INTERNATIONAL COMMISSION
for the
CONSERVATION of ATLANTIC TUNAS

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

MADRID, SPAIN 1973

INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS

Member Countries (as of March 1, 1973)

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

Chairman of Commission

Mr. J. TOUYA, France

First Vice-Chairman of Commission

Dr. M. P. PAIVA, Brasil

Second Vice-Chairman of Commission

Mr. D. LAYACHI, Morocco

Panel Membership (as of March 1, 1973)

Panel	Contracting Parties	Chairman
1	Brazil, Canada, France, Ghana, Japan, Korea, Morocco, Portugal, 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	Japan, Portugal, Spain, U.S.A.	Spain

Council

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

Standing Committees

Committees:	Chairman
Committee on Research and Statistics (SCRS)	Mr. V. VALDEZ, Portugal
Committee on Finance and Administration (STACFAD)	Dr. W. M. SPRULES, Canada

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 I (1972)"***, describing the activities of the Commission during the first half of said biennial period.

The volume contains reports of the Second Regular Meeting of the Council, held in November-December, 1972, 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

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CHAPTER I

ADMINISTRATIVE REPORT 1972 *

CON/72/7 (Amended)

1. Meetings

i) *Second Regular Meeting of the Commission*

The Second Regular Meeting of the Commission was held in Madrid, December 2-7, 1971. The four Panels and the Standing Committee on Finance and Administration also met at that time. Previously, beginning on November 26, the Standing Committee on Research and Statistics, preceded by its Sub-Committees, held meetings. For details, please see 1970-71 Biennal Report, Part III.

ii) *Working Group — Abidjan*

As decided by the SCRS at its 1971 meeting, a group of scientists met in Abidjan, June 12-16, under the chairmanship of Dr. J. C. LeGuen to evaluate yellowfin and bluefin stock conditions. The scientists exchanged substantial information prior to the meeting. The Secretariat actively participated in preparations. The report was distributed in advance of the Council meeting (SCRS/72/7).

iii) *Meetings held by the Secretariat during 1972*

The Secretariat held several brief meetings in connection with the coordination of research programs and the improvement of statistics. One meeting took place in Santander, in northern Spain, and another in Madrid, and these were attended by officials of the Spanish Oceanographic Institute, the Spanish Directorate of Marine Fsheries, Mr. Dao (a French scientist), and members of the Secretariat staff. The purpose of both meetings was to initiate port surveys in northern Spain. For further details refer to 3-iii.

Another meeting was held at ICCAT headquarters in connection with Canary Islands statistics and was attended by members of the Spanish Oceanographic

* Revised version of «Administrative Report» presented at Council Meeting.

Institute in the Canary Islands, the Spanish Directorate of Marine Fisheries and Secretariat officials.

iv) *Meetings at which ICCAT was represented*

a) *IATTC*

The Assistant Executive Secretary attended the annual IATTC and intergovernmental meetings in Tokyo, January 6-13, 1972, as an observer. IATTC held another meeting (for 1973) November 7-11, 1972, in Panama, and the Secretariat was again represented by the Assistant Executive Secretary.

Because tuna fleets move from one ocean to another, management measures taken by one tuna organization directly affect the fisheries of another. For commercial and scientific reasons as well, it was strongly felt that the closest cooperation possible between IATTC and ICCAT would be even more desirable in the future.

b) *COFI*

The Executive Secretary attended the FAO Fisheries Committee meeting (COFI) in Rome, April 6-13, 1972 as an ICCAT observer. Of particular interest is the recommendation made by the Committee to promote close working relations among regional bodies concerning management of tuna resources, although it was felt that formation of a single tuna management body is not feasible at present.

c) *ICSEAF*

The Executive Secretary attended the First Regular Meeting of the International Commission for the Southeast Atlantic Fisheries (ICSEAF), held in Rome, April 24-29, 1972. ICSEAF agreed that it would be most appropriate to establish and maintain close working relations with ICCAT in order to avoid a duplication of effort. The Executive Secretary reported on the decision of ICCAT taken at the Second Regular Meeting, regarding its interest in ICCAT/ICSEAF relations. He also participated in discussions on technical, administrative and financial matters.

d) *IOFC/IPFC*

The Assistant Executive Secretary attended the IOFC/IPFC Working Party on Tuna Stock Assessment in Rome, June 7-9. The purpose of the group was to attempt an analysis of the current status of tuna stocks, mainly in the Indian Ocean.

