INTERNATIONAL COMMISSION
for the
CONSERVATION of ATLANTIC TUNAS

R E P O R T
for biennial period, 1972-73
PART II (1973)
English version

MADRID, SPAIN 1974

INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS

Member Countries (as of July 1, 1974)

Brazil, Canada, France, Ghana, Ivory Coast, Japan, Korea, Morocco, Portugal, Senegal, South Africa, Spain, U.S.A.

Chairman of Commission

Mr. J. TOUYA, France
(to December 4, 1973)
Dr. I. MALICK DIA, Senegal
(from December 4, 1973)

First Vice-Chairman of Commission

Dr. M. P. PAIVA, Brasil
(from December 7, 1971)

Second Vice-Chairman of Commission

Mr. D. LAYACHI, Morocco
(to December 4, 1973)
Mr. D. S. KIM, Korea
(from December 4, 1973)

Panel Membership (as of July 1, 1974)

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

Council (to December 4, 1973)

Chairman: FRANCE
First Vice-Chairman: BRAZIL
Second Vice-Chairman: MOROCCO
Countries: CANADA, GHANA, JAPAN, KOREA, PORTUGAL, SOUTH AFRICA, SPAIN, U.S.A.

Council (from December 4, 1973)

Chairman: SENEGAL
First Vice-Chairman: BRAZIL
Second Vice-Chairman: KOREA
Countries: CANADA, FRANCE, IVORY COAST, JAPAN, MOROCCO, PORTUGAL, SPAIN, U.S.A.

Standing Committees

Committees:	Chairman
Committee on Research and Statistics (SCRS)	Mr. V. VALDEZ, Portugal (to December 4, 1973) Dr. B. J. ROTHSCHILD, U.S.A. (from December 4, 1973)
Committee on Finance and Administration (STACFAD)	Dr. W. M. SPRULES, Canada (to December 4, 1973) Mr. K. YONEZAWA, Japan (from December 4, 1973)

Secretariat
General Mola, 17, 28001 Madrid (Spain)
Executive Secretary: O. RODRÍGUEZ-MARTÍN
Assistant Executive Secretary: P. M. MIYAKE

LETTER OF TRANSMITTAL

The Chairman of the International Commission for the Conservation of Atlantic Tunas presents his compliments to the Member Governments to the Convention for the Conservation of Atlantic Tunas (signed in Rio de Janeiro, May 14, 1966), and to the Delegates and Observers representing said Governments, and has the honor to transmit the ***"Report for the Biennial Period, 1972-73, Part II (1973)"***, describing the activities of the Commission during the second half of said biennial period.

The volume contains reports of the Third Regular Meeting of the Commission, held in Paris, November-December, 1973, and of all the associated meetings of the Standing Committees and Sub-Committees. In addition, it contains a summary of the activities of the Secretariat, and the National Reports on scientific activities related to tuna fisheries carried out by the various countries.

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

J. Touya
Chairman

TABLE OF CONTENTS

CHAPER I — Secretariat Reports

CHAPTER II — Meeting Documents

CHAPTER III — National Reports

CHAPTER I

Secretariat Reports

ADMINISTRATIVE REPORT 1973 *

COM/73/10 (Amended)

1. New member of the Commission

On December 6, 1972, the Government of the Republic of the Ivory Coast deposited with the Director General of the Food and Agriculture Organization of the United Nations (FAO) an instrument of adherence to the International Convention for the Conservation of Atlantic Tunas.

In accordance with Article XIV, paragraph 3 of the Convention, the adherence becomes effective on the date the instrument is deposited. Therefore, as of December 6, 1972, the Ivory Coast is a member country of the International Commission for the Conservation of Atlantic Tunas. The Commission now has the following thirteen member countries:

Brazil, Canada, France, Ghana, Ivory Coast, Japan, Korea, Morocco, Portugal, Senegal, South Africa, Spain and U.S.A.

2. Meetings

i) *Second Regular Meeting of the Council*

The Second Regular Meeting of the Council, presided over by the Chairman of the Commission, was held in Madrid from November 29 to December 5, 1972. Panels 1 and 2 also met at that time. Previously, beginning on November 20, the Standing Committee on Research and Statistics held meetings. The proceedings and the reports of the meetings appear in Part I of the Biennial Report, 1972-73.

* Revised version of Administrative Report presented at Commission Meeting.

ii) *Meetings held at the Secretariat during 1973*

a) A meeting was held on statistics, which was attended by personnel from the Spanish Fisheries Administration, the Spanish Oceanographic Institute and the ICCAT Secretariat.

The Oceanographic Institute is continuing its port survey and sampling program which was started in 1972 along the north and northwest coasts of the Peninsula. This program will cover the entire albacore fishing fleet.

The Oceanographic Institute and the Spanish Administration, with ICCAT's assistance, will initiate a logbook system for all the Spanish vessels operating off Africa.

b) A seminar on tuna fishery and biology was held at the Secretariat from May 2-4. Some Spanish scientists concerned with the study of tuna attended, as well as the Secretariat staff.

c) Meetings between the Secretariats of international agencies (see Section iii, *g*) ...).

iii) *Meetings at which ICCAT was represented*

a) *CECAF*

The Executive Secretary attended the CECAF (FAO Fishery Committee for the Eastern Central Atlantic) Meeting in Tenerife, Canary Islands, from December 11-15, 1972. He offered the services of an expert in fishery statistics to collaborate with African coastal countries in the collection of tuna data. He also had the opportunity of visiting tuna boats from several countries.

b) *Japanese Tuna Research Conference*

The Conference was held in Shimizu, Japan, from February 6-8, 1973. ICCAT was represented by the Assistant Executive Secretary, who was in Japan at that time on home leave. He gave a short talk on Commission activities and on the recommendation proposed at the last Council meeting for a yellowfin tuna regulation.

c) *FAO Technical Conference on Fishery Management and Development*

The Conference was held in Vancouver, Canada, February 13-23, 1973, and ICCAT was represented by the Assistant Executive Secretary. The main topic under discussion was how to establish a proper management of fish stocks, at the same time assisting developing countries with their fishery programs.

d) *COFI*

The Executive Secretary attended the FAO Fisheries Committee (COFI) Meeting in Rome, April 10-16, 1973.

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

The Assistant Executive Secretary attended the meetings of the ICSEAF Working Groups on Demersal and Pelagic Species, in Madrid, May 14-19, 1973.

f) *International Council for the Exploration of the Sea (ICES)*

The Assistant Executive Secretary attended the 61st Statutory Meeting of ICES, in Lisbon, October 1-10, 1973. He participated in the meetings of the Statistics Committee and the Pelagic Fish (South) Committee. The need for close cooperation in carrying out tuna studies and improving statistics was emphasized.

g) *Meetings between international agency secretariats and selected national fishery statistical offices*

Three meetings were held: in Paris (Sept. 26-27, 1973), Madrid (Sept. 28) and Lisbon (Oct. 2). Participating agencies were FAO (CWP), ICES, ICNAF, ICSEAF, OECD and ICCAT. ICCAT acted as host for the Madrid meeting and was represented at both the Madrid and Lisbon meetings by the Assistant Executive Secretary. The report of the meetings is submitted as Document SCRS/73/24.

3. Cooperation with other organizations

i) *FAO*

The ICCAT Council reviewed the Draft Agreement between FAO and ICCAT and recommended its approval by the Commission.

In accordance with the decision of the ICCAT Council, on March 5, 1973 the Secretariat sent the text of the Draft Agreement between FAO and ICCAT to the Director General of FAO. At its meeting in June, 1973, the Council of FAO studied the text of the Draft Agreement and approved it, pending confirmation by the Conference, in accordance with Article XXIV-4(c) of the General Rules of Procedure of the Organization.

Good working relations with FAO have continued during the present year, and there has been close collaboration in the collection and comparison of statistics.

ii) *Inter-American Tropical Tuna Commission (IATTC)*

Working relations with IATTC have been maintained, with an exchange of scientific information on different matters of mutual interest.

Owing to the lack of funds, this year ICCAT was not represented at the IATTC Annual Meeting in Washington D.C., U.S.A.

iii) *ICSEAF*

Following instructions from the Council, the Executive Secretary held several discussions with the Executive Secretary of ICSEAF regarding the working relations between both Commissions. They agreed that such relations could be established by means of a Document laying out the bases for collaboration, to be approved by both Commissions. Both Secretaries have jointly prepared a draft Document which is included in Annex 7 to the Proceedings of the Third Regular Meeting of the Commission.

iv) *Other organizations*

The Secretariat has maintained good relationships with other international organizations and particularly with the International Council for the Exploration of the Sea (ICES), and the International Commission for the Northwest Atlantic Fisheries (ICNAF).

It is felt, however, that even closer collaboration with ICNAF is necessary. It is therefore advisable that the ICCAT Secretariat be represented at ICNAF meetings as this Organization has a lot of experience in problems regarding fishery regulations and international inspection, which could be most helpful to us.

4. Coordinating research activities

The Secretariat has prepared a detailed report on this subject (See «Secretariat Report on Coordination and Research Activities»).

5. Publications

i) *Procedure for distribution*

In accordance with the Council decision, publications are sent free of charge to all member Governments, and on an exchange basis to official bodies of various countries, international organizations and national non-profit making concerns.

Also in accordance with the Council decision, the Secretariat has started, as an experiment, to sell copies of the «Field Manual», at average cost ($2 per copy), to commercial and industrial concerns or to private parties that request them. In such cases, mailing costs are also charged.

ii) *Biennial Report*

Part I of the Report for the Biennial Period, 1972-73 was printed in the three official languages and distributed in October. It covers Commission activities during the first half of the biennial period 1972-73.

iii) *Staff Rules*

The Secretariat prepared, by its own means, a volume containing the Staff Rules approved by the Commission at its Second Regular Meeting.

iv) *Statistical Bulletin*

Statistical Bulletin, Vol. 3 (1973) was prepared and sent to the appropriate people. A preliminary issue was prepared in July, the completed version sent out in August, the first revision in October, and the second (final) revision in February, 1974.

v) *Collective Volume of Scientific Papers*

In accordance with the proposal of the Standing Committee on Research and Statistics (SCRS), the Secretariat prepared and distributed, in May, to interested parties, a Collective Volume of scientific papers presented at the last SCRS Meeting (1972).

vi) *Data Record (Vols. 1 and 2)*

The Secretariat prepared and sent out in June, Volume 1 of the Data Record. Volume 2 was distributed in November.

vii) *Newsletter*

As in previous years, Newsletters were sent out to inform all those interested of Secretariat and Commission activities in general.

6. Secretariat administration

i) *Staff changes*

a) *Resignations*

This year three members of the Secretariat staff left, of their own accord: Miss Martha Sussmann, bilingual secretary; Mr. Juan Antonio Fernández, Administrative Assistant, and Miss Gail Tibbo, Statistical Assistant. The Secretariat is appreciative of the efficient services rendered by them in the past.

b) *New appointments*

Miss Lorna Dell, of British nationality, has joined the Secretariat as a multilingual secretary. She replaces Miss Martha Sussmann.

Miss Joannie Manning, of American nationality, recently joined the Secretariat as Statistical Assistant, replacing Miss Tibbo.

ii) *The Secretariat staff is presently made up of the following persons:*

		Date of employment
Olegario Rodríguez Martín, Executive Secretary	(P-5)	July 1, 1970
Makoto Miyake, Assistant Executive Secretary	(P-4)	Nov. 1, 1970
Administrative Assistant	(G-6)	Vacant
Ana Mª Mingote, Multilingual secretary	(G-4)	Oct. 1, 1970
Elisabeth Carel, Multilingual secretary	(G-4)	April 1, 1972
Lorna Dell, Multilingual secretary	(G-4)	Feb. 1, 1973
Joannie Manning, Statistical Assistant		Sept. 10, 1973
Arnaud de Boisset, Statistical Expert		Oct. 1, 1972
Amadeo Aguilar, Messenger		Oct. 1, 1970

iii) *Travel*

a) In March 1973, the Executive Secretary visited the following African coastal countries, which are members of the Commission: Morocco, Senegal, Ivory Coast, and Ghana.

He had the opportunity of speaking with the Directors General of Fisheries of each of these countries, and also met with their collaborators in both the administrative and scientific fields. He called at fishery research laboratories, and was favorably impressed by the possibilities they offer of collaborating in joint Commission programs.

The Executive Secretary noted the great interest and concern of these countries in tuna fisheries, and was aware of the hopes they have in ICCAT's ability to conserve these resources.

b) The Assistant Executive Secretary visited the laboratory of the National Marine Fisheries Service, and the Inter-American Tropical Tuna Commission Headquarters, in La Jolla, on his way back from the Vancouver Conference. The main purpose of the visit was to discuss with NMFS the loan of a statistical expert to ICCAT. There was also an exchange of recent information on tuna research in both the Pacific and the Atlantic.

c) In June, the Executive Secretary visited some American countries on the Atlantic coast which are interested in tuna fisheries: Mexico, Venezuela, Brazil, Uruguay and Argentina. This journey had been scheduled for 1972 but was postponed for various reasons.

He met with the Fisheries Authorities in each country, and also with biologists and experts in fishery statistics most closely associated with the fisheries administrations.

We are hopeful that these meetings will prove highly beneficial to ICCAT in its international relations and also assist the Secretariat in the task of collecting statistical information.

d) *Other trips*

Secretariat personnel also undertook trips in order to attend the meetings mentioned previously, i.e. CECAF, the FAO Technical Conference on Fishery Management and Development, COFI, ICES, etc.

O. Rodríguez Martín
Executive Secretary

SECRETARIAT FINANCIAL REPORT (1972-1973) *

COM/73/11 (Amended)

1. Auditor's Report

The Auditor designated by the «Instituto de Censores de España» has examined the accounts and balance sheet of the Commission up to December 31, 1972. In compliance with Article 9-3 of the Financial Regulations and in accordance with the recommendation of the Council at its Second Regular Meeting, the Secretariat sent a copy of the Auditor's Report to all the member country Governments in March, 1973. An extract of same has been included in Part I of the 1972-1973 Biennial Report.

2. Current status of Commission accounts

Statement 1 shows the status of accounts at the end of the 1972 fiscal year, contributions for that year paid in before December 31, 1973, and those still outstanding, and the Commission's distribution of these funds.

In *Statement 2* can be seen the status of each member country's contributions. Outstanding contributions amount to $ 10,655.00 (1973) which when added to the $ 4,196.58 outstanding for 1972, give a total of $ 14,851.58.

Since the budget was approved in December 1971, fluctuations in the dollar exchange rate have decreased its value by 20 % (i.e. present relative peseta value has increased by 25 %).

The Secretariat has therefore been obliged to restrict activities to a minimum in order to compensate for the reduction in funds. Cuts have particularly been made in the Chapters: «Travel», «Salaries», «Office Equipment» and «Coordi-

* Revised version of Financial Report presented at Commission Meeting.

nation of Research». We were also somewhat concerned about «Meeting Expenses» as this year the meeting was being held away from Headquarters.

However, as expenses in Paris were restricted to a minimum and the French authorities offered us facilities, this chapter of the budget was only very slightly increased. As a result, expenditures practically balanced with the budget at the end of the fiscal year, and we must consider these results very satisfactory in view of the circumstances.

Statement 3 shows the total of income and expenditures for 1973.

Statement 4 shows the status of accounts as at December 31, 1973. The amount in Cash and Bank is $ 9,498.99.

3. Review of Working Capital Fund

The Working Capital Fund amounted to $ 17,795.19 at the close of the fiscal year for 1972. After adding the non-budgeted income for 1973, the Fund now amounts to $ 22,974.93.

4. 1974-1975 Budget

The Executive Secretary presented a budget estimate for 1974-75 (Document COM/73/7, Supp. 1, corrected November, 1973). This was approved by the Commission (Appendix 3 to Annex 5 – Proceedings of the Third Regular Meeting of the Commission).

5. Member country contributions (1974-75)

Member country contributions were calculated during the Commission meetings, after the Budget had been approved, in compliance with Article X of the Convention (Appendix 5 to Annex 5 of the Proceedings).

STATEMENT 1

Balance at Close of Fiscal Year 1972

ASSETS	$	LIABILITIES	$	$
Cash & Bank (at 31-XII-72)	28,045.23	To 1973 Budget	16,000.00	
Contribution Brazil	6,144.00	To 1973 Budget	4,000.00	20,000.00
Contribution U.S.A.	5.00	Working Capital Fund . .	17,310.83	
Contribution Ghana	4,196.58	» » » . .	400.63	
(outstanding at 31-XII-73)		» » » . .	83.73	17,795.19
		Balance in favor of France, passed to 1973 Budget .	595.62	595.62
TOTAL	38,390.81	TOTAL . . .		38,390.81

Status of Member Country Contributions in 1973

	Balance 1972	*Contributions for 1973, approved by the Commission*	*Contributions paid*		*Balance 1973*
	$	$	$		$
Brazil		6,314.00			— 6,314.00
Canada		6,877.00	6,877.00	(16-II)	
France	+ 595.62	19,687.00	19,091.38	(8-V)	
Ghana	—4,196.58	4,341.00			— 8,537.58
Japan		19,230.00	19,230.00	(22-III)	
Korea		10,175.00	10,175.00	(23-III)	
Morocco		8,700.00	9,563.64	(23-V)	+ 863.64
Portugal		11,207.00	11,207.00	(21-V)	
Senegal		2,031.00	2,031.00	(17-I-74)	
South Africa		3,882.00	3,882.00	(7-V)	
Spain		22,473.00	22,473.00	(7-VIII)	
U.S.A.	— 5.00	20,083.00	20,600.00	(16-II)	+ 512.00
	+ 595.62				+ 1,375.64
	—4,201.58				—14,851.58
	—3,605.96		125,130.02		—13,475.94
Corresponding to 1972 Budget			— 5.00		
Corresponding to 1974 Budget			— 1,375.64		
Paid in during year for Fiscal Year 1973			123,749.38		
Paid in during 1972 for Fiscal Year 1973			+ 595.62		
Total payment for 1973			124,345.00		
Pending payment for 1973			+ 10,655.00		
Amount corresponding to 1973 Budget		135,000.00	135,000.00		

STATEMENT 3

Income and Expenditures (at December 31, 1973)

INCOME	$	EXPENDITURES	$
Cash & Bank at 1-1-1973 . .	28,045.23	Regular budget 1973	154,987.69
Brazil, Contribution 1972 . .	6,144.00	Cash and Bank . .	9,498.99
U.S.A., » » . .	5.00		
Paid in during year of 1973 Budget	123,749.38		
Ivory Coast, Contribution 1973 (not included in Budget) . .	2,031.00 [1]		
Interest from Bank — 1st sem. .	817.06 [1]		
Interest from Bank — 2nd sem.	1,714.36 [1]		
Sales of Field Manual . . .	129.98 [1]		
Differences in exchange rates .	475.03 [1]		
In favor of U.S.A.	512.00		
In favor of Morocco . . .	863.64		
TOTAL . . .	164,486.68	TOTAL . . .	164,486.68

[1] To Working Capital Fund ($ 5,167.43).

STATEMENT 4

Balance Sheet (at 31/12/73)

ASSETS		$	LIABILITIES	$
Cash and Bank		9,498.99	In favor of U.S.A.	512.00
Contributions pending:			» » » Morocco	863.64
From 1972 Budget	4,196.58		Working Capital Fund	22,974.93
» 1973 »	10,655.00	14,851.58		
	TOTAL	24,350.57	TOTAL	24,350.57

The Balance Sheet of the Commission at the close of the Fiscal Year and the Liquidation of Estimated Expenditures for 1973 are given below. Both form part of the Auditor's Report for 1973, which was forwarded to Delegates in April, 1974.

International Commission for the Conservation of Atlantic Tunas
Balance Sheet at Close of Fiscal Year 1973

ASSETS			LIABILITIES		
Available:					
BANCO EXTERIOR DE ESPAÑA			*Payments in advance of 1974 Budget:*		
Checking Account		$ 7,635.72	By Morocco	$ 863.64	
C/A in domestic pesetas	96,301.08		By U.S.A.	$ 512	$ 1,375.64
C/A in convertible pesetas	13,092.40				
Cash on hand Ptas.	539.90				
TOTAL Ptas.	109,933.38				
At 59 Ptas. per $		$ 1,863.27			
TOTAL		$ 9,498.99			
Receivables:			*Acquired holdings:*		
Contributions pending payment:			From previous Fiscal Years	$ 19,035.77	
BRAZIL	$ 6,314		From 1973 Fiscal Year	$ 2,271.70	$ 21,307.47
GHANA, 1972	$ 4,196.58				
GHANA, 1973	$ 4,341	$ 14,851.58			
Equipment:			*Working Capital Fund:*		
Acquired before Fiscal Year 1973.	$ 18,884.21		As shown in attachment		$ 22,974.93
During Fiscal Year 1973	$ 2,271.70				
TOTAL	$ 21,155.91				
DEPOSITS	$ 151.56	$ 21,307.47			
TOTAL		$ 45,658.04	TOTAL		$ 45,658.04

Madrid, March 15, 1974

Furniture ceded by Undersecretariat of Merchant Marine of Spain	$ 3,365.38	Undersecretariat of Merchant Marine of Spain, furniture ceded	$ 3,365.38

International Commission for the Conservation of Atlantic Tunas

Liquidation of Estimated Expenditures for 1973

Headings	*Budget Appropriations*	*Expenditures for Year*	*Equipment*	*Expended*	
				Over	*Under*
1. Salaries, allowances	$ 87,500	$ 90,164.32		$ 2,664.32	
2. Travel	10,000	8,525.49			$ 1,474.51
3. Meetings	19,000	20,386.13		1,386.13	
4. Publications	11,000	10,186.10			813.90
5. Office Equipment	2,000		$ 2,271.70	271.70	
6. General Office Expenses	13,000	13,503.79		503.79	
7. Miscellaneous Expenses	2,500	2,587.38		87.38	
8. Coordination & Research	10,000	7,362.78			2,637.22
Totals for the Year	$ 155,000	$ 152,715.99	$ 2,271.70	$ 4,913.32	$ 4,925.63

Deduct:	Expended under the budget	$ 4,925.63
	Expended over the budget	$ 4,913.32
	Fiscal Year Results	$ 12.31

Madrid, March 15, 1974

The Executive Secretary:

OLEGARIO RODRÍGUEZ MARTÍN

Certified:
Auditor

ALEJANDRO OLIVER Y TRUJILLO

SECRETARIAT REPORT ON COORDINATION AND RESEARCH ACTIVITIES

COM/73/15 — SCRS/73/7 (Amended)

I. STATISTICS

Collecting accurate and adequate statistics on a timely basis is one of the most important parts of the Secretariat's work. In 1973, for the first time, the Secretariat has had direct contact with the fishery industry through the experts we sent to the ports. However this is still a supplementary project as the majority of important data are submitted by National Offices.

Tables 1 to 3 (contained in Addendum 2 to Appendix 2 to the SCRS Report) show the types of data submitted, and the date. It is obvious that many more countries have cooperated this year than previously, and data have been coming in much more rapidly. The Executive Secretary's trip to Central and South American countries helped to improve our relationship with them and we expect a closer cooperation in the future.

1. Statistics collected through National Offices

On April 8, 1973, the Secretariat sent out requests for these data to member countries, following the guidelines set out by the SCRS. At the same time, requests for cooperation in this project were also sent to non-member countries which catch a significant amount of tuna and tuna-like fishes.

Data were requested for the following four categories:

a) Task 1 data — total catch and number of boats — deadline May 31.
b) Task 2 data — catch-effort data by area (1° × 1°, or 5° × 5° squares) and by month (or quarter) — deadline August 31.
c) Summarized Task 2 data — catch-effort data by larger area — deadline May 31.

d) Biological data — actual size frequency of samples — deadline April 30 for data already available; August 31 for newly processed data.
e) Summarized biological data — catch by size classes (or weighted size frequency) — deadline August 31.

More detailed coverage of the above is given in Section 4-ii.

2. Flow charts prepared by National Offices

Following instructions given at the last SCRS meeting, the Secretariat sent out initial requests for flow charts on January 31, 1973, and circulated the first reminder on May 25. There was a considerable difference in the quality of charts received by the Secretariat, so a second reminder requesting an improvement in quality of the charts up to the level agreed upon by the SCRS was sent on an individual basis in August.

3. Statistical work in which the Secretariat is directly involved

i) *Canary Islands Project*

Mr. de Boisset, a member of the Secretariat staff, has been stationed in this area since mid-May. His main assignments are as follows:

a) Collecting transshipment and landing statistics for the international fleet based in the Canaries.
b) Biological sampling from the above mentioned fleet.
c) Making estimates of catches by local boats for 1971 and 1972.
d) Carrying out port surveys to obtain Task 2 data for local boats.
e) Biological sampling from local boats.

Items *c*) to *e*) are carried out jointly with the Spanish Oceanographic Institute. In accordance with an agreement with the Institute, all data thus collected are forwarded to the Institute for processing and analysis.

An evaluation of this project is attached as Appendix I.

ii) *African Coast Project*

In accordance with the «Resolution concerning the improvement of ICCAT data collecting procedures» passed at the last Council meetings, the Executive

Secretary announced the project on January 22, 1973. The USA offered the loan of an expert and, after some discussion, an agreement was reached between NMFS (United States) and ICCAT. The outline of the agreement follows:

a) All expenses would be paid by NMFS except those incurred during the expert's stay in Madrid.
b) The expert would only represent ICCAT and receive his instructions from the Executive Secretary.
c) He would be in Africa from May until the end of October.
d) Whether or not ICCAT would send him to the Canary Islands should be decided at a later date.
e) All data collected by him would be kept confidential by the Secretariat, except when permission to reveal them is granted by the captain of the boat from which the data are obtained.

Mr. Eugene Holzapfel, an American national, was chosen for this assignment. He visited ICCAT Headquarters for briefing before going to Ghana, where he was assigned to work.

He worked in coordination with Ghanaian scientists in collecting statistics and biological samples from foreign fleets fishing off Africa. The project, which was a great success, terminated in December and our evaluation of it is attached as Appendix III.

iii) *Northern coast of Spain*

The port survey and sampling project started in 1972 was continued on a larger scale by the Spanish Oceanographic Institute. The Secretariat again gave some technical assistance in the Project. It was agreed that the Institute would report on the results.

iv) *Logbooks*

In the past, the Secretariat asked every scientist to send in logbook models so that the Secretariat could prepare standard logs for each type of gear, thereby helping those countries that have no logbook system yet. In this way, forms were prepared for the following fisheries:

a) Large purse seiners.
b) Large baitboats.
c) Multi-purpose — particularly convenient for longliners.
d) Trap fisheries.

Forms have also been prepared for port surveys.

The logbooks for large purse seiners and baitboats are basically the same as those used by IATTC, while the «multi-purpose» form is based on those used by Japanese, Korean and Taiwanese longliners. Since most of the American boats in the Atlantic keep IATTC logs, and most of the oriental longliners have a common standard form, we considered that the ICCAT forms should be similar to these so that a vessel moving from one ocean to the other would not have to record its activity on different forms. This also makes record collecting much easier for people working in the ports.

Samples of all the forms were offered to the National Offices and the following countries decided to adopt ICCAT forms:

Spain

Spain has adopted baitboat and purse seiner forms *a*) and *b*) for large boats fishing off the African coast. These were distributed via the owners and the Spanish Oceanographic Institute agreed to take all responsibility for collecting and processing the data. The ICCAT Secretariat assisted in disrtibuting logbooks among the fishermen (at the same time instructing them on how to keep the records) and also helped collect them from the boats.

The Secretariat also assisted in the preparation of forms for port surveys in the Canary Islands and northern Spain.

Ghana

Ghanaian scientists adopted forms *a*), *b*) and *c*), and distributed them to all the international fleets based in Tema. Boats which already have logs were, of course, excluded.

Panama

ICCAT experts at the ports are asking the captains of Panamanian flag vessels to cooperate in keeping logs.

Morocco

At the request of Morocco, we provided forms for trap fisheries as well as for port surveys.

Libya

At their request, we prepared a form suitable for their trap fisheries.

4. Processing and dissemination of data

i) *Task 1 data — Statistical Bulletin*

All available Task 1 data have been published in the Statistical Bulletin (Vol. 3). Since many data were received in late May and June, a preliminary issue was circulated in early July among scientists directly concerned. The first official issue went out in early September, when we had almost 90 % of the 1972 data. A revision was made in November and the final version was issued in January, 1974. Special efforts were made to obtain data for Panamanian flag vessels by contacting the Panamanian Government, private companies operating such vessels, ORSTOM, etc. The ICCAT experts stationed at the ports have played an important role in this, as have the Ghanaian scientists. Data was obtained for 30 of the approximately 40 vessels registered in Panama and fishing in the Atlantic.

ii) *Task 2 and biological data — Data Record*

Some National Offices sent in measurements as recorded at the ports and these were summarized by the Secretariat. However, most of the countries which sent in any Task 2 and/or biological data to the Secretariat have followed the guidelines given by the SCRS. The person editing the data generally circulates them among the scientists directly concerned at the same time as forwarding them to the Secretariat.

Besides these, in 1973 the Secretariat also collected data directly at ports. As has been explained, most of these were sent in to the National Offices for further analysis but some data relating to foreign fleets were retained by the Secretariat. Some of these data were manually summarized in 1973.

All data submitted by National Offices as well as those summarized by the Secretariat are published in the Data Record series. An exception to this are data which have already been published by the various National Offices.

iii) *Field Manual*

The Field Manual published in 1972 has proved to be an excellent means of informing those concerned of our statistical requirements. The Secretariat is constantly receiving requests for copies from research institutions, industrial and private concerns, etc. (100 copies sold, approximately 200 donated).

In the future we should consider the convenience of including another Section with instructions on how logbooks should be kept and later collected.

5. Present problems and future plans

i) *Adequacy and accuracy of data*

a) Species breakdown

We are still having many problems in this respect. A few countries can only provide data on total catch of tuna and tuna-like fishes. Also there is often confusion regarding species classification when local names are used. The Secretariat is becoming more experienced in sorting out and correcting such errors, particularly since our project of direct sampling in the field was started.

b) Flag countries

To some extent this problem is now being solved.

c) Discrepancies in data received from different sources

This is still a major problem for the Secretariat since cross-checking, detecting discrepancies and inquiring about them, etc. requires a good deal of time and effort. Moreover our inquiries are frequently ignored by the providers of the data.

d) National Offices unfamiliar with the data

The statistical correspondents in some countries are not very familiar with tuna data and, in some cases, are merely persons in charge of the statistical section. Therefore data submitted by them may give rise to the problems described above in *a*) to *c*). The Secretariat is now getting experienced in detecting these errors but as corrections must be done by the National Offices themselves, this can be a lengthy business.

ii) *Timeliness of data*

In 1973, there was some improvement in getting data on a timely basis. For example, we circulated a preliminary compilation of the Statistical Bulletin in early July covering nearly 80 % of the total Atlantic catch, whereas in 1972 we were unable to do this until late in August. However some countries still have difficulty in submitting data promptly.

Some of the major causes of delayed reporting are given below:

a) Late reporting from fishing boats. This is particularly a problem in the case of longliners, which may stay at sea for 6-12 months each trip. Possible so-

lutions for this would be either to report landings instead of catches (although catch data is preferred) or to report catch data by cable.

b) *National Office delay in processing data.* Verification of input and output of data as well as data processing can, of course, be extremely time-consuming work. Also, any minor mishaps in the computer system may well delay data compilation by a few months.

c) *Delay in communications.* Delay in the submission of data is often due to red tape at National Offices. This problem is probably one of the most difficult to solve.

iii) *The Secretariat's recommendations for improving statistics*

The Secretariat made some recommendations at the 1973 SCRS meeting for improving statistics. The modified version of these as approved by the Commission appears as Addendum 3 to Appendix 3 to the SCRS Report.

II. TAGGING

1. Tagging by Member Countries

We give below information received since the 1972 SCRS Meeting on tagging cruises conducted by member countries (see p. 26).

2. Secretariat's contribution

As in the past, the Secretariat cooperated with countries starting tagging projects, providing them with tags and equipment necessary for the cruises. Materials furnished in 1973 were:

Country	*Tags*	*Cradles*	*Needles*
Ghana	1,000	2	120
South Africa	700	—	—

This year we found it necessary to replenish our stock of tags and purchased 10,000 through Dr. A. Jones of NMFS, Miami, who acted as our agent. Also IATTC was kind enough to supply us with a sufficient number of dart heads.

Agency	*Period*	*Area*	*Gear*	*No. of fish tagged*
South Africa	19/10/72-22/10/72	Off Cape Point	Sport fishing	101 Albacore
South Africa	19/12/72-27/12/72	Off Cape Point	Sport fishing	83 Albacore
ORSTOM	18/6/73-30/6/73	Off Pointe Noire		396 Yellowfin 397 Bigeye 20 Skipjack
Canada	5/8/73-23/8/73	Off Newfoundland-Gulf of St.Lawrence	Sport fishing	15 Bluefin
Canada	5/8/73-14/8/73	New Jersey-New York	Purse seine	156 Bluefin
ORSTOM	6/8/73-17/8/73	Off São Tome		606 Yellowfin 7 Skipjack
ORSTOM	20/8/73-29/8/73	Gulf of Guinea		280 Yellowfin 41 Bigeye 88 Skipjack
Canada	3/10/73	Gulf of St.Lawrence	Harpoon	1 Bluefin
WHOI (USA)	1/1/73-11/10/73	Florida-Massachusetts	Sport fishing	37 Blackfin 11 Yellowfin 130 Bluefin 58 Skipjack 680 Sailfish 253 White Marlin 93 Blue Marlin
WHOI (USA)	1/7/73-31/8/73	New Jersey-New York	Purse seine	264 Bluefin 1 Skipjack
ORSTOM	24/9/73-6/10/73	Off Pointe Noire		12 Yellowfin 2 Bigeye
ORSTOM	29/10/73-14/11/73	Off Ghana		291 Yellowfin 9 Bigeye 8 Skipjack

3. Lotteries

Following the decision reached at the 1972 SCRS Meeting, in 1973 the Secretariat held two lotteries: the first lottery — tropical tunas only (yellowfin, skipjack, bigeye), totaling 223 tag recoveries; the second lottery — all other tunas and tuna-like species, totaling 242 tag recoveries.

The winners were: the Captain of a Canadian seiner, and a longshoreman in Puerto Rico. The awards of $ 300 each were forwarded to the winners via the respective tagging correspondents of the countries involved.

A breakdown by country of the tags recovered is shown in the following table:

Summary of Tag Recoveries entered for the 1972 Lotteries

(Held in 1973)

Recoveries from	*Releasing Agencies*					*Total*
	ORSTOM	*U.S.A.*	*Canada*	*Morocco*	*France*	
Canada		15	14			29
Congo	1					1
Cuba		1				1
France	96				9	105
Italy	3					3
Ivory Coast	3					3
Japan	2	13				15
Korea		1				1
Morocco				3		3
Portugal (inc. Angola)	3					3
Senegal	34					34
Spain	1			2	18	21
Taiwan					1	1
U.S.A. (inc. Puerto Rico)	80	117	40			237
U.S.S.R.		2				2
Venezuela		6				6
	223	155	54	5	28	465

December, 1973

Appendix I

PROGRESS REPORT ON THE CANARY ISLANDS PROJECT

1. Landing Statistics for International Fleet based in the Canaries

All the international and national trading companies and transshipment agencies in the Canary Islands have been contacted. They have been very cooperative, providing us with almost all the transshipment records since the beginning of 1972 up to the present. The information consists of landings by:— species, condition of fish, size of fish, and trip. Special emphasis was placed on the landings by boats flying Panamanian flags. The data have been summarized and used for cross-checking and completing our Statistical Bulletin.

2. Biological Samplings from International Fleet

The owners, as well as the captains of most of the international boats were cooperative when we measured the fish. However, we have been limited in our biological sampling because our expert has been based in Tenerife while most of the boats were unloading in Las Palmas. Unfortunately, as most of his time was dedicated to other more important assignments, he could not visit Las Palmas frequently enough to secure adequate samples.

3. Catch Data - Small Local Boats, 1971-73

There have been some problems regarding species identification and accuracy of catch statistics for small local boats from isolated ports on the islands of Tenerife, Hierro, La Palma and Gomera. This year the Spanish Oceanographic Institute started extensive surveys at these ports, with the assistance of the ICCAT Secretariat. Our expert based in Tenerife, accompanied by a member of the Institute staff, secured the help of one person at each port to daily record catches by local boats. These port coordinators also helped us to obtain most of the data available for previous years. The expert visited each port periodically to collect data as well as to discuss and verify species identification. In addition, many biological

samplings were carried out. We have collected accurate landing statistics for 1971-72 with correct species identification. For 1973, besides landing data, we have been gathering information on seasonal and geographical distribution of catch and effort (equivalent to Task 2 data).

4. Catch Data - Large Local Boats, 1971-73

Every year some large boats leave the Peninsula to fish in the area of the Canary Islands. The majority of their catches are unloaded at Lanzarote. Our expert was able to establish a fine relationship with all the canneries in the area, which provided the necessary data for 1971-73. We tried to establish a logbook system for these vessels but the project has not so far been successful.

5. Overall Review

For 1973, emphasis was placed on the collection of statistics and biological sampling from small and large local boats. The project was very successful with the exception of the establishment of a logbook system for large local boats. It is hoped that, in the future, the project will be continued and intensified by the Spanish Oceanographic Institute independently. However, for the time being, the Secretariat is prepared to cooperate with the Institute.