2. Cooperation with other organizations

i) *FAO*

The Secretariat prepared Document CON/72/10, expanding on the status of legal relationships between FAO and ICCAT.

Working relations with FAO were intensified in the past year. All requests for statistics from non-member countries went out through the CWP Secretariat, FAO, and all tuna statistics are now cross-checked by ICCAT and FAO.

A part of the ICCAT Field Manual was prepared in coordination with the FAO Species Identification Sheet project. It was mutually agreed that the Manual may be used by FAO to complete its Identification Sheets.

ii) *IATTC*

Excellent working relations have been maintained with IATTC and much scientific information has been exchanged. IATTC has provided ICCAT with valuable computer programs; further, IATTC assisted the Abidjan Working Group in making an analysis of present yellowfin stock conditions. Many tags released under the ICCAT tagging project have been returned through IATTC personnel. Also, a great deal of technical and scientific advice on tagging and other matters was given ICCAT by various staff members of IATTC.

iii) *ICSEAF*

As decided by the Commission, the Secretariat has given particular attention to ICCAT/ICSEAF relations. These were initiated by attendance of the Executive Secretary at the First Regular Meeting of ICSEAF, as mentioned in another section of this report [1-iv)-c)]. The Secretariats of both Commissions have since maintained cordial and effective cooperation in all matters of mutual interest. The fact that Madrid is the seat of both Commissions will notably facilitate this cooperation.

iv) *Codex Alimentarius*

v) *World Health Organization*

As decided by the Commission, the Secretariat established contact with the Codex Alimentarius, FAO, and the World Health Organization, in order to obtain information on programs being carried out as regards research on heavy metal contamination. As a result of such contacts, the Secretariat received from FAO three microfiche cards of a 150-page document with 2,800 references to pollution. These include information on mercury contamination in fish, toxicology, therapeutics, legislation and trade. The reference is «Mercury in the Environment and

its related Toxicological Aspects. A selected bibliography». (3 microfiche cards No. 16221) These can be obtained on request from:

Documentation Centre, FAO,
Via delle Terme di Caracalla,
00100, Rome, Italy

for a fee of $ 1.00 U.S. per card.

Additionally, the Secretariat will, of course, maintain pertinent contacts with the above organizations in order to continue receiving information.

3. Development of research program

i) *Collection of Statistics*

The SCRS established five activities at the Second Regular Meeting of the Commission, three of which relate to collection of statistics. The Secretariat has made progress in carrying out these tasks, adhering to the schemes outlined at the above meeting. From time to time progress reports have been circulated among the scientists, and a special paper evaluating present programs and future plans was distributed among the scientists concerned early in June. Additional observations and analyses are presented to the SCRS as Document SCRS/72/5.

Although significant progress has been made in collecting statistics, it is regretted that some countries continue to experience problems in meeting requirements. The Secretariat has endeavored to solve problems, sometimes through correspondence, and occasionally by visiting the respective statistical offices. The statistician recently recruited by the Secretariat, as decided at the Second Regular Meeting of the Commission, will greatly accelerate work along these lines. Up to 1972 all statistics have been handled manually, but the Secretariat is considering processing data by computer beginning in 1973, subject to the decision made at the SCRS meeting. Since the statistician is a computer programming expert, matters should be greatly facilitated. Besides, the accumulation of Task 2 statistics may make it desirable to adopt the automatic data processing system.

ii) *Stock identification studies*

As confirmed at the Second Regular Meeting of the Commission, and by the SCRS, the Secretariat completed the final list of all tags recovered in 1971, and on March 1 held a lottery for the special US $ 300 award. A Canadian cannery worker was the winner. The Secretariat took advantage of this event to publicize the joint tagging project to world fisheries.