Only secondary attention was given to the collection of statistics and biological sampling from the international fleet. This information has enabled us to:

i) Compile the statistics from those countries which do not report their catch to the Secretariat.

ii) Obtain estimates on current catch.

iii) Gather biological data.

iv) Continue monitoring the fisheries.

v) Assist fishermen in keeping logbooks.

vi) Cross-check statistics made available by scientists and by National Offices of various countries.

However, if we intend to use such information to compile complete Atlantic tuna statistics we would have to carry our surveys in 7 or 8 important ports, in addition to those presently covered by ICCAT experts. It is therefore more practical for us to continue using the statistics provided by National Offices, supplementing these with data collected by ICCAT directly.

Appendix II

REPORT ON THE AFRICAN PROJECT

I. Main Assignments

1. Complete boat list.
2. Record unloadings and transshipments at ports.
3. Sample fish for biological measurements.
4. Encourage fishermen to keep logbooks.
5. Estimate current accumulative catch and cable the figures to ICCAT (as an experiment).

Special priority was given to the following tasks:

a) obtaining catch records and biological samples from the American surface fishery fleet (Canada and Cuba excluded);
b) obtaining catch records and biological samples from Panamanian flag longliners,

and secondary importance to:

c) biological sampling from Chinese and Korean longliners;
d) collecting logbooks from Spanish surface fishery boats.

II. Progress Made

1. *Place of assignment*

The expert was stationed in Tema, Ghana, and made one visit to Abidjan, Ivory Coast. He was greatly assisted by Ghanaian scientists and also received excellent cooperation from fishing and trading organizations, as well as from many shipping agencies.

2. *Difficulties encountered*

i) The most significant setback was the unreliability of the postal system. In August, two parcels sent from Ghana containing essential data were lost. As

the photocopying facilities available to the expert were very limited, he was unable to send duplicates of all these missing data. As a result, other data received from him lost a lot of their relative value.

ii) Since ICCAT had no funds whatsoever for supporting this project, we were entirely dependent on the generosity of the NMFS, although all instructions were given by the ICCAT Executive Secretary. If ICCAT had had some funds at its disposal to supplement the project, this would have lightened the financial burden of NMFS.

iii) Another problem involved the minimum size regulation for yellowfin. After the regulation became effective, the expert found boat captains to be more suspicious and less cooperative, particularly where the measuring of fish was concerned.

3. *Achievements*

i) *Boat list.* As a result of the efforts of the expert, and assistance from ORSTOM, the Secretariat has, for the first time, been able to make a complete list of tuna vessels fishing off Tema and Abidjan, with their specifications. This will help us to follow fishery development in the area as well as to check the completeness of data.

ii) *Unloading and transshipment records.* The expert obtained in Tema all the information we needed on the surface fishery boats of the various countries. If some data had not been lost in the mail, the Secretariat could have compiled up-to-date records on surface catch.

iii) *Biological sampling.* This was mainly conducted by Ghanaian scientists, who sampled surface catches. Half of the data were lost in the mail and duplicates did not reach us in time for inclusion in Vol. 2 of our Data Record. The rest of the data were, however, included. After the yellowfin size regulation entered into effect, obtaining permission to take measurements became difficult, even though it was explained that this was only for scientific purposes. As expected, sampling from longliners proved to be rather difficult, for technical reasons.

iv) *Logbooks.* The expert tried to ensure that all boats carry logbooks. However, due to a shortage of time, he could only do this through agencies. He was able to obtain some copies of logs from American vessels.

v) *Up-to-date figures for total catch.* This task of estimating the total catch and cabling the figures to Madrid was assigned to the expert as an experiment. However he had insufficient time to handle this.

III. Assessment

An enormous amount of data were obtained through this project and have enabled the Secretariat to:

1. Obtain statistics for countries which do not report their catches.
2. Monitor the development of fisheries.
3. Avoid some double-counting of catches.
4. Record landings not reported in the past.
5. Obtain up-to-date figures for landings in the area.
6. Compile biological data for the fishery not previously covered.

In our opinion, the project has been very successful in all these aspects. However, for some items, one year's data is insufficient, and an accumulation of data over several years is essential.

We are confident of having monitored landings by surface fishery boats in Ghana very well. If we could get similar data from Abidjan, Dakar and Angola, the Secretariat could in the future compile current landing statistics on a biweekly basis, at least for the surface fishery.

IV. Acknowledgements

The Secretariat is most appreciative of the excellent work carried out by Mr. Eugene Holzapfel, the expert chosen for the assignment, who was continuously under the strain of an overload of work in an unfamiliar climate and environment. We also wish to acknowledge the generosity of the National Marine Fisheries Service (U.S.A.) who completely financed the project and allowed Mr. Holzapfel to work exclusively under ICCAT's direction, with no intervention on their part.

The support of the Ghanaian Government made this project possible, and the assistance and cooperation given by Ghanaian scientists were essential to its success.

Lastly, we wish to acknowledge the cooperation received from U.S., Japanese, Korean and Taiwanese fishery industries, as well as many international transshipment agencies.

CHAPTER II

Meeting Documents

PROCEEDINGS OF THE THIRD REGULAR MEETING OF THE COMMISSION

Paris, France, November 28 - December 4, 1973

Table of Contents

Opening Ceremony - November 28, 1973

1. The Commission held its Third Regular Meeting at the Centre de Conférences Internationales du Ministère des Affaires Etrangères, Paris, France, under the chairmanship of Mr. J. Touya.

2. Mr. Velitchkovitch, Secrétaire Général de la Marine Marchande welcomed the delegates and observers attending the Meeting. He emphasized the importance of the role played by Fishery Commissions and pointed out that they were, in his opinion, the organizations best suited to achieve a rational exploitation and

effective protection of biological resources in the sea. Referring to the methods of exploitation, he then stated that research, collection of statistics and interpretation of data would be even more useful if undertaken on a wider scale. He expressed his confidence and faith in the International Commission for the Conservation of Atlantic Tunas, whose task in terms of management and conservation conformed with his views.

Proceedings of the First Plenary Session, November 28, 1973

Item 1. *Opening of the meeting*

3. The Chairman opened the meeting by welcoming the delegates and advisers from member countries, as well as observers (see List of Participants — Annex 1). He expressed a warm welcome to the Ivory Coast, which has become a member since the last Commission Meeting. The Chairman expressed his satisfaction at the interest shown by the many countries that sent observers and at the fine cooperation shown by other international organizations both during the past years and during the scientific meetings held prior to this meeting. He welcomed the participation of FAO and especially mentioned the work of Dr. J. Gulland, which had been highly commended by many people.

4. The Chairman expressed deep regret over the death of Mr. W. Terry (USA) whose work had been an invaluable contribution to the Commission.

5. The SCRS scientists were commended for their excellent studies on the status of tuna stocks, and for providing much biological information. The Chairman also thanked the members of the Working Group on Yellowfin Tuna Regulations, which had discussed various aspects of possible regulatory measures. He expressed his satisfaction at the progress made by the Secretariat in collecting statistics and coordinating research activities. Special mention was made of the excellent work carried out by the expert loaned to the Commission by the United States. The achievements made by the Executive Secretary through his visits to many countries were appreciated. The Chairman also thanked Mr. V. Valdez for his fine work over the past years as Chairman of SCRS. Dr. B. J. Rothschild is the new Chairman of the SCRS.

Item 2. *Adoption of Agenda and arrangements for the meeting*

6. The Tentative Agenda was presented by the Executive Secretary and fully explained. The Commission adopted the Agenda without change (attached as Annex 2).

Item 3. *Admission of Observers*

7. The Executive Secretary explained the criteria by which observers were invited to attend. All the observers present were admitted (see Annex 1 for list).

Item 4. *Appointment of subsidiary bodies for the meeting*

8. The Commission recognized that the Working Group on Yellowfin Tuna Regulations had already met prior to the Commission meetings and that the Working Group on International Inspection was scheduled to meet on December 3 to carry out tasks which it had not been able to complete in 1972.

9. The Commission decided to again form a drafting committee to review the Proceedings of each session in the three official languages:

— for English, the U.S.A. (namely, Mr. Hallman)
— for French, France
— for Spanish, Spain (chiefly, Mr. Bermejo).

10. No new subsidiary bodies were appointed at this time.

Item 12. *Report of the Second Regular Meeting of the Council*

11. The Executive Secretary presented the Report (COM/73/12), and summarized the decisions made by the Council. The Report was adopted by the Commission.

Proceedings of the Second Plenary Session, November 29, 1973

Item 13. *Report of the Standing Committee on Research and Statistics*

12. Mr. Valdez, Chairman of the Standing Committee on Research and Statistics, submitted the SCRS Report (Annex 8) and gave a thorough explanation of its contents.

13. Both the Chairman and the scientists were congratulated on their excellent work and recognition was made of the collaboration of Dr. Gulland (FAO), who acted as Rapporteur for the Committee. The participation of many observers from international organizations and non-member countries in the Committee's scientific work was much appreciated, and the need for even closer cooperation with them was emphasized. The FAO representative commented that FAO is looking forward to continuing the close working relationship demonstrated in the past.

14. After a thorough review, the Report was *adopted* by the Commission.

Item 16. *Report of the Working Group on Yellowfin Tuna Regulations*

15. Mr. E. B. Young, Chairman of the Working Group on Yellowfin Tuna Regulations, submitted the Report (COM/73/25) to the Commission.

16. The Senegalese delegation stated that any measures taken to limit an increase in fishing effort without taking into account the interests of the coastal countries were not acceptable. The Senegalese point of view stated in paragraph 10 of the Report was stressed, and the need for promoting scientific research was emphasized as the only way in which the objectives of the Commission, as laid out in the Convention, could be achieved.

17. The Commission recognized that there are two basic problems. The first is to identify scientifically the level of tuna stocks which will permit the maximum sustainable catch. The second is how to take the allowable catch from the stock in the most effective way.

18. The Commission noted the importance of recommendations made by the Working Group in its Report (paragraph 21) regarding a continuation of studies by correspondence. The tolerance limit contained in the yellowfin minimum size regulation was discussed and the Commission requested Panel 1 to study the problem as recommended by the Working Group on Yellowfin Tuna Regulations.

19. With slight amendments to the main text and Appendix 2, the Report was adopted together with all the recommendations. The Report thus amended is attached as Annex 6.

Item 19. *Review of the present status of the yellowfin tuna minimum size regulation recommended by the Council*

20. The Chair recognized that this subject had been fully studied by the Working Group on Yellowfin Tuna Regulations and was covered in its Report (Annex 6).

Proceedings of the Third Plenary Session, November 30, 1973

Item 20. *Other regulatory measures for conservation of tuna stocks*

21. Reference was made to Documents SCRS/73/15 and 18, the SCRS Report (Annex 8) and the Report of the Working Group on Yellowfin Tuna Regulations (Annex 6). The proposal made by the Working Group on Yellowfin Tuna Regulations to continue its work through correspondence was fully endorsed by

the Commission. It was however recognized that the Commission could not discuss this Agenda item until the results of the Panel meetings were made known. For this reason, the Commission *decided* to take up Agenda Item 17 before discussing Item 20.

Item 17. *Panel Reports*

22. The Report of the meeting of Panel 1 (Annex 3) was presented by its Chairman (Mr. W. G. Van Campen — USA) and adopted by the Commission.

Item 20. *Other regulatory measures for conservation of tuna stocks* (continued)

23. The Commission noted the Panel's discussion on whether the tolerance level for the incidental catch of undersized yellowfin tuna should be based on weight or on the number of fish. The Ivory Coast explained the difficulties in applying the tolerance in terms of 15 % of the number of fish and urged that steps be taken to adopt a method based on the weight of the fish.

24. Senegal proposed that the Commission allow each country to choose which of the 2 systems to use until such time as a common method can be adopted. It urged that the yellowfin tuna size regulation be implemented by all countries fishing this species in the Atlantic Ocean and stated its belief that no legal difficulty would arise if the tolerance level were converted from a numerical basis to one of weight.

25. The proposal was *agreed* to by the Commission and each country was requested to inform the Secretariat as to which method it is using and the status of the implementation of this regulation.

26. Japan expressed its concern with regard to yellowfin tuna stocks and referred to its proposal that the Working Group on Yellowfin Tuna Regulations should adopt a catch quota for yellowfin tuna. Japan hoped that the continuation of studies by the Working Group on Yellowfin Tuna Regulations would provide more biological and technical information in this respect. Spain emphasized the necessity of considering different regulatory measures, including the possibility of closing the fishery in terms of area and/or season. Senegal stressed the importance of studying the effectiveness and applicability of other regulatory measures such as, for example, a reduction in the number of vessels fishing, based on biological information.

27. The Ivory Coast stated that a quota system would be premature since the surface fishery in the eastern Atlantic is still being developed with regard to area, effort and gear. Brazil stated that a total catch quota system based on the present

level of catch or on free competition would not be acceptable. Also, a quota system respected only by member countries would not be acceptable. The Brazilian opinion was supported by Portugal.

28. The Chairman decided that the discussion on other species should be carried out at the next Plenary Session.

Item 21. *Measures for promoting activity in research and statistics*

29. The Secretariat presented its recommendations regarding the improvement of statistics (COM/73/15 and Addendum 3 to Appendix 9 of SCRS Report). Senegal pointed out the need for a uniform methodology to be followed by every country, in preference to training new statisticians. The Commission understood that the Secretariat's proposal to invite biologists from countries developing statistical systems was oriented in that direction.

30. Senegal also noted that existing facilities at both national and international scientific institutions should be fully utilized to combine and process all the data becoming available in many of the developing countries. The Commission recognized that much improvement has been made in the collection of statistics, particularly in developing countries. It also noted that the SCRS had already started taking steps to solve the problem of combining and disseminating data by using established institutional facilities, and encouraged these activities.

31. Taking note of the above discussion, the Commission approved the recommendations made by the Secretariat on this subject.

Proceedings of the Fourth Plenary Session, December 4, 1973

Item 24. *Relations with other organizations*

32. Document COM/73/10 was referred to. Having noted that the formal ICCAT/FAO relationship * had been adopted by the FAO Conference in October, 1973, the Commission also adopted it formally. The Commission expressed satisfaction at the close relationship with FAO shown in the past and it was *decided* that this close cooperation should continue in the future.

33. Document COM/73/16 was introduced concerning a relationship between the International Commission for the Southeast Atlantic Fisheries (ICSEAF) and ICCAT. The Commission reviewed and approved the draft letter contained in the

* The text appears in ICCAT Biennial Report for 1972-73, Part 1.

Document (attached as Annex 7) and instructed the Executive Secretary to proceed with the formalization of working relations with ICSEAF. The Commission expressed its satisfaction that a close working relationship had already started between both Commissions.

Item 17. *Panel Reports* (continued)

34. The Reports of Panels 2, 3 and 4 (Annex 3) were presented by the respective Chairmen (Morocco, Japan and Spain). They were reviewed and adopted by the Commission, and the Chairmen were thanked for their excellent work.

Item 20. *Other regulatory measures for conservation of tuna stocks* (continued)

35. The United States expressed its keen interest in the conservation of bluefin tuna stocks, and referred to Appendix 2 to the Report of Panel 2 (Annex 3). Some other countries also expressed their concern in this matter.

Item 15. *Report of the Working Group on International Inspection*

Item 22. *Measures for rendering effective the provisions of the Convention* (joint enforcement)

36. The Report of the Working Group on International Inspection (Annex 4) was presented by its Chairman (Mr. Valdez). The Report was reviewed by the Commission and adopted, together with its recommendations.

Item 14. *Report of the Standing Committee on Finance and Administration (STACFAD)*

37. The STACFAD Report (Annex 5) was submitted by its Chairman (Mr. Yonezawa), who explained the Committee's recommendations to the Commission. The Report was reviewed with particular attention to the following Items on the Commission Agenda:

Item 5. *Review of panel members*
Item 6. *Administrative Report*
Item 7. *Auditor's Report (1972)*
Item 8. *Financial status (1972-1973)*
Item 9. *Review of Working Capital Fund*
Item 10. *Budget estimate (1974-1975)*
Item 11. *Contributions by member countries*
Item 23. *Review of Commission publications*

The Report of the Standing Committee was adopted together with all the pertinent recommendations, and the Chairman was congratulated on his excellent work.

Item 28. *Date and place of next meeting of the Council and assignment of items for consideration by the Council*

38. As recommended by STACFAD, it was *agreed* that the next Council meeting should be held in Madrid for one week starting on Wednesday, November 20, 1974 and that the meeting of the Standing Committee on Research and Statistics and other scientific meetings should take place during the week prior to the Council meeting. The Commission gave its approval that the items listed in Appendix 6 to Annex 5 should be assigned to the Council for consideration, with the addition of one item (Item 11).

Item 29. *Date and place of the next meeting of the Commission*

39. It was decided that the next Commission meeting should be held in Madrid for approximately one week, commencing November 19, 1975.

Item 25. *Election of Chairman of the Commission*

40. It was proposed that the present Chairman, Mr. Touya, be re-elected. Mr. Touya expressed his thanks but had to decline for personal reasons. Senegal (Dr. Malick Dia) was subsequently elected Chairman of the Commission for the next biennial period.

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

41. Brazil was re-elected First Vice-Chairman for the next biennial period and Korea was elected Second Vice-Chairman.

Item 27. *Election of Council members*

42. South Africa withdrew from the election of Council members. The Commission thought that Ghana might also wish to step out of the election and it was therefore decided that Canada, France, Ivory Coast, Japan, Morocco, Portugal, Spain and the U.S.A., together with the Chairman (Senegal) and Vice-Chairmen (Brazil and Korea), would be members of the Council for the next biennial period.

Item 30. *Other matters*

43. Praising Mr. Touya's fine work, Senegal also expressed its appreciation for being elected Chairman of the Commission and requested members' support in the future.

44. Reference was made to an invitation, received from Japan, for the Commission to exhibit at the International Ocean Exposition, to be held in Okinawa in 1975. It was decided that the matter should be referred to the Council for consideration at the time of its Third Regular Meeting (Item 12 on the list — Appendix 6 to Annex 5).

Item 31. *Adoption of the Report*

45. The Commission adopted the Proceedings of the First, Second and Third Plenary Sessions. It was decided that the Proceedings of the final Plenary Session, as well as the Commission Report in its entirety, should be approved at a later date, by correspondence.

Adjournment

46. The Meeting was adjourned.

Annex 1

LIST OF PARTICIPANTS

Member Countries

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Annex 2

AGENDA

Procedure of the Meeting

1. Opening of the meeting
2. Adoption of agenda and arrangements for the meeting
3. Admission of Observers
4. Appointment of subsidiary bodies for the meeting

Administration

5. Review of Panel members
6. Administrative Report

Finance

7. Auditor's Report (1972)
8. Financial status (1972-1973)
9. Review of Working Capital Fund
10. Budget estimate (1974-1975)
11. Contributions by member countries (1974-1975)

Reports to the Commission

12. Report of the Second Regular Meeting of the Council
13. Report of the Standing Committee on Research and Statistics
14. Report of the Standing Committee on Finance and Administration
15. Report of Working Group on International Inspection
16. Report of Working Group on Yellowfin Tuna Regulations
17. Reports of Panels 1-4
18. Report of other subsidiary bodies appointed by the Commission for the Meeting

Tuna stock conservation measures

19. Review of the present status of the yellowfin tuna minimum size regulation recommended by the Council
20. Other regulatory measures for conservation of tuna stocks

21. Measures for promoting activity in research and statistics
22. Measures for rendering effective the provisions of the Convention (joint enforcement)

Publications

23. Review of Commission publications

International Cooperation

24. Relations with other organizations

Other matters

25. Election of Chairman of the Commission
26. Election of Vice-Chairmen of the Commission
27. Election of Council members
28. Date and place of next meeting of the Council and assignment of items for consideration by the Council
29. Date and place of the next meeting of the Commission
30. Other matters
31. Adoption of Report

Adjournment

32. Adjournment

Annex 3

REPORTS OF PANEL MEETINGS

Table of Contents

Report of the Meeting of Panel 1

Paris, November 29, 1973

1. *Opening*

Mr. W. Van Campen of the United States called the meeting to order.

2. *Adoption of Agenda*

The provisional agenda was adopted (Appendix 1).

3. *Election of Rapporteur*

Dr. B. Rothschild of the United States was elected Rapporteur.

4. *Review of Panel Membership*

Senegal requested to join the Panel. The Ivory Coast requested participation this year as an observer, and stated a desire for full participation next year.

The present members of this Panel are: Brazil, Canada, France, Ghana, Japan, Korea, Morocco, Portugal, Senegal, Spain, U.S.A. and the Ivory Coast (as observer).

5. *Review of SCRS Report*

The Chairman called attention to the pertinent section of the SCRS Report (Annex 8).

6. *Review of possible stock conservation measures*

Practical measures of size limitation were discussed. The Ivory Coast directed attention to its proposal of changing from a 15 % by number tolerance to a 2 % by weight tolerance. Canada reiterated the United States' suggestion that each country could approach the 15 % number in the most efficient way.

The United States, on the basis of its experience, pointed out that the numerical tolerance of 15 % would be equivalent to about 3.5 % by weight. The Ivory Coast indicated that the «true» average weight of fish of less than 3.2 kg. could be less than 2.8 kg. Portugal indicated that it also had difficulty with a numerical tolerance.

Japan indicated agreement with the United States and Canadian view, but noted further that there would be a lack of wisdom in changing the regulation in the middle of the first year of implementation. The Japanese delegation also mentioned that numerical percentage might be preferable and pointed out that percentage by weight would vary from location to location and from year to year. The Ivory Coast noted some problems with the number percentage and questioned its enforceability. France agreed with the weight system for judging the tolerance limit as this is easy to apply. France added that any change should not create a legal vacuum. Spain indicated that either method would be suitable, the important matter being the reduction in capture of small fish. Brazil agreed with Canada, Japan and Spain. The delegation from Senegal suggested that it was important to communicate individual methodology to the Commission.

The Chair summarized the need to examine critically the problem and suggested that the numerical definition should be maintained during the year and that each country should attempt to achieve size limit exemption by either the weight or the numerical method. Also, the methodology used should be reported to the Commission for study and action next year.

Japan noted the need to adhere to Rule 8 of the Rules of Procedure concerning the requirement that recommendations must be presented to all member countries at least 60 days before the date of the meeting.

It was felt that other possible additional conservation measures had already been amply discussed.

7. *Need for further research*

The SCRS Rapporteur informed the Group that a continuation of the research outlined in the report of the SCRS meeting was recommended. The need for timely

reporting was stressed and also the usefulness of the proposed population dynamics workshop.

The delegation of Brazil requested that the Commission carry out more detailed studies on the east-west distribution of yellowfin tuna and on the stock structure of yellowfin tuna, in general, in the Atlantic. The countries that fish yellowfin in the western part of the Atlantic were urged to present data on this problem and Brazil offered to do so for its own country.

The need to improve statistics was again stressed. Also mentioned was the need to provide technical assistance to developing countries with regard to the collection of statistics.

8. *Date and place of next meeting*

The Panel *agreed* to hold the next meeting at the same time and place as the next Council meeting.

9. *Election of Chairman*

The United States was re-elected Chairman of Panel 1 for next biennial period.

10. *Other matters*

The report was adopted with some modifications.

11. *Adjournment*

The meeting was adjourned.

Report of the Meeting of Panel 2

Paris, November 29, 1973

1. *Opening*

The meeting was called to order by the Chairman, Mr. A. L. Layachi (Morocco).

2. *Adoption of Agenda*

The provisional agenda was adopted without change (Appendix 1).

3. *Election of Rapporteur*

The Secretariat was designated Rapporteur.

4. *Review of Panel Membership*

Panel 2 membership was noted as now being:
Canada, France, Japan, Korea, Morocco, Portugal, Spain and the United States.

5. *Review of SCRS Report*

The SCRS Report (Annex 8) was presented by the SCRS Rapporteur. The pertinent part of the Report was reviewed by the Panel.

6. *Review of possible stock conservation measures*

It was noted that the SCRS Report contained references to studies on the conservation of bluefin tuna. Minimum size limits and other conservation measures were referred to (paragraphs 49-51).

The United States expressed a view concerning Atlantic bluefin tuna (Appendix 2). Japan withheld its position in regard to this, stating its doubt as to whether this view could be substantiated by scientific facts. Spain fully endorsed the view of the U.S. on bluefin tuna and urged that regulatory measures be taken in the near future.

7. *Need for further research*

The Panel reviewed Appendices 5 and 6 to the SCRS Report (Annex 8) and concurred with the plans proposed by the Bluefin and Albacore Working Groups, noting that an improvement in statistical and biological information is very necessary. The Panel noted that the SCRS will be taking definite steps to collaborate closely with ICES in bluefin studies.

8. *Date and place of next meeting*

The Panel agreed to hold the next meeting of Panel 2 at the same time and place as the next Council meeting.

9. *Election of Chairman*

Morocco was re-elected as Chairman for the next biennial period.

10. *Other matters*

The report was adopted with some modifications.

11. *Adjournment*

The meeting was adjourned.

Report of the Meeting of Panel 3

Paris, November 30, 1973

1. *Opening*

The meeting was called to order by the Chairman, Mr. K. Yonezawa (Japan).

2. *Adoption of Agenda*

The provisional agenda was adopted without change (Appendix 1).

3. *Election of Rapporteur*

Mr. F. J. Mather (U.S.) was designated Rapporteur.

4. *Review of Panel Membership*

Panel 3 membership was noted as now being: Brazil, Japan, South Africa, and the United States. The delegate from Korea requested membership on Panel 3, and was welcomed by the Chairman.

5. *Review of SCRS Report*

The pertinent parts (paragraphs 40 through 59, Appendices 5 and 6) of the SCRS Report (Annex 8) were reviewed briefly by the Chairman of SCRS. Dr. S. Hayasi (Japan) briefly reviewed a paper on the bluefin tuna in the southern hemisphere.

6. *Review of possible stock conservation measures*

No discussion was initiated.

7. *Need for further research*

This item is covered by Appendices 5 and 6 of the SCRS Report (Annex 8). There was no comment.

8. *Date and place of next meeting*

The Panel *agreed* to hold the next meeting of Panel 3 at the same time and place as the next meeting of the Commission (approximately 2 years from this date).

9. *Election of Chairman*

Japan was re-elected as Chairman of Panel 3 for the next biennial period.

10. *Other matters*

The report was adopted.

11. *Adjournment*

The meeting was adjourned.

Report of the Meeting of Panel 4

Paris, November 30, 1973

1. *Opening*

The meeting was called to order by the Chairman, Mr. Bermejo (Spain).

2. *Adoption of Agenda*

The provisional agenda was adopted without change (Appendix 1).

3. *Election of Rapporteur*

The Secretariat was designated Rapporteur.

4. *Review of Panel Membership*

Canada and Korea requested membership. Therefore, the Panel now has the following members: Canada, Japan, Korea, Portugal, Spain, and the United States.

5. *Review of SCRS Report*

Reference was made to the SCRS Report (Annex 8), paragraphs 60 and 61.

6. *Review of possible stock conservation measures*

The SCRS Report was reviewed in this respect but no further comments were made.

7. *Need for further research*

The United States expressed its keen interest in the study of billfishes, referring to its recreational billfish fishing and its intention to present a report at the 1974 SCRS meeting.

8. *Date and place of next meeting*

The Panel agreed to hold the next meeting of Panel 4 at the same time and place as the next Council meeting, since the U.S. hopes to have a report of its research activities available at that time.

9. *Election of Chairman*

Spain was re-elected as Chairman for the next biennial period.

10. *Other matters*

The report was adopted.

11. *Adjournment*

The meeting was adjourned.

Appendix 1 to Annex 3

Agenda for Panels 1-4

1. Opening
2. Adoption of Agenda
3. Election of Rapporteur
4. Review of Panel Membership
5. Review of Report of Standing Committee on Research and Statistics
6. Review of possible stock conservation measures
7. Need for research to be carried out
8. Date and place of next Panel meeting
9. Election of Chairman
10. Other matters
11. Adjournment

Appendix 2 to Annex 3

Views of the United States concerning Atlantic Bluefin Tuna

The United States has become increasingly concerned over the status of the stocks of the northern bluefin tuna (*Thunnus thynnus thynnus*) of the Atlantic Ocean, and has noted that other countries of the International Commission for the Conservation of Atlantic Tunas, as well as other international groups, appear to have similar concerns. In this respect, the Standing Committee on Research and Statistics has in recent years remarked on certain disturbing elements associated with various bluefin fisheries in the Atlantic. This has been reflected in the recent annual reports of the SCRS.

In 1970, for example, the Sub-Committee on Stock Assessment noted that it was disturbing that there were apparently substantial quantities of very small bluefin tuna being caught off Northwest Africa, and believed that there could be an appreciable increase in total catch by avoiding the capture of very small bluefin.

The same Sub-Commitee in 1971 noted the very sharp decline in catches of large bluefin since about 1960. The Sub-Committee reported that there was likely to be an advantage in avoiding the capture of small tuna of such fast-growing species, suggesting that there would be appreciable benefits if the capture of small bluefin could be avoided. The Sub-Committee again received evidence of significant quantities of very small bluefin being caught off the Northwest coast of Africa, and noted that this size was obviously below the optimum.

In 1972, the SCRS confirmed previous estimates of a high recapture rate in the New England Fishery based on tagging projects. It also noted the apparently decreasing numbers of large fish throughout the Atlantic, and remarked on the continuing absence of medium-size fish.

This year the SCRS has reported that an analysis of the long-term trends in different bluefin fisheries shows some disturbing features, noting the serious decline in total catch and particularly the decline in the fisheries on large bluefin, which are now at the lowest recorded level. The Committee further noted that the average size of the large fish is increasing. It also has reported that the growth of the fisheries on smaller fish must have reduced the numbers of fish becoming available to the fisheries on larger fish. The Committee stated that data from the New England Fishery indicate that a practicable size limit appears to be about 7 pounds.

* Originally attached to the Report of Panel 2.

The United States is concerned over the capture of large bluefin and notes the SCRS has reported on the apparent very low level of these fish, suggesting that any further decline may well affect recruitment. Since the intensive exploitation of the remaining large fish may reduce significantly the spawning stock, the United States urges all member countries to make every feasible effort to reduce the capture of large bluefin tuna.

Also, in light of the concern of the United States and others over the status of the stocks of the northern bluefin tuna, and considering the reports over the years by the Standing Committee on Research and Statistics, we have concluded that there is preliminary data indicating that intensive exploitation of very small bluefin tuna throughout the Atlantic may reduce significantly future spawning stock and also the availability of fish at a size both scientifically and economically acceptable. Therefore, the United States recommends that the contracting States take the necessary measures to prohibit any taking and landing of very small bluefin tuna, suggesting as a possibly practicable size limit for consideration of contracting Parties, pending further scientific analysis, a weight of approximately 7 pounds.

The United States intends to do what it can to help the Atlantic bluefin stocks within the range of its fisheries, and is pleased to report that Canada has agreed to consult with us with a view toward cooperation in this respect. Both countries intend to jointly examine the problem to see what can be done, and it is hoped that all countries fishing bluefin in the Atlantic would be equally willing to cooperate to ensure the protection of this important species.

Annex 4

REPORT OF THE WORKING GROUP ON INTERNATIONAL INSPECTION

1. The Working Group on International Inspection met on December 3, 1973.

2. Mr. V. Valdez (Portugal) was elected Chairman. Ms. Rossignol (France) was designated Rapporteur.

3. The Working Group's discussion centered on Working Document INF/73/1, prepared by the Secretariat to summarize the discussions held in former meetings.

4. In the course of the ensuing discussion, the Working Group *decided* to incorporate modifications to paragraphs 5, 6, 8 and 12 of the proposed recommendation (Appendix 1).

5. The draft of the «ICCAT Scheme of Joint International Enforcement» (Appendix 1) was adopted by the Working Group without further modification, and it was *recommended* that the Commission approve it.

6. The Working Group *agreed* that member countries should communicate by correspondence to the Secretariat:

(i) the text of their legislation presently in force relating to inspection and inspectors;
(ii) their suggestions as to the most efficient way to insure control in ports;
(iii) the name of the correspondent in charge of this matter in their delegation.

7. The Working Group *decided* to adjourn the meeting until the next meeting of the Council.

8. The report was adopted.

Appendix 1 to Annex 4

ICCAT Scheme of Joint International Enforcement (draft)

Recommendation

Pursuant to paragraph 3 of Article IX of the Convention, the Commission recommends the establishment of the following arrangements for international control outside territorial waters and fishery limits for the purpose of ensuring the application of the Convention and the measures in force thereunder:

"(1) Control shall be carried out by inspectors of the fishery control services of Contracting Governments. The names of the inspectors appointed for that purpose by their respective governments shall be notified to the Commission.

"(2) Ships carrying inspectors shall fly a special flag or pennant approved by the Commission to indicate that the inspector is carrying out international inspection duties. The names of the ships so used for the time being, which may be either special inspection vessels of fishing vessels, shall be notified to the Commission.

"(3) Each inspector shall carry a document of identity supplied by the authorities of the flag state in a form approved by the Commission and given him on appointment stating that he has authority to act under the arrangements approved by the Commission.

"(4) Subject to the arrangements agreed under paragraph (9), a vessel employed for the time being in fishing for tuna or tuna-like fishes in the Convention Area shall stop when given the appropriate signal in the International Code of Signals by a ship carrying an inspector unless actually carrying out fishing operations, in which case it shall stop immediately once it has finished such operations. The master [1] of the vessel shall permit the inspector, who may be accompanied by a witness, to board it. The master shall enable the inspector to make such examination of catch or gear and any relevant documents as the inspector deems necessary to verify the observance of the Commission's recommendations in force in relation to the flag state of the vessel concerned and the inspector may ask for any explanations that he deems necessary.

"(5) On boarding the vessel an inspector shall produce the document described in (3) above. Inspections shall be made so that the vessel suffers the minimum interference and inconvenience and that degradation of the quality of the fish be avoided. An inspector shall limit his enquiries to the ascertainment of the fact in relation to the observance of the Commission's recommendations in force in relation to the flag state of the vessel concerned. In making his examination an inspector may ask the master for any asistance he may require. He shall draw up a report of his inspection in a form approved by the Commission. He shall sign the report in the presence of the master of the vessel who shall be entitled to add or have added to the report any observations which he may think suitable and must sign such observations. Copies of the report shall be given to the

[1] Master refers to the individual in charge of the vessel.

master of the vessel and to the inspector's government who shall transmit copies to the appropriate authorities of the flag state of the vessel and to the Commission. Where any infringement of the recommendations is discovered the inspector should, where possible, also inform the competent authorities of the flag state, as notified to the Commission, and any inspection ship of the flag state known to be in the vicinity.

"(6) Resistance to an inspector or failure to comply with his directions shall be treated by the flag state of the vessel in a manner similar to resistance to any inspector of that state or a failure to comply with his directions.

"(7) Inspectors shall carry out their duties under these arrangements in accordance with the rules set out in this recommendation but they shall remain under the operational control of their national authorities and shall be responsible to them.

"(8) Contracting Governments shall consider and act on reports of foreign inspectors under these arrangements on a similar basis in accordance with their national legislation to the reports of national inspectors. The provisions of this paragraph shall not impose any obligation on a Contracting Government to give the report of a foreign inspector a higher evidential value than it would possess in the inspector's own country. Contracting Governments shall collaborate in order to facilitate judicial or other proceedings arising from a report of an inspector under these arrangements.

"(9) (i) Contracting Governments shall inform the Commission by the 1st of March each year of their provisional plans for participation in these arrangements in the following year and the Commission may make suggestions to Contracting Governments for the coordination of national operations in this field including the number of inspectors and ships carrying inspectors.

(ii) The arrangements set out in this recommendation and the plans for participation shall apply between Contracting Governments unless otherwise agreed between them; and such agreement shall be notified to the Commission:

Provided, however, that implementation of the scheme shall be suspended between any two Contracting Governments if either of them has notified the Commission to that effect, pending completion of an agreement.

"(10) (i) The fishing gear shall be inspected in accordance with the regulations in force for the subarea in which the inspection takes place. The inspector will state the nature of the violation in his report.

(ii) Inspectors shall have authority to inspect all fishing gear.

"(11) The inspector shall affix an identification mark approved by the Commission to any fishing gear which appears to have been used in contravention of the Commission's recommendations in force in relation to the flag state of the vessel concerned and shall record this fact in his report.

"(12) The inspector may photograph the gear in such a way as to reveal those features which in his opinion are not in conformity with the regulation in force, in which case the subjects photographed should be listed in the report and copies of the photographs should be attached to the copy of the report to the flag state.

"(13) The inspector shall have authority, subject to any limitations imposed by the Commission, to examine the characteristics of catches, to establish whether the Commission's recommendations are being complied with. He shall report his findings to the authorities of the flag state of the inspected vessel as soon as possible."

Annex 5

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

Table of Contents

Item 1. *Opening of the meeting*

1. The Committee met at the Centre de Conférences Internationales du Ministère des Affaires Etrangères, Paris, France, on November 28, 1973, and subsequent days. All the member countries and observers participating in the Commission meetings were present.

Item 2. *Election of Chairman for the present meeting*

2. Mr. K. Yonezawa (Japan) was elected as the new Chairman to fill the vacancy arising from the retirement of the previous Chairman, Dr. W. M. Sprules (Canada). The Committee expressed sincere thanks to Dr. Sprules for his excellent service in the past years.

Item 3. *Adoption of Agenda*

3. The Tentative Agenda was reviewed and adopted by the Committee without change (attached as Appendix 1).

Item 4. *Election of Rapporteur*

4. The Secretariat was designated Rapporteur.

Item 5. *Review of Panel Members*

5. The present membership (COM/73/9) was reviewed and the following changes were noted:

Canada joins Panel 4,
Korea joins Panels 3 and 4,
The Ivory Coast will attend the Panel 1 meeting as an observer, and decide later whether or not to request Panel membership,*
Senegal joins Panel 1.

No country expressed the desire to withdraw from any Panel. It was understood that membership is open for new applications during the course of the sessions as well as thereafter, according to the Rules of Procedure. A table summarizing current Panel membership is attached as Appendix 2.

Item 6. *Administrative Report (1972)*

6. The Administrative Report (COM/73/10) was presented and fully explained by the Executive Secretary. Reference was made to the Secretariat Report on Coordination and Research Activities (COM/73/15). The Committee reviewed the Administrative Report and *recommended* that the Commission approve it.

Item 7. *Auditor's Report (1972)*

7. It was recognized that the Auditor's Report had been circulated to the head of each delegation in early 1973. The Report was reviewed and the Committee *recommended* it to the Commission for adoption.

Item 8. *Financial Status (1972-1973)*

8. The Financial Report (COM/71/11) was presented by the Executive Secretary. In addition to the items covered in the report, the Executive Secretary pointed out that some difficulty could be encountered in managing the operating fund during the early part of 1974, until member contributions for 1974 were received. The Committee *recommended* that the Executive Secretary pursue the contributions presently pending and that the Commission authorize the Executive Secretary to seek a short-term loan from a bank only if this became absolutely necessary.

* Later, the Ivory Coast formally decided to join Panel 1.

9. Some comments were made on the basis used for calculating member country contributions and on the distribution of funds within the different chapters. The Committee decided to review the matter under the appropriate Agenda items. The Committee noted that the Senegalese contribution for 1973 was paid in October, although it appeared that bank transactions had not yet been completed.

10. The Committee approved the Financial Report and *recommended* its adoption by the Commission.

Item 9. *Review of Working Capital Fund*

11. Statement 6 of the Financial Report (COM/73/11) was reviewed and approved by the Committee.

Item 10. *Budget estimate (1974-1975)*

12. Budget estimate (1974-1975) (COM/73/7 Supplement 1 corrected) was presented and explained by the Executive Secretary. Recognizing that many items in the budget could not be discussed in detail until the results of the SCRS and other meetings were fully reviewed, the Committee decided to take up this matter later in the meeting.

Item 12. *Review of Commission publications*

13. The Commission's policy regarding publications was explained by the Secretariat. The Committee *recommended* that the Commission continue its present policy.

Item 10. *Budget estimate* (continued)

14. The Estimated Budget 1974-1975 presented by the Secretariat (COM/73/7 Supplement 1, corrected), was taken up again for discussion. An additional table showing the breakdown of this budget according to the allocation of funds was presented by the Secretariat (Appendix 3).

15. The Committee discussed the possibility of adding a new chapter to the ICCAT Budget which would provide financial assistance to the research facilities in some of the countries. The aim would be to develop a general research program, the findings of which would be used when formulating regulatory measures. The Committee noted that the idea was worth considering, but that it might result in a substantial increase in the total budget. The Committee *decided* to recommend that the Commission explore this subject in the future in conjunction with developing the research program.

16. It was *decided* to recommend that the Commission approve the Budget proposed for the biennial period 1974-1975.

Item 11. *Contributions by member countries (1974-1975)*

17. The method of calculating country contributions was explained. Also Morocco's proposal (COM/73/20) for recalculation of their 1973 contribution, based on new statistical information, was discussed. The Committee *recommended* that the Commission approve the new calculation included in Document COM/73/20 (Table 1), which was based on new catch data for Morocco, and that adjustment (Appendix 4) should be made when calculating country contributions for 1974.

18. It was decided to use the 1971 statistics of catch and canned products for calculating country contributions for the next biennial period. All the countries (Ghana absent) either confirmed or corrected the figures provided by the Secretariat and these were then used for calculating the country contributions for 1974 and 1975 (Appendix 5). Since the Ivory Coast presented an official application for Panel 1 membership, this was also included in the calculation.

19. Several countries expressed the wish that the Secretariat make a rough estimate of country contributions, based on the latest information available, when the total Budget Estimate for expenditures is prepared. Some discussion took place on whether or not contributions should reflect more directly than at present the figures for catch and canned products. Since this would involve amending the Convention, the Committee decided to consider the matter more carefully in the future.

20. The Committee *recommended* that the Commission approve the member country contributions for the biennial period 1974-1975, as shown in Appendix 5 to this Report, on the understanding that corrections of a minor nature be made where necessary.

Item 13. *Date and place of next meeting of the Council and assignment of items for consideration by the Council*

21. The Committee *recommended* to the Commission that the next Council Meeting should be held in Madrid for a period of one week, starting on Wednesday, November 20, 1974 and that the Standing Committee on Research and Statistics and other scientific meetings should take place during the week prior to the Council Meeting. It wat confirmed that the next meeting of the Standing Commitee on Finance and Administration should be held at the same time and place as the next Commission Meeting, i.e. in 1975.

22. Having examined Document COM/73/19, the Committee *recommended* that the Commission assign ten items, attached as Appendix 6, to be considered by the Council when it meets next year.

Item 13. *Date and place of the next meeting of the Commission*

23. The Committee *recommended* to the Commission that the next Commission Meeting be held in Madrid in 1975, for a period of approximately one week, beginning on November 19.

Item 15. *Election of Chairman*

24. Mr. K. Yonezawa (Japan) was re-elected Chairman of the Committee for the next biennial period. The Chairman thanked the Committee members for their support.

Item 16. *Adoption of Report*

25. The Report was adopted.

Item 17. *Adjournment*

26. The Meeting was adjourned.

Appendix 1 to Annex 5

Standing Committee on Finance and Administration

Agenda

1. Opening of the meeting
2. Election of Chairman for the present meeting
3. Adoption of Agenda
4. Election of Rapporteur
5. Review of Panel Members
6. Administrative Report
7. Auditor's Report (1972)
8. Financial status (1972-1973)
9. Review of Working Capital Fund

10. Budget Estimate (1974-1975)
11. Contributions by member countries (1974-1975)
12. Review of Commission publications
13. Date and place of the next Council and the next Commission meetings and assignment of items for consideration by the Council
14. Other matters
15. Election of Chairman
16. Adoption of Report
17. Adjournment

Appendix 2 to Annex 5

Panel Membership

Countries	*Panel 1*	*Panel 2*	*Panel 3*	*Panel 4*	*Total*
Brazil	×	—	×	—	2
Canada	×	×	—	×	3
France	×	×	—	—	2
Ghana	×	—	—	—	1
Ivory Coast	×	—	—	—	1
Japan	×	×	×[1]	×	4
Korea	×	×	×	×	4
Morocco	×	×[1]	—	—	2
Portugal	×	×	—	×	3
Senegal	×	—	—	—	1
South Africa	—	—	×	—	1
Spain	×	×	—	×[1]	3
U.S.A.	×[1]	×	×	×	4
	12	8	5	6	31

[1] Chairman of Panel.

Budget (1974-1975)
Breakdown by Allocation

Chapter	1974 Administration	1974 Meetings	1974 Research	1974 Total	1975 Admin.	1975 Meetings	1975 Research	1975 Total
1. Salaries[1]	52,920		61,190	114,110	58,000		62,000	120,000
2. Travel	4,000		10,000	14,000	2,000		10,000	12,000
3. Meetings		20,000		20,000		23,000		23,000
4. Publications	7,000		9,000	16,000	7,000		10,000	17,000
5. Office equipment	1,200		800	2,000	1,000		1,000	2,000
6. General operating expenses	7,000		10,000	17,000	7,000		11,000	18,000
7. Miscellaneous expenses	3,000			3,000	3,000			3,000
8. Coordination of Research			15,000	15,000			20,000	20,000
Subtotal	75,120	20,000	105,990	201,110	78,000	23,000	114,000	215,000
9. Contingencies				8,890				15,000
Total				210,000				230,000

[1] P5, G6, G4, Messenger and temporary translator (1/2 expenses) are included in «Administration».
P4, G4, G4, Statistical expert (P1-temporary), Statistical Assistant (temporary), temporary translator (1/2 expenses) are included in «Research».

Appendix 4 to Annex 5

Adjustment to be made for 1974 Contribution due to the recalculation of 1973 Contribution

	Approved Figures	*New Calculations*	*Difference*
South Africa . .	3,882	3,890	+ 8
Brazil	6,314	6,341	+ 27
Canada	6,877	6,924	+ 47
Korea	10,175	10,323	+ 148
Spain	22,473	22,955	+ 482
U.S.A.	20,083	20,430	+ 347
France	19,687	20,146	+ 459
Ghana	4,341	4,359	+ 18
Japan	19,230	19,547	+ 317
Morocco . . .	8,700	6,717	—1,983
Portugal	11,207	11,329	+ 122
Senegal	2,031	2,039	+ 8
Total . . .	135,000	135,000	—

Table of Contributions by Member Countries for 1974

Total 1974 Budget
(total of column K) ..... $ 210,000.00

Country	*A* *No.*	*B* %	*C* *(thousand*	*D*	*E* *tons)*	*F* %	*G* $	*H* $	*I* $	*J* $	*K* $	*Adjustment from 1973 contribution*	*Total* $
Total	31	100.00	313.0	103.2	416.2	100.00	13,000	31,000	55,333.3	110,666.7	210,000	0	210,000
Brazil	2	6.818	1.3	0.0	1.3	.312	1,000	2,000	3,772.7	345.7	7,118.4	27	7,146
Canada	3	9.091	2.3	1.2	3.5	.841	1,000	3,000	5,030.3	930.6	9,960.9	47	10,008
France	2	6.818	47.0	40.8	87.8	21.096	1,000	2,000	3,772.7	23,345.8	30,118.6	459	30,578
Ghana	1	4.545	2.7	0.0	2.7	.649	1,000	1,000	2,515.2	717.9	5,233.1	18	5,251
Ivory Coast	1	4.545	1.9	1.9	3.8	.913	1,000	1,000	2,515.2	1,010.4	5,525.6	0	5,526
Japan	4	11.364	77.7	0.0	77.7	18.669	1,000	4,000	6,287.9	20,660.3	31,948.1	317	32,265
Korea	4	11.364	39.7	0.0	39.7	9.539	1,000	4,000	6,287.9	10,556.1	21,844.0	148	21,992
Morocco	2	6.818	2.5	0.5	3.0	.721	1,000	2,000	3,772.7	797.7	7,570.4	—1,983	5,587
Portugal	3	9.091	11.8	6.5	18.3	4.397	1,000	3,000	5,030.3	4,865.9	13,896.2	122	14,018
Senegal	1	4.545	5.8	2.0	7.8	1.874	1,000	1,000	2,515.2	2,074.0	6,589.2	8	6,597
South Africa	1	4.545	0.0	0.0	0.0	0.000	1,000	1,000	2,515.2	0.0	4,515.2	8	4,523
Spain	3	9.091	88.0	25.6	113.6	27.295	1,000	3,000	5,030.3	30,206.0	39,236.3	482	39,718
U.S.A.	4	11.364	32.3	24.7	57.0	13.695	1,000	4,000	6,287.9	15,156.2	26,444.1	347	26,791

A=Panel membership
B=Percentage of payments for annual membership and panel membership (G+H)
C=1971 catch (live weight)
D=1971 canned production (net product weight)
E=Total of C and D
F=Percentage distribution of E

G=Payment of $ 1,000 annual membership contributions
H=Payment of $ 1,000 for each panel membership
I=1/3 of $ 166,000 ($ 210,000-44,000 [G+H]); distributed percentagewise according to column B
J=2/3 of $ 166,000 ($ 210,000-44,000 [G+H]); distributed percentagewise according to column F
K=Total of G, H, I and J

Table of Contributions by Member Countries for 1975

Total 1975 Budget
(total of column K) ..... $ 230,000.00

Country	A No.	B %	C (thousand	D	E tons)	F %	G $	H $	I $	J $	K $
Total	31	100.00	313.0	103.2	416.2	100.00	13,000	31,000	62,000	124,000	230,000
Brazil	2	6.82	1.3	0.0	1.3	.312	1,000	2,000	4,227.3	387.3	7,614
Canada	3	9.09	2.3	1.2	3.5	.841	1,000	3,000	5,636.4	1,042.8	10,679
France	2	6.82	47.0	40.8	87.8	21.096	1,000	2,000	4,227.3	26,158.6	33,386
Ghana	1	4.55	2.7	0.0	2.7	.649	1,000	1,000	2,818.2	804.4	5,623
Ivory Coast	1	4.55	1.9	1.9	3.8	.913	1,000	1,000	2,818.2	1,132.1	5,950
Japan	4	11.36	77.7	0.0	77.7	18.669	1,000	4,000	7,045.5	23,149.4	35,195
Korea	4	11.36	39.7	0.0	39.7	9.539	1,000	4,000	7,045.5	11,828.0	23,873
Morocco	2	6.82	2.5	0.5	3.0	.721	1,000	2,000	4,227.3	893.8	8,121
Portugal	3	9.09	11.8	6.5	18.3	4.397	1,000	3,000	5,636.4	5,452.2	15,089
Senegal	1	4.55	5.8	2.0	7.8	1.874	1,000	1,000	2,818.2	2,323.9	7,142
South Africa	1	4.55	0.0	0.0	0.0	0.0	1,000	1,000	2,818.2	0.0	4,818
Spain	3	9.09	88.0	25.6	113.6	27.295	1,000	3,000	5,636.4	33,845.3	43,482
U.S.A.	4	11.36	32.3	24.7	57.0	13.695	1,000	4,000	7,045.5	16,982.2	29,028

A=Panel membership
B=Percentage of payments for annual membership and panel membership (G+H)
C=1971 catch (live weight)
D=1971 canned production (net product weight)
E=Total of C and D
F=Percentage distribution of E

G=Payment of $ 1,000 annual membership contribution
H=Payment of $ 1,000 for each panel membership
I=1/3 of $ 186,000 ($ 230,000-44,000 [G+H]; distributed percentagewise according to column B
J=2/3 of $ 186,000 ($ 230,000-44,000 [G+H]); distributed percentagewise according to column F
K=Total of G, H, I and J

Appendix 6 to Annex 5

List of Items Assigned by the Commission to the Council to be Considered at its 3rd Regular Meeting (Madrid, Nov. 1974)

1. Review the organization, staffing and operation of the Commission Secretariat.
2. Review the status of financial contributions by contracting parties.
3. Receive and review a suitably detailed report of the current state of Commission accounts.
4. Review the second half of the biennial budget, and authorize such reapportionment of amounts as may be appropriate and in accordance with Article X, paragraph 3, of the Convention.
5. Formulate proposals for the organization of the next meeting of the Commission.
6. Review status of relationships with FAO, IATTC, ICES, and other international bodies, and make recommendations to the Commission.
7. Receive, review, and report to the Commission the results of any meeting of the Standing Committee on Research and Statistics held prior to or in conjunction with a Council meeting, with particular reference to:
   (i) matters relating to coordination of research, proposed scientific meetings and conservation;
   (ii) status of statistical systems of the Commission, including submission to the Commission of an evaluation of such systems, together with any recommendations that may facilitate the organization of statistical systems.
8. Receive, review and report to the Commission the results of any meeting of other subsidiary bodies of the Commission.
9. Review plans for and status of publications of the Commission.
10. Review schemes of joint enforcement of regulatory measures developed by other Commissions and formulate appropriate recommendations for the Commission concerning the feasibility of such schemes for application by ICCAT.

*11. Explore the possibility of adding a new chapter to the ICCAT Budget which would provide financial assistance to the research facilities in some of the countries.

*12. Consider whether the Commission should prepare an exhibit for the International Ocean Exposition, to be held in Okinawa, Japan, in 1975.

* Not included in the original STACFAD Report but added later during the Plenary sessions.

Annex 6

REPORT OF WORKING GROUP ON YELLOWFIN TUNA REGULATIONS

Paris, November 26-27, 1973

Item 1. *Opening of meeting and election of Chairman*

1. The Working Group on Yellowfin Tuna Regulations met at the Centre de Conférences Internationales du Ministère des Affaires Etrangères in Paris on November 26 and 27, 1973. All the member countries (with the exception of Ghana and South Africa), Representatives of FAO, Observers from Cuba, Mexico, USSR and IATTC attended the meeting.

2. The Executive Secretary opened the meeting and Mr. E. B. Young of Canada was elected Chairman. The Secretariat was nominated as Rapporteur.

3. Documents COM/73/8, 13, 23 and the SCRS Report (Annex 8 — Section on Yellowfin stocks) were introduced to the Group by the Executive Secretary.

Item 2. *Adoption of Agenda*

4. The Tentative Agenda was adopted without change, and is attached as Appendix 1.

Item 3. *Review of the status of the stocks, and of the fishery*

5. Dr. J. Gulland, Rapporteur of the SCRS, presented the pertinent part of its Report (paragraphs 17-35) and also drew the Group's attention to paragraphs 36-39 (Study on skipjack). He reviewed the studies on *Separation of yellowfin stocks* (paragraphs 17 and 18), *Size Limits* and their effects (paragraph 19) and *Present status of the fishery* (paragraphs 20-35). The Report noted that the detailed stock structure of yellowfin tuna in the Atlantic was still not completely understood. In particular the relation between the fish in the main area of fishing in the eastern Atlantic and those further to the west is not well known. Although the catch in 1972 was the highest recorded, it appears that, at least with the present distribution of fishing, the stocks are fully exploited. An increase in the amount of fishing will not result in any appreciable increase in sustained yield and might even decrease the sustained yield. There were no questions or additional comments.

Item 4. *General consideration of methods of controlling the amount of fishing*

6. Document COM/73/23 (SCRS/73/62) was presented and reviewed fully by its author. The collaboration by FAO and, in particular, the fine study presented by Dr. J. Gulland was highly commended by the Group.

Item 5. *Problems of regulating the amount of fishing by controlling the amount of fishing effort*

7. The Chair recognized the fact that this is a very complex and difficult problem, but no comments were made by the Group.

Item 6. *Catch quotas, for 1974 and later years, required to reach specific limits on the amount of fishing*

8. Japan referred to its proposal, made in 1972, of limiting the catch of yellowfin tuna at 70,000 MT. Referring to the Report of SCRS on the status of the stocks and pointing out the need for prudence in increasing the catch and fishing effort beyond the present level, the Japanese delegation proposed that this year again the Group consider limiting the amount of yellowfin tuna catch to a level to be agreed on by the Commission (at about the present catch level).

9. The SCRS Rapporteur stated that a catch level slightly below the 1972 catch (perhaps 90,000 metric tons) could be considered as the level of catch quota, if it were desired to maintain the true fishing effort at the 1972 fishing level. He mentioned, however, that a more careful study is required.

10. Following some discussion, the Group, except Japan, *agreed* that it is, at present, premature to introduce a definite yellowfin tuna catch quota, recognizing that a much more careful review of the subject, based on up-to-date scientific findings, is essential. The Senegalese delegation expressed the opinion that a quota system which does not take into account the interests of the coastal countries, does not define who should be assigned a quota and does not mention the disproportion in the fishing potential of the countries which fish in the Atlantic, particularly in the tropical area, is not acceptable as it would ruin the development of fisheries in these coastal countries. Some countries stated that a quota system in itself is unacceptable.

11. However, it was *agreed* that the Group would not dismiss the subject and that it was important to continue studying the technical, biological and economic aspects of a catch quota, and a quick-reporting system for statistics.

12. The Working Group recognized the importance of studying the relationship between yellowfin stocks exploited by surface and longline fisheries, and *recommended* that the Commission refer this matter to the SCRS.

Item. 7. *Methods of implementing a catch quota*

13. Is was noted that Document COM/73/23 (SCRS/73/62) dealt with the subject.

Item 8. *Effects of other possible regulations such as controls on the sizes of fish caught*

14. The status of the yellowfin tuna minimum size regulation (Document COM/73/14) was presented and reviewed by the Executive Secretary. The review was then up-dated by several countries and a summary is attached as Appendix 2. It was observed that, to be effective, size controls should also be applied to yellowfin included in skipjack landings, since the two species are sometimes marketed together.

15. The Ivory Coast proposed the following modification to the minimum size yellowfin tuna regulation adopted by the Council in 1972 in terms of its tolerances granted to «boats which have incidentally captured yellowfin weighing less than 3.2 kg. with the condition that this incidental catch should not exceed *2 % of total weight* of fish per landings of the total yellowfin catch of said boats.», instead of «*15 % of total number* of fish...». It was further explained that enforcing the regulation with a tolerance of 15 % in the number of fish is rather impractical (COM/73/24).

16. Whether or not 2 % in weight is equivalent to 15 % in number was a subject of discussion. The group recognized that the relation between weight and number of fish is rather complicated since it varies according to the average size of yellowfin caught, by various gears, and in various areas, and also from year to year. The Group *decided* to refer the problem to the Standing Committee on Research and Statistics to study what percentage in weight is equivalent to 15 % in number, and to consider which of the two methods is more acceptable. It further *agreed* that the SCRS should report its findings to Panel 1 so that it might be able to arrive at a decision on the matter. The group recognized that the actual wording of the regulation recommended in 1972 might allow the possibility of individual countries adopting their own conversion factors, adhering to the 15 % tolerance level.

17. There was discussion on how and when the effects of the present yellowfin size regulation would be known. Paragraph 19 of the SCRS Report (SCRS/73/75) was referred to.

Item 9. *Data requirements for different regulatory systems*

18. The Group again stressed the need of speeding up data collecting.

Item 10. *Methods of enforcement*

19. It was pointed out that eventual adoption of a quota system should be preceded by a detailed study making it possible to determine whether this quota should be applied to the Atlantic as a whole or only to certain areas.

20. Reference was made to the difficulty in enforcing a regulation without close international cooperation. The Group *recommended* that the Working Group on International Inspection give consideration to this problem when it meets.

Item 11. *Recommendations*

21. In addition to the recommendations made under different items, it was *decided* that the Group will continue to study various points during the year, by correspondence. Particularly referring to Agenda Item 7, it was *agreed* that various possible methods of applying a catch quota should be carefully studied and compared, and that a report on the subject should be prepared for the next meeting of the Working Group. The Secretariat was requested to ask each member country and FAO to nominate a correspondent to act as coordinator for this work, collaborating with the Secretariat.

22. The Ivory Coast presented a declaration (COM/73/22) and proposed that the Working Group *recommend* that the Commission take all the necessary steps to bring about the immediate enforcement of the regulation prohibiting the taking of yellowfin less than 3.2 kg., which was adopted by all the ICCAT member countries at the Council Meeting in 1972. Information should be given on how this regulation is being implemented, and the results obtained.

Item 12. *Other matters*

23. No discussion took place.

Item 13. *Adoption of report*

24. The draft report was reviewed by the Group and adopted with some corrections.

Item 14. *Adjournment*

25. The meeting was adjourned.

Appendix 1 to Annex 6

Agenda

1. Opening of meeting and election of Chairman
2. Adoption of Agenda
3. Review of the status of the stocks, and of the fishery
4. General consideration of methods of controlling the amount of fishing
5. Problems of regulating the amount of fishing by control of fishing effort
6. Catch quotas, for 1974 and later years, required to reach specific limits on the amount of fishing
7. Methods of implementing a catch quota
8. Effects of other possible regulations such as controls on the sizes of fish caught
9. Data requirements for different regulatory systems
10. Methods of enforcement
11. Recommendations
12. Other matters
13. Adoption of report
14. Adjournment

Appendix 2 to Annex 6

Summary of Implementing Regulation of Minimum Size of Yellowfin Tuna

Brazil

On February 23, 1973, Regulation No. 87 of the «Superintendência do Desenvolvimento da Pesca» (SUDEPE) was issued prohibiting the taking and landing at Brazilian ports of yellowfin less than 50 cm. long, or under 3.2 kg. in weight. A tolerance limit of 15 % of the number of fish per landing is permitted. (Letter dated April 13, 1973.)

Canada

On September 4, 1973, an Order of Council incorporated all the recommendations on minimum size regulation of yellowfin tuna into their law.

France

Based on existing laws, Order No. 2147, issued by the «Direction des Pêches Maritimes» on June 29, 1973, prohibits the taking and landing of yellowfin less

than 3.2 kg. A tolerance of 15 % of the number of fish is allowed. (Letter of July 10, 1973.)

Ghana

No information.

Ivory Coast

The law prohibiting taking and landing of yellowfin less than 3.2 kg. has been in force since March, 1970.

Japan

On June 14, 1973, an administrative instruction was issued, putting into effect the recommendation on July, 1, 1973. An inspector was sent to the ports where Japanese surface boats unload their catch.

Korea

An order was issued to all fishermen on June 21, 1973, putting the recommended regulation into effect.

Morocco

Has no specific regulation for the control of yellowfin fishery as this species does not exist in Moroccan waters. Nor does the Moroccan fleet fish in yellowfin waters. (Letter of April 28, 1973.)

Portugal

The necessary preparations are being made for regulating the yellowfin tuna catch, in accordance with the Commission's recommendation. (Letter of July 21, 1973.) No information received up to now on actual regulatory measures.*

Senegal

By Decree No. 70/1221 (Article 3) issued on November 7, 1970, Senegal specifies the characteristics of fish acceptable to the tuna canneries operating in Senegal:

— Yellowfin over 3 kg.
— Bigeye from 3 to 35 kg.
— Skipjack over 1.5 kg.

* On December 10, the Portuguese Government informed the Commission that the Regulation was brought into effect by «Portaria No. 835/73», issued on Nov. 26, 1973.

Senegal has prepared a slight adjustment to this regulation to make the minimum weight for yellowfin 3.2 kg.

South Africa

After the Amendments and Consolidation of the Sea Fisheries Act, a regulation prohibiting the catch of yellowfin tuna of less than 3.2 kg. in weight was promulgated.

Spain

Circular No. 12/73 was issued by the «Dirección General de Pesca Marítima» on February 23, 1973 to all the fisheries authorities advising them that as from July 1, 1973, the taking and landing of yellowfin weighing less than 3.2 kg per specimen will be prohibited. A tolerance limit is granted of 15 % of the number of fish. (Letter dated June 14, 1973.)

U.S.A.

Necessary steps to enact legislation under which the recommended regulations can be implemented are being taken, although the congressional action required is delaying the implementation. Every effort is being made to hasten matters.

In practice, sampling of yellowfin tuna caught by U.S. boats and transshipped to the U.S. indicates that the amount of yellowfin tuna weighing less than 3.2 kg. was within the limit allowed by the recommendation.

Cuba (non-member country)

In July, 1973, the recommended regulation was forwarded to all fishermen and has since been implemented.

Annex 7

WORKING RELATIONS BETWEEN ICCAT AND ICSEAF

In accordance with the wishes of both Commissions, and in order to avoid a duplication of effort in the field of their activities, and to guarantee a mutual co-operation, the International Commission for the Conservation of Atlantic Tunas (ICCAT) agrees to the establishing of working relations with the International Commission for the Southeast Atlantic Fisheries (ICSEAF), on the following bases:

1. Regular exchange of information and documents and, in particular, of all documents concerning research and statistics on Atlantic tunas in the area covered by ICSEAF.
2. Reciprocal discussion on matters of common interest in such fields of activity as concern both Commissions.
3. Reciprocal invitations from both Commissions to attend, in an Observer capacity, all the meetings held by the other Commission, as well as those that may be held in the future by subsidiary bodies.
4. Possibility of joint activities, perhaps with the future participation of other international organizations, for studying scientific or technical matters of common interest.
5. ICCAT will take charge of research and statistics on tunas and tuna-like fishes, informing ICSEAF of the results.

It is hoped that these basic principles will permit a fruitful collaboration between ICSEAF and ICCAT, which would in no way impede the signing in the future of a formal Agreement between both Commissions, in accordance with ICCAT Articles IV and XI, and ICSEAF Articles III and XI.

Annex 8

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

Paris, November 19-27, 1973

Table of Contents

Item. 1. Opening of the meeting

1. The meeting was opened by the Chairman, Mr. V. Valdez. Delegates from all member countries except Ghana and South Africa, representatives from FAO, and observers from Colombia, Costa Rica, Cuba, Gabon, Federal Republic of Germany, Guatemala, Mexico, Venezuela, U.S.S.R., I-ATTC and ICES were present (see Annex 1 to the Commission Report). In welcoming all participants and observers, the Chairman gave a particular welcome to the Ivory Coast, attending as a member of the Commission for the first time.

2. The Chairman referred to the loss the Commission had suffered by the death of Mr. W. M. Terry (USA). The Committee stood in silence for a minute in his memory.

Item 2. Adoption of Agenda

Item 3. Admission of observers

3. The Agenda set out in Appendix 1 was adopted, as was the draft timetable. A list of documents presented to the meeting is given in Appendix 2. Dr. J. A. Gulland (FAO) was nominated as Rapporteur. All the observers were admitted (Annex 1 to the Commission Report).

Item 4. Review of national fisheries

4. *Brazil (SCRS/73/73)*

The Brazilian tuna fishery was not at present expanding in the same way as other fisheries. The catches in 1972 of all tuna and tuna-like fishes amounted to 5,680 tons, of which 823 were large tunas, 956 small tunas, 294 billfishes and 3,607 Spanish and king mackerels.

5. *Canada (SCRS/73/28)*

The Canadian swordfish fishery has not operated since 1971. Canadian seiners did not operate in the eastern Atlantic in 1972, though some were there in 1973. Canadian tuna catches in 1972 therefore amounted to only 570 tons, less than a quarter of the catch in the previous year. Research activities have been confined to completing analysis of swordfish data, routine sampling, and some tagging of bluefin.

6. *France (SCRS/73/42)*

French tuna catches in 1972 increased by rather more than 10 % over 1971, to 52,400 tons. This increase was mainly due to increased yellowfin catches off West Africa, the catches of skipjack, and of bluefin and albacore in the northeast Atlantic were about the same. A feature of the latter fishery was the important share of the catch taken in the Azores area. Regular collection of statistical and biological data has been continued in both the West African and European fisheries.

7. *Ghana (SCRS/73/11)*

Some 30,000 tons of tuna were landed by foreign vessels in Ghana in 1972. Plans are now being made for the direct operation by Ghanaian vessels in tuna fishing. Length sampling of landings was continued.

8. *Ivory Coast*

Abidjan continued to be an important port of landing of foreign flag vessels, as well as for Ivorian vessels. The catch by Ivorian vessels in 1972 was 3,500 tons. Collection of detailed statistical and biological data from F.I.S. vessels was continued.

9. *Japan (SCRS/73/12)*

Japanese catches in 1972 amounted to some 67,000 tons, two-thirds taken by longliners. These vessels are taking increasing proportions of bigeye and southern bluefin, and less albacore and yellowfin. Statistical and biological data are being collected for all fisheries, and most have been compiled for years up to 1971.

10. *Korea (SCRS/73/58)*

Korean tuna catches showed little change from 1971 (36,500 tons compared with 37,100 tons). The number of vessels fell slightly, since an increased proportion of Korean vessels fished in the Pacific and Indian Oceans. Albacore and yellowfin continued to predominate in the catches. Research activities on the tuna fisheries have been conducted, with major concentration on the Pacific and Indian Oceans.

11. *Morocco (SCRS/73/27)*

Moroccan catches fell slightly in 1972 (2,066 tons compared with 2,514 tons in 1971). Marking studies were begun in 1972 and have been continued in 1973. So far, 57 skipjack, 62 bluefin, 15 albacore and 16 other small tunas have been marked.

12. *Senegal (SCRS/73/22)*

Landings of the FIS fleet amounted to only 13,500 tons after having recorded the highest production in 1971 (21,866 T.). Statistical data are collected from all the landings. A particular effort has been made for automatic data processing and treatment. Biological data for skipjack and bigeye have also been collected.

13. *South Africa (SCRS/73/18)*

South African tuna catches have remained at a very low level (less than 1,000 tons). Statistical and biological data were collected. 184 albacore were tagged at the end of 1972.

14. *Spain*

Spanish catches in 1972 fell from 88,000 tons to about 80,000 tons. This decrease occurred for most species except yellowfin, which increased from 8,200 tons to 10,900 tons. Considerable efforts are being made to improve the statistical systems, including the use of logbooks. Biological investigations are being intensified on the fishery on albacore and bluefin in the Bay of Biscay region.

15. *U.S.A. (SCRS/73/59)*

United States catches increased by 4 % to 33,038 tons in 1972. The catches in the major fishery, that by purse seiners for tropical tuna, mostly in the eastern Atlantic, were the highest recorded (24,426 tons). This increase was accounted for by greatly increased catches of yellowfin, the skipjack catches actually decreasing. Preliminary results for 1973 indicate a reversal, with more skipjack and much fewer yellowfin being caught. Catches of bluefin in the northwest Atlantic decreased. Biological studies on these fisheries, including the tagging of bluefin, have continued.

16. *Other countries*

Cuba reported catches of 6.7 thousand metric tons from its longline and purse seine fisheries in the central and eastern (Gulf of Guinea) Atlantic. Yellowfin made up more than half of the catches. The Committee *noted* that the Secretariat had not received statistics from the Taiwanese fisheries and hoped that the Secretariat would continue to make every effort to obtain data concerning this important element in the Atlantic tuna fisheries.

Item 5. Status of stocks

5.a. Yellowfin tuna (Thunnus albacares)

Separation of stocks

17. The Committee reviewed the latest evidence on the separation of stocks of yellowfin in the Atlantic, including information on parasites (SCRS/73/56). The conclusions are shown in Figure 1 (SCRS/73/71). For younger fish (one to three years of age) there are three fairly distinct groups in the eastern Atlantic (roughly off Dakar, Abidjan and Pointe Noire, with some mixing between the first two groups). On the west side there is a group of young fish off Venezuela, though the extent and status of this group is not well known. The separation between the eastern Atlantic Groups is better than might appear from the figure because the north-south movements, indicated by arrows, are in phase i.e. when the fish of group 3 are at the northern limit of their range, so are the fish of groups 1 and 2.

18. The older fish from 4 years upwards and some 2 and 3 year old fish, which are fished both by longline and surface gears undergo more extensive movements. The separation between groups on the eastern side appears to vanish, though an east-west separation may be maintained. A possible dividing line may be along

the longitude of 30°W, which corresponds to a line of low catch-per-unit-effort in the longline fishery. Doubts therefore remain as to the extent that the yellowfin in the eastern and western Atlantic are independent stocks. This is important in view of the considerably greater fishing intensity (fishing effort per unit area) that exists in the eastern Atlantic. The analyses of the status of stocks presented below refer to the present distribution of fishing and therefore mainly to the situation in the eastern Atlantic. To the extent that the fish to the westward are an independent stock, the analyses are less valid for these fish, and for the Atlantic as a whole.

Size limits

19. The 1972 SCRS Report (paras 51-58) discussed at some length the question of the size of first capture, and the effects of the introduction of size limits. Additional information on the present effective size at first capture was presented (SCRS/73/33 and 64). The Committee has no reason to alter its advice — that there are benefits, when harvesting a large and fast growing fish like the yellowfin, from avoiding the capture of small fish. In the light of the increasing fishing effort, the benefits would be expected to be greater than previously calculated. The Committee therefore urges the full implementation of the 3.2 kg. size limit recommended by the Council in 1972. It is clearly too early to distinguish the effect of this measure, which has only been in full effect for part of the year. It is in any case difficult to determine the effect other than by repeating the existing theoretical calculations. It is important for these calculations, and for estimation of the effect of any adjustment to the size limit, that full information is available on the sizes of all yellowfin caught, including any undersized fish rejected at sea, or landed. The cohort analysis confirms that any reduction in effective size at recruitment below 3.2 kg. results in a reduction in yield-per-recruit.

Present status of the fishery

20. Table 1 shows the statistics of total catch, by country and by type of gear. The total catch of yellowfin in 1972 (including estimates for the fleets for which statistical data have not yet been received) was around 99,000 tons (live weight), the highest catch yet recorded, being higher than the catch in 1969 (91,400 tons live weight), and considerably higher than the catch in 1970 and 1971. This increase was mainly due to a sharp increase in catches in the surface fisheries, especially the purse seine fleets of France and the U.S. The longline catches were approximately the same as in the previous three years.

21. The increased surface catch was due both to a recovery of catch rates from the low 1970-1971 level, and to a continued increase in effort in 1972. Table 2 gives two series of c.p.u.e. obtained by combining the information from the various sur-

face gears operating in the eastern Atlantic in different ways, and the two corresponding indices of total surface effort in the eastern Atlantic (from Table 1 of SCRS/73/61). Both indices of effort are higher than in any previous year; the indices of c.p.u.e. are lower than any year except 1970 and 1971. The low catch rates in 1970 and 1971 may to some extent be accounted for by variations in year-class strength, especially the low 1968 year-class (see Figure 8 of SCRS/73/64).

22. Preliminary information on the 1973 F.I.S. (France-Ivory Coast-Senegal) fishery suggests that the surface catch will be slightly less or similar to that in 1972, and a similar or slightly higher fishing effort.