Posters in eight languages announcing the reward were widely distributed and now appear in every world fishing area. This joint tagging operation is being continued in 1972 and the Secretariat serves as coordinator, providing tags on request (to Spain, France, Morocco and Brazil to date), exchanging information, forwarding reported tags, etc. The Secretariat is in the process of filing all tag recoveries on computer cards. IATTC computer programs for analyzing recovery data are also available at ICCAT headquarters, so that scientists in Madrid will be able to run on-the-spot analyses in future. The supply of tags at ICCAT headquarters is running low and an order for 10,000 has been placed.

iii) *Spanish-French cooperation*

As discussed in Section I-iii, the Secretariat coordinated a Spanish port survey program. Scientists of the Spanish Oceanographic Institute are responsible for this project, and French scientists are involved on a personal basis. As one aspect of this project, captains of boats coming into ports in northern Spain are interviewed to ascertain the geographical distribution of their effort and catches, as well as biological sampling. Results of the survey will be analyzed by the Spanish Oceanographic Institute.

4. Commission publications

i) *Basic policy*

In compliance with assignments given the Secretariat by STACFAD 1971, Madrid, the Secretariat made an exhaustive study of the format, cost and distribution of publications (Document CON/72/14). Although a final decision will be made by the Council or the Commission, timing was such that the Secretariat had to find an interim solution; thus all formal publications prepared during 1972 were produced in the same size and form as the Biennial Report for 1970-71. This was done particularly in consideration of a suggestion made at the above meeting that all publications should be in identical format. The exception was the Statistical Bulletin, which was larger than the above form and the same size as that of other internal publications such as the Abidjan Meeting Report, etc.

ii) *Biennial Report*

The report covering Commission activities during the second half of the 1970-71 biennial period was printed and circulated in the three official languagues. Because the workmanship was satisfactory and cost reasonable, the same printer who undertook the work in 1971 was contracted.

iii) *Basic Texts*

Basic texts were prepared following recommendations made by STACFAD, Madrid, 1971. The volume includes the Convention, Rules of Procedure, Financial Regulations and Agreement between the Spanish State and the Commission. The texts have been prepared in looseleaf form so that any corrections or changes in content can easily be inserted.

iv) *Field Manual*

The first draft presented at the SCRS meeting, Madrid, 1971 was further improved to include suggestions made by the various scientists. Contributions on taxonomy made by Dr. Bruce Collette of the Ichthyological Laboratory, National Museum, Washington, D.C., were particularly appreciated. Publication was completed prior to the meeting of the Council. It is hoped that this work will prove useful to field workers as well as fishermen and we have been encouraged by the number of advance requests for copies.

v) *Statistical Bulletin*

The Statistical Bulletin for 1972 has been prepared and circulated. The looseleaf format was maintained to enable substitution of corrected pages.

vi) *Newsletter*

The Commission had published four Newsletters as of the time of the meeting; these covered Secretariat and Commission activities in general, the purpose being to keep everyone up-to-date.

5. Secretariat management

i) *Changes in personnel*

Miss Marie-Elisabeth Carel, a French national, has been recruited as a trilingual secretary. An advertisement had been placed in newspapers of several countries.

Mr. Arnaud de Boisset, a French national, has been hired as a temporary statistician under contract until the end of 1973. Announcement of the vacancy was made to scientific institutions and national offices, and Mr. de Boisset was chosen from among many applicants because of his background, which includes experience in working with tuna statistics. Further, he is a capable computer programmer.

ii) *Travel*

a) *Asia*

The Assistant Executive Secretary attended the IATTC Annual Meeting in Tokyo. He discussed problems of statistics and scientific research with scientists, government officials and industry representatives. He later attended the Tuna Research Conference held at Shimizu, and again had the opportunity to catch up on recent progress in the field. His travel included visits to Korea and Taiwan. In the former country he went to Seoul and Pusan, establishing valuable contacts with government officials, industry representatives and, of even greater significance, scientists. In Taiwan he held extended talks with government and industry personnel, covering such items as statistics, fisheries management, etc. He made a side trip to Kaosiung where he witnessed tuna research activities.