23. The Committee discussed likely future trends in the amount of fishing. Several countries reported that numbers of new vessels were planned or being built. Others reported that while no increase in numbers was planned, the replacement of old vessels by new and more powerful vessels would increase the effective fishing effort exerted by their fleets. It was stressed that the actual amount of fishing in the Atlantic would depend on the degree to which there was redeployment of vessels between the Atlantic and other areas. It seems likely that in the future there will be more vessels coming into the Atlantic. Altogether it is likely that the total fishing effort in the tropical Atlantic tuna fisheries will in 1974 and subsequent years be considerably in excess of that in previous years. Some estimates for the effort in 1974 and 1975 are given in Doc. SCRS/73/13. The 1975 effort may be some 15-40 % above that in 1972, although these estimates are only approximate extrapolations. The analyses below, and especially the relation between catch and fishing effort should be interpreted with this in mind.

24. The relation between the amount of fishing and the sustained catch was studied using the same methods as in previous years. The results of using the generalized production model with the data of the eastern Atlantic surface fishery alone, and of the whole Atlantic yellowfin, are shown in Figures 3 and 4 (Figures 4, modified, and 6 of SCRS/73/61). Similar results are shown in Figures 5 and 6 of Document SCRS/73/13, and Figure 1 of SCRS/73/64. As suggested in last year's report (para. 64), the addition of the data for 1972 has tended to modify previous analyses towards predicting relatively higher catches at higher levels of fishing effort. The levels of maximum catch and optimum fishing effort are not changed much, the changes mainly concerning the prediction of events beyond the maximum. The addition of the 1973 data, the probable position of which is indicated by the shaded area in Figure 3, will probably have a similar, but smaller, effect, though it must be remembered that it takes some time for the stocks to adjust to the effects of fishing. In a period such as the present, when fishing is increasing, the points will tend to lie above the line of equilibrium conditions.

25. Shown in the figures are lines corresponding to different values of the coefficient, m, in the production model. These show good agreement, and good fit to

the data, over the observed range of values of fishing effort but diverge for values of effort higher than those so far experienced. That is, the model, like most models, is not very good for extrapolation to entirely new situations.

26. The nature of the uncertainty, in terms of the biological events in the fish stock, may be seen by reference to the other general type of model. This is the analytic model, which considers the growth and mortality rates of the individual fish, as well as the numbers of recruits. Figure 5 (Figure 14 of SCRS/73/64) shows the relation of yield-per-recruit to the amount of fishing based on the most recent estimates of growth and mortality for the eastern Atlantic fishery (including the longline fishery). These curves are generally similar to those for $m = 0$ and $m = 1$ in Figure 4, corresponding most closely to that for $m = 1$.

27. This implies that the curve for $m = 1$ will give the true relation between sustained yield and amount of fishing if recruitment is not affected by high rates of fishing. The curve for $m = 0$ which gives the best fit to the observed points, will give the true relation if recruitment increases slightly, and that for $m = 2$ if recruitment decreases at higher levels of fishing.

28. The relation between the adult stock and the magnitude of recruitment is one of the most important but least tractable in present-day fishery research. There is increasing evidence that while many fish stocks can be very greatly reduced without their reproductive capacity being altered, at some level of fishing a point can be reached at which the numbers of recruits begin to decline. Estimates were produced (SCRS/73/51) of the spawning index, based on the catch-per-unit effort of different sizes of fish, in the longline fishery, and the numbers of eggs present in each size. This indicates a decline of about 50 % (from an index of 5 to one of a little over 2) between 1966 and 1970. It was suggested that the true spawning potential would also depend on the frequency of spawning of different sizes of fish, and possible differences in the size (and hence viability) of eggs produced.

29. Taking into account these factors, and the fact that the hook-rate in 1966 was already only a small fraction (about one-fifth) of the initial hook-rate, suggests that the present spawning potential is small, possibly no more than 10 % of the potential of the stock before it was fished. At the same time studies of the recruitment (SCRS/73/64) show that up to 1970 the recruitment has not shown signs of decreasing i.e. the stock abundance up to 1968-69 was sufficient to produce average recruitment. The Committee *noted* the importance of repeating these analyses of changes in stock fecundity each year.

30. The yield curves shown in Figures 3 and 4 represent average conditions for sustained levels of fishing for the present pattern and distribution of fishing. Catches in any particular year will depart from the average for a number of reasons. Firstly, as already noted, it takes time —two to three years if recruitment is

not affected, and possibly several generations if it is affected— for the stock and the fishery to reach equilibrium after changes in the amount of fishing. Secondly, there are many natural factors —variations in recruitment, growth or mortality, or in the distribution or availability of fish— which can affect the catches irrespective of the amount of fishing.

31. Another factor that affects the detailed predictions of the production model, and similar models, concerns possible changes in the relative catches of different sizes of fish. These models, as they are formulated, do not take such changes into account. However, as already noted in relation to the effects of size limits, differences in the sizes caught can affect the magnitude of the sustained yield.

32. The main sizes of fish caught vary considerably depending on the gear used. In order of increasing size of fish the ranking is baitboats, small, medium and large purse seiners and longliners. There is little overlap in sizes between the catches taken by baitboats and longliners, but the other gears overlap to a considerable extent. Because of the changing composition of the total fleet, the trends in fishing effort have not been the same for all sizes of tuna. Analysis of three size groups caught by the F.I.S. fleet from 1969 to 1972 (less than 15 kg., 15-55 kg. and over 55 kg.), Figure 6 (taken from SCRS/73/14), has shown that the effort on the biggest fish has been increasing much faster during the last few years than that on the medium or small fish. However cohort analysis on the whole eastern Atlantic fishery from 1967 to 1972 shows that the average mortality of very young fish in their first year (average weight 4.2 kg.) has increased from $F = .05$ in 1967-68 to around $F = .35$ from 1969 to 1972. It can be expected that the decrease in the effort on very young fish resulting from the size limitation, together with the increased exploitation of adults by large seiners, will improve the yield-per-recruit.

33. Despite all these doubts and qualifications, the basic conclusion concerning the relation between yield and effort is quite clear. Up to about the present level, increased fishing will result in increased catches, but the rate of increase slows down as the amount of fishing increases. Fishing greater than the present level might give greater catches, though the increase would not be substantial, and it is possible, particularly if recruitment is affected, that sustained amounts of fishing greater than those of 1972-73 could result in an appreciable fall in total catch. It is important to note that these comments apply to the fishery as now constituted with respect to its areal distribution and selectivity of the fishing gear.

34. The implications of these results for management of the stocks, and the technical problems of certain methods of management, were discussed in detail in previous reports. The choice of the position on the yield curve to be regarded as the objective of management is a matter for the Commission, taking into account both the magnitude of the catch, and the likely cost of catching it. In this

connection it may be noted that, particularly for the flatter yield curves (e.g. the yield-per-recruit curve) there is a considerable range as the maximum is approached over which the cost of achieving increased catch is likely to exceed considerably the increased value of the catch.

35. It should be stressed that the yield curves are biological characteristics of the stock, and that the amount of fishing must be expressed in biological terms, i.e. either as fishing mortality, or as standardized fishing effort, taking into account all changes in the efficiency of the fleet, or in the availability of the fish (i.e. in the coefficient q in the relation $F = qf$).

5.b. Skipjack (Katsuwonus pelamis)

Size limits

36. At the 1972 meeting, the Council had some discussion on the advisability of introducing a size limit for skipjack. The Committee therefore reviewed the evidence concerning this. The average size of skipjack in the catches (*ca* 3 kg.) is very much smaller than that of yellowfin. This is partly because of the smaller limiting size, L_∞, of skipjack, and partly because of its high natural rate of disappearance from the fishery, which includes both emigration and natural mortality.

37. As a result the potential for growth of small skipjack is not so large as for small yellowfin, so that *a priori* there would be expected to be less benefit from size regulation. This expectation is confirmed by theoretical calculations, which suggest that even at high rates of fishing the optimum age at first capture is no more than about 1.2 years, i.e. 30-35 cm fork length, or less than 1 kg. (SCRS/73/53). At present fishing mortality may still be relatively low, so that the optimum size at first capture under current conditions is even less.

38. The most recent statistics of skipjack are given in Table 3. This shows some decrease in 1972 compared with 1971. Interpretation of skipjack statistics is difficult because of the interaction with yellowfin. On the whole, fishermen prefer to catch yellowfin when they can, so that skipjack catches tend to increase when yellowfin are scarce. The drop in skipjack in 1972 is therefore probably related to the good yellowfin catches in that year.

39. It is generally believed by comparison with other oceans that skipjack resources are large. However direct evidence from the more reliable methods of stock assessment are not yet available, and the high year-to-year variability in skipjack catches may mean that the evidence will not become clear until the effect of fishing has become quite severe. Therefore, although there is no case yet for restricting the expansion of skipjack catches, this expansion should proceed with caution.

5.c. *Bluefin tuna (Thunnus thynnus thynnus)* — Table 4

40. A substantial report on distribution, fisheries and life history of Atlantic bluefin was presented (SCRS/73/54). The Committee noted the volume of valuable information contained in the report, and congratulated Mr. Frank Mather and his colleagues on their work.

41. Arising from this report there was some discussion on the stock structure of bluefin. On the one hand there was considerable evidence of separate groups of fish maintaining their identity over a period (e.g. groups of large fish in the fishery off Norway). On the other hand tagging experiments have shown migration of small tunas in both directions across the Atlantic, as well as of larger tunas from west to east. Both tagging results and the distribution of longline catches suggest that the patterns of movement and migration can vary rather greatly from year to year.

42. Taking into account the long movements in at least some years and the long life of the fish (up to 14 years or more), it seems most likely that the bluefin in the Atlantic forms essentially one stock. Particular groups of fish, e.g. the small fish off New England, may stay together long enough for this separation to be taken into account in considering management measures. The stock structure is still speculative and requires examination of additional data.

43. An analysis of the long-term trends in different fisheries (SCRS/73/54 and SCRS/73/60) shows some disturbing features. The total catch has declined from a peak of around 40,000 tons in 1964 to only 26 000 tons in 1971. The decline in some fisheries, particularly those on big fish, has been much more severe. The Norwegian purse seine fishery, which at its peak took over 10,000 tons, has virtually disappeared and the trap fisheries inside and around the entrance to the Mediterranean have nearly all declined to very low levels. The large fish catches taken as a whole are now at the lowest recorded level.

44. Detailed size composition data (Fig. 8 of SCRS/73/54) of the Norwegian catches show that the collapse of this fishery was due to the rather sudden and complete cessation of recruitment of relatively young fish to this fishery after about 1959. It was noted that the catches of large tuna in the longline fishery fluctuated between 2.4 and 14.3 thousand tons with a peak in 1964 and 1965, and another in 1971. The North American catch fluctuated in a similar way. It is difficult to relate the recruitment failure in the Norwegian fishery in any quantitative manner to fishing effects, and it seems more likely that the causes are environmental and behavioral. It was stressed that many fish stocks, including bluefin in the Pacific, show considerable fluctuations and it cannot be assumed that the present low levels of catches off Norway, rather than the previous high values, represent «abnormal»

conditions. Other large fish fisheries have exhibited similar trends of falling catch rates and increasing average size.

45. The impact of fishing can be directly estimated in the New England fishery from the results of extensive tagging experiments. Analysis of the rate of return of fish tagged at varying times after capture indicates that the actual fishing rate may be much higher than that estimated from the uncorrected number of tags returned (SCRS/73/44). These nominal values range from 5-15 % per year, or 15-44 % (average 29 %) over a 3-year period.

46. Estimation of fishing mortality in the bluefin fisheries generally is made difficult by the complex structure of the fisheries, and the absence of comprehensive data on the quantity and sizes of fish caught. Clearly the growth of the fisheries on the smaller fish during the nineteen-fifties and sixties (see Fig. 9 of SCRS/73/54) must have reduced the numbers of fish becoming available to the fisheries on larger fish. It is not possible with the present data to quantify this loss, or to estimate the effect on the total catch of Atlantic bluefin.

47. Another problem in assessing the bluefin stocks is the absence of good measures of abundance, since for various reasons the indices of catch-per-unit-effort in most of the fisheries do not reflect accurately changes in abundance. This makes it difficult to examine trends in the recruitment which might be resulting from the presumed decline in adult stocks. The best estimate of recruitment in the western Atlantic is believed to be the catch-per-unit-effort of class 3 seiners, which over the past 10 years has tended to increase although the efficiency of this class of seiner may have increased (Fig. 4 of SCRS/73/60). The catch of small fish in the eastern Atlantic declined between 1954 and 1960 and has since fluctuated with no clear trend.

48. The present evidence does not suggest any clear decline in recruitment to the fisheries on the younger fish, at least over the past decade, which might reflect the apparent decline in adult stocks since 1960. The adult stocks do now appear to be at a very low level, and any further decline might well affect recruitment. The Committee noted the concern over bluefin expressed by ICES at its recent meeting (SCRS/73/57). In general this concern was shared, and the Committee welcomed the offer of collaboration in research studies made by ICES.

49. The Committee examined in some detail the possible effects of measures to control the catching of small fish. Two questions were involved — the estimation of the theoretical benefits to be expected from avoiding the capture of a particular size of fish, and the practical question of how these fish could be avoided without harmful side-effects. The benefits depend on the probability of a fish being caught at some later date, and the average weight when caught. For the New England fishery, for which the tag returns indicate a high probability of later capture, it was

estimated by the Miami working group of 1968 that the avoidance of fish up to 10 kg. would lead to an increase in yield. The studies in SCRS/73/60 show that the effective size at first capture, taking the fisheries as a whole, is at about this size.

50. Control by means of a size limit would lead to losses from the capture and subsequent rejection at sea of undersized fish unless the limit is set at some clear break in the size composition e.g. between the modes of two age groups, which corresponds to a separation of fish in the sea. For the New England fishery, a practicable size limit appears to be about 7 lbs. (3.2 kg.). Corresponding information on which a practicable size limit could be set is not available for other fisheries. In some there is a chance that a size limit for bluefin could impede the development of fisheries for other species.

51. The Committee *stressed* that application of size limits or similar measures could not provide a complete program of stock management. Considerations of size limits should not hinder work on the main tasks, which are first the determination on a scientific basis of the needs for control of the amount of fishing (limits on total catch or total effort) and, second, if these are shown to be desirable, determination of the measures needed to implement such controls.

52. It is clear that the first of these requires the supply of better basic data (catch statistics and size composition). The Committee welcomed the action being taken by countries, with the support of the Secretariat, to improve the supply of data. It strongly *urged* that every effort be made to further improve matters, particularly as regards data from the fisheries off N.W. Africa and the Iberian peninsula, and from sports fisheries.

53. The area from southern Morocco to Cape Blanco appears to be important for small bluefin, as well as other species, though there is little information from this area. The Committee therefore *recommended* the strengthening of research activities in this region, as regards both better observation on the catches by commercial fishermen and research work at sea.

54. The Committee also *stressed* the desirability of further tagging of small fish on the eastern side of the Atlantic for better identification of stock structure. It noted with appreciation the plans being made for such tagging by France and Morocco.

5.d. Albacore (Thunnus alalunga)

55. The Committee received a number of papers concerning the stock structure of albacore. As regards the young fish in the northeast Atlantic it appears on the basis of color and other evidence (SCRS/73/19 and 43) that there are at least two

groups (Azores fish and the fish on the traditional European grounds) that maintain their identity within a season, and possibly also from one season to another while they remain in the northeast Atlantic. The older seem to mix, and in the north Atlantic form a single stock.

56. It has been believed that the albacore in the north and south Atlantic form separate stocks. The line of separation is, however, not clear in the longline data. However the trends in longline yields in the north and south Atlantic (SCRS/73/40 — Figure 2, and SCRS/73/53) are very different and there is a clear decline in yield in the north. The Committee believes that this subject merits further examination.

57. A number of reports were received describing the increasing volume of studies being made by Spanish scientists on the fisheries in the northeast Atlantic, as well as the continuing work by French scientists. The Committee congratulated those concerned on this work, and noted that this growing volume of good basic information on distribution of catches, sizes of fish etc. would be invaluable in future analyses. These reports seem to indicate that the French and Spanish catches of albacore are made in one common fishing area.

58. Recent statistics of albacore catches are given in Table 5. The 1972 data are still incomplete, but there appears to have been a general decline in total catch since 1964-1965. This decline has occurred in both longline and surface fisheries. In the surface fishery in the Bay of Biscay there has been a particularly clear decline in the catches and catch-per-unit-effort, in the traditional areas, which has been only partly balanced by a shift in effort to the west.

59. Preliminary studies have been made on the relation between surface fishing and longline fishing, on the relation between catch and effort and on the yield-per-recruit for different sizes at first capture. The Committee emphasized the importance of these studies, particularly in the light of the decline in total catch. It urged those concerned to continue their activities, and report the results to the next year's meeting of the Committee.

5.e. Other species

60. Recent statistics of bigeye tuna *(Thunnus obesus)* are set out in Table 6. After a very substantial increase in catch in 1971, there appeared to have been a decrease in 1972, though the data up to 1971 (SCRS/73/50) showed that the number of hooks in 1971 was substantially greater (up by about 30 %) than that in the previous highest year (1965). The hook rate was the lowest since 1961. The Committee believed that these preliminary analyses gave some cause for concern, and that the question of the status of the bigeye stocks should receive more detailed attention at the next session.

61. The Committee also noted that although no report was presented to the present session concerning the status of billfishes, some concern had been expressed about the stocks, and that more detailed study of these should also be made. For bigeye and billfishes better statistical data, including improved species identification in some fisheries, is needed. Studies should also be made of the basic elements for stock assessment —growth, mortality, and trends in catch-per-unit-effort— and the results should be reported to the 1974 Committee session.

Item 6. Report of Sub-Committee on Statistics

62. The report of the Sub-Committee (Chairman, S. Hayasi, Rapporteur, D. Sahrhage) is given in Appendix 3. In approving the report, the Committee *stressed* the essential nature of the activities of this Committee to the whole work of the Commission. The attention of the Commission is drawn to the considerable progress being made by countries and by the Secretariat, and the value, in certain fisheries, of the activities of the Secretariat at the fishing ports. The attention of the Commission is also drawn to the views expressed by the delegate of Senegal regarding possible assistance by the Commission to developing countries in the field of statistics.

Item 7. Review of programs and consideration of priorities

63. The Committee examined the tasks set out at the previous meeting in relation to the different species. It was believed that they represented a continuing program, and should form the basis for 1974 activities. It was *stressed* that, to enable assessments to be made and circulated for consideration in advance of the meeting, deadlines for reporting of statistics and other data should be adhered to. The Committee congratulated the countries and the Secretariat on the progress that had been achieved in this regard, and *urged* that every effort should be made to improve matters where there were still delays.

64. Studies and problems of bluefin and albacore were considered in more detail by two small adhoc groups. The reports of these groups, including proposals for future activities, are given in Appendices 4 and 5.

65. Recent trends in the tuna fisheries and advances in theoretical methods of population dynamics and analysis make it highly desirable to give more detailed examination of these questions than is possible during the Committee sessions. It was suggested that a special meeting would be desirable, which might deal with two aspects. First, discussion at an advanced technical level of the theoretical methods of stock assessment, limited to a small group of leading experts; and second, a

more general discussion and exposition of these ideas. The second part would be a good opportunity for improving the capacity of scientists from developing countries in the uses of modern techniques of population dynamics.

66. The proposal for such a workshop was reviewed by a small ad-hoc group, whose report is given in Appendix 6. The Committee *believed* that this workshop would be extremely valuable to the work of the Commission, and should be strongly supported by the Commission. In particular, the Commission should endeavor to support the participation in the workshop of suitable scientists from developing countries which are members of the Commission.

67. It was noted that the workshop would be of great interest to a number of other organizations, including I-ATTC, FAO, and ICES. Representatives of these organizations expressed their general willingness to support the workshop in any appropriate way.

Item 8. Advice to panels

68. The attention of Panel 1 is drawn to para. 17 to 35, and 36 to 39 of this report concerning the status of yellowfin and skipjack respectively. For Panel 2, the status of albacore and bluefin are reviewed in para. 40 to 54, and 55 to 59. In relation to size limits, the Committee also draws the attention of Panel 1 to para. 71 to 73 concerning yellowfin size limits, and paragraph 51, which, although written with reference to bluefin, is of quite general relevance.

Item 9. Relations with other organizations

69. The Committee noted the close and valuable collaboration and cooperation that had been continued with FAO, I-ATTC and ICES. It noted a proposal (SCRS/73/74) concerning the possible association with FAO's Expert Panel for the Facilitation of Tuna Research. If felt this matter deserved further consideration, and should be reviewed at next year's session. The Committee wishes to specifically thank FAO for facilitating John Gulland's contributions of technical expertise to its deliberations.

70. The Committee also noted the concern of ICES over bluefin, and the offer of collaboration on this subject. It welcomed this offer, particularly as regards the coordination of the ICES bluefin working group (which contained several scientists from countries not members of ICCAT), and *suggested* that the Commission should take appropriate action. At the scientific level, the Chairman of SCRS should consult with the Chairman of the Southern Pelagic Fish Committee of ICES.

Item 10. Other matters

71. The Secretariat reported on publications issued during the year. The Committee congratulated the Secretariat on their work, especially as regards the Collective Volume of Scientific Papers, which was believed to be very useful.

Control of size limits

72. At the request of the Working Group on Yellowfin Tuna Regulations, the Committee examined the question of control of size limits, and the equivalence between exemptions based on percentages in terms of weight and those in terms of numbers. The ratio between the two numbers is equal to the ratio between the average weight of the undersized fish and the average weight of all fish in the catch. Between 1969 and 1972, the average weight of yellowfin under 3.2 kg. in the landings of the F.I.S. fleet ranged from 2.5 to 2.7 kg. Taking an average value of 2.6 kg. the percentage in terms of weight which corresponds to 15 % by numbers is given in the table.

	Mean weight (kg)				Equivalent percentage			
F. I. S. Fleet	1969	1970	1971	1972	1969	1970	1971	1972
Baitboats (ice) . .	18.7	9.9	7.5	8.1	2.1	3.9	5.2	4.8
Baitboats (freezer) .	11.3	5.5	6.5	8.7	3.4	7.1	6.0	4.5
Small seiners . . .	24.7	11.4	14.3	17	1.6	3.4	2.7	2.3
Large seiners . .	17.6	10.4	11.4	27	2.2	3.7	3.4	1.4
U. S. Seiners . . .	38.2	11.1	14.1		1.0	3.5	2.8	
					2.06	4.32	4.02	3.25

It may be noted that some average percentage, e.g. 3 %, expressed in terms of weight will permit fewer undersized fish to be landed than an exemption of 15 % by numbers when most fish in the catch are small, e.g. in 1970, but more when fish are large, e.g. most fleets in 1969.

73. While both the numbers and weight of undersized fish in the catch could be recorded, it is for practical reasons much easier to determine the weight rather than the number of fish in the total catch. This is particularly true for large catches.

74. The assessments made in last year's report on the effect of different size limits were based on the assumption that no undersized fish would be landed. Any

exemption will modify the effects of the size limit, and a very large percentage exemption will result in the size limit having no effect. The Committee did not have information available to it to determine what might be the effects of the exemption limit included in the present size limit regulations, and believes that this should receive careful attention. Studies will be made first on the detailed past size composition data to examine seasonal and area (and possibly also between vessel) variations in the proportion of very small fish, and second, on comparing the size of fish caught before and after the regulations were introduced. Until these studies are completed, it is difficult to determine either the biological effect of regulations currently in force, or of modification to these regulations. The Committee wishes to stress the importance of ensuring that all regulations are fully enforced.

Item 11. Election of officers

75. On the proposal of Korea, Dr. B. J. Rothschild (U.S.) was unanimously elected Chairman of SCRS for the forthcoming biennial period. On the proposal of U.S.A., Mr. A. Fonteneau (Ivory Coast) was unanimously elected Convenor of the Sub-Committee on Statistics. The Committee congratulated the outgoing officers (V. Valdez and S. Hayasi) on the work done by them during their term of office.

Item 12. Date and place of next meeting

76. The Committee should meet for one week immediately preceding the 1974 Council meeting, at the same place.

Item 13. Adoption of report

77. The report, with appendices, was adopted.

Item 14. Adjournment

78. The meeting of the Committee was adjourned at midday November 27, though the Chairman noted that a further meeting migth be necessary if the Commission posed any specific question to the Committee. In closing the meeting, the Chairman noted the considerable progress that had been made in the scientific work of the Committee, and congratulated all those concerned.

Table 1. Yellowfin Tuna Catch (Thousand Metric Tons) in the Atlantic Ocean, 1963-72

Country	*Gear*	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
TOTAL		*68.7*	*65.5*	*66.8*	*64.0*	*57.3*	*81.2*	*89.5*	*76.8*	*72.0*	*77.3*
Sub-totals by gear											
Total longline		43.0	38.3	39.4	25.9	20.2	25.9	28.3	28.4	28.5	30.1
Total surface		23.3	25.6	26.8	37.7	36.4	54.6	60.8	47.7	43.1	67.1
Baitboats		5.3	6.6	4.1	2.9	2.9	3.8	16.1	9.5	10.8	13.8
Purse seiners		0.2	0.6	1.1	5.4	6.9	14.3	38.8	31.1	24.0	42.4
Unspecified		17.8	18.4	21.6	29.4	26.6	36.5	5.9	7.1	8.3	10.9
Total unclassified		2.4	1.6	0.6	0.4	0.7	0.7	0.4	0.7	0.4	0.1
Sub-totals by country											
Argentina	LL	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.4
Brazil	LL	2.4	1.4	0.6	0.4	0.7	0.7	0.4	0.7	0.4[3]	0.3
Canada	PS	—	—	0.0	0.6	0.7	0.7	0.9	0.2	0.0	—
China (Taiwan)[5]	LL	0.4	0.3	0.1	0.9	2.3	6.8	10.0	7.2	4.1	4.1[6]
Cuba	LL	1.7[2]	0.9[2]	0.8	0.8	3.0	1.9	1.6	1.6	2.1	3.6
France[4]	BB	...	...	...	...	...	...	14.2	8.1	7.8	8.4
	PS	...	...	...	...	...	...	14.7	18.0	18.0	27.2
	Sur-UNCL	16.6	17.5	20.1	23.4	23.8	32.5	—	—	—	—
Ghana	Sur-UNCL	...	...	...	...	...	...	...	...	...	0.0
Japan	LL	37.7	35.1	36.6	22.1	12.8	13.9	9.8	6.7	11.0	8.9[1]
	PS	—	0.5	1.1	4.8	5.2	7.5	5.8	1.3	2.2	2.8
	BB	0.9	2.1	1.3	0.5	1.3	2.2	0.9	1.0	2.5	4.4[1]
Korea[5]	LL	—	...	...	—	—	2.0	5.2	11.5	9.9	11.1
Norway	PS	...	...	...	...	...	...	...	...	...	0.1
Panama	LL	...	...	...	...	...	...	...	...	...	0.1
	BB	...	...	...	...	...	...	...	...	...	0.4
Portugal (Angola)	BB	4.4[1]	4.5[1]	2.8[1]	2.4[1]	1.6[1]	1.6[1]	1.0[1]	0.4[1]	0.5	0.6
South Africa		0.0	0.2	...	...	...	...	...	0.0	0.0	0.1
Spain	Sur	1.2	0.9	1.5	6.0	2.8	4.0	5.9	7.1	8.3	10.9
United States	PS	0.2	0.1	—	—	1.0	6.1	18.2	8.9	3.8[1]	12.3[1]
Venezuela	LL	3.1	1.9	1.8	2.1	2.1	1.2	1.6	1.4	1.3	1.6

[1] Provisional figures.
[2] Includes bigeye and bluefin.
[3] Includes blackfin.
[4] Catches from Ivory Coast and Senegal have been included with French catch, in order to protect the privacy of private enterprises of the former two.
[5] Not round weight.
[6] Estimate based on previous year's catch.

Table 2. Catch (Y), catch rate (U), and effective effort (f) data for the eastern Atlantic yellowfin tuna surface fishery, 1964-1972 (taken from SCRS/73/61)

Year	*Catch* [1] (10^3 metric tons) Y	*Catch Rate* I [2] U^{I}	*Effective Effort* I f^{I}	*Catch Rate* II [3] U^{II}	*Effective Effort* II f^{II}
1964	25.8	0.191	135.1	3.06	8.43
1965	26.8	0.147	182.3	2.51	10.68
1966	37.7	0.180	209.4	3.04	12.40
1967	36.4	0.136	267.6	3.41	10.67
1968	54.6	0.161	339.1	3.56	15.34
1969	61.6	0.125	492.8	2.68	22.99
1970	44.7	0.084	532.1	1.86	24.03
1971	43.7	0.085	514.1	1.78	24.55
1972	64.7	0.109	593.6	2.26	28.63

[1] ICCAT Statistical Bulletin Vol. 3 with modifications as noted in text (SCRS/73/61).
[2] SCRS/72/7 (Table 5), 1964-71; 1972 from Pianet (1973) and Fonteneau (pers. comm.).
[3] Fonteneau (pers. comm.).

Table 3. Skipjack Catch (Thousand Metric Tons) in the Atlantic Ocean, 1963-72

Country	*Gear*	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
TOTAL		*21.2*	*18.8*	*33.0*	*40.2*	*37.9*	*63.8*	*44.4*	*63.7*	*87.0*	*75.9*
Sub-totals by gear											
Total surface		15.6	17.7	31.5	38.5	35.3	61.4	42.8	60.5	84.7	75.8
Baitboats		7.9	6.6	12.7	10.7	12.0	17.9	14.1	13.2	19.4	16.1
Purse seiners		3.0	4.4	1.9	1.4	3.3	10.5	10.3	24.0	38.1	33.4
Unspecified		4.7	6.7	16.9	26.4	20.0	33.0	18.4	23.3	27.2	26.3
Total longline		4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total traps		...	...	—	—	—	0.0	—	—	0.1	0.1
Total unclassified		1.0	1.1	1.5	1.7	2.6	2.4	1.6	3.2	2.2	0.0
Sub-totals by country											
Argentina	LL	...	...	...	...	...	...	...	0.0	—	0.0
Brazil		0.3	0.4	0.5	0.7	1.5	0.8	0.4	0.4	0.4	—
Canada	PS	0.0	0.4	0.0	—	0.6	1.0	0.1	0.6	1.2	0.0
China (Taiwan)	LL	—	—	—	—	0.0	0.0	0.0	0.0	0.0	0.0[3]
Cuba		0.7	0.7	1.0	1.0	1.1	1.6	1.2	1.8	1.8	PS 0.1
France[2]	BB	...	...	...	...	...	...	4.6	4.8	5.7	3.8
	PS	...	...	...	...	...	...	3.8	9.2	13.8	17.6
	Sur-UNCL	3.3	2.2	4.2	6.4	5.5	13.0	—	—	—	—
Japan	LL	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0[1]
	PS	—	0.0	1.8	1.4	2.2	6.3	0.7	3.5	6.2	3.4
	BB	4.6	3.1	6.3	4.4	3.7	7.3	4.9	7.5	11.7	10.1[1]
Korea	LL	...	...	...	...	...	...	...	...	...	0.0
Mexico		...	—	0.0	—	—	—	—	—	—	—
Morocco	Tra	...	...	—	—	—	0.0	—	—	—	—
	Sur	0.0	0.0	3.2	1.5	0.9	0.9	0.1	1.1	0.1	0.0
Norway	PS	...	...	...	...	...	...	...	...	...	0.1
Panama	BB	...	...	...	...	...	...	...	...	...	0.7
Portugal		...	...	...	...	...	...	...	1.0	...	...
Portugal (Angola)[1]	BB	3.3	3.5	6.4	6.3	8.3	10.6	4.6	0.9	2.0	1.5
	Trp									0.1	0.1
Spain	Sur	1.4	4.5	9.5	18.5	13.6	19.1	18.3	22.2	27.7	26.3
United States	PS	3.0	4.0	0.1	0.0	0.5	3.2	5.7	10.7	16.9[1]	12.2[1]

[1] Provisional figures.
[2] Catches from Ivory Coast and Senegal have been included with French catch, in order to protect the privacy of private enterprises of the former two.
[3] Estimate based on previous year's catch.

Table 4. Bluefin Tuna Catch (Thousand Metric Tons) in the Atlantic Ocean, 1963-72

Country	*Gear*	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
TOTAL		*42.9*	*45.9*	*46.2*	*28.6*	*40.9*	*23.8*	*27.5*	*27.8*	*27.9*	*25.5*
Sub-totals by gear											
Total longline		8.3	14.3	12.3	4.5	5.3	2.8	2.4	5.1	9.9	6.6
Total surface		20.6	16.4	20.6	15.2	20.1	12.0	13.5	12.3	9.2	5.5
Baitboats		9.9	8.0	11.2	6.1	10.5	3.9	7.5	6.9	4.9	4.7
Purse seiners		0.3	0.6	0.5	...	...	...	...	1.2	0.9	0.3
Unspecified		10.4	7.8	8.9	9.1	9.6	8.1	6.0	4.2	3.4	0.5
Total traps		4.7	5.2	5.3	3.4	4.6	2.0	2.3	2.0	0.7	0.2
Total sport		0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2
Total unclassified		9.2	9.9	7.9	5.4	10.8	6.8	9.1	8.2	8.0	3.0
Total Atlantic		38.8	40.1	40.5	22.8	31.0	16.0	18.2	21.6	21.1	20.3
Total Mediterranean		4.1	5.8	5.7	5.7	9.9	7.8	9.3	6.2	6.8	5.2
Sub-totals by country											
Algeria		0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.1	0.1	0.0
Argentina	LL	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Brazil	LL	...	...	...	...	...	...	...	...	0.1	0.0
Canada	PS	0.3	0.6	0.5	...	...	...	...	1.2	0.9	0.3
	SPORT	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2
	UNCL	0.2	0.3	0.2	0.2	0.3	0.3	0.4	0.3	0.1	0.0
China (Taiwan)	LL	—	—	—	0.0	0.0	0.1	0.2	0.1	0.1	0.1[6]
Cuba	LL	...	...	0.1	0.5	2.4	1.4	0.5	0.2	—	—
Denmark		0.0	0.1	0.0	0.0	0.0	0.0	0.0	—	0.0	0.0
France[4]	BB	1.6	2.8	1.9	2.8	2.2	1.9	1.8	1.7	2.6	1.9
Germany		0.0	0.0	0.0	0.0	—	0.0	0.0	0.0	0.0	0.0
Greece		...	0.6	0.7	0.5	0.6	0.5	...	0.5	...	0.5

Table 4. (Continued)

Country	Gear	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Italy		2.4	2.5	2.1	1.7	4.0	2.8	3.1	3.1	3.0	7.6
Japan	LL	7.8	12.6	9.6	2.9	0.9[2]	0.4[2]	0.8[2]	4.4[2]	6.2[2]	6.4[2 3]
	BB	—	0.0	—	—	—	—	—	—	—	—
Korea [5]	LL	...	...	...	—	—	—	—	—	3.0	0.0
Libya		...	0.4	0.6	0.7	0.8	1.0	2.9	0.5	0.6	...
Malta		0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Morocco	Tra	2.4	2.3	1.9	1.8	1.4	0.8	0.1	0.3	0.1	0.2
	Sur	1.5	2.1	1.0	1.8	2.0	0.5	0.7	0.4	0.1	0.5
Norway	LL	0.2	1.5	2.5	1.0	1.9	0.9	0.9	0.4	0.6	0.1[1]
Poland		—	—	—	—	—	—	—	—	0.1	0.1
Portugal [1]	Tra	0.4	0.4	0.1	0.2	0.2	0.1	0.4	0.0	0.0	...
	LB-Co	0.5	0.5	0.3	0.0	0.0	0.2	0.1	0.0	0.2	0.0
	LB-Isl	7.8	4.7	9.0	3.3	8.3	1.8	5.6	5.2	2.1	2.8
South Africa		0.4[1]	0.2[1]	...	...	...	...	...	0.0	0.0	—
Spain	Sur	8.9	5.7	7.9	7.3	7.6	7.6	5.3	3.8	3.3	2.4
	Tra	1.9	2.5	3.3	1.4	3.0	1.1	1.8	1.7	0.6	
Sweden		0.0	0.0	0.0	0.0	0.0	0.0	—	0.0	0.0	—
Tunisia		...	0.5	0.8	0.6	0.7	0.9	0.6	0.3	0.5	0.4
Turkey		0.1	0.0	0.1	0.1	1.5	0.3	0.4	0.1	0.0	0.0
United States		5.7	4.9	3.2	1.2	2.3	0.6	1.2	3.3	3.2[3]	1.8[3]
Yugoslavia		0.3	0.3	0.1	0.2	0.3	0.2	0.3	0.0	0.3	0.2

[1] Includes some other species.
[2] Includes both bluefin and southern bluefin.
[3] Provisional figures.
[4] Catches from Ivory Coast and Senegal have been included with French catch, in order to protect the privacy of private enterprises of the former two.
[5] Not round weight.
[6] Estimate based on previous year's catch.

Table 5. Albacore Catch (Thousand Metric Tons) in the Atlantic Ocean, 1963-72

Country	*Gear*	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
TOTAL		*74.4*	*87.7*	*87.8*	*75.4*	*76.1*	*71.9*	*75.3*	*68.4*	*79.9*	*74.1*
Sub-totals by gear											
Total longline		31.2	41.3	44.3	34.6	25.3	33.0	39.7	34.7	41.9	39.6
Total surface		42.7	45.8	43.4	40.7	50.7	38.9	35.4	33.5	37.7	34.3
Baitboats		—	0.0	—	3.7	4.2	2.4	1.8	2.0	1.6	1.2
Trolling		...	...	...	10.6	12.4	11.9	8.2	4.6	8.2	8.7
Unspecified		42.7	45.8	43.4	26.4	34.1	24.6	25.4	26.9	27.9	24.4
Total unclassified		0.5	0.6	0.1	0.1	0.1	0.0	0.2	0.2	0.3	0.2
Sub-totals by country											
Argentina	LL	1.5	1.5	1.1	0.8	0.7	1.2	0.4	0.5	0.3	0.1
Brazil	LL	...	...	...	...	...	...	...	...	0.2	0.1
China (Taiwan)	LL	0.0	0.1	0.1	0.2	1.8	8.7	11.5	11.9	19.2	19.2[3]
Cuba	LL										0.1
France[2]	BB	...	...	...	3.7	4.2	2.4	1.8	2.0	1.6	1.1
	Tro	...	...	...	10.6	12.4	11.9	8.2	4.6	8.2	8.7
	Sur-UNCL	14.2	17.3	13.8	—	—	—	—	—	—	—
Grenada		0.1	0.1	0.1	0.1	0.1	...	...	0.1	0.1	0.1
Japan	LL	29.7	39.5	42.6	26.9	12.5	15.2	11.0	11.8	10.1	5.3
	BB	—	0.0	—	—	—	0.0	—	—	—	—
Korea	LL	...	0.2[1]	0.5[1]	6.7	10.3	7.3	16.0	10.0	11.5	13.6
Malta		0.0	0.0	0.0	0.0	0.0	0.0	—	—	—	—
Norway	PS	...	...	...	...	...	...	...	...	...	0.0
Panama	LL	...	...	...	...	...	...	...	...	...	0.4
	BB	...	...	...	...	...	...	...	...	...	0.1
Spain	Sur-UNCL	28.5[1]	28.5[1]	29.6[1]	26.4[1]	34.1[1]	24.6[1]	25.4	26.9	27.9	24.4
South Africa		0.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Venezuela	LL	...	...	...	...	...	0.6	0.8	0.5	0.8	0.8
Yugoslavia		...	0.0	0.0	0.0	0.0	0.0	0.2	0.1	—	...

[1] May include minor quantities of other species.

[2] Catches from Ivory Coast and Senegal have been included with French catch, in order to protect the privacy of private enterprises of the former two.

[3] Estimate based on previous year's catch.

Table 6. Bigeye Tuna Catch (Thousand Metric Tons) in the Atlantic Ocean, 1963-72

Country	*Gear*	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
TOTAL		*17.6*	*20.5*	*29.1*	*18.8*	*11.6*	*17.3*	*23.5*	*25.1*	*41.7*	*33.8*
Sub-totals by gear											
Total longline		14.7	17.5	29.0	18.8	11.1	16.3	20.3	22.6	36.1	31.7
Total surface		2.9	3.0	0.1	0.0	0.5	1.0	2.1	1.3	1.2	0.6
Baitboats		0.0	0.0	0.1	0.0	0.4	0.6	0.3	0.0	—	
Purse seiners		—	—	—	—	0.1	0.4	0.2	0.1	0.7	0.3
Trolling		0.2	0.2	...	...	...	...	...	...	...	
Unspecified		2.7	2.8	...	...	...	...	1.6	1.2	0.5	0.3
Total unclassified		...	...	...	...	...	...	1.1	1.2	4.4	1.5
Sub-totals by country											
Argentina	LL	0.2	0.2	0.4	0.2	0.1	0.3	0.2	0.1	0.0	0.0
Brazil	LL	...	...	...	...	...	...	...	...	0.0	0.0
China (Taiwan)[4]	LL	0.0	0.0	—	0.5	1.9	4.6	7.2	5.3	4.7	4.7[3]
Cuba	LL	...	...	0.1	0.3	0.3	0.9	1.0	4.1	3.2	2.0
France[2]	Sur-UNCL	2.7	2.8	—	...	...	...	1.6	1.2	0.5	0.3
Japan	LL	14.5	17.3	28.5	17.6	8.5	10.3	10.3	9.0	20.8	19.2[1]
	PS	—	—	—	—	0.1	0.4	0.2	0.1	0.2	0.3
	BB	0.0	0.0	0.1	0.0	0.4	0.6	0.3	0.0	—	—
Korea[4]	LL	...	...	...	0.2	0.3	0.2	1.6	4.1	7.4	5.7
Panama	LL	...	...	...	...	...	...	...	...	...	0.1
South Africa	Tro	0.2	0.2	...	...	...	...	...	...	...	—
Spain		...	...	...	...	...	...	1.1	1.2	4.4	1.5
United States	PS	...	...	...	...	...	...	...	...	0.5[1]	...
Venezuela	LL	...	...	...	...	...	0.0	0.0	0.0	0.0	—

[1] Provisional figures.

[2] Catches from Ivory Coast and Senegal have been included with French catch, in order to protect the privacy of private enterprises of the former two.

[3] Estimate based on previous year's catch.

[4] Not round weight.

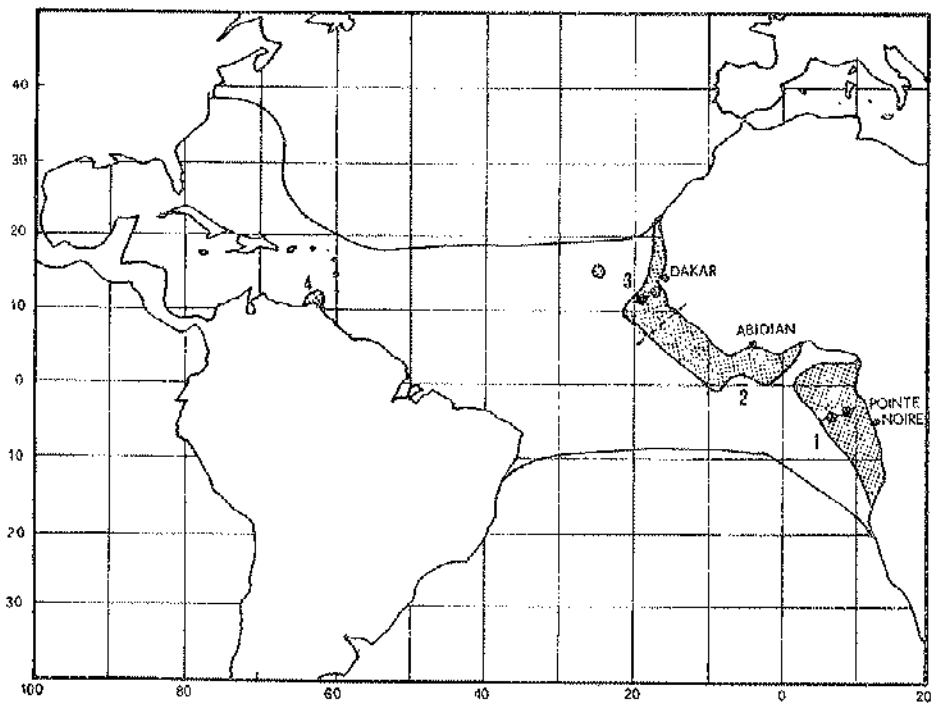

FIG. 1. Hypothesis (1973) on the distribution and separation of Atlantic yellowfin stocks.

Area limited by the two lines — Longline ground
Shaded areas — Surface fishing grounds

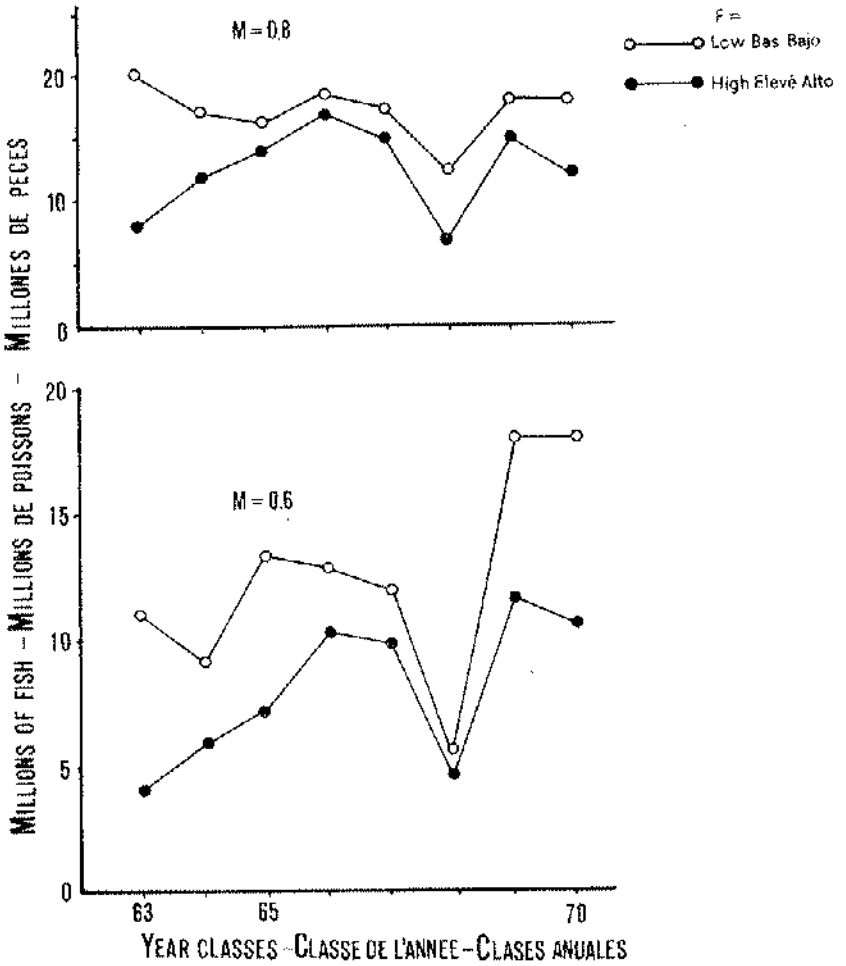

FIG. 2. Yearly fluctuation of yellowfin year classes.

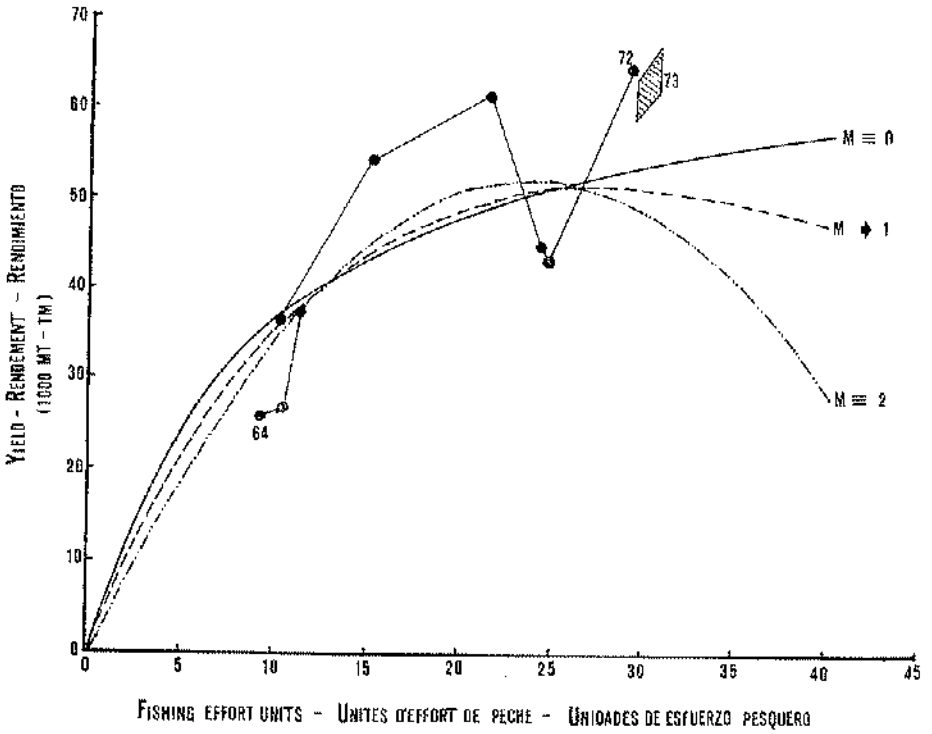

FIG. 3. Eastern Atlantic yellowfin surface fishery curves of sustainable average yield for three production models and the empirical data 1964-73.

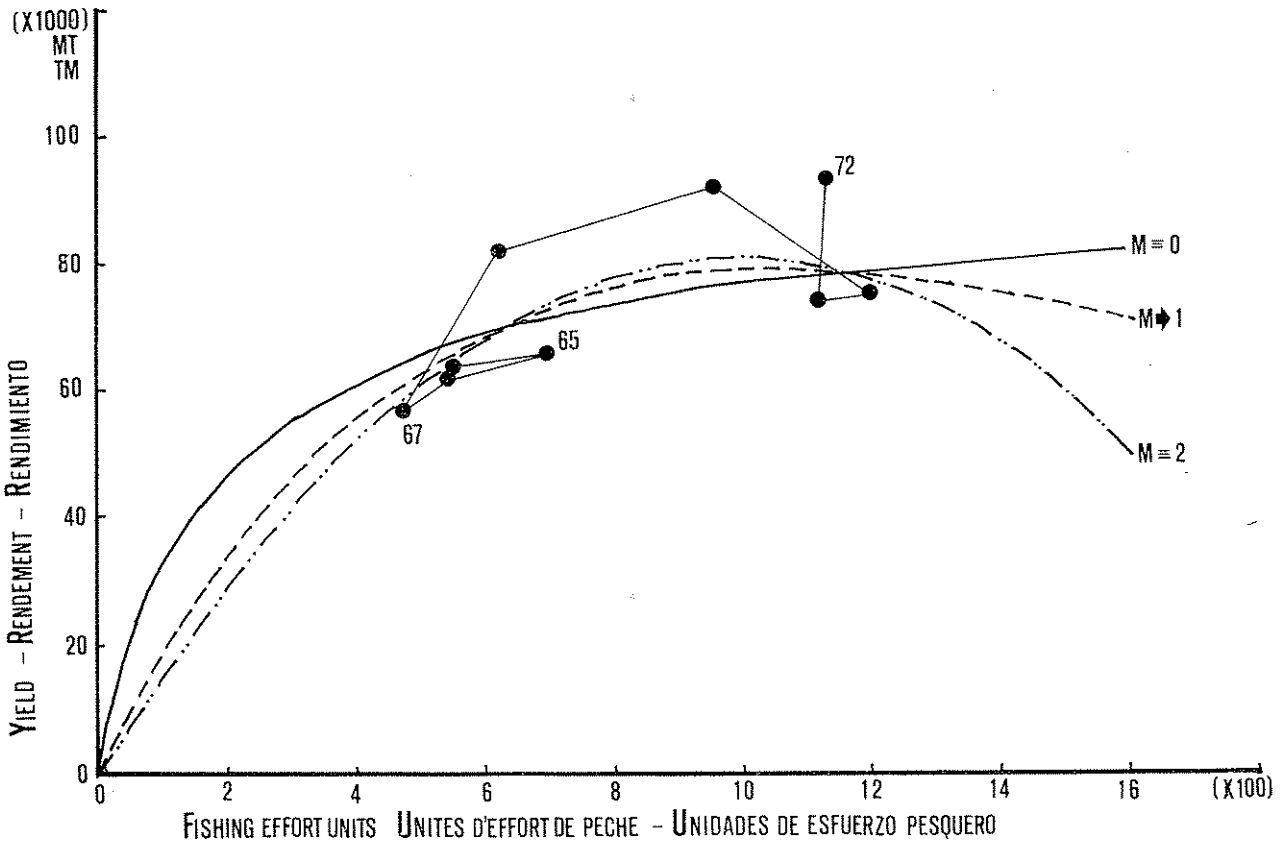

FIG. 4. Total Atlantic yellowfin tuna fishery curves of sustainable average yield for three production models and the empirical data, 1964-1972.

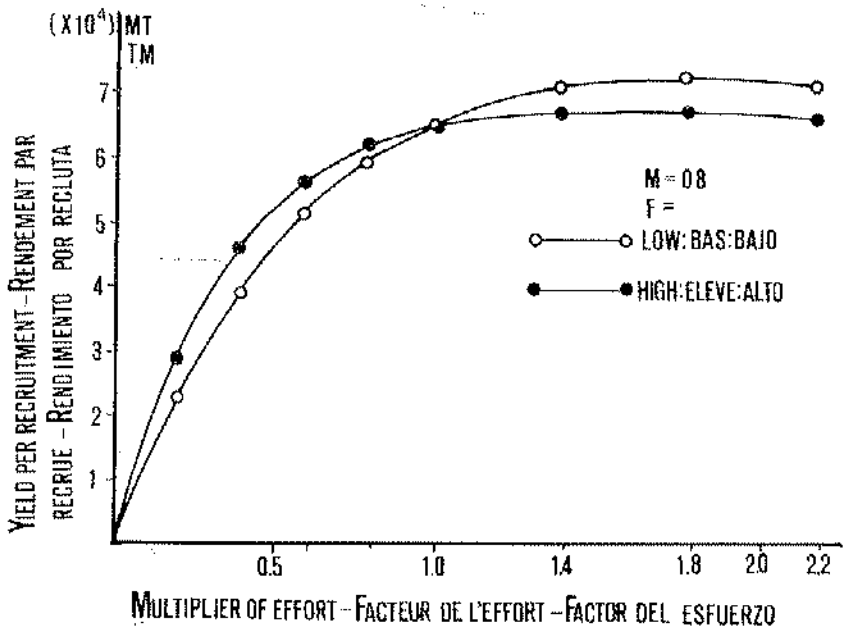

FIG. 5. Estimates of yield per recruitment of yellowfin in the Eastern Atlantic as a function of age of recruitment under the conditions that prevailed in 1971.

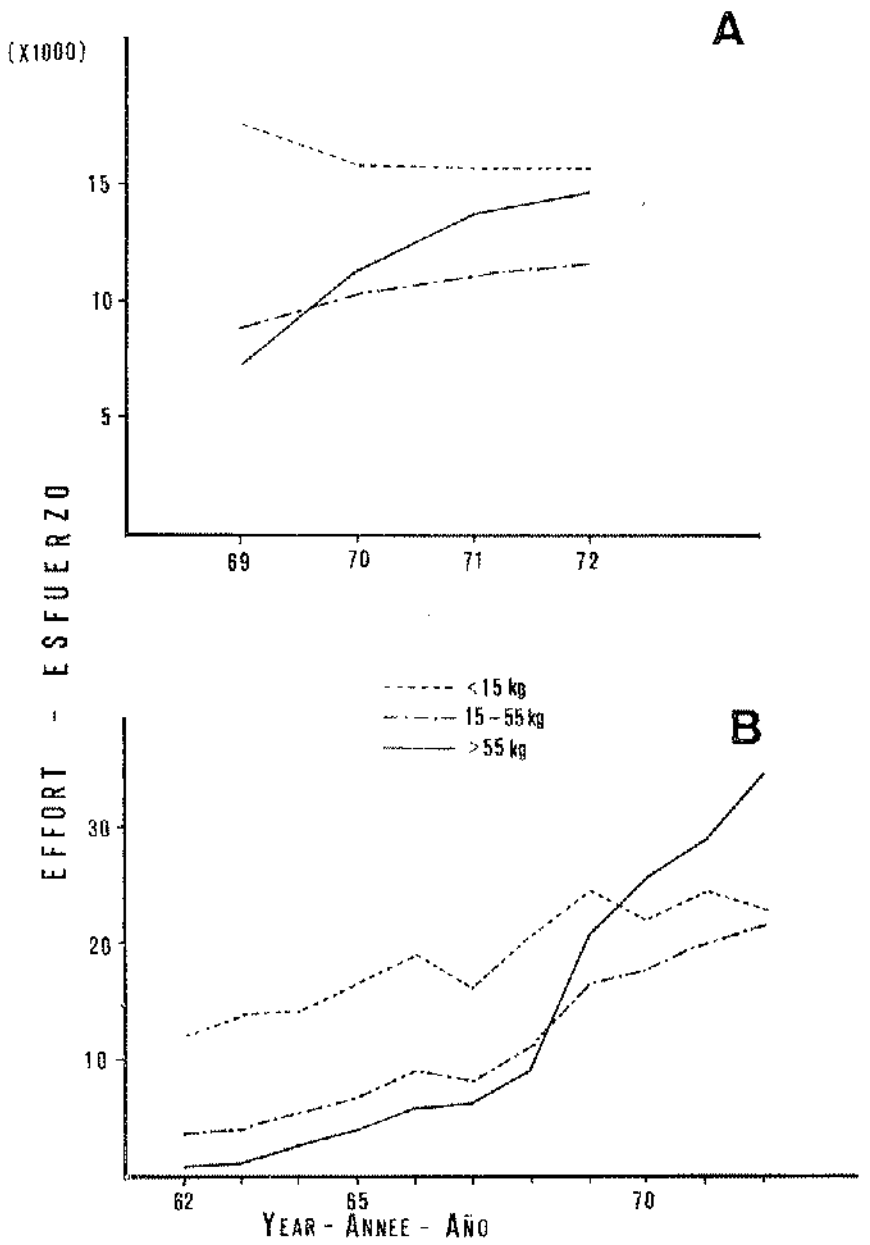

FIG. 6. Standardized surface effort (in days at sea of average seiner) for each size class of yellowfin tuna.

Appendix 1 to Annex 8

STANDING COMMITTEE ON RESEARCH AND STATISTICS (SCRS)

AGENDA

1. Opening of the meeting.
2. Adoption of the Agenda and arrangements for the meeting.
3. Admission of observers.
4. Review of national fisheries and research programs.
5. Review of the status of the following stocks:
   a) Yellowfin.
   b) Skipjack.
   c) Bluefin.
   d) Albacore.
   e) Others.
6. Report of Sub-Committee on Statistics.
7. Review of SCRS research programs, and consideration of project priorities:
   a) Statistics and sampling.
   b) Yellowfin.
   c) Skipjack.
   d) Albacore.
   e) Bluefin.
8. Advice to the Panels and the Working Group on Yellowfin Tuna Regulations regarding the effects of management measures.
9. Relations with other organizations.
10. Other matters.
11. Election of officers.
12. Date and place of next meeting.
13. Adoption of report.
14. Adjournment.

Appendix 2 to Annex 8

LIST OF DOCUMENTS

SCRS/73/1	Tentative agenda — SCRS/Ordre du jour provisoire du SCRS/Orden del día provisional del SCRS.
2	Annotated provisional agenda — SCRS/Observations à l'ordre du jour provisoire du SCRS/Observaciones al orden del día provisional del SCRS.
3	Provisional agenda for Sub-Committee on Statistics/Ordre du jour provisoire du Sous-Comité pour les Statistiques/Orden del día provisional del Subcomité de Estadísticas.
4	Provisional timetable — SCRS Meetings/Horaire provisoire des Réunions du SCRS/Horario provisional de las Reuniones del SCRS.
5	Statistical Bulletin Vol. 3/Bulletin Statistique Vol. 3/Boletín Estadístico Vol. 3.
6	Report of the 1972 SCRS Meeting (COM/73/12)/Rapport de la Réunion de 1972 du SCRS (COM/73/12)/Informe de la Reunión de 1972 del SCRS (COM/73/12).
7	Secretariat report on coordination and research activities (COM/73/15)/Rapport du Secrétariat sur les mesures visant à encourager les activités de recherche et les statistiques (COM/73/15)/Informe de la Secretaría sobre coordinación y programas de investigación (COM/73/15).
8	Collective Volume of Scientific Papers Vol. 1/Recueil de Documents Scientifiques Vol. 1/Colección de Documentos Scientificos Vol. 1.
9	Data Record Vol. 1/Recueil de Données Vol. 1/Colección de Datos Vol. 1.
10	Data Record Vol. 2/Recueil de Données Vol. 2/Colección de Datos Vol. 2.
11	Ghanaian National Report for 1972/Rapport National du Ghana pour 1972/Informe Nacional de Ghana para 1972.
12	Japanese fisheries and research activities on tunas and tuna-like fishes in the Atlantic Ocean, 1971-1973.

SCRS/73/13 * Application des modèles de Shaeffer et dérivés aux populations d'albacores *(Thunnus albacares)* de l'Atlantique.

14 * Efficacité de pêche comparée et évolution de l'effort des thoniers de la flottille franco-ivoiro-sénégalaise sur les différentes tailles d'albacore de l'Atlantique.

15 * Catch statistics and sample length composition in Japanese Atlantic tuna purse seine fishery, 1967-1969.

16 * Catch statistics and sample length composition in Japanese Atlantic tuna purse seine fishery, 1971 and 1972, with a brief review of the fishery since 1964.

17 A hypothesis on population structure of yellowfin tuna in the Atlantic Ocean, mainly based on longline data.

18 Review of national fisheries and research programs — South Africa/Examen des pêcheries et des programmes de recherche nationaux de l'Afrique du Sud/Informe de las pesquerías nacionales y del programa de investigación de Sudáfrica.

19 Populations de germons dans l'Atlantique N.E.

20 ** La campagne thonière 1972 à Pointe-Noire.

21 *** Echantillonnages albacores de l'ORSTOM effectués à Dakar, Abidjan et Pointe-Noire en 1972.

22 Rapport de synthèse sur la pêche des thonidés intéressant le Sénégal.

23 La pêche thonière à Dakar en 1972.

24 Meetings between international agency secretariats and selected national fishery statistical offices.

25 ** La pêche thonière de surface dans le Golfe de Guinée en 1972.

26 Bibliographie annotée du germon atlantique *(Thunnus alalunga)*, 1962-1972.

27 Pêcheries de thonidés et travaux effectués au Maroc.

28 Canadian research report, 1972-1973.

29 Notas sobre la albacora, *Thunnus alalunga* (Bonaterre), desembarcada en el puerto de Vigo en el verano del año 1973.

30 ICES views concerning bluefin tuna.

31 Species composition of catches by Spanish purse seine sets.

* Data partially included in Data Record Vol. 2.
** Distributed to scientists since 1972 SCRS meeting.
*** Fully contained in Data Record Vol. 2.

SCRS/73/32 Informe preliminar sobre la pesquería de atún por palangre en Venezuela durante el período 1960-1972.

33 Taille au recrutement des albacores pêchés par la flottille franco-ivoiro-sénégalaise.

34 Relations poids-longueur des listaos *(Katsuwonus pelamis)* pêchés dans le secteur de Pointe-Noire.

35 Possible regulatory measures of yellowfin tuna fisheries in the Atlantic Ocean, based on information up to August 1973.

36 Cartographie des captures par unité d'effort (CPUE) d'albacore *(Thunnus albacores)* en Atlantique par la pêcherie palangrière japonaise, 1956-1970.

37 Cartographie des captures par unité d'effort (CPUE) de germon *(Thunnus alalunga)* en Atlantique par la pêcherie palangrière japonaise, 1956-1970.

38 Cartographie des captures par unité d'effort (CPUE) de thon obèse (Thunnus obesus) en Atlantique par la pêcherie palangrière japonaise, 1956-1970.

39 Cartographie des captures par unité d'effort (CPUE) de makaire bleu *(Makaira nigricans)* en Atlantique par la pêcherie palangrière japonaise, 1956-1970.

40 Evolution spécifique des rendements (CPUE) de la pêcherie palangrière japonaise de germon *(Thunnus alalunga)* de l'Atlantique Nord et de l'Atlantique Sud, 1956-1970.

41 Traitement numérique et cartographie des données sur l'effort et les prises de la pêcherie palangrière thonière atlantique.

42 France — Rapport de recherches pour 1972.

43 La couleur des germons *(Thunnus alalunga)* — Un critère de séparation des populations du N.E. Atlantique.

44 High recovery rates of small bluefin tuna (*Thunnus thynnus* L.) tagged in the Northwest Atlantic.

45 Contribución al estudio de la población de atún blanco (*Thunnus alalunga,* Bonnaterre, 1788) del Atlántico Norte.

46 Informe sobre las pesquerías de *Thunnus alalunga* del norte de España en 1973.

47 Estudios realizados por el laboratorio costero del noroeste del Instituto Español de Oceanografía en La Coruña.

48 Pesquerías de túnidos en las Islas Canarias.

49 Valores geográficos de la CPUE, distribución de tallas y crecimiento de la albacora (*Thunnus alalunga* B.) durante la temporada 1972 en la región cántabro-galaica.

SCRS/73/50 Overall fishing intensity of Japanese Atlantic longline fishery for bigeye tuna, 1956-1971 (preliminary).

51 Overall fishing intensity and catch by length class of yellowfin tuna in Japanese longline fishery in the Atlantic Ocean, 1956-1971 (preliminary).

52 Overall fishing intensity and catch by length class of albacore in Japanese Atlantic longline fishery, 1956-1971 (preliminary).

53 A comment on skipjack stock in the Atlantic (preliminary).

54 Distribution, fisheries and life history data relevant to identification of Atlantic bluefin tuna stocks.

55 Fronts thermiques et thermohalins dans la région de Cap Lopez (Golfe de Guinée) juin-juillet 1972 — Phytoplancton, zooplancton, micronecton et pêche thonière.

56 Mise en évidence, chez l'albacore de l'Atlantique *(Thunnus albacares)* de groupements spatio-temporels, à partir des chiffres d'infestations parasitaires — Premiers résultats obtenus par l'analyse factorielle des correspondances.

57 Rapport sur la réunion du Comité des Poissons Pélagiques du Sud au Conseil International pour l'Exploration de la Mer en 1973.

58 National Report — Office of Fisheries, Republic of Korea.

59 United States report on fisheries and research of Atlantic tuna and tuna-like fishes, 1973.

60 A review of some aspects of the bluefin tuna *(Thunnus thynnus thynnus)* fisheries of the Atlantic Ocean.

61 A production model analysis of the status of Atlantic yellowfin tuna.

62 Some general considerations of methods of controlling the amount of fishing (COM/73/23).

63 La pêche du listao *(Katsuwonus pelamis)* sur la côte ouest-africaine de 1969 à 1972.

64 Cohort analysis of the Eastern Atlantic fishery for yellowfin tuna/Analyse des cohortes appliquée à la pêcherie d'albacores de l'Atlantique.

65 Distribution de fréquence des albacores pêchées par la pêcherie franco-ivoiro-sénégalaise en 1972.

66 Studies on albacore (*Thunnus alalunga,* Bonnaterre, 1788) of North Atlantic Ocean — Population dynamics/Etudes sur le germon (*Thunnus alalunga,* Bonnaterre, 1788) de l'Atlantique Nord — Elements de dynamique de population.

SCRS/73/67 Quelques données sur l'exploitation du thon rouge de l'Atlantique Nord.

68 Croissance du patudo *(Thunnus obesus)* dans les régions de Dakar et Pointe-Noire.

69 Estimation de la production yellowfin de 1973 pour l'Atlantique Est de surface.

70 Estimation de la production de thon blanc *(Thunnus alalunga)* des thoniers-ligneurs français en 1972.

71 Hypothèses 1973 sur la répartition et les séparations des stocks atlantiques d'albacores.

72 Consideraciones sobre las pesquerías cubanas de atún en el Océano Atlántico.

73 Las pesquerías de túnidos y especies afines en Brasil en el año 1972.

74 FAO Panel of Experts for the Facilitation of Tuna Research.

75 SCRS Report (COM/73/26)/Rapport du SCRS (COM/73/26)/Informe del SCRS (COM/73/26).

76 Information on Atlantic and Mediterranean bluefin tuna.

Appendix 3 to Annex 8

REPORT OF SUB-COMMITTEE ON STATISTICS

Paris, November 21, 1973

I. Introduction

The Sub-Committee on Statistics met at the Centre de Conférences Internationales du Ministère des Affaires Etrangères in Paris on November 21, 1973, under the chairmanship of Dr. S. Hayasi (Japan). The meeting was attended by all delegations, and some representatives and observers participating in the SCRS Session. Dr. D. Sahrhage (FAO) acted as Rapporteur.

The Convenor opened the meeting by welcoming all participants, and the Sub-Committee adopted the Agenda without amendments (Addendum 1).

II. Progress in Collection of Statistics and Biological Data

The Assistant Executive Secretary reported on progress made by the Secretariat in collaboration with national offices of both member and non-member countries in the collection, compilation and reporting of tuna statistics. His review was based on the Secretariat's Report on Coordination and Research Activities (SCRS/73/7). He noted that many more countries cooperated during the past year than before and that the data were also received more rapidly by the Secretariat. Furthermore, direct contacts with the fishing industry, established by the Secretariat in 1973, through experts working in various ports, helped greatly to improve the situation, particularly contributing to a better coverage of vessels flying the Panamanian flag and operating in the Atlantic.

The Sub-Committee noted this progress with satisfaction and then reviewed, country by country, the present status of Task 1, Task 2 and Task 3 statistics and data. It was also noted that further improvements were required, in the light of recommendations made during the 1972 Session. Tables 1-3 of Document SCRS/73/7 were amended accordingly and are attached as Addendum 2 to this report.

Concerning Task 1 statistics (total catch and number of boats) the Sub-Committee *stressed* the need for certain countries to provide statistics with a breakdown by species and *recommended* strongly that the Secretariat should provide its services to help fill this important gap.

The Sub-Committee noted that a few countries only submitted 1972 data to the Secretariat during this SCRS Session, and it encouraged these countries to do their utmost in ensuring an earlier submission in the future, in accordance with the established deadlines.

Concerning Task 2 statistics (catch-effort data by area and month or quarter) considerable improvements were achieved during 1973, particularly for the Spanish fisheries, and further progress may be expected to include data on baitboats and longliners from Asian countries. Some difficulties are encountered in publishing data which relate to a single tuna-fishing company, and cannot be released without prior clearance, or have to be combined with other statistics.

The Sub-Committee had extensive discussions on the collection of biological data (Task 3) which consist of size frequencies of samples and of calculated size compositions of the catches. It was noted with satisfaction that a considerable amount of useful data had been published in the Data Records, Volumes 1 and 2, and its was *recommended* that the Secretariat should continue to publish further data in this series.

In view of the increasing concern about the stocks of albacore and bluefin tuna and the need for collecting more biological information, the Sub-Committee *agreed* to encourage strongly adequate sampling of these species.

Recognizing that the landings of skipjack often contain a substantial amount of small tuna, particularly bigeye and yellowfin, the Sub-Committee *recommended* that special efforts should be made to increase biological sampling of such landings in key places, especially if they are to be transshipped.

The Sub-Committee noted that after the implementation of the yellowfin size regulation there was some difficulty in obtaining permission to take length measurements, even through it was explained that these were only for scientific purposes. It was realized that measurements of the smaller fish might be made more difficult, thus leading to the possibility of biased sampling.

It was therefore *recommended* that monitoring length compositions should preferably be made either on landing or shortly before canning, rather than on board vessels. The Sub-Committee suggested that the Working Group on Yellowfin Tuna Regulations give further attention to this matter.

III. Statistical Projects Undertaken by the Secretariat

The Secretariat reported in some detail on the implementation and results of special statistical projects in which it was directly involved during 1973. The Sub-Committee was pleased to note that through the services of a member of the Secretariat staff, major improvements have been made in the collection of statistics and biological data in the Canary Islands. It took also note of the good progress made in this respect on the African coast through the work of an expert stationed in Tema, Ghana, who had been assigned fully to ICCAT for this purpose by the National Marine Fisheries Service of the U.S.A. The Sub-Committee expressed its appreciation to NMFS and the expert for his efforts, and also to the Government of Ghana and the Centre de Recherche Oceanographique in Abidjan for their support. It was also noted that the Secretariat is continuing to provide assistance to the port survey and sampling project on the northern Spanish coast.

The Sub-Committee realized that these projects can now be continued mainly on a national basis by the local scientists. However, further special efforts by the Secretariat may be needed at certain key places, e. g. the Canary Islands and other ports with specific problems related to the transshipment of tuna. It was *recommended* that special efforts be undertaken to obtain proper records on fishing locations from the vessels involved in transshipments.

IV. Logbook Systems

The Secretariat reported on its activities to develop a number of standard forms for various types of tuna fisheries, on the basis of models used by I-ATTC and member countries (SCRS/73/7). While this effort was welcomed as being particu-

larly useful to countries without standard forms, it was felt that further improvements in format were desirable. In particular, it was *stressed* that such forms for use by rather less advanced fisheries should be as simple as possible.

The Sub-Committee set up a small *ad hoc* working group on logbook systems. The group identified three categories of fisheries for which different forms are required: (a) large distant-water vessels in advanced stage; (b) medium-size coastal boats or new large vessels with crews lacking experience in sophisticated logbooks; (c) local small boats. It was *agreed* that for (a) it would be desirable to develop rather elaborate uniform forms on a world-wide basis as such large vessels are highly mobile and operate between various oceans. The Secretariat was requested to collaborate with FAO and I-ATTC in the development of forms for each type of gear. For (b) is was *proposed* to establish a dual form, with one section for recording in a simple way the absolutely essential information, and the other for more detailed information. Essential minimum information was considered to be: catch by species, position, date (or set, in the case of surface fisheries), and effort expressed in number of days fishing. For (c) it was felt that the essential information would have to be obtained through interviews. It was also realized that in any log, very simple and clear instructions should be provided in the native language of the fishermen.