b) *Within Spain*

Members of the Secretariat staff made a few trips to various Spanish ports in connection with the improvement of tuna statistics.

c) *Others*

Members of the Secretariat staff attended several other meetings, which included COFI (Rome), IOFC/IPFC (Rome), ICSEAF (Rome), ICCAT Working Group (Abidjan), IATTC (Panama). (Details have already been discussed in Section I-iv.)

iii) *Visitors*

The ICCAT Secretariat received many visitors during 1972. Among others, the following visits were of particular interest to us: Mr. Touya, Chairman of the Commission, who visited us on April 19; Mr. Valdez, Chairman of the SCRS was at the Secretariat on August 24 and 25, and Dr. Hayasi stayed in Madrid for a week on his way back from the Abidjan meeting, to work on completion of the Field Manual.

O. Rodríguez Martín
Executive Secretary

FINANCIAL REPORT 1972 *

CON/72/8 (Amended)

1. Auditor's Report

The Auditor designated by the «Instituto de Censores de Cuentas de España» examined the accounts and balance sheet of the Commission up to December 31, 1971. In compliance with Art. 9-3 of the Financial Regulations, a copy of the Auditor's Report was forwarded to all member countries in March, 1972. An extract of same has been included in the 1970-71 Biennial Report, Part III.

2. Current status of Commission accounts

As shown in Statement 1 of this report, there were US $ 46,420.57 in the Commission treasury as of December 31, 1971.

The 1972 budget, expenditures and balance appear in Statement 2.

The following remarks are offered:

i) *Salaries and allowances*

Spain has been regrouped by the United Nations in their classification for salary computation. This resulted from the rising cost of living and, above all, from changes in peseta quotations with respect to the United States dollar as follows:

1970-71: $ 1.00 = 70 Ptas.
1972: $ 1.00 = 63.35 Ptas.

Spain (Madrid) Class 1 — after January 1, 1972
Class 2 — after June 1, 1972

* Revised version of Financial Report submitted to the Council Meeting.

Retroactive salary adjustments have been estimated on the basis of information furnished by the financial services of FAO.

ii) *Travel*

The Commission allotted funds to cover expenses incurred by an expert attending the meetings of the Special Working Group on Yellowfin Stock Assessment, Abidjan, June 1972. This disbursement proved unnecessary, since all participants in the above meeting were covered by their respective governments or the organizations they represented.

iii) *Publications*

The publications listed below have been charged to the pertinent appropriation:

a) 1970-71 Biennial Report, Part III.
b) Field Manual.
c) Statistical Bulletin.
d) Basic Texts of the Commission.
e) Report of the Abidjan Meeting.

There is a negative balance of $ 500 under this item due to the fact that the Basic Texts of the Commission were published this year and no appropriation had been provided.

iv) *Office Equipment*

The following three items appear in this chapter:

A) Budget approved for this chapter.
B) Small desk-type electronic computer (Hewlett-Packard 9810A) with 51 memories and 500 steps of programming.

The Secretariat made a very exhaustive study of all models available on the market for that particular capability and price range, bearing in mind the Commission's financial status.
The following items were purchased at the same time:

1 9810A calculator
1 OPC 004 printer
1 1211A Print/Alpha
1 11214 A Stat Block

C) Two dictaphones

Since it is frequently the case that the secretary is fully occupied when one of

the officers is free to dictate — or vice versa — these instruments will represent time savers for both parties. They will also considerably speed up translating work.

The Executive Secretary consulted with the Chairman of the Commission regarding the need for items B) and C), and also regarding our financial status. Authorization was obtained to transfer $ 5,000 to Chapter 5 (Office equipment) to cover the purchase of both items.

3. Contributions by member countries

Statement 3 shows contributions made to the Commission in 1972.

4. Second half of the 1973 Biennial Budget

Statement 5 shows the 1973 budget approved by the Commission at its Second Regular Meeting, and revised by the Council at its 1972 Meeting. The unused balance of the 1972 budget was US $ 4,400.63. In compliance with the Council's decision, US $ 4,000.00 of this amount have been allocated to the 1973 budget (US $ 2,000.00 to Chapter I and US $ 2,000.00 to Chapter III) and the remaining US $ 400.63 to the Working Capital Fund. The difference in exchange rate, US $ 83.73, was also allocated to the Working Capital Fund.