V. Present Problems and Future Plans

In examining Activities I to III in the light of recommendations made during previous SCRS meetings, the Sub-Committee noted the great progress made. It commended the Secretariat for its efficient work and requested that efforts should continue along the lines agreed earlier, taking into special account the problems described in previous sections of this report.

It was *recommended* especially that, after the basic problems for collecting essential statistics had been overcome, the Secretariat should, during the forthcoming intersessional period, give particular attention to improving the timeliness of statistics, and developing statistical forecasting methods, required as a basis for management decisions.

In this connection the Sub-Committee took note of a detailed report by the Secretariat on the problems and plans related to the adequacy, accuracy and timeliness of data, and strongly endorsed the recommendations 1-6 made by the Secretariat for improving statistics (SCRS/73/7, pp. 7/8 — See Addendum 3). The delegate from Senegal proposed adding to these a further item recommending financial assistance by ICCAT to developing countries in the field of statistics. The Sub-Committee *decided* to bring these recommendations, through SCRS, to the attention of the Commission for its further consideration.

The Sub-Committee fully recognized that further progress in the field of statistics and biological data will greatly depend on active input and response from national offices in member and non-member countries.

VI. Processing and Dissemination of Data

The Assistant Executive Secretary reported on the actions taken by the Secretariat since the 1972 Session and invited guidance from the Sub-Committee (SCRS/73/7, pp. 6 and 7).

The Sub-Committee agreed that it was most desirable to continue the publication of statistics and biological data in the Statistical Bulletins and Data Records.

With regard to 3 alternative plans for improving data processing, put forward by the Secretariat, the Sub-Committee agreed that is was preferable to follow the second alternative and to make full use of the working groups established for major species, and to arrange for the collaboration of the Secretariat with one scientist in each group given responsibility for data processing. The Sub-Committee noted that the I-ATTC was presently developing a completely computerized storage and retrieval system for all their landing and logbook data, the documentation of which could be made available for use by ICCAT. In this connection the Sub-Committee *agreed* that automatic processing of data should be encouraged and that an increase in the exchange of ADP material between the countries was desirable. It came to the conclusion that the exchange of magnetic tapes is difficult because of the different systems used and the practical problems of safe shipment. It encouraged, therefore, the exchange of data on punch cards and other paper.

VII. Adjournment

In concluding the meeting, the Convenor thanked all participants for their active collaboration and, in particular, the staff of the ICCAT Secretariat for their efficient work. The members of the Sub-Committee and the Secretariat expressed their appreciation to the Convenor for his able leadership of the group during the last 4 years.

Addendum 1: Agenda

Addendum 2: Tables 1-3. Progress made in data collection

Addendum 3: Secretariat's recommendations for improving statistics

Addendum 1 to Appendix 3 to Annex 8

Sub-Committee on Statistics

Agenda

1. Opening of the meeting
2. Adoption of the Agenda and arrangements for the meeting
3. Review of progress by national offices during 1973
4. Review of statistical projects undertaken by the Secretariat during 1973
4.1. Work of expert loaned by U.S.A
4.2. Work of temporary expert hired by the Secretariat
4.3. Logbook systems
5. Examination of activities I-III (Proceedings of the Second Regular Meeting of the Council, November 29-December 5, 1972)
6. Processing and dissemination of data
7. Others
8. Adjournment

Table 1. Progress Made in the Collecting of Task 1 Data, 1972

Country	*Receipt of Data*	*Type of Data*							*Remarks*
		Catch	*Landings*	*Effort*	*By Gear*	*By Species*	*Preliminary*	*Final*	*Confidential*	
Argentina	August, 1973	×		×	×	×		×		
Brazil	November, 1973	×		×	×	×		×		More timely reporting required.
Canada	June, 1973	×		×	×	×		×		
China (Taiwan)		No Data								More timely reporting required.
Cuba	November, 1973	×		×	×	×		×		More timely reporting required.
France	June, 1973		×	×	×	×		×		Bluefin and Albacore.
	Apri-Sept., 1973	×		×	×	×		×		Tropical species.
Ghana	May, 1973	×		×	×	×		×		
Ivory Coast	April, 1973	×		×	×	×		×	×	Reported together. - France and Senegal.
Japan	June, 1973	×		×	×	×	×			Surface fishery.
	July, 1973	×		×	×	×	×			Longline fishery.
Korea	May, 1973		×	×	×	×		×		Some confusion in species breakdown. Includes catches by 21 Panamanian flag vessels.

Libya	June, 1973	×							Species breakdown required.
Mexico	July, 1973	×			×	×			Gear breakdown desirable.
Morocco	June, 1973	×	×	×	×		×		
Norway	May, 1973	×	×	×	×	×			Sent in by Ghanaian government. - Tropical Species.
	September, 1973	×		×	×		×		Sent by government for whole species.
Panama	May-August, 1973	×	×	×	×	×			Not 100 % coverage. - Collected by Secretariat.
Portugal	June, 1973	×					×		Species breakdown essential.
Portugal (Angola)	April, 1973	×	×	×	×		×		
Senegal	April, 1973	×	×	×	×		×	×	Reported together. - France and Ivory Coast.
South Africa	May, 1973	×	×	×	×		×		
Spain	April, 1973	×	×	×	×		×		Collected with assistance of Secretariat. Tropical tuna only.
	August, 1973	×	×	×	×		×		Collected with assistance of Secretariat. Canary Islands only.
	August, 1973	×			×	×			Peninsula statistics. Gear breakdown desirable.
U.S.A.	April, 1973	×	×	×	×	×			Bluefin tuna only.
	July, 1973	×	×	×	×	×			Tropical tuna.
	August, 1973	×			×	×			Other tunas.
Venezuela	August, 1973	×	×	×	×		×	×	Clearance was given in September for publication.

August, 1973

Data for Algeria, Denmark, Dominican Republic, Fed. Rep. of Germany, Israel, Italy, Lebanon, Malta, Poland, Sierra Leone, Sweden, Yugoslavia and U.S.S.R. received via CWP (FAO).

Table 2. Progress Made in the Collecting of Task 2 Data

Country	*Date Received*	*Species*	*By Gear*	*By Month*	*By 1°×5° Area*	*By 5°×5° Area*	*By Larger Area*	*Effort*	*Weight*	*No. of Fish*	*Confidential*	*Years*	*Remarks*
Argentina	August, 1973	All	×				×		×			1970-72	CARPAS area is used.
Brazil	Nov., 1973	All	×	×			×	×	×			1972	
Canada	June, 1973	BF, SJ										1972	
France	June, 1973	BF, Alb.	×	×				×	×			1972	
FIS	May, 1973	YF, SJ	×	×	×			×	×			1972	France, Ivory Coast and Senegal.
	Nov., 1973	SJ	×	×	×			×	×			1969-71	
Ghana	May, 1973	All	×						×			1972-73	By Flag, by trip.
Japan	June, 1973	YF, SJ	×	×	×			×	×			1968-72	Purse seine data.
	May, 1973	All	×	×		×		×		×		1971	Longline data.
Morocco	August, 1973	All	×	×	×			×	×			1972	
Norway	September, 1973	All	×	×	×			×	×		×	1972	No clearance.
South Africa	May, 1973	All	×	×	×			×	×			1972	
U.S.A.	May, 1973	YF, SJ	×	×			×	×	×			1972	
	July, 1973	YF, SJ	×	×	×	×		×	×			1972	
Venezuela	August, 1973	All	×	×	×			×		×	×	1970-72	Confidential but clearance was given.

Table 3. Progress Made in the Collecting of Biological Data

Country	*Date Received*	*Species*	*By Gear*	*By Area*	*By Month*	*Actual Size Frequency*	*Weighted Size Frequency*	*Year*	*Remarks*
Canada	May, 1973	SJ	×		×	×		1964-71	No skipjack fishing in 1972
	October, 1973	BF, YF	×	×	×	×		1964-72	
FIS	July, 1973	YF	×	×	×		×	1972	France, Ivory Coast and Senegal.
Ghana	January, 1973	All	×	×	×	×		1972	Data on foreign fleets.
Japan	May, 1973	All	×	×	×	×		1971	Longline samples.
	May, 1973	YF, SJ, BE	×	×	×	×		1967-71	Purse seine samples.
U.S.A.	April, 1973	SJ	×				×	1968-71	Including Canada and Panama.
	June, 1973	YF, SJ	×	×	×		×	1972	
Venezuela	August, 1973	YF	×	×	×	×		1972	Longline sample.

Addendum 3 to Appendix 3 to Annex 8

The Secretariat's Recommendations for Improving Statistics

(1) Each country should nominate one scientist as national correspondent to check all data before sending them to ICCAT. If this is not possible and the person in charge of the national statistical office is to be responsible for this work, one scientist should be nominated as assistant or joint correspondent.

(2) The following deadlines should be strictly observed:

Task 1 data	— June 15 of the following year
Task 2 data	— August 15 of the following year
Summarized Task 2 data	— August 15 of the following year
Biological data (actual frequency)	— June 15 of the following year
Biological data (summarized frequency)	— August 15 of the following year.

If for some reason these deadlines cannot be met, the Secretariat must be informed to this effect, together with a brief explanation and a projected date for completion of data. *Important:* requests and/or correspondence from the Secretariat should *always* be acknowledged.

(3) The Secretariat must have one statistician (at P-1 level) who can be sent to problem areas to collect statistics, particularly for vessels flying flags of non-member countries.

(4) The Secretariat requests authorization (and financial support) to invite two scientists every year from countries developing fisheries to ICCAT Headquarters for training in statistics. This will encourage the development of a good statistical system in these countries.

(5) The Secretariat should be given financial support so that a member of the Secretariat staff can periodically visit countries developing statistical systems to advise and encourage them.

(6) Projects (4) and (5) should gradually be intensified in order to eventually replace project (3).

Appendix 4 to Annex 8

REPORT OF WORKING GROUP ON BLUEFIN TUNA

A small working group met twice on Friday, November 23, 1973, at the direction of SCRS, with J. C. Dao (France) as convener, to consider future research programs and project priorities for bluefin tuna. J. Beckett (Canada) was invited to be rapporteur.

A review of the available size frequency data (see attached) identified the gaps as being the catches of the Asian longline fleets, the U.S. sports fishery, and from the Southern Spain-Mauritania-Canaries offshore triangle. It was recognized that effort data were also of great importance, particularly for the latter two areas, while the lack of information available for the Mediterranean was a matter of concern that should receive attention.

The group was informed that prospects for improvement in the data for the three above-mentioned Atlantic areas are good, and urged that such plans be carried out with the highest priority.

A specific review of the Activity V problems (SCRS Report — 1972, COM/73/12) and the actions relevant since 1972, may be summarized as follows:

Problem 4 (-The number of separate stocks of bluefin in the Atlantic and adjacent seas.)

This problem has been considered first in recognition of the importance placed on it, particularly since it directly affects the other problems (1, 2 and 3).

The most important task is 4(d) (-tagging to provide data on stock separation), with priority on the tagging of young bluefin in the Bay of Biscay, the Spain-Mauritania offshore area, and in the Mediterranean. The working party took note of the programs initiated in this connection by Morocco and Spain and urged that new programs be developed as rapidly as possible.

Three specific recommendations were made:

- countries to pursue national programs
- the development of a joint-cooperative tagging program in the Eastern Atlantic and the Mediterranean (Morocco to coordinate)
- the preparation by all scientists involved in tuna tagging of programs and budgets for optimum tagging, including the charter of fishing vessels as one alternative. These proposals to be collected, by the Secretariat or Canada, relatively early in the summer for consideration at the 1974 meeting of SCRS.

The second vital task is 4(c) (-size frequency data). The specific task of coordinating field measurements was, in fact, carried out in 1972/73 but should be reported for 1974. However, it was recognized that length frequency data is presently (SCRS/73/54) inadequate to permit reliable assessments using mathematical procedures, and that considerable effort is needed in the specified areas to improve this situation. There are plans to do this in 1974, with greater coverage of the Japanese longline bluefin anticipated and hence some inferred information on the other Asiatic longline catches. Both Morocco and the U.S.A. are planning to concentrate more effort on the data requirements. Japan, Morocco and the U.S.A. will attempt to stimulate work in their general areas, the U.S.A. to compile the information for 1974, together with tabulations of sample selection methods (random, as available, etc.).

Task 4(a) (-review of evidence of stock structure) was carried out (SCRS/73/54 and also SCRS/73/60) and clearly revealed the need for the further data which is likely to be generated by Task 4(c) and 4(d).

Task 4(b) (-implications of stock separation to assessments) was covered in three documents (SCRS/73/54, SCRS/73/60, and SCRS/73/67), and again indicated the need for more data. It was recommended, however, that life tables based on bluefin in the various fisheries should be prepared for 1974.

Reviewing other problems specified in Activity V of last year's report, the working party noted:

Problem 1 (-Yield-effort curve)

The preparatory phase has been completed and great amounts of data have been assembled (SCRS/73/54) but have not been subjected to detailed analysis. Techniques must be selected and such analysis carried out. In addition, it is recommended that scientists be urged to search national data collections for unpublished data on bluefin size composition and catch/effort (*U.S.A.*, France, Japan).

Problem 2 (-On recruitment)

The working group recognized the incomplete coverage of data as specified above (Problem 4), both for fishing effort and size composition, and, since plans are already forthcoming to alleviate this lack, considered that the next step should be the preparation of cohort analyses for the various fisheries, longline, traps and surface (U.S.A., *France*, Japan).

Problem 3 (-Inter-relationship of fisheries)

This question must await clarification of the stock structure and improvement of the statistics for surface fisheries, particularly in the Eastern Atlantic. In the

meantime, a chronological comparison of the various historical fisheries should be prepared for the 1974 meeting, including time lags for the different ages at recruitment (*U.S.A.*, France).

Problem 5 (-Unit of effort)

This was discussed in SCRS/73/60, which utilized the present accumulation of data, but the problem requires further study as more suitable information is made available (France, *U.S.A.*).

The working group wishes to bring to the attention of SCRS the following proposed recommendations:

1. That the SCRS encourages nations not currently members of ICCAT, and other international organizations such as CGPM and ICES, to collect and present to ICCAT all the available data on bluefin, both biological and fisheries.
2. That ICES be supplied with a copy of the SCRS Report and be invited to nominate correspondents to facilitate joint action particularly in the fields of tagging and size frequency data collection.

Members of working party, and correspondents where relevant:

H. Aloncle (France)
J. S. Beckett (Canada)
O. Cendrero (Spain)
J. C. Dao (France)
W. W. Fox (U.S.A.)
S. Hayasi (Japan)
M. Lamboeuf (Morocco)
J. Y. Le Gall (France)
S. C. Kim (Korea)
F. J. Mather (U.S.A.)

Table 1. Summary of available data on catch and effort for bluefin tuna from the Atlantic Ocean

Nation	*Gear*	*Catch*		*Effort*		*Comments*
		Area	*Years*	*Area*	*Years*	
Argentina	Handline	none	none	none	none	Probably southern bluefin tuna.
Brazil	Longline	Southern Brazil	1972	Southern Brazil	1972	Catch is small.
Canada	Longline	none	none	none	none	Catch of longline is small, mostly discarded and not landed.
	Purse seine	1°×1° square	1963-72	1°×1° square	1963-72	Effort is in day's fished.
	Trap	District	1962-72	none	none	
	Sport	District	1962-72	District	1961-70	Effort is in number of boats.
Cuba	Handline	none	none	none	none	Catch is small.
	Longline	none	none	none	none	Catch is probably small. None caught in 1971.
Denmark	Handline	none	none	none	none	Catch is small.
France	Troll	Bay of Biscay	1965-71	Bay of Biscay	1965-71	With Spain.
	Baitboat	Bay of Biscay	1965-71	Bay of Biscay	1965-71	
Germany	Handline	Northeast Atlantic	1952-63	Northeast Atlantic	1952-63	Effort is in fishing trips. Fishery collapsed in 1963.
Japan	Longline	5°×5° square	1957-71	5°×5° square	1957-71	Effort is in number of hooks.
Korea	Longline	Atlantic	1971	none	none	Catch is small.
Morocco	Surface	none	none	none	none	High priority.

	Trap	East Atlantic	1927-70	East Atlantic		Effort is in number of traps.
	Troll	none	none	none	none	
	Baitboat	none	none	none	none	
Norway	Purse seine	Northeast Atlantic	1954-64	Northeast Atlantic	1954-64	Effort is in number of boats. Recent catch is small.
Portugal	Trap	District	1950-71	District	1950-62	Effort is in number of traps. Fishery collapsed in 1971.
	Troll	none	none	none	none	Catch is small.
South Africa	Longline	none	none	none	none	Substantial catch only in 1963 and 1964. Probably some southern bluefin tuna.
Spain	Trap	District	1929-72	District	1929-72	Effort is in number of traps. Recent catch is small.
	Baitboat	Bay of Biscay	1965-71	Bay of Biscay	1965-71	Effort is an estimate of days at sea. With France.
	Purse seine	off Africa	none	none	none	
Sweden	Handline	none	none	none	none	Catch is small.
Taiwan	Longline	5°×5° square	1967-69	5°×5° square	1967-69	Data may not be representative of the fleet's catch. Effort is in number of hooks.
U.S.A.	Handline	State	1946-71	none	none	
	Harpoon	State	1930-71	none	none	
	Purse seine	1°×1° square	1962-71	1°×1° square	1962-71	Effort is in days fished.
	Trap	State	1929-71	none	none	
	Sport	none	none	none	none	
Mediterranean	Various	all	limited	limited	limited	High priority.

Table 2. Available data on size-frequency distributions of bluefin tuna from the Atlantic Ocean

Nation	*Gear*	*Area*	*Years*	*Comments*
Argentina	Handline	none	none	Catch is possibly southern bluefin tuna.
Brazil	Longline	none	none	Catch is small.
Canada	Longline	none	none	Catch is small.
	Purse seine	1°×1° square	1963-72	Form 1.[1]
	Trap	none	none	
	Sport	District	1946-71	Form 1.
Cuba	Handline	none	none	Catch is small.
	Longline	none	none	Catch is small.
Denmark	Handline	North Atlantic	1962-71	Recent catch is small. Form 1.
France	Troll	Bay of Biscay	1972	Form 1 and some data for earlier years are available in Form 2.[2]
	Baitboat	Bay of Biscay	1949, 1972	Form 1.
Germany	Handline	North Atlantic	1951-62	Fishery collapsed in 1963. Form 1.
Japan	Longline	5°×5° square	1965-69	Sample coverage increasing. Priority.
Korea	Longline	none	none	
Morocco	Surface		none	High priority. Coverage is increasing.

Norway	Purse seine	North Atlantic	1956-70	Recent catch is small. Form 1.
Portugal	Trap	Eastern Atlantic	1930-70	Fishery collapsed in 1971. Form 2.
	Troll	Eastern Atlantic	1960, 1961	Form 1.
South Africa	Longline	none	none	Substancial catch only in 1963-64. Probably some southern bluefin tuna.
Spain	Trap	Districts	1956-70	Mostly from one trap. Form 1.
	Troll	none	none	
	Baitboat	Bay of Biscay	1972	Form 1.
Sweden	Handline	none	none	Catch is small. Form 1.
Taiwan	Longline	none	none	Priority.
U.S.A.	Handline	District	1962-71	Samples for some years are small; not a complete series. Form 1.
	Harpoon	District	1958-71	Not a complete series. Form 1.
	Purse seine	1°×1° square	1962-72	Form 1.
	Trap	District	1947-72	Samples for some years are small; not a complete series. Form 1.
	Sport	District	1956-72	Samples for some years are small. Form 1.
Mediterranean	Various		Very little	High priority.

[1] Form 1: smoothed percent frequencies by 5-cm. or 5-kg. groupings.
[2] Form 2: numbers of fish by broad weight groupings that include several age groups.

Appendix 5 to Annex 8

REPORT OF THE WORKING GROUP ON ALBACORE

A working group on albacore met on November 27, 1973, at the request of SCRS to ascertain the progress made in studies on the species and fisheries and to determine the areas of research to be given priority, and, eventually, to assign the necessary tasks and analyses.

On the whole, definite progress has been observed in various preliminary studies which were laid out in Appendix 6 (Albacore) to Annex 9 of the 1972 SCRS Report.

1. Collaboration of scientists

It should be noted that the collaboration of scientists concerned with the two types of fisheries has increased:

— *N.E. Atlantic surface fishery* (France-Spain)

Very noticeable progress has been made since the last meeting due to the development of programs of research and standardization of techniques for data collecting and processing (biological data, breakdown of catch and effort...) which allow an overall view of the fishery.

— *Atlantic longline fishery*

A closer coordination with Cuban, Japanese and Korean scientists will provide, during the 1973-74 intersessional period, for a standardization of longline data processing and improvements in the collection of biological data.

2. Biological data

It is requested that special efforts be made to develop and increase the speed in transmitting biological data on both types of fishery.

— *Atlantic longline fishery*

Size frequency distributions for 1965 to 1970 by large geographical area have already been published by ICCAT, in Data Record, Vol. II (Japan). A program for taking measurements on board longliners had been announced for the years since 1972. In general, it is forecast that these catch by length class data up to 1971-1972 will be made available by June 1974. The processing method adopted will be by quarter, by geographical area. A special effort will be made by Korean scientists to carry out similar work with the collaboration of Japanese scientists.

— *N.E. Atlantic surface fishery*

Improvement in joint processing by France and Spain on the basis of biweekly distributions of age classes (since 1968 for France, and 1972 for Spain).

3. Catch and effort data

The state of progress in different studies both on surface and longline fisheries indicates that the majority of data are available as follows:

— 5° × 5° per month for longline
— 1° × 1° per biweekly period for surface fishery.

The different programs being followed will enable us to obtain these data in future years.

4. Review of problems in Activity VI

Problem 1: Yield-effort curve for longline fishery

Definite progress has been made: the data have enabled a separate analysis to be made of both North and South Atlantic fisheries. This analysis (SCRS/73/52) will be continued in more detail, taking into account the results expected from Japanese-Korean collaboration. In order to permit a unified analysis of this problem, data should be made available to Dr. Hayasi by April, and distributed to other members of the group by August 1. (See also Bull. Far Seas Reg. Fish. Res. Lab. N.° 7.)

Problem 2: Is fishing affecting recruitment?

It would seem that the most urgent problem at the moment is the improvement of year class abundance indices (especially class II) in the surface fishery, and the

knowledge of the demographic structure of the populations fished by longline. The presentation of these data will allow us to resume the analysis already started (SCRS/72/35), and to determine the relationship between surface fishery and longline fishery using cohort analysis.

Problem 3: Effects of changes in the amount of fishing

It would be useful to develop the analyses, taking into account the size/weight composition of catches and, as a result, develop biological studies. Moreover, it is interesting to attempt an overall analysis of the albacore fishery as a whole, trying to standardize one fishery (surface) in relation to the other (longline), and vice-versa.

Problem 4: How many separate stocks of albacore are there in the Atlantic?

Document SCRS/73/43 describes the progress of research on this matter (population of North Atlantic stock), but it was not possible to make an overall review of this before the meeting. The working group decided on the need to carry out this analysis before the 1974 SCRS meeting.

Problem 5: The best unit of effort/c.p.u.e. in the surface fishery

The same as for solving Problem 4, the necessary data have been collected and analyzed separately (France, Spain) for the surface fishery. A combined study should be carried out jointly during the 1973-74 intersessional period.

List of participants and national correspondents:

Canada:	J. S. Beckett	Spain:	J. M. Alonso-Allende
France:	J. Y. Le Gall	U.S.A.:	W. W. Fox
	H. Aloncle	Cuba:	E. A. Carrillo
Japan:	S. Hayasi	Portugal:	V. Valdez
Korea:	S. C. Kim		

Appendix 6 to Annex 8

WORKSHOP ON TUNA POPULATION DYNAMICS

Because new techniques in population dynamics have been developed in recent years, it is now appropriate to assess these techniques and their special applications to the tuna fisheries. A workshop is a convenient medium for such an assessment. The workshop will consist of two sessions:

The first session will be attended by 6 or 7 specialists, highly experienced in population dynamics, though not necessarily specializing in tuna research. They will study the techniques of sampling, cohort analysis, yield per recruit, production models, and the use of effort and c.p.u.e. as measures of mortality and abundance. The specialists will each bring an informal paper to the meeting on a critical evaluation of population dynamics, problems dealing with tuna and, perhaps, more specialized papers on the above topics. The first session will begin the first week in September and last for 6 days. The second session will be attended by 18-24 additional participants from the ICCAT countries. These additional participants will not necessarily be expected to have as much experience as the participants in the first session, but should include those with immediate responsibility for tuna research and stock assessments in their own countries. The second session will be oriented toward informing new participants on the deliberations of the first group as well as training them in tuna assessment techniques. The sessions will be held in France.

It is hoped that some funding will be available from ICCAT, and also from FAO or other agencies, to support the attendance of scientists from developing countries. ICCAT should invite the participation in the workshop of other organizations concerned with tuna research including ICES and FAO, particularly with respect to studies carried out through IOFC and IPFC.

CHAPTER III

NATIONAL REPORTS

1972 FISHERIES OF TUNAS AND TUNA-LIKE SPECIES IN BRAZIL

by

M. PINTO PAIVA

Fisheries of tunas and tuna-like species in Brazil during 1972 totaled 5,680 tons (Table 1).

Although catches of these species were made all along the Brazilian coast, the industrial fisheries were carried out in the southern area by three longliners which used the port of Santos (State of São Paulo) as their base. These boats made 30 trips and fished for 531 days, with a total fishing effort of 620,860 hooks (Table 2).

Longliner catches (Table 3) represented 10.1 % of the national total for tunas and tuna-like species. The predominant species in these longliner catches was the yellowfin, which corresponded to 48.2 %.

The most important species in the artisanal fisheries were Spanish mackerels, and these comprised 63.5 % of the national production of tunas and tuna-like species.

Tuna fishery in Brazil has still not reached the desired level of development and the national fishery administration is very much concerned about this. The Brazilian Government has therefore reestablished its policy of offering fiscal incentives to the fishing industry, giving top priority to companies concerned with: catch-processing-marketing; processing alone; exportation; and the supply of tunas, in the northeastern and southern regions of the country. Such companies will receive up to 75 % of the fiscal incentives designated to the fisheries.

The following national bodies are developing tuna research programs in Brazil: «Instituto de Pesca da Secretaria de Agricultura do Estado de São Paulo» — responsible for the statistical control of the catch and fishing effort of the longliners based in Santos, and carries out size sampling of the species caught.

Original Report in Spanish.

«Instituto de Biologia Marinha da Universidade Federal do Rio Grande do Norte» — carrying out a study on the biology and fishing of blackfin tuna in order to assess the stock in northeast Brazilian coastal waters.

«Laboratório de Ciências do Mar da Universidade Federal do Ceará». The research program on the biology and fishing of Spanish mackerels in the costal waters of the State of Ceará has produced a great deal of scientific data, and allowed yield curves to be drawn up.

All these research programs receive financial assistance from the «Superintendência do Desenvolvimento da Pesca (SUDEPE)», the official body responsible for managing the national fisheries.

Table 1. Brazilian production of tunas and tuna-like species in 1972

Species	*Tons*
Tunas [1]	823
Atlantic bonitos [2]	956
Billfishes [3]	294
Spanish and King mackerels:	
Scomberomorus cavalla	1,461
Scomberomorus maculatus	2,146
TOTAL	5,680

1. Bluefin, yellowfin, albacore, bigeye and blackfin tuna.
2. Atlantic little tuna, skipjack, bonito and frigate mackerel.
3. Sailfish, black marlin, blue marlin, white marlin and swordfish.

Table 2. Fishing effort of the Brazilian longline fleet operating in 1972 from the port of Santos (State of São Paulo)

Months	*No. of boats*	*No. of trips*	*Days fishing*	*Hooks set*
January	1	1	18	21,600
February	3	3	60	63,450
March	2	2	23	19,100
April	2	2	37	43,830
May	2	2	27	31,100
June	3	3	69	81,600
July	3	3	64	77,100
August	3	3	44	52,280
September	3	3	52	61,900
October	3	3	41	46,600
November	3	3	59	74,750
December	2	2	37	47,550
TOTAL	3	30	531	620,860

Table 3. Catches of tunas and tuna-like species by the Brazilian longline fleet operating in 1972 from the port of Santos (State of São Paulo). Weight expressed in kgs.

Months	*Yellow-fin*	*Alba-core*	*Bigeye*	*Bluefin*	*Sword-fish*	*Sail-fish*	*White Marlin*	*Black Marlin*	*Blue Marlin*	*Total*
January	23,900	11,400	—	—	6,400	—	1,600	500	—	43,800
February	47,527	4,248	575	408	8,452	7,800	2,728	3,402	43	75,183
March	2,411	1,098	1,021	624	3,361	1,993	1,268	644	—	12,420
April	1,254	2,932	1,145	414	10,694	3,514	1,264	160	—	21,377
May	3,227	2,945	1,475	1,375	3,867	358	2,669	358	—	16,274
June	47,876	8,403	2,932	2,017	3,509	2,149	8,015	2,766	—	77,667
July	21,397	13,414	5,684	1,060	5,840	603	6,485	740	—	55,223
August	20,221	2,541	4,890	142	5,157	100	3,692	495	—	37,238
September	7,803	1,703	2,126	2,984	370	255	19,932	638	307	36,118
October	21,170	2,090	1,060	290	5,510	1,400	2,703	1,505	—	35,728
November	57,065	1,408	5,679	355	9,640	20,037	1,922	3,436	452	99,994
December	23,055	486	6,786	380	2,462	25,279	1,224	281	—	62,953
TOTAL	276,906	52,668	33,373	10,049	65,262	63,488	56,502	14,925	802	573,975

CANADIAN RESEARCH REPORT, 1972-73

by

S. N. TIBBO and J. S. BECKETT

Canadian research efforts on tunas and related species in the Atlantic have been at a low level since 1971, mainly because of the virtual abandonment of the swordfish fishery. Research on swordfish is being phased out, although there is a significant backlog of data which has not yet been reported. Opportunities for studies of tunas caught incidentally by swordfish fishermen no longer exist and tuna research consists almost entirely of sampling for size composition and small scale tagging.

A. Status of the Fisheries

1. *Swordfish*

The swordfish fishery has been virtually defunct since its abandonment early in 1971 because of high mercury levels in swordfish flesh. A few fish have been caught each year since then but they were not landed in Canada and no statistics are available. There have been sporadic attempts to find markets for swordfish not restricted by the 0.5 ppm total mercury limitations but these have not been successful.

2. *Tunas*

In 1972 Canadians caught approximately 570 metric tons (round weight) of tuna in the Atlantic — less than 25 % of the quantity taken in the previous year. There was no fishery in the Gulf of Guinea and the purse seine fishery off the New Jersey coast was relatively unproductive (260 metric tons of bluefin and 7 of skipjack). In Canadian coastal areas, traps and unspecified gear accounted for 38 m.t. and the sport fishery for 264 m.t. About 75 m.t. of the sport catch was released alive — many of them tagged before release. The sport catch was nearly double what it was in 1971 with substantial increases in both the Prince Edward Island and Newfoundland areas.

Original Report in English.

B. Special Research Studies

Swordfish

Research on swordfish is being concluded and no new data have been acquired since the 1972 series of longline cruises already reported in SCRS/72/12. Mercury content studies have been extended to re-examine all samples for total/organic mercury ratios. A study on the distribution of total mercury throughout the skeletal musculature has shown no significant variation within any individual (Freeman and Horne, 1973).

Despite the virtual elimination of Canadian longlining for swordfish, tags from earlier releases have continued to be recaptured by other nationals with two (2) recovered in 1972 and one (1) in 1973. All these three tags were inserted in free-swimming fish using a harpoon adapter (Beckett, 1968), and bring the recovery rate of such tags to 22 % in comparison to 1.4 % for fish tagged after capture on longlines. The recapture positions continue to indicate that swordfish return to the same area each summer, with displacements of 150 km only having been exceeded twice, and the maximum (286 km) being somewhat suspect.

Tunas

The low purse seine catch of small bluefin off the New Jersey coast resulted in reduced sampling during 1972, and only 794 fish were measured. These proved to be predominantly (80 % by number) 1- and 2-year-old fish, with no fish more than 4 years old. The preponderance of small fish may be due in part to the avoidance of large fish by the seiners because of higher mercury content.

Round weights of 593 of the 857 large bluefin taken by anglers were provided by Provincial Departments of Tourism, who take a keen interest in the promotion of their sport fisheries. These data show that the mean weight off Prince Edward Island (323.7 kg) was, as in previous years, considerably larger than that off the east coast of Newfoundland (284.4 kg), although the difference was not as great as in 1971.

The tagging of large bluefin by sport fishermen in Newfoundland reached a record level in 1972 with 120 fish being tagged — 70 with Canadian tags and 50 with tags supplied by the Woods Hole Oceanographic Institution. However, some tagging opportunities were missed in that 138 fish were released alive without having been tagged.

A lucrative export market has now been developed for large bluefin and nearly all of the fish caught by anglers and commercial fishermen in Canadian coastal waters during 1973 were landed and sold. As a consequence, most of the tagging by

anglers has been eliminated and costs have forced us to abandon the tagging program which was based on commercial catches by fish traps in St. Margaret's Bay, Nova Scotia.

The only large bluefin tagged in 1973 were released by sport fishermen — eleven (11) off the Gaspé coast, in the Gulf of St. Lawrence — a new fishing area, and four (4) in Seal Bay off the east coast of Newfoundland.

The large (> 200 kg) bluefin tagging program in St. Margaret's Bay had been in effect since 1963 and altogether 412 fish were tagged and released. There have been 13 recaptures; nine (9) from the release area (eight (8) within a few days and one (1) a year later), three (3) from Cape Cod, Massachusetts, after one or two years and one (1) from 120 miles westward from the release area after seven (7) weeks.

Attempts to tag small bluefin, as part of the joint Canada-U.S. tagging program, were continued in 1973. During a research vessel (E. E. Prince) cruise in August, 156 bluefin (54-135 cm long) were tagged either with two FTIA (nylon dart) or with two WHOI «H» type (stainless steel anchor) tags. Thirteen (13) recoveries have been reported to date.

Four (4) recoveries were made in 1973 from the 268 small bluefin which were released in 1971. The total number of recoveries from this operation is now 66 or 25 % of the total number released (Table 1).

Table 1. Recoveries of small bluefin tuna double tagged with two types of spaghetti tag in 1971, with data on loss of one tag

Year	*Number released*	*Number recaptured*	% *«survivors» recaptured*	% *recaptures one tag only*
FTIA (nylon barb)				
1971	140	17	12.1	6
1972		16	13.0	50
1973		1	0.8	0
TOTAL		34	24.3	26.5
«H» Tag (stainless steel anchor)				
1971	128	10	7.8	10
1972		19	16.1	53
1973		3	3.0	67
TOTAL		32	25.0	40.6

The overall recovery rate for the two tag types is very similar (25.0 and 24.3 %) although the data suggest that metal anchor tags may, in fact, be retained longer than nylon dart tags. Short-term recoveries were higher for the nylon dart tags but this may be a result of a greater initial tagging mortality caused by the metal anchors. However, Lenarz et al. (1973) demonstrated that the difference between the early recoveries from the two tag types was not statistically significant.

The negative results of the offshore longlining experiments in 1972 (SCRS/72/12) discouraged the continuance of this program in 1973.

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FRANCE — 1972 RESEARCH REPORT

by

R. LETACONNOUX

Status of fishing in France

In 1972, more than 50,000 tons of tunas were caught in the northeast and central-east Atlantic by French fishermen operating from Bay of Biscay and African ports.

In comparison with former years, the figures show an increase in the amount of yellowfin caught, while catches of skipjack, albacore and bluefin show little change.

	1966	1967	1968	1969	1970	1971	1972
Albacore	14.3	16.6	14.3	10.0	6.6	9.8	9.8
Yellowfin	22.0	20.7	29.2	26.4	21.5	20.1	25.7
Skipjack	6.2	4.8	12.5	7.9	11.4	15.8	16.1
Bigeye	—	—	—	1.3	0.9	0.4	—
Bluefin	1.6	1.0	0.6	0.6	0.8	0.8	0.8
Thousands of tons	44.1	43.1	55.6	46.2	41.2	46.9	52.4

With regard to the albacore caught between the coast of Europe and the Azores, the French yield totalled 8,140 tons, which is more or less equivalent to the amount landed in 1971 (8,168 tons).

A noticeable feature of the 1972 season was the importance of the Azores fishery. At the end of July, when all the fleet had fished in the area, the amount landed was 4,308 tons, equivalent to 53.2 % of the total yield for the season. (In 1973, catches made in the Azores and landed by July 31 were to represent 57.5 % of the total landed).

292 vessels — 250 trollers and 42 baitboats — were operated during the season.

Original Report in French.

French albacore fishery in the N.E. Atlantic

Years	1966	1967	1968	1969	1970	1971	1972
No. of trollers	368	328	380	313	212	254	250
Tons unloaded (1,000 T)	10.6	12.4	11.9	8.2	4.6	8.2	7.0
No. of baitboats	102	86	80	33	54	57	42
Tons unloaded (1,000 T)	3.7	4.2	2.4	1.8	2.0	1.6	1.1
Total tons	14.3	16.6	14.3	10	6.6	9.8	8.8
Total No. of vessels	470	414	460	346	266	311	292

When comparing 1972 with 1971, we notice a slight decrease in the number of vessels equipped for albacore fishing — 292 as opposed to 311, i. e. 6 % less. This decrease is chiefly due to the slow disappearance of baitboats (—26 %).

Albacore fishing in the N.E. Atlantic in 1972
Monthly landings *

Month	*Landings*	*No. of trips*	*Monthly catch/trip*
June	36	4	9
July	4,308	291	14.8
August	2,545	317	8.02
September	1,102	271	4.06
October	149	51	2.92
TOTAL	8,140	934	8.71
1971 Season	8,168	1,126	7.2

* The first results for 1973 can be found in Annex I.

Catch per Vessel

Vessels	*Landings*	*Catch/vessel*	*1971 Figures*
Trollers 250	6,994	28 T	29.4 T
Baitboats 42	1,146	16.4 T	25.5 T

Taking the season as a whole, the average landing per trip, in tons, was 8.7 T against 7.2 in 1971. This is due to the large yields by the Azores fishery at the beginning of the season.

Research

1. *Research carried out by I.S.T.P.M.*

Two cruises were conducted by the research vessel «Le Pélagia», one from May 26-July 20 in the region north of the Azores and the other from September 28-October 13 in the Bay of Biscay and the area N.W. of Cape Finisterre.

A training ship «La Perle» belonging to the Marine Marchande was chartered by ISTPM to undertake explorations on the high seas around latitude 47° north from September 26 to October 13.

During these cruises studies were carried out on the behavior, biology and ecology of albacore.

Special attention was given to the thermal conditions of the environment and the frequency of captures with different types of bait.

The studies carried out at the start of the season in the area of the Azores have largely confirmed those undertaken in the region in 1971.

For 15 days, three fishing vessels worked under instructions from «La Pélagia». The results obtained enabled the French fleet to make a magnificent start to the season in this sector.

During the year, 1597 albacore were tagged, chiefly in the region of the Azores. Besides these, 13 skipjack *(K. pelamis)*, 4 bluefin *(T. thynnus)* and 5 bigeye *(T. obesus)* were tagged.

Between January 1 and December 31, 1972, 2,733 young albacore were measured on board «La Pélagia» in the following areas:

Sector	*Season*	*No. sampled*
Azores	Summer	2,656
North Azores	Autumn	70
Bay of Biscay	Autumn	27

We have been informed of 19 tag recoveries, as follows:

1	bluefin	tagged	in	1972
3	albacore	»	»	1972
12	»	»	»	1971
2	»	»	»	1970
1	»	»	»	1969

The data obtained from these taggings have enabled us to specify more accurately the particular characteristics of the different populations of albacore that move into the N.E. Atlantic during the summer period.

Portugal, Spain and France have decided to carry out a joint study on bluefin *(Thunnus thynnus)*.

A tagging program has been perfected and also a system for collecting measurement statistics in tuna fishing ports in the Bay of Biscay. Only the latter has so far given positive results. In St. Jean-de-Luz, ISTPM has carried out 261 measurements of bluefin ranging from 74 to 172 cms in length.

2. *Research program for 1973*

With regards to ISTPM, the program planned should permit a follow up on the research studies initiated in the sector of the Azores as, since 1971, this area has proved to be productive at the start of the albacore fishing season.

3. *Studies undertaken by the Office de la Recherche Scientifique et Technique d'Outre-Mer (O.R.S.T.O.M.)*

The Dakar, Abidjan and Pointe-Noire laboratories have been used by ORSTOM for their studies in the central-east Atlantic.

Fishing statistics have been collected and on-the-spot samplings carried out in

these three ports. All the data go to Abidjan for analyzing. It was in this city that the ICCAT Sub-Committee meeting on Stock Assessment was held in 1972.

The «Capricorne» has made a thorough study of the Cape Lopez «front», between the Cape and the Islands. The «Laurent Amaro» from Pointe-Noire, and a private airplane with a Barnes radiometer on board also took part in this operation.

The «Capricorne» has also made a detailed exploration along stations from Abidjan to the south of Saint Helene, studying temperature, salinity, oxygen, nutritive salts, phytoplankton, zooplankton and microneckton. This vessel spent 20 days in February studying the upwelling south of Nouadhibou.

In 1972, the work started in Abidjan on yellowfin parasites *(Neothunnus albacora)* was completed. This is presently being edited and analyzed.

4. *Studies carried out by the Centre Océanologique de Bretagne (C.O.B.)*

Albacore (Thunnus alalunga)

The French fishery on albacore has been continued throughout the season. As in previous years, a small team worked from June 15 to September 30 on board the scouting boat of the tuna fishing fleet (June 16-July 22, July 16-August 11, August 16-September 7, September 9-September 30).

250 surveys have been made on board fishing vessels, during which 5,300 albacore were measured and nearly 300 biological samplings carried out — stomach contents, sex, scales.

The study of the hydrological conditions encountered, together with the work carried out by five pilot tuna vessels, have provided the fleet with useful information for forecasting the movement of fishing areas.

Some attempts at longline fishing were unsuccessful due to the insufficient technical capabilities of the scouting boat.

4.1. From July 15 to October 31, the landings of the Cantabrian tuna vessels were examined, in conjunction with the Spanish Oceanographic Institute. 1,575 fish were measured.

4.2. Two flights were made (on September 6 and 14) over the fishing grounds by a plane carrying a Barnes radiometer.

Bluefin (Thunnus thynnus)

Samplings were carried out regularly between May 25 and October 31 in the two Cantabrian ports concerned with this type of fishing. Catch surveys and measurements (1,100 fish) were made at the time of unloading.

Sampling by C.O.B.: Albacore *(Thunnus alalunga)*

Region (I.C.E.S.)	*Season (Quarter)*	*No. fish measured*
North Spain	1	
	2	2,135
	3	3,237
	4	345

Sampling by C.O.B.: Bluefin *(Thunnus thynnus)*

Region (I.C.E.S.)	*Season (Quarter)*	*No. fish measured*
North Spain	3	614
	4	215

Annex I

Albacore fishing in the N.E. Atlantic during 1973
Monthly landings

Month	*Landings*	*No. of trips*	*Monthly yield per trip*
June	268	23	11.6
July	3,253	427	7.6
August	1,229	279	4.4
September	930	125	7.4
October	439	89	4.9
TOTAL	6,119	943	6.5
1972 Season	8,140	934	8.7

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GHANAIAN NATIONAL REPORT FOR 1972

Foreign owned vessels

A significant event on the tuna scene for the year 1972 was the signing of an agreement between the Government of Ghana and Star-Kist International S. A. The agreement was based on a policy of ensuring the development of a Ghanaian tuna industry and the promotion of an export trade in tuna. The agreement also imposed a levy of $ 8.50 for each intransit metric ton of tuna, shipped or transshipped by Star Kist.

A total of 44 foreign tuna boats called at Tema. They comprised 18 pole and line boats, 17 purse seiners and 9 long liners.

Ghanaian participation in tuna fishing

Ghanaian fishing companies are becoming more active in their endeavour to enter into the tuna fish trade. Two such companies, namely Mankoadze Fisheries Ltd. and Ocean Fisheries Ltd., are negotiating for the purchase and operation of tuna bait-boats.

Catch statistics

Catch statistics have already been submitted.

Yellowfin	9,880.52	metric	tons
Blue-fin / Big-eye	863.92	»	»
Skipjack	17,392.55	»	»
Albacore	804.27	»	»
Sailfish & Marlin	214.65	»	»

Original Report in English.

Tagging and length frequency sampling

Length frequency sampling is in progress and length frequency distribution of the tuna in this area have already been submitted to ICCAT.

Two tags which were recovered have been returned to the Secretariat. We did not participate in the 1972 tagging programme but we are getting prepared to actively participate in future tagging programmes. Negotiations were thus made to start tagging off some of the American tuna vessels which operate in Ghana.

JAPANESE FISHERIES AND RESEARCH ACTIVITIES ON TUNAS AND TUNA-LIKE FISHES IN THE ATLANTIC OCEAN, 1971-1973

by

SIGEITI HAYASI

Summary

Japanese fisheries produced an annual average of around 67,000 tons of tuna and tuna-like fishes in the Atlantic Ocean for three years, from 1970 to 1972. The longline fishery took about two-thirds of the catch. The major species are bigeye and southern bluefin tunas, which are sold in the domestic market. In 1972, the pole-and-line fishery increased its number of boats, while the purse seine fishery stayed on a small scale.

For the longline fishery, we obtained Task 1 and 2 statistics, and length data up to 1971. Comparable data compiled recently for the purse seine fishery cover the six years from 1967 to 1972. A compiling system is now being established for Task 2 data of the pole-and-line fishery.

A paper was prepared on the distribution of larval longbill spearfish as well as the taxonomy of related species at the early stages of life. Two other recent studies covered the distribution of bigeye tuna in the longline fishery.

It was shown that further expansion of fishing activities may not increase the catch of yellowfin tuna but may result in a reduction of recruitment. Stocks of albacore are in a better condition than those of yellowfin tuna. In both species, exploitation of immatures depletes the abundance of eggs more severely than the number of adults.

Semi-processing systems for catch and length statistics from the longline fishery have been established for major species. Such routine processing makes it possible to advance co-operative studies of stock assessment for ICCAT.

1. Fishing activities

The Japanese catch of tunas and tuna-like fishes in the Atlantic Ocean has been slightly on the increase since 1970, and averaged around 67,000 tons for three years up to 1972 (Fig. 1). The total yield in 1973 may be comparable to that in the previous years.

Original Report in English.

1.1. *Longline fishery*

Longline is still the most important fishing gear for the Japanese tuna fleet, even though its share of the total national catch in the 1970's decreased to about two-thirds (Table 1). The growth of homeland-based operations was remarkable; the catch increased from only 546 tons (or one percent) of longline subtotal in 1968 to 41,000 tons (or 92 percent) in 1972 (Table 1). The catch by homeland-based boats in 1973 may attain that of the previous year. The rapid increase in the number of homeland-based operations and the decrease in mother-boat and foreign-based operations are also reflected in the number of boats (Table 2). But increase in the former may be exaggerated by the fact that many boats fishing southern bluefin tuna around South Africa have moved between the Atlantic and Indian Oceans.

Recently, the species preference of the longline fleet has suddenly changed (e.g. Suda 1971, Shiohama 1971, Hayasi 1972 a). The share in the total catch of yellowfin tuna, the dominant species in the early years of exploitation, declined to 34 percent in 1968 and further dropped to below 20 percent in 1971. Albacore comprised about one-third of the total longline yield in 1968, but also dropped below 20 percent in 1971. Bigeye and southern bluefin tunas have increased in importance, exceeding 40 and 10 percent in 1971, respectively (Table 3).

1.2. *Pole-and-line fishery*

The Japanese pole-and-line fishery has operated in the Gulf of Guinea for more than 10 years. The number of boats and the amount of catch stayed at fairly constant levels up to 1971. In 1972, seven new boats including one of 300 and another of 400-ton class arrived in the area, thereby doubling the size of the fleet. Nevertheless, the amount of catch (mainly skipjack) has not increased yet (Fig. 1, Tables 1, 2 and 4).

1.3. *Purse seine fishery*

Since 1964, two-boat and one-boat seiners of various sizes have operated in the Gulf of Guinea, producing around 7,000 tons per year on average (Fig. 1, Tables 1 and 2). Ratios between the two dominant species, yellowfin tuna and skipjack, varied remarkably from year to year (Table 5).

2. Research activities

2.1. *Catch statistics*

The Statistics and Information Department of the Ministry of Agriculture and Forestry, provides the official catch and effort statistics for longline and pole-and-

line boats. The Fishery Agency compiles similar data from purse seiners in the Gulf of Guinea. Final versions of statistics for 1971 and onward are compiled *by year of catch* rather than *by year of landing*, threreby meeting completely the requirement of Task 1 defined at the first SCRS meeting.

The Fishery Agency and its research laboratories have continuously collected detailed catch records from major fisheries. These data are enough to prepare the Task 2 statistics. Processing systems are not yet completed for the Atlantic pole-and-line fishery, however.

2.1.1. *General statistics*

In March 1973 the Statistics and Information Department published the fisheries yearbook including catch and effort data (in number of cruises, operations and days at sea), for 1971, according to the type of fishery, species and base port. Also compiled by the Department are provisional catch statistics for pole-and-line and longline fisheries in 1972.

The Fishery Agency and Far Seas Fisheries Research Laboratory obtained final figures of catch and effort statistics for the Japanese purse seine fishery in the Atlantic Ocean up to 1972 (Honma and Suzuki ms b).

2.1.2. *Detailed statistics*

The yearbook for 1971 longline statistics was published in March 1973 by the Fishery Agency. Later data are now being processed, and the yearbook for 1972 will appear early in 1974.

Logbooks were also collected from the pole-and-line fishery. However, the data from the Atlantic Ocean have not been compiled yet.

Captains of purse seiners also submitted their logbooks to the Fishery Agency. Honma and Suzuki (1972) processed the Atlantic data for 1970 and compiled catch (in 0.1 ton of live weight) and effort (in number of boats and sets) by 1° square and by month. Recently they (ms a, b) prepared the similar data for 1967-1969 and 1971-1972.

2.2. *Length statistics*

Length composition data on tunas and billfishes taken in 1971 and reported to the Far Seas Fisheries Research Laboratory by the end of August 1972 were compiled in 1972. The statistics from the Atlantic Ocean were reported in various papers (Shingu and Hisada 1972, ms, Honma 1972, ms, Honma and Suzuki 1972, ms a, b, Shiohama 1972, ms). The measurements obtained in 1972 and reported by August 1973 will be processed by early 1974.

Since May 1972 samplings have been conducted aboard the boats to measure body lengths of yellowfin tuna, albacore and bigeye tuna taken by longline in the Atlantic Ocean. For the 1973 fiscal year starting in April, eleven boats have been selected to take part in the survey. These data may improve to some extent on the length data for 1972, that will be published in 1974. The survey is indispensable to ameliorate the accuracy of the length data obtained from longline samplings, which do not always designate the specific place and time because the boats travel over wide areas for quite long periods of time — often extending over two oceans during six to fifteen months.

2.3. *Morphological characters and distribution*

Two studies have been carried out on the distribution of bigeye tuna, recently a major species in longline catch. Hanamoto (1973) noticed two «horse-shoe» fishing grounds along the boundaries between different currents, one in the northern hemisphere and another in the southern hemisphere, continuing in the eastern Atlantic. Hisada *et al.* (1973) confirmed the same feature of distribution, and the appearance of immatures restricted to the higher latitudinal waters.

Ueyanagi (1973) conducted taxonomic studies on larvae and juveniles of billfishes in the Atlantic Ocean. He noticed two types of juveniles, seemingly of longbill spearfish, *Tetrapturus pfluegeri* Robins and De Sylva, in addition to a related type supposed to be *T. georgei* Lowe. The former two types appeared in the northern and southern Atlantic separately (Fig. 2). It is possible that these two types represent different populations. A paper by Honma *et al.* (1973) on the identification of young yellowfin and bigeye tunas was printed.

2.4. *Stock assessment*

Analysing catch statistics, yield-per-recruit models and relative stock fecundity of yellowfin tuna, Hayasi (1972 b), Hayasi *et al.* (1972) and Hayasi (ms a) showed that a further increase in fishing effort might result in only a slight increase in catch, and might possibly lead to a decline in reproduction. A decrease in the hook rate for albacore does not seem to indicate so serious a reduction of parent stocks as to reduce recruitment.

The apparent fluctuation in catches of skipjack suggests that the surface fishery concentrated on this species in years when fishery on the more profitable yellowfin tuna was unfavorable. The average age at first capture to obtain the maximum yield-per-recruit for skipjack may probably lie between 0.9 and 1.6 years even if fishing intensity were increased so as to reach a high fishing coefficient of over 1.0. Average weight for these ages may be 0.6 to 1.3 kg. Biological data from several fleets indicated that about 50 percent in terms of weight of the yields was made up of small fish less than 40 to 45 cm, or 1.3 to 2.0 kg (Hayasi msb).

In order to advance the cooperative studies of ICCAT, the staff of the Far Seas Fisheries Research Laboratory calculated overall fishing intensities of the Japanese longline fishery on yellowfin tuna, albacore and bigeye tuna from 1956 through 1971, together with the catch by length class of the former two species from 1965 through 1971 (Honma 1972, ms, Shiohama 1972, ms, Hisada 1972, Kume ms).

3. List of papers

FISHERY AGENCY.

1973. «Annual report of effort and catch statistics by area on Japanese tuna longline fishery, 1971.» 319 p. (b).

HANAMOTO, E.

ms.* «*Taiseiyo no mebachi gyojo to kaiyogakuteki tokusei* (Fishing grounds of bigeye tuna exploited by longline gear in the Atlantic Ocean, with special references to the oceanographic conditions).» Lecture given at a monthly symposium on far seas fishery held by the Association of Masterfishermen based on Misaki, Miura, May 1973 (b).

HAYASI, S.

1972a. «Japanese fisheries and research activities of tunas and tuna-like fishes in the Atlantic Ocean, 1970-1972.» *SCRS*/72/13. 5 p. + 5 tabs. + 1 fig. (c).

HAYASI, S.

1972b. «Biological views for conservation of yellowfin tuna in the Atlantic Ocean, based on information up to October 1972.» *SCRS*/72/21. 4p. + + 3 tabs. + 7 figs. (c).

HAYASI, S.

ms a. «Possible regulatory measures of yellowfin tuna fisheries in the Atlantic Ocean, based on information up to August 1973.» (d).

HAYASI, S.

ms b. «A comment on skipjack stock in the Atlantic Ocean.» (d).

HAYASI, S., M. HONMA and Z. SUZUKI.

1972. «A comment to rational utilization of yellowfin tuna and albacore stocks in the Atlantic Ocean.» *Bull. Far Seas Fish. Res. Lab.* (7), 71-112 (b).

HISADA, K.

1972. «Overall fishing intensity on bigeye tuna in Japanese longline fishery in the Atlantic Ocean, 1956-1970.» *SCRS/72/20*. 3 p. + 3 tabs. + 2 figs. (c).

HISADA, K., K. YAMATE and K. OTSUKI.

ms.* «*Taiseiyo no mebachi no bunpu* (Distribution of bigeye tuna in the Atlantic Ocean).» Lecture given at symposium on tuna fishery held by the Japanese Society of Fisheries Oceanography, Shimizu, March 1973 (b).

HONMA, M.

1972. «Overall fishing intensity and catch by length class of yellowfin tuna in Japanese longline fishery in the Atlantic Ocean, 1956-1970.» *SCRS/72/14*. 6 p. + 6 tabs. + 4 figs. (c).

HONMA, M.

ms. «Overall fishing intensity and catch by length class of yellowfin tuna in Japanese Atlantic longline fishery, 1956-1971.» (d).

HONMA, M. and Z. SUZUKI.

1972. «Catch statistics and sample length composition in Japanese Atlantic tuna purse seine fishery, 1970.» *SCRS/72/8*. 2 p. + 4 tabs + 1 fig. (c).

HONMA, M. and Z. SUZUKI.

ms a. «*Dittos.*, 1967-1969.» (d).

HONMA, M. and Z. SUZUKI.

ms b. «*Dittos.*, 1971 and 1972, with a brief review of the fishery since 1964.» (d).

HONMA, M., I. WARASHINA and Z. SUZUKI.

1973. «Identification of young yellowfin and bigeye tunas in the western Pacific Ocean — Examination of practical standards based on external characters and the reliability in field survey.» *Bull. Far Seas Fish. Res. Lab.* (8), 1-23 (b).

KUME, S.

ms. «Overall fishing intensity of Japanese Atlantic longline fishery for bigeye tuna, 1956-1971.» (d).

NAKAGOME, J.

1972. «Oceanic tuna tagging program of Kanagawa Prefectural Fisheries Experimental Station.» *SCRS/72/15*. 2 p. + 1 tab. + 1 fig. (c).

SHINGU, C. and K. HISADA.

1972. «Size composition of tuna and billfish samples from Japanese longline fishery in the Atlantic Ocean, 1970.» *SCRS/72/9*. 1 p. + 9 tabs. (c).

SHINGU, C. and K. HISADA.

ms. «*Dittos.*, 1971, including supplemental data for 1970.» (d).

SHIOHAMA, T.

1971. «Studies on measuring changes in the characters of the fishing effort of the tuna longline fishery — I. Concentrations of the fishing effort to particular areas and species in the Japanese Atlantic fishery.» *Bull. Far Seas Fish. Res. Lab.* (5), 107-130 (a).

SHIOHAMA, T.

1972. «Overall fishing intensity and catch by length class of albacore in Japanese longline fishery in the Atlantic Ocean, 1956-1970.» *SCRS/72/18.* 3 p. + 5 tabs. + 4 figs. (c).

SHIOHAMA, T.

ms. «Overall fishing intensity and catch by length class of albacore in Japanese Atlantic longline fishery, 1956-1971.» (d).

STATISTICS and INFORMATION DEPARTMENT.

1973.* «*Showa 46 nen Gyogyo Yoshokugyo Seisan Tokei Nenpo* (Annual report of production of fisheries and aquiculture, 1971).» 307 p. + 2 figs. (b).

SUDA, A.

1971. «Japanese report on progress of tuna fisheries and research activities in the Atlantic Ocean.» *ICCAT Rept. 1970-71. Part* II, 93-102, English Version (a).

UEYANAGI, S.

ms. «Present status of billfish larval taxonomy.» Paper submitted to the symposium on early life history of fish, Oban, Scotland, May 1973 (b).

* In Japanese without English summary. The Japanese title and its English translation are given in italics and in parentheses, respectively.

(a) Papers published previously, but cited in this report.
(b) Papers published or orally presented in a period from November 1972 to August 1973.
(c) Papers presented for the 1972 SCRS meeting.
(d) Unpublished papers prepared for the 1973 SCRS meeting.

Table 1. Catch and percentages (in parentheses) of tunas and tuna-like fishes taken by different types of Japanese Atlantic fisheries, 1958, 1963, 1968, 1971 and 1972

Types of fishery		1958	1963	1968	1971	1972*
TOTAL		30,984	114,107	72,456	77,728	66,980
LONGLINE	Subtotal	30,984 (100)	108,539 (95)	44,896 (62)	53,316 (69)	44,271 (66)
	Deckloaded mother-boat	—	41,823 (39)	22,845 (51)	6,565 (12)	3,648 (8)
	Homeland-based-boat	—	—	546 (1)	39,929 (75)	40,623** (92)
	Foreign-based-boat	30,984 (100)	66,716 (61)	21,505 (48)	6,822 (13)	**
PURSE SEINE	Subtotal	—	—	15,861 (22)	9,440 (12)	7,750 (12)
	Single-boat seiner	—	—	1,582 (10)	1,983 (21)	2,399 (31)
	Double-boat seiner	—	—	14,279 (90)	7,457 (79)	5,352 (69)
Pole-and-line		—	5,568 (5)	11,699 (16)	14,972 (19)	14,959 (22)

Source of data: Statistics and Information Department, for landings of longline and pole-and-line fisheries; and Fishery Agency and Far Seas Fisheries Research Laboratory, for catch of purse seine fishery.

* Preliminary estimates.

** No breakdown is available between homeland and foreign-based boats in 1972.

Table 2. Number of Japanese tuna boats operating in the Atlantic Ocean, 1958, 1963, 1968, 1971 and 1972

Type of fishery		*Size class**	1958	1963	1968	1971	1972**
LONGLINE	Deckloaded mother-boat	TOTAL	—	28	21	11	8
		201- 500	...	...	—	---	2
		501-1,000	...	...	21	7	5
		1,001-	...	...		4	1
	Homeland-based-boat	TOTAL	—	—	3	142	186
		51- 200	—	—	1	142	1
		201- 500	—	—	2		181
		501-1,000	---	---	---	—	4
	Foreign-based-boat	TOTAL	51	95	47	36	11
		51- 200	...	...	9	6	2
		201- 500	...	...	35	30	9
		501-1,000	...	...	3	---	---
		1,001-	...	...		---	---
PURSE SEINE	Single-boat	TOTAL	—	—	3	3	2
	Single-boat seiner	- 50	—	—	1	---	—
		51-100	---	---	---	---	---
		101-200	---	---	1	1	—
		201-400	—	—	1	1	1
		401-	—	—	—	1	1
	Double-boat seiner ***	TOTAL	—	—	4	3	3
		51-150	---	---	4	3	3
Pole-and-line boat		TOTAL	—	5	6	7	14
		151-	—	5	6	7	14

Source of data: Statistics and Information Department, for longline and pole-and-line fisheries; and Fishery Agency and Far Seas Fisheries Research Laboratory, for purse seine fishery.

* Size is given in gross tonnages for all fisheries except the single-boat purse seiner whose size is expressed in carrying capacity.

** Preliminary estimates.

*** Double-boat purse seiners are given in number of units, each of which comprises two net-boats and several carriers.

Table 3. Landings and catch per mille (in italics) of tunas and tuna-like fishes taken by Japanese Atlantic longline fishery, 1958, 1963, 1968, 1971 and 1972

Year	1958	1963	1968	1971	1972*
TOTAL	30,984	108,539	44,896	53,316	44,271
Albacore	1,992 *64*	29,692 *274*	15,163 *338*	10,113 *190*	5,331 *120*
Bigeye tuna	453 *15*	14,490 *134*	10,286 *229*	20,772 *390*	19,160 *433*
Bluefin tuna	34** *1*	7,809** *72*	363** *8*	1,532 *29*	1,748 *39*
Southern bluefin	**	**	**	4,648 *87*	4,660 *105*
Yellowfin tuna	27,159 *877*	37,717 *347*	13,857 *309*	11,026 *207*	8,864 *200*
Young fish	— —	4 *0*	56 *1*	— —	— —
Skipjack	0 *0*	4,551*** *42*	30 *1*	2 *0*	2 *0*
Swordfish	135 *4*	1,136 *10*	1,121 *25*	1,683 *32*	1,775 *40*
Blue & black marlin	772 *25*	8,600 *79*	946 *21*	1,435 *27*	1,050 *24*
White marlin	161 *5*	2,418 *22*	1,088 *24*	999 *19*	835 *19*
Sailfish	119 *4*	735 *7*	970 *22*	446 *8*	297 *7*
Unclassified and others	159 *5*	1,387 *13*	1,016 *23*	651 *12*	549 *12*

Source of data: Statistics and Information Department.

* Preliminary estimates.

** Southern bluefin tuna are included in bluefin tuna catches.

*** Possible misidentification of species.

Table 4. Landings and percentages (in italics) of tunas and tuna-like fishes taken by Japanese Atlantic pole-and-line fishery, 1963, 1968, 1971 and 1972.

Year	1963	1968	1971	1972*
TOTAL	5,568	11,699	14,972	14,959
Albacore	—	38	—	—
		0		
Bigeye tuna	15	646	—	—
	0	*6*		
Yellowfin tuna	877	2,151	2,475	4,425
	16	*18*	*17*	*30*
Skipjack	4,599	7,306	11,730	10,149
	83	*62*	*78*	*68*
Frigate mackerels	—	1,558	—	25
		13		*0*
Unclassified and others	77	—	765	360
	1		*5*	*2*

Source of Data: Statistics and Information Department.
* Preliminary estimates.

Table 5. Catch and percentages (in italics) of tunas and tuna-like fishes taken by Japanese Atlantic purse seine fishery, 1964, 1968, 1971 and 1972.

Year	1964	1968	1971	1972
TOTAL	488	15,861	9,440	7,750
Bigeye tuna	—	413	249	308
		3	*3*	*4*
Yellowfin tuna	455	7,463	2,232	2,827
	93	*47*	*24*	*36*
Skipjack	32	6,256	6,222	3,386
	7	*39*	*66*	*44*
Frigate mackerels	—	1,254	685	1,189
		8	*7*	*15*
Unclassified and others	1	476	52	40
	0	*3*	*1*	*1*

Source of data: Fishery Agency and Far Seas Fisheries Research Laboratory.

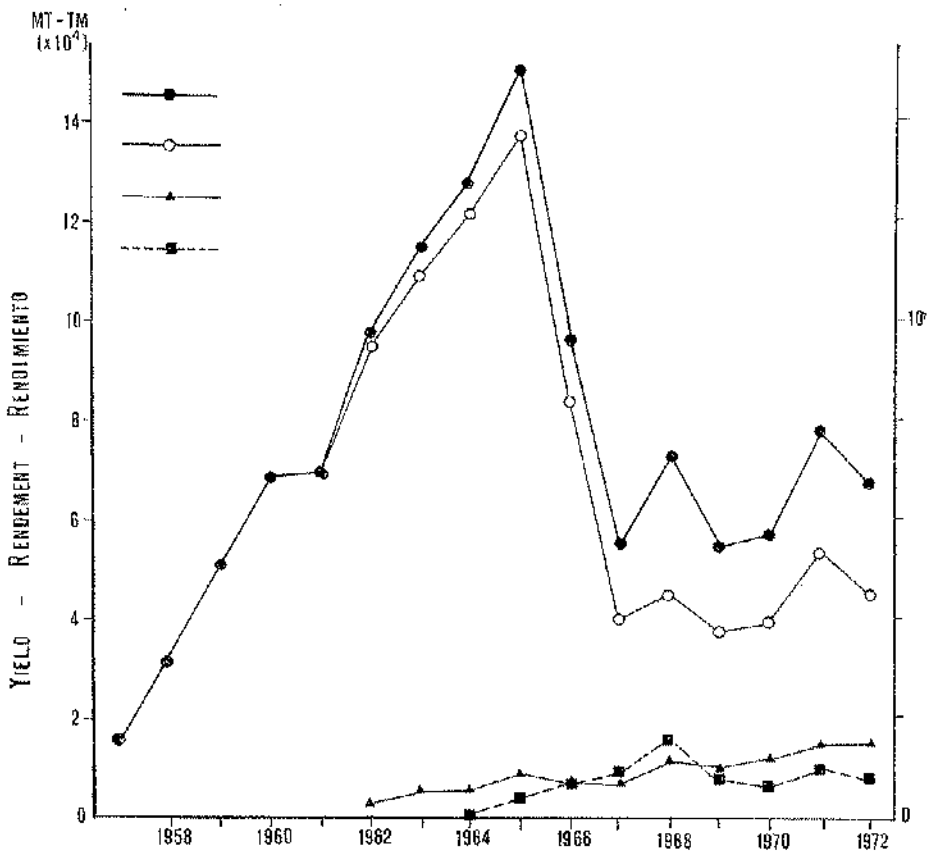

Fig. 1. Yield and landings of Japanese tuna fisheries in the Atlantic Ocean, 1957-1972. Data taken from ICCAT Statistical Bulletin, vol. I for 1957-1967; vol. II for 1968-1970; and recent compilation given in footnote of Table 1 for 1971 and 1972.

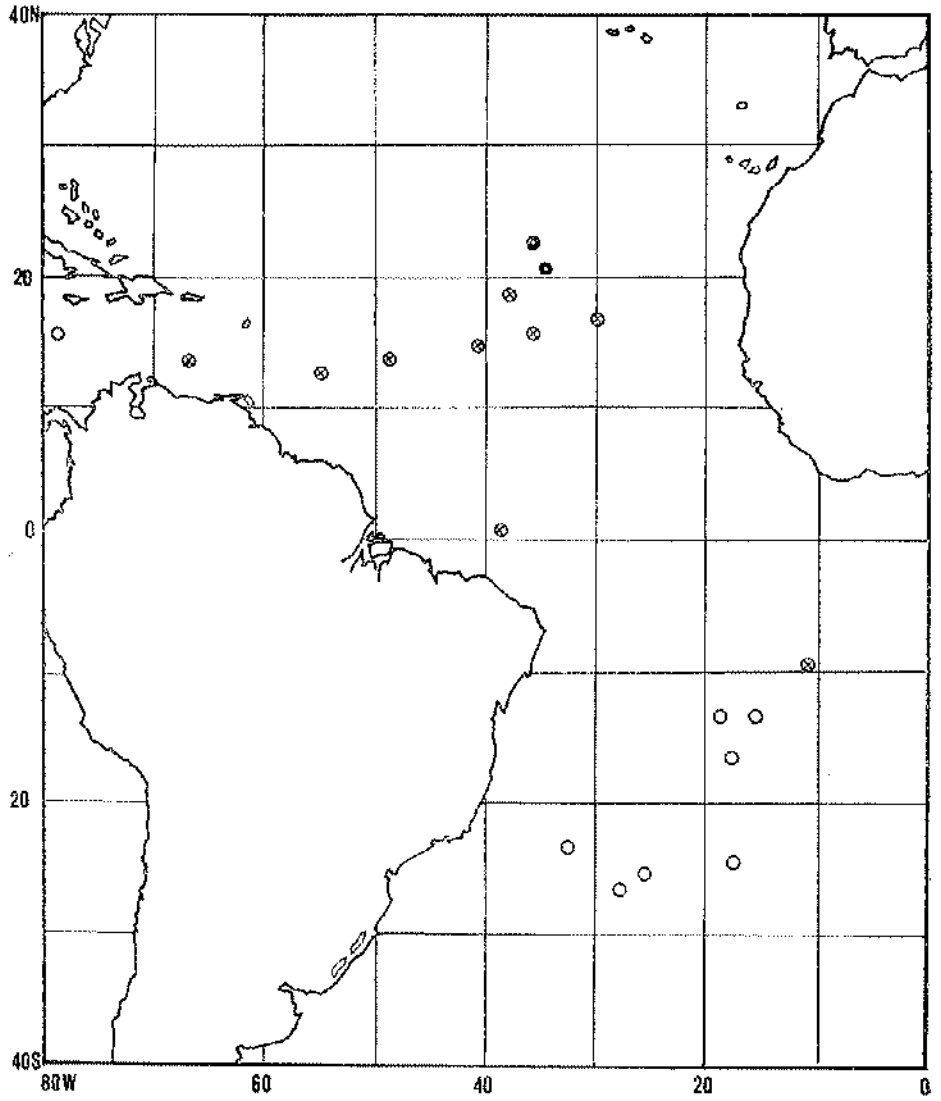

Fig. 2. Occurrence of three types of larval spearfish in the Atlantic Ocean.
⊗ Type D_1 *Tetrapturus pfluegeri* in the northern Atlantic.
○ Type D_2, possibly the same species in the southern Atlantic.
● Type D_3, possibly *T. georgei*.
After Ueyanagi (1973).

KOREAN NATIONAL REPORT

OFFICE OF FISHERIES

Republic of Korea

1. Introduction

The number of Korean tuna longliners engaged in operations in the Atlantic in 1972 was 107, and catches of tuna and tuna-like fishes amounted to 36,345 metric tons. These corresponded to 29 % of the total number of Korean vessels engaged in deep-sea tuna fisheries, and 37 % of the total catch, respectively. The Atlantic fishing ground has therefore become one of the major ones for Korean tuna fisheries. Up till now, most of the tuna vessels engaged in this fishery have been longliners, with just a few skipjack pole and line vessels. The vessels have been operating from various fishing bases along the West coast of Africa.

2. Sizes of vessels and ports of operation

A. As of the end of 1972, the number of Korean tuna vessels reached 360, with sizes ranging from 100 to 650 gross tons. The majority of these vessels are between 200 and 300 G/T, and no more than 14 are of 400 G/T or more.

The following table shows the size class distribution of vessels operating in the Atlantic Ocean.

Vessels by Tonnage

Tonnage	100-200	201-300	301-400	more than 400	Total
Number	11	58	24	14	107

Original Report in English.

It is obvious from the above table that vessels between 200 and 300 G/T (58 boats) form the major part of the Korean fleet in the Atlantic Ocean.

B. Seven bases have been used by Korean vessels operating in the Atlantic area and of these, Abidjan and Las Palmas are the most important.

The number of vessels using the different ports is shown in the following table:

Ports	*Number*
Freetown	7
Tema	7
St. Martin	11
Abidjan	44
Tenerife	16
Port of Spain	33
Las Palmas	19
TOTAL	107

3. Status of Catches

A. In 1972, 36,345 metric tons of tuna were caught by 107 vessels in the Atlantic. This showed a decrease of 10 vessels compared with 1971, while the average catch per boat was 340 metric tons, showing an increase of 7 %.

B. The average catch per vessel, as can be seen in the following table, suddenly went up in 1969, and has been stable since 1970. When comparing these figures with those for the other oceans, it is found that the average catch per vessel in the Atlantic for the last 3 years is higher, and more stable than any others. Taking into account the slight difference in size between the vessels in the different oceans, it is remarkable that the Atlantic fleet catches on average 40 % per vessel more than the fleets in the other areas.

Annual Catch by Year

Unit: 1,000 M/T

	66	67	68	69	70	71	72
Number of vessels	54	56	49	57	105	117	107
Catch	7.1	11.1	12.6	25.4	34.9	37.1	36.3
C.P.U.E.	0.13	0.20	0.26	0.45	0.33	0.32	0.34

Catch by Oceans

Ocean	*Category*	1970	1971	1972
Pacific	Number	690	122	178
	Catch	27,690	29,856	40,358
	C.P.U.E.	263.7	244.7	226.7
Atlantic	Number	105	117	107
	Catch	34,865	37,142	36,345
	C.P.U.E.	332.0	317.5	339.7
Indian	Number	36	52	75
	Catch	8,808	16,786	20,967
	C.P.U.E.	244.7	322.8	279.6
TOTAL	Number	236	291	360
	Catch	71,363	83,784	87,670
	C.P.U.E.	302.4	287.9	243.5

C. In regard to species compositions of the catch (see the table below), yellowfin and albacore constitute the main portion in 1972, as in the past. The relative importance of these two species varies from year to year, but they always comprise the major portion of the fishery.