5. Review of Working Capital Fund

Statement 6 shows current status of the Working Capital Fund with contribution made during the current fiscal year at US $ 17,795.19.

It was decided at the Second Regular Meeting of the Commission that the Working Capital Fund was highly useful and should be maintained at some 15 % of the regular budget.

Balance Sheet as of December 31, 1971

STATEMENT 1

ASSETS	*Ptas.*	*$*	LIABILITIES	*$*
Cash, Pesetas	8,881.82		To 1972 Budget	14,000.00
Bank:			To 1973 Budget	16,000.00
i) Domestic Pesetas	7,781.58		Pending payment (1971)	2,000.00
ii) Convertible Pesetas	76,386.30		In favor of Ghana	23.42
	93,049.70			
	(at 66 Ptas./$)	1,409.84	To Working Capital Fund.	14,397.15
iii) Dollars		45,010.73		
TOTAL		46,420.57	TOTAL	46,420.57

Budget, Expenses and Balance (In US dollars)

STATEMENT 2

FISCAL YEAR 1972 (January 1 - December 31, 1972)

	I *Appropriated by Commission at its Second Regular Meeting*	II *Total Obligations 1972*	III *Balance*
1. Salaries, allowances, etc.	79,500.00	77,919.23	1,580.77
2. Travel	12,000.00	11,491.49	508.51
3. Expense - Meetings	16,000.00	15,130.55	869.45
4. Publications	11,000.00	11,461.50	−461.50
5. Office equipment	2,000.00	*A)* 2,097.65 *B)* 4,748.08 *C)* 529.00 = 7,374.73	−5,374.73
6. General operating expenses	12,000.00	11,902.48	97.52
7. Miscellaneous	2,500.00	2,425.61	74.39
8. Coordination of research	9,000.00	1,893.78	7,106.22
TOTAL	144,000.00	139,599.37	4,400.63

Status of Contributions from Member Countries 1972

STATEMENT 3

	1972 contributions approved by the Commission $	*Contributions paid* $	*Pending payment* $
Brazil	6,144.00	— *	6,144.00
Canada	6,677.00	6,677.00 (8-IV)	
Korea	9,805.00	9,805.00 (15-VII)	
Spain	21,520.00	21,520.00 (24-VIII)	
United States	19,305.00	19,300.00 (21-II)	5.00
France	18,827.00	18,827.00 (11-I-73)	
Ghana	4,220.00	—	4,220.00
Japan	18,496.00	18,496.00 (23-III)	
Morocco	8,407.00	8,407.00 (26-VI)	
Portugal	10,835.00	10,835.00 (6-V)	
Senegal	1,979.00	1,979.00 (26-X)	
South Africa	3,785.00	3,785.00 (21-III)	
	130,000.00	119,631.00	10,369.00

* Brazilian contribution received 14-V-73.

Income and Expenditures

STATEMENT 4

FISCAL YEAR 1972

INCOME	$	EXPENDITURES	$
Balance 1971 budget	46,420.57	Payment pending from 1971 budget	2,000.00
Accruing on 1972 budget	119,631.00	Regular budget 1972	139,599.37
Overpayment by France	595.62		
Contribution of Senegal 1971	957.00	TOTAL	141,599.37
Interests from checking account	1,878.28	Cash and Bank	28,045.23
Reimbursement	78.40		
Profit from exchange rate	83.73		
TOTAL	169,644.60		169,644.60