Annual Catches by Species in the Atlantic

Unit: 1,000 metric tons

Species	*Years*						
	66	67	68	69	70	71	72
Bluefin						3.0	
Yellowfin			2.0	5.2	11.5	9.9	11.1
Albacore	6.7	10.3	7.3	16.0	10.0	11.5	13.6
Bigeye	0.2	0.3	0.2	1.6	4.1	7.4	5.7
Little tuna							
Skipjack							
Others	0,2	0.5	3.1	2.6	9.9	5.3	5.9
TOTAL	7.1	11.1	12.6	25.4	34.9	37.1	36.3
Rate of Composition (Yellowfin)			15.9%	20.5%	32.9%	26.7%	30.4%

Catches of albacore appear to have increased in recent years.

1970 showed the highest proportion of yellowfin in the total catch (32.9 % = = 11,500 metric tons). In 1971, this dropped to 26.7 %, then increased again in 1972 to 30.4 % (11,100 metric tons).

D. For the past few years, catches of yellowfin and albacore (which comprise the highest proportion of Atlantic tuna catches) have been relatively high from February to April and from August to November, but tend to drop off in the summer months.

4. Research activities

For various reasons (including the problem of distance), research on tuna resources is carried out by the Korean research agencies only in the Pacific and Indian Oceans. Attempts have been made to assess the resources in the Atlantic by analyzing the records of vessels operating in the area. Although up to the present time the data obtained in this way have been inadequate for carrying out accurate assessments due to the lack of skill in reporting, it is believed that such a system of data collection will bring about favorable results in the future.

As it is planned to extend the research activities of the Government agencies to cover all the areas, a more reliable assessment of resources is expected in the near future.

TUNA FISHERY AND STUDIES CARRIED OUT IN MOROCCO

Tuna catches in Morocco decreased in 1972 (2066 tons) compared to 1971 (2514 tons). This decrease is more noticeable in Atlantic catches, which went from 2,162 tons in 1971 to 1970 tons in 1972, while Mediterranean catches dropped from 352 tons in 1971 to 296 tons in 1972. This decrease was noted chiefly in catches of skipjack *(Katsuwonus pelamis)*, swordfish, Atlantic bonito *(Sarda sarda)*, Atlantic little tuna *(Euthynnus alletteratus)* and plain bonito *(Orcynopsis unicolor)*, while catches of bluefin *(Thunnus thynnus)* and frigate mackerel *(Auxis thazard)* have increased.

The tagging program initiated in the summer of 1972 has been continued this year. Up to the present, 15 trips have been carried out with a total of 90 fish tagged — 55 skipjack *(Katsuwonus pelamis)*, 18 young bluefin *(Thunnus thynnus)*, 10 Atlantic bonito *(Sarda sarda)*, 6 Atlantic little tuna *(Euthynnus alletteratus)* and 1 albacore *(Germo alalunga)* (see attached table).

These taggings were carried out from June to September in a region 33° to 35° 30′ N and not more than 30 miles from the coast. The fish were caught by trolling.

Bluefin this year have been less abundant than in 1972, and surface temperatures in the Casablanca region were in fact high during July and August since they reached an average of 23.5°C. On the other hand, these water temperatures are favorable for skipjack. Average length of bluefin caught was 51 cm.

Of the bluefin tagged in the Agadir region in November 1972, two were recaptured one month later. The fish had traveled about 90 miles towards the North.

Original Report in French.

Taggings of bluefin *(Thunnus thynnus)* in Morocco

Date	*Longitude*	*Latitude*	*Surface temperature °C*	*Length in cm.*	*Tag N.°*
18-6-73	06° W	34° N		53	PI 560
»	»	»		51	PI 562
»	»	»		52	PI 563
»	»	»		51	PI 564
»	»	»		51	PI 565
»	»	»		50	PI 566
»	»	»		52	PI 567
19-6-73	»	»		41	PI 568
»	»	»		50	PI 569
»	»	»		51	PI 571
»	»	»		49	PI 573
»	»	»		47	PI 575
»	»	»		50	PI 578
»	»	»		52	PI 579
»	»	»		56	PI 580
13-7-73	06° W	35° N		54	PI 581
8-8-73	07° W	33° N	22°2	59	PI 590
»	»	»		59	PI 591

Tagging of albacore *(Germo alalunga)* in Morocco

Date	*Longitude*	*Latitude*	*Surface temperature °C*	*Length in cm.*	*Tag N.°*
31-7-73	08° W	33° N	—	48	PI 583

Taggings of Skipjack *(Katsuwonus pelamis)* in Morocco

Date	*Longitude*	*Latitude*	*Surface temperature °C*	*Length in cm.*	*Tag N.°*
31-7-73	07° W	33° N		53	PI 582
»	08° W	»		48	PI 584
»	»	»		50	PI 585
»	»	»		50	PI 586
7-8-73	»	»	23	49	PI 587
»	»	»	»	49	PI 588
»	»	»	»	49	PI 589
23-8-73	»	»	»	47	PI 592
»	»	»	»	47	PI 593
»	»	»	22,5	47	PI 594
»	»	»	»	50	PI 595
»	»	»	»	48	PI 596
»	»	»	»	48	PI 597
»	»	»	»	50	PI 598
»	»	»	»	50	PI 599
»	»	»	»	45	PI 600
»	»	»	»	49	PI 601
»	»	»	»	49	PI 602
20-9-73	07° W	»	22°	45	PI 607
»	»	»	»	50	PI 608
»	»	»	»	50	PI 609
»	»	»	»	50	PI 610
»	»	»	»	46	PI 611
»	»	»	»	50	PI 612
»	»	»	»	47	PI 613
»	»	»	»	48	PI 614
»	»	»	»	50	PI 615
»	»	»	»	52	PI 616
»	»	»	»	52	PI 617
»	»	»	»	50	PI 618
»	»	»	»	50	PI 619
»	»	»	»	50	PI 620
»	»	»	»	49	PI 621
»	»	»	»	49	PI 622
»	»	»	»	48	PI 623
»	»	»	»	48	PI 624
»	»	»	»	49	PI 625
»	»	»	»	48	PI 626

(Cont.)

(Cont.)

Date	*Longitude*	*Latitude*	*Surface temperature °C*	*Length in cm.*	*Tag N.°*
21-9-73	07° W	33° N	20°	40	PI 631
»	»	»	»	47	PI 632
»	»	»	»	47	PI 633
»	»	»	»	50	PI 635
»	»	»	»	47	PI 637
»	»	»	»	48	PI 638
»	»	»	»	50	PI 639
»	»	»	»	49	PI 640
»	»	»	»	48	PI 641
»	»	»	»	48	PI 642
»	»	»	»	48	PI 643
»	»	»	»	50	PI 644
»	»	»	»	50	PI 645
»	»	»	»	46	PI 646
»	»	»	»	48	PI 647
»	»	»	»	49	PI 648
»	»	»	»	50	PI 649

Taggings of Atlantic Bonito *(Sarda sarda)* in Morocco

Date	*Longitude*	*Latitude*	*Surface temperature °C*	*Length in cm.*	*Tag N.°*
18-6-73	06° W	34° N		61	PI 561
19-6-73	»	»		51	PI 570
»	»	»		60	PI 572
»	»	»		53	PI 574
»	»	»		60	PI 576
»	»	»		63	PI 577
23-8-73	08° W	33° N	22°5	47	PI 603
»	»	»	»	47	PI 604
»	»	»	»	47	PI 605
»	»	»	»	47	PI 606

Taggings of Atlantic little tuna *(Euthynnus alletteratus)* in Morocco

Date	*Longitude*	*Latitude*	*Surface temperature °C*	*Length in cm.*	*Tag N.°*
21-9-73	07° W	33° N	20°	57	PI 627
»	»	»	»	58	PI 628
»	»	»	»	58	PI 629
»	»	»	»	50	PI 630
»	»	»	»	52	PI 634
»	08° W	33° N	»	59	PI 636

OVERALL REPORT ON THE SENEGALESE TUNA FISHERY

by

Centre de Recherches Océanographiques de Dakar-Thiaroye

Introduction

Industrial fishery on intertropical tuna started in the Dakar region in 1955. At that time, tuna vessels with iced-wells fished with live bait.

The first freezer baitboats appeared in 1958. Purse seining did not start until 1961 and 1962, and has since developed rapidly.

In 1965, Senegal formed the Société Sénégalaise d'Armement à la Pêche (SOSAP) to which all the national tuna vessels, both baitboats and freezer seiners, belong.

1. Overall statistics for tuna vessels fishing in the Guinean-Mauritanian Region (Dakar landings)

1.1. *Total catch since 1966 (landed or transshipped at Dakar by the Senegalese and French fleets).*

Table I

Year	*Tons*
1966	15,025
1967	10,176
1968	17,648
1969	11,795
1970	13,388
1971	21,866
1972	13,500
1973	(15,000)*

* Estimated after 7 months of fishing.

Note: Spanish catches in this area, transshipped at Dakar, are not known.

Original Report in French.

After an outstanding year in 1971, tuna catches experienced a falling off but show signs of picking up this year if the season continues normally.

1.2. *Gears used since 1966*

Tuna are landed at Dakar by French and Senegalese (SOSAP Group) tuna vessels, or are transshipped by freezer vessels of the Société pour la Vente du Thon Congelé (SO.VET.CO) group.

There are four main categories of tunaboats:

— Baitboats with iced wells
— Baitboats with freezers
— Purse seiners: — old type or medium size
— New large purse seiners. These did not unload at Dakar before 1970.

Table II

Year		*Baitboats*	*Purse seiners*	TOTAL
1966	Wt. (tons)	11,937	3,088	15,025
	%	79.5	20.5	100
1967	Wt. (tons)	9,681	495	10,176
	%	95.1	4.9	100
1968	Wt. (tons)	13,351	4,297	17,648
	%	75.7	24.3	100
1969	Wt. (tons)	9,830	1,965	11,795
	%	83.3	16.7	100
1970	Wt. (tons)	5,803	7,585	13,388
	%	43.3	56.7	100
1971	Wt. (tons)	8,315	13,551	21,866
	%	38.0	62.0	100
1972	Wt. (tons)	5,208	8,292	13,500
	%	38.6	61.4	100

Since 1970, purse seiners have clearly taken the lead and will undoubtedly remain in this position as they are presently landing more than 60 % of the total tonnage. The importance of baitboats with iced wells, the oldest of the vessels, is declining since 1968, while that of freezer baitboats has increased slightly.

1.3. *Catches by species since 1966*

Catches landed at Dakar are made up of only three species:

— Yellowfin *(Thunnus albacares)*
— Skipjack *(Katsuwonus pelamis)*
— Bigeye *(Thunnus obesus)*

Only very occasionally are some albacore *(Thunnus alalunga)* and young bluefin *(Thunnus thynnus)* included. These are caught along the coast of Rio de Oro by boats with iced wells, en route to Dakar.

Table III

Year		*Yellowfin*	*Skipjack*	*Bigeye*	TOTAL
1966	Tonnage	11,074	3,833	118	15,025
	%	73.7	25.5	0.8	100
1967	Tonnage	5,313	2,656	2,207	10,176
	%	52.2	26.1	21.7	100
1968	Tonnage	9,202	8,259	187	17,648
	%	52.1	46.8	1.1	100
1969	Tonnage	7,703	2,881	1,211	11,795
	%	65.3	24.4	10.3	100
1970	Tonnage	6,877	5,931	580	13,388
	%	52.0	44.0	4.0	100
1971	Tonnage	11,513	9,949	404	21,866
	%	53.0	45.0	2.0	100
1972	Tonnage	6,687	6,622	183	13,492
	%	49.5	49.0	1.5	100

The species composition of landings shows an increase in skipjack catches and a decrease in bigeye.

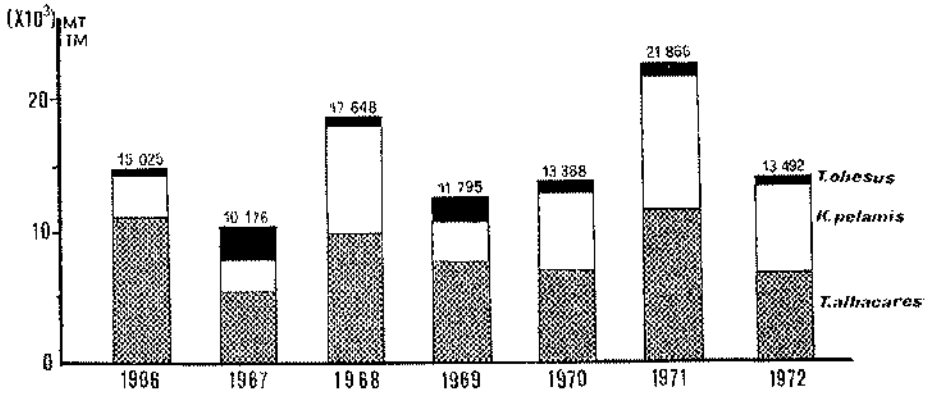

FIG. 1. Species breakdown of tuna landed at Dakar from 1966 to 1971.

1.4. *Catch per country since 1966*

Table IV

Country	*Landings (tons)*						
	1966	1967	1968	1969	1970	1971	1972
Senegal	1,786	1,831	1,292	739	3,084	6,219*	2,944*
%	12.0	19.0	7.0	7.0	23.0	36.0	52.0
France	13,239	8,345	16,356	11,056	10,104	15,647	10,548
%	88.0	81.0	93.0	93.0	77.0	64.0	48.0

Note: Since 1970, the SOSAP tuna fleet has been taking good catches in the sector of Abidjan and Pointe Noire. The figures marked (*) correspond to the tonnage fished by this fleet in the DAKAR area only; the total amounts caught by SOSAP are: 8,900 tons in 1971, and 11,339 tons in 1972, i.e. a 24.4 % increase in landings.

2. Development of the Senegalese National Fleet

2.1. *Development of the fleet*

The whole national tuna fleet, baitboats and freezer seiners, belongs to the Société Sénégalaise d'Armement à la Pêche (SOSAP).

The development of this fleet since SOSAP was formed in 1965 is shown in Table V.

Table V. Development of the SOSAP fleet since 1965.

	Baitboats			*Seiners*		
Year	*No. of boats*	*Gross Tons*	*Capacity (MT)*	*No. of boats*	*Gross Tons*	*Capacity (MT)*
1965	1	235	100			
1966	4	986	400			
1967	5	1,246	500			
1968	5	1,246	500			
1969	5	1,246	500	4	1,200	480
1970	7	1,806	700	4	1,200	480
1971	8	2,086	800	8	2,400	1,020
1972	6*	1,516	600	9	2,700	1,155

* The two oldest baitboats were converted into sardine boats in 1972.

In 1972, SOSAP caught 11,339 tons of tuna, compared with 8,900 in 1971. (At first only 70 %, and later 26 %, were landed at DAKAR.)

The species breakdown for these two years is as follows:

		Yellowfin	*Skipjack*	*Bigeye*	*Albacore*	TOTAL
1971	Tons	5,245	3,463	192	0	8,900
	%	58.9	28.9	2.2	0	100.0
1972	Tons	7,174	4,112	4	49	11,339
	%	63.27	36.26	0.04	0.43	100.0

3. Catch-per-unit-effort in the Guinean-Mauretanian area since 1966 (French/Senegalese statistics)

3.1. *C.P.U.E. of medium-size vessels*

Table VI shows the breakdown by gear and by species of the catch-per-unit-effort. The fishing effort is measured in *days at sea*. According to LE GUEN and POINSARD (1970), this is presently the best index of effort for a fleet mainly comprised of baitboats and medium-size seiners.

Table VI. Catch-per-unit-effort (CPUE). (Tons/Days at sea.)

Year	*Type of vessel*	*Yellow-fin*	*Skip-jack*	*Bigeye*	TOTAL
1966	Baiboats with iced wells	1.30	0.39	0.02	1.71
1967	Baitboats with iced wells	0.60	0.37	0.53	1.50
1968	Baitboats with iced wells	0.91	0.90	0.02	1.83
	Baitboats	2.07	1.04	0.05	3.16
	Seiners	2.04	2.47	0.00	4.51
1969	Baitboats with iced wells	0.80	0.29	0.14	1.23
	Baitboats	0.95	0.46	0.21	1.62
	Seiners	3.64	1.23	0.09	4.96
1970	Baitboats	0.58	0.79	0.09	1.46
	Medium seiners	1.86	1.54	0.07	3.47
1971	Baitboats	0.91	0.99	0.06	1.97
	Medium seiners	2.47	1.80	0.03	4.31
1972	Baitboats	0.60	0.63	0.03	1.27
	Medium seiners	1.80	1.48	0.02	3.30

The CPUE of the baitboats fluctuates less than that of the seiners. In actual fact, the former fish in the region throughout the year, so it is easy to observe annual variations in the abundance of surface tuna. On the other hand, the seiner

effort varies considerably from year to year since these vessels tend to concentrate around the densest concentrations of fish.

3.2. *C.P.U.E. of large seiners*

The average annual CPUE for large seiners is of little importance as this type of vessel only fishes in the region very occasionally. However, some monthly CPUE figures for 1972 show that the seiner is definitely superior in fishing potential.

Large seiners — 1972

Month	*C.P.U.E. (tons/days at sea)*
September	5.10
October	9.91
November	6.72

4. Distribution of catch by fishing area

4.1. *Distribution of catches made off the West African coast*

The areas of catch in 1971 and 1972 were very different. In 1971, the Dakar region (from Cap des Palmes to Cap Blanc) was the most productive. In 1972, catches were more abundant in the Pointe Noire region (from Gabon to Angola).

Table VII. Distribution of catch by fishing area (in tons) in 1971 and 1972

Species	*Dakar*		*Abidjan*		*Pointe Noire*		*Total*	
	1971	1972	1971	1972	1971	1972	1971	1972
Yellowfin	11513	6687	364	1981	1003	3685	12880	12353
Skipjack	9949	6622	184	1005	592	2028	10725	9655
Bigeye	404	183	0	34	44	0	448	217
Albacore	0	0	0	0	0	49	0	49
TOTAL	21866	13492	548	3020	1639	5762	24053	22274

4.2. *Distribution of catch in the Guinean-Mauretanian region*

The Guinean-Mauretanian sector has up to now been subdivided into 3 fishing areas:

— North Bissagos (NB) — from latitude 10° to 20° N, from the coast to 20° W
— Cap Vert Islands
— South Bissagos (SB) — from Cap des Palmes to 10° N. Exploitation is secondary.

The area of the Cap Vert Islands has been included in the NB sector in the following table.

Table VIII shows the distribution between the NB and SB areas over the last three years.

Table VIII. Catch distribution by area (in tons)

Year	*NB*	*SB*	*Total*
1970	7,295	6,093	13,388
1971	12,366	9,500	21,866
1972	7,324	6,168	13,492

The decrease in catches in 1972 was chiefly in the NB area. The year class recruited in 1971 (CHAMPAGNAT & LE MARREC, 1972) seems to have undergone too great a fishing effort. The seiners, which spend more and more time fishing skipjack, catch larger quantities of young yellowfin than before.

Table IX. Distribution according to percentage (%) of catch per area in 1971 and 1972

Year	*Species*	*Catches (%)*	
		NB	*SB*
1971	Yellowfin	56	44
	Skipjack	63	37
	Bigeye	96	4
1972	Yellowfin	46	54
	Skipjack	60	40
	Bigeye	78	22

5. Distribution of the different species in the Dakar Region

5.1. *Yellowfin*

Studies carried out previously have allowed two independent yellowfin stocks to be identified, at least as far as fish under 3 years are concerned. The separation of the two lies between 10° N and 11° N, on the latitude of the Bissagos Islands, and approximately corresponds to the point of maximum extension of the upwelling waters.

The South Bissagos population, which is mainly fished from January to March along the Liberian coast, seems to spread from Cap des Palmes to the Bissagos from April to June. From July to September, this area is little explored as the great majority of the tuna fleet fishes north of Dakar. It is not until October that the fishing effort is again concentrated in this region, when the availability of yellowfin in the NB area decreases (CHAMPAGNAT, GIRET, 1973).

5.2. *Skipjack and bigeye*

Skipjack are chiefly caught in the NB area by baitboats. When seiners are in the region, catches become larger in the SB area.

The simultaneous existence of large concentrations of skipjack in different areas allows for a hypothesis to be made on the existence of several relatively independent populations.

Bigeye are often found with the Senegalese-Mauritanian stock of yellowfin but are only occasionally found in the Guinean stock. This species is decreasing in the Dakar catches.

Conclusions

The constant increase in fishing effort and the systematic searching for skipjack by purse seiners have led to a decline in the yellowfin stock, and younger fish are being caught. Skipjack, up till now considered a secondary species, are called upon to cover to a great extent the shortage of yellowfin and there is now systematic searching for it. A suitable regulation appears to be necessary to avoid a rapid destruction of intertropical tuna stocks.

REVIEW OF NATIONAL FISHERIES AND RESEARCH PROGRAMMES: SOUTH AFRICA

by

G. H. STANDER

a) The Fishery

Commercial activity was limited to the operations of five vessels equipped with purse-seine nets in the Cape Agulhas area and two longliners. The catch consisted mainly of yellowfin tuna and amounted to less than 100 metric tons. Sport fishing was conducted in the Cape Point region during the summer months.

Estimated landings of tuna in South Africa remain well below 1,000 metric tons.

b) Tagging

Two taggings cruises were conducted, namely during October/November 1972 and December 1972, and proved to be the most successful to date. A total of 184 albacore was marked. During a further attempt in March 1973 only yellowfin tuna were encountered.

The fish were caught by trolling and all specimens were double-tagged. ICCAT was furnished with tagging cruise reports and completed tag release data forms.

Further tagging cruises are planned for the summer of 1973.

c) Biological sampling

Sampling of catches was done at Gansbaai on the southern coast of the Cape Province during the first four months of the year. A total of 103 yellowfin was examined.

Original Report in English.

d) The environment

The sea surface temperature of the waters between the coast and the offshore oceanic front is still being monitored monthly by airborne radiation thermometry between Cape Agulhas and Mocamedes.

These data are supplemented by hydrographic surveys carried out by research vessels.

e) Statistics

Catch statistics were collected and supplied to ICCAT.

f) Legislation

South Africa's Amended Sea Fisheries Act (No. 58 of 1973) will become effective shortly and a regulation prohibiting the taking and landing of yellowfin tuna weighing less than 3.2 kg is being provided for.

SPANISH NATIONAL REPORT — 1973

by

O. CENDRERO

Spanish tuna research in 1973 was carried out on two different fisheries. Firstly, the studies initiated in 1972 on the *Thunnus alalunga* fishery carried out by the fleets based along the Cantabrian/Galician coast were continued and, in part, extended. Secondly, a fairly intensive study on tuna fisheries in the Canary Islands was undertaken, with the effective collaboration of the ICCAT Secretariat staff.

Thunnus alalunga fisheries in the north of Spain

As in 1972, immediately the fishery on this species was started by the fleets off the north and northeast coast of Spain, research workers from the Spanish Oceanographic Institute and the Fishery Research Institute also commenced the collection of data, as follows:

1. *Reports on fishing effort.* Through visits to the boat captains in the different ports, information on: days at sea, days fishing, tonnage, number of crew, carrying capacity of live-bait tanks, horse power and number of hooks, was collected from a number of vessels — making the study as representative as possible. Catch data were also requested, both on weight and number of fish, determining, whenever possible, the catch by day or by fishing area. The information was recorded on the standardized ICCAT forms, to be processed later.

2. *Data on stock composition.* At the time the above mentioned interviews took place, biological samplings were carried out to determine the size composition of each catch. These data will be compared with those already published for 1972 (González-Garcés *et al.*, 1973), and with the data collected by the French scientists carrying out research on the same fishery, in order to make a joint assessment of the population.

3. *Studies on the fishing areas.* By distributing logbooks and maps showing areas by squares in accordance with the CEDO (Spanish Oceanographic Data

Original Report in Spanish.

Center) code, and also thermometers, to the captains of quite a few vessels, an attempt was made to determine the fishing areas and the influence of surface temperatures on the presence of *T. alalunga*. The system has not been functioning very well and needs to be improved in 1974; it has however helped to show that the migratory patterns of this species have, in general, coincided with those of 1972.

4. *Other data.* Some information was also collected on the feeding habits and stomach contents of *T. alalunga*, and appears in document SCRS/73/29.

Tuna fisheries in the Canary Islands

As already mentioned, studies on these fisheries were commenced by the Spanish Oceanographic Institute in 1973, with collaboration from the ICCAT Secretariat. The different items under study were:

1. *List of the important ports of landing.* A list of the principal tuna fishing ports (by «tuna» we mean the species in general) in the Islands has already been compiled. These total 29, of which the majority (19) are in the western islands (in the province of Santa Cruz de Tenerife).

2. *List of the fleets based in each port.* The composition of the fleet in each of the 29 ports mentioned above has been determined according to the number of boats — classifying these in four categories according to their tonnage — and the number of crew per boat in each category. This has given a fairly detailed picture of the Canarian tuna fleet, which is composed of 469 vessels with a total crew of 2,018.

3. *Landing statistics by species, port and vessel.* Through interviews and samplings, we have learned that 11 species of tunas are fished by the Canarian fleet. Approximately two thirds of the catches are landed at ports in the province of Las Palmas, the predominant species being skipjack *(Katsuwonus pelamis)*.

4. *Studies on stock composition.* Samplings of catches are carried out regularly to determine the size composition, as well as the composition of the different stocks exploited by the Canarian fleet.

Catch

After reaching a peak in 1967 and sharply falling the following year, Spanish tuna catches started to increase again in 1969, 1970 and 1971. However in 1972 they declined again, being about 9 % lower than in the previous year. This general

decline was most noticeable in the principal species fished, *Thunnus alalunga*, which dropped more than 12 %. Although we do not have complete data yet on the 1973 catches, the information at our disposal indicates that *T. alalunga* fisheries off the Galician/Cantabrian coast were also about 10 % lower than in 1972.

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Documents SCRS/73/29, SCRS/73/31, SCRS/73/46, SCRS/73/47, SCRS/73/48, SCRS/73/49 of the 1973 ICCAT Commission meeting.

ICCAT Statistical Bulletin, Vol. 3, 1973.

UNITED STATES REPORT ON FISHERIES AND RESEARCH OF ATLANTIC TUNA AND TUNA-LIKE FISHES, 1973 [1]

National Marine Fisheries Service
Southwest Fisheries Center
La Jolla, California 92037

Review of fisheries

About 30,038 tons of Atlantic tuna and tuna-like fishes were landed in 1972 by United States fishermen (Table 1). The tonnage was an increase of 4 % from that of 1971. Tropical tunas, yellowfin and skipjack, continued to be the dominant species of Atlantic tunas landed by U.S.A. fishermen. The total landing was 24,426 tons in 1972, the highest recorded for the U.S.A. fleet. As in previous years, beginning with 1967, nearly all of the 1972 U.S.A. Atlantic catch of tropical tunas was made in the eastern tropical Atlantic (Table 2). The fishing season in 1972 was from April through November, and the catch rates were 3.3 tons of yellowfin tuna/day's fishing and 3.7 tons of skipjack tuna/day's fishing. The average length of fish in the catch was 70 cm for yellowfin tuna and 49 cm for skipjack tuna.

This year, U.S.A. fishermen are experiencing an excellent fishing season in the eastern tropical Atlantic (Table 2). Total fishing effort for the season is expected to be lower than the 3,700 vessel days of fishing of 1972, but the total catch is expected to be a record one with skipjack making up the bulk. Preliminary reports indicate that the catch rates are high — 4 tons of yellowfin tuna/day's fishing and 21 tons of skipjack tuna/day's fishing.

The 1972 landing of bluefin tuna was about 1,814 tons or about 42 % less than that of 1971. Two-year-old fish were the dominant age group in the 1972 catch. Preliminary reports from the 1973 fisheries indicate that the bluefin tuna landing will decrease about 10 % in 1973, continuing the downward trend which began in 1971, and the dominant age group in the catch will probably be 2-year-old fish.

U.S.A. landings of little tunny and bonito were low in 1972. Landings of these species have historically been quite variable and have probably been greatly affected

1. Report prepared by the National Marine Fisheries Service, Southwest Fisheries Center, for the Third Regular Meeting of the International Commission for the Conservation of Atlantic Tunas, November 28-December 4, 1973, Paris, France.

Original Report in English.

Table 1. Commercial Landings of Atlantic tuna and tuna-like fishes by United States fishermen for 1960-72 [1]

	Landings (metric tons) by species [2]										
	Tuna							Mackerel [4]			
Year	*Bluefin*	*Yellowfin*[3]	*Skipjack*	*Little tunny*	*Bigeye*	*Bonito*	*Sword-fish*	*Spanish*	*King*	*Unclassi-fied*	*Total*
1960	637	—	—	7	—	80	459	3,581	1,654	—	6,418
1961	1,074	—	—	1	—	63	409	3,372	1,734	—	6,653
1962	3,969	17	463	7	—	78	424	4,355	1,886	—	11,199
1963	5,672	207	2,995	5	—	96	1,250	3,535	2,294	5	16,059
1964	4,882	126	3,980	2	—	29	1,384	2,755	1,569	56	14,783
1965	3,184	—	64	10	—	83	1,226	3,634	2,083	114	10,398
1966	1,238	—	39	21	—	56	616	4,295	2,051	4	8,320
1967	2,319	977	489	7	—	22	474	3,577	2,767	10	10,642
1968	635	6,104	3,219	—	—	43	274	5,342	2,813	113	18,543
1969	1,226	17,394	5,712	7	—	98	171	4,952	2,814	1	32,375
1970	3,328	11,638	10,736	115	—	68	130	5,506	3,052	—	34,573
1971[4]	3,154	3,750	16,921	4	544	31	2	4,690	2,560	112	31,768
1972[4]	1,814	12,259	12,167	5	—	23	89	4,225	2,455	1	33,038

1. Includes catches by U.S. vessels landed at Puerto Rico and outside U.S.: does not include catches from other oceans landed at Puerto Rico. Does not include sport catches of species other than those listed. Does not include more than 3.500 tons caught by U.S. vessels in the eastern tropical Atlantic in 1958-1963.
2. Bluefin, *Thunnus thynnus*; bonito, *Sarda sarda* (probably ncludes varying quantities of other small tunas); little tunny, *Euthynnus alletteratus*; yellowfin, *T. albacares*; skipjack, *Katsuwonus pelamis*; swordfish, *Xiphias gladius*; Spanish mackerel, *Scomberomorus maculatus*; King mackerel, *Scomberomorus cavalla.*
3. Includes catches of bigeye tuna in some years but the amount is small.
4. Provisional statistics.

by market conditions. U.S.A. swordfish landings in 1972 showed a sharp increase from the low of 2 tons in 1971. The low 1971 landing resulted from regulations that prevented swordfish with high mercury content from entering the U.S.A. market and also from consumer resistance for the product. Regulations of mercury content in fish were still in force in 1972 but it appears that there was some eroding of consumer resistance which contributed to the increase in swordfish landings.

The U.S.A. total mackerel landings (Spanish and King mackerel) was 6,680 tons in 1973. The landings of both species have remained fairly steady from 1960-72.

Table 2. Catch and catch rate of yellowfin and skipjack tunas caught by American seiners[1] in the eastern tropical Atlantic. Source of data is the Inter-American Tropical Tuna Commission

		YELLOWFIN		SKIPJACK	
Year	*Number of seiners*	*Catch (metric tons)*	*Catch rate (metric tons/ day's fishing)*	*Catch (metric tons)*	*Catch rate (metric tons/ day's fishing)*
1967	3	977	7.8	473	3.8
1968	8	6,198	23.3	3,193	12.0
1969	25	19,845	10.9	4,440	2.4
1970	23	9,065	4.0	11,423	5.1
1971	24	4,356	2.7	16,141	10.0
1972	33	12,021	3.3	12,152	3.7
1973[2]	24	3,700	4.0	20,800	21.0

1. Purse seiners flying the flags of Canada, Netherlands, Panama and the U.S.A. are included.
2. Preliminary estimates as of November 1. Does not include possible catches for November and December.

Review of research activities

United States research activities on Atlantic tuna and tuna-like fishes are conducted by the National Marine Fisheries Service (NMFS), Southwest Fisheries Center (SWFC), La Jolla Laboratory, the NMFS, Southeast Fisheries Center (SEFC), Miami Laboratory, and the Woods Hole Oceanographic Institution (WHOI). Coordinating responsibility lies with the SWFC. In 1973, U.S.A. research was on problems associated with the yellowfin, skipjack, and bluefin tuna and billfish populations.

Yellowfin. — Preliminary statistics on the total catch of yellowfin tuna from the Atlantic showed an increase in 1972 from the downward trend which began in 1970. Since the increase was significant and the 1972 total catch is probably an all-time high, research attention on yellowfin tuna was focused on in-depth analysis of catch-per-unit-of-effort to estimate a maximum sustained average yield (Fox and Lenarz), analysis of cohorts to estimate year-class strength and to evaluate effects of changes in a minimum size limit (Fonteneau and Lenarz), and analysis of data collected from U.S.A. vessels that participated in the 1972 eastern tropical Atlantic tuna fishery. The analysis of cohorts was a joint project involving French scientists of ORSTOM and American scientists of the SWFC.

A technical expert was loaned to ICCAT to assist ICCAT in the collection of tuna fisheries data in Africa. The expert worked strictly under the direction of the ICCAT Secretariat and collected data from several fleets, among them the U.S.A. purse-seine and baitboat fleets. Data collected from the U.S.A. fleets were length measurements of fish landed and catch and effort.

Under an NMFS contract, the Inter-American Tropical Tuna Commission also assisted in the collection of statistics on catch and effort and length-frequency samples of Atlantic tunas landed by U.S.A. vessels in California and Puerto Rico.

Tagging of tunas in the Atlantic has been encouraged by ICCAT as a tool for better understanding the population dynamics of Atlantic tunas. In 1973, 11 yellowfin and 59 skipjack tuna were tagged by WHOI off the northeastern coast of the United States. Scientists of SWFC assisted in the training of scientists from the Fisheries Research Unit of Ghana in procedures used in tagging tropical tunas.

Skipjack. — U.S.A. research on skipjack tuna in 1973 was focused particularly on evaluating the effects of a minimum size limit on the yield per recruit of skipjack tuna (Lenarz and Fox).

Bluefin. — As a first step in formulating a rational management program for Atlantic bluefin tuna, it was deemed necessary to evaluate the dynamics of the population on a regional and on an Atlantic-wide basis. In 1973, two important areas concerning the dynamics of the bluefin tuna population were investigated by U.S.A. scientists. One was a review of the bluefin tuna fisheries, which included an evaluation of the quality and quantity of available data, estimation of some population parameters, examination of trends in production and proposal of measures for improving the understanding of the dynamics of the population (Sakagawa and Coan). The second was a review of information pertinent to understanding the stock composition of the population.

In addition, tagging studies on bluefin tuna continued to be carried out by WHOI and NMFS. Tagging in 1973 included the completion of an experiment begun in 1971 to double tag 1,000 school bluefin tuna (< 70 kg) in order to compare two types of tags — plastic dart tag (WHOI D) and stainless steel dart tag

(WHOI H) — and to estimate shedding rates. This project was carried out by the Fisheries Research Board of Canada, NMFS and WHOI, jointly. WHOI tagged a total of 394 bluefin tuna in 1973 with 50 of these being large fish (> 120 kg). Tag returns, especially for the school bluefin, showed high rates, the greatest of which presently stand at 44.2 % for 1968 releases and 39.7 % for 1970 releases. All years from 1966 on have return rates of over 23 % with the exception of the new releases of 1973, of which only 8.4 % have so far been recaptured. The tag return rate for large bluefin tagged off New England also increased markedly in 1973.

The catch of the bluefin tuna purse-seine fishery off the northeastern United States was sampled for lengths of fish and the age composition of the catch estimated. Data on total catch and effort by this fishery were also collected in order to monitor the effects of fishing on the stock.

Billfish

U.S.A. research on billfishes received emphasis in 1973. WHOI assisted recreational fishermen in tagging over 250 while marlin, 680 sailfish and 90 blue marlin. Scientists of SEFC tested procedures for collecting statistics and biological information from sport fishermen. The procedures included sampling the catch at tournaments.

In 1973, a unique experiment was conducted by the U.S.A. to relate occurrence of game fishes to oceanographic features, such as water temperature, salinity, currents, upwellings, and productivity, in a 3,000 square mile area in the northeastern Gulf of Mexico. The experiment was a coordinated effort, involving recreational fishermen, astronauts aboard SKYLAB, orbiting satellites, specially-equipped aircraft, and research vessels. SEFC coordinated the activities of the fishermen and research vessels.

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LENARZ, W. H., and W. W. FOX, JR.

A preliminary analysis of yield per recruit of Atlantic skipjack tuna.

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Cohort analysis of the eastern Atlantic fishery for yellowfin tuna.

FOX, W. W., JR., and W. H. LENARZ.

A production model analysis of the status of Atlantic yellowfin tuna.

SAKAGAWA, G. T., and A. L. COAN.

A review of some aspects of the bluefin tuna *(Thunnus thynnus thynnus)* fisheries of the Atlantic Ocean.