1973 Budguet (US Dollars)

STATEMENT 5

	Approved by the Commission		*Revised by the Council*
	1972	*1973*	*1973*
Contributions from Member Countries .	130,000.00	135,000.00	135,000.00
Unexpended balance of the 1971 budget allocated to 1972-1973 budget . . .	14,000.00	16,000.00	16,000.00
TOTAL	144,000.00	151,000.00	151,000.00
Unexpended balance of the 1972 budget allocated to 1973 budget			4,000.00
			155,000.00
CHAPTER			
1. Salaries, allowances, etc. . . .	79,500.00	81,500.00	87,500.00
2. Travel	12,000.00	10,000.00	10,000.00
3. Expense - Meetings	16,000.00	17,000.00	19,000.00
4. Publications	11,000.00	15,000.00	11,000.00
5. Office equipment	2,000.00	2,000.00	2,000.00
6. General operating expenses . .	12,000.00	13,000.00	13,000.00
7. Miscellaneous	2,500.00	2,500.00	2,500.00
	135,000.00	141,000.00	145,000.00
8. Coordination of research . . .	9,000.00	10,000.00	10,000.00

Composition of the Working Capital Fund

STATEMENT 6

		$
1970 Budget results		3,417.91
Non-budgeted contributions:		
Korea 1970	$ 1,125.00	
Korea 1971	$ 6,580.00	7,705.00
Interests:		
1970	$ 16.76	
1971 (1st sem.)	$ 954.61	
1971 (2nd sem.)	$ 1,423.39	2,394.76
1971 Budget results		320.82
Difference in exchange rate		558.66
SUB-TOTAL (as of 31-XII-71)		14,397.15
Non-budgeted Contribution of Senegal 1971		957.00
Interests:		
1972 (1st sem.)	$ 987.44	
1972 (2nd sem.)	$ 890.84	1,878.28
Reimbursement for goods returned to supplier		78.40
SUB-TOTAL (as of 31-XII-72)		17,310.83
1972 Budget results		400.63
Difference in exchange rate		83.73
TOTAL (end of Fiscal Year 1972)		17,795.19

Balance Sheet (as at close 1972 Fiscal Year) STATEMENT 7

ASSETS	$	LIABILITIES		$
Cash and Bank . . .	28,045.23	To 1973 Budget		16,000.00
Pending contributions.	10,369.00	Working Capital Fund		17,310.83
		In favor of Ghana		23,42
		In favor of France		595.62
				33,929.87
		Difference in exchange rate .	83.73	
		Fiscal Year Results	4,400.63	4,484.36 [1]
	38,414.23			38,414.23

1. In accordance with the decision adopted at the 2nd Regular Meeting of the Council, this balance is to be disposed of in the following way:
   a) US $ 4,000.00 to 1973 Budget (Statement 5).
   b) US $ 400.63 to Working Capital Fund (Statement 6).
   c) US $ 83.73 to Working Capital Fund (Statement 6).

The Balance Sheet of the Commission as at January 30, 1973 and the Liquidation of Estimated Expenditures for 1972 are given below. Both form part of the Auditor's Report for 1972, which was forwarded to Delegates on February 14, 1973.

International Commission for the Conservation of Atlantic Tunas Balance Sheet as at January 30, 1973, having liquidated all expenditures for 1972 Fiscal Year

ASSETS			LIABILITIES		
Available:			*Advance payments:*		
BANCO EXTERIOR DE ESPAÑA			Received from FRANCE, for 1973 Fiscal Year . .		$ 595.62
Checking Account		$ 19,043.15			
C/A in domestic pesetas	18,556.08				
C/A in convertible pesetas . . .	903.28				
Cash on hand	Pts. 16,106.72		*Transfers to other Fiscal Years:*		
TOTAL	Pts. 35,566.08		From 1971 to 1973	$ 16,000.00	
At 63.50 ptas. per $		$ 560.10	From 1972 to 1973	$ 4,000.00	$ 20,000.00
TOTAL		$ 19,603.25			
Expenditures corresponding to 1973		$ 8,441.98			
Receivables:			*Acquired holdings:*		
Contributions pending payment:			From previous Fiscal Years . . .	$ 11,661.04	
BRAZIL	$ 6,144.00		From 1972	$ 7,374.73	$ 19,035.77
UNITED STATES	$ 5.00				
GHANA	$ 4,196.58	$ 10,345.58			
Equipment:					
Former acquisitions	$ 11,509.48		*Working Capital Fund*		$ 17,795.19
Acquired in 1972	$ 7,374.73				
TOTAL	$ 18,884.21		TOTAL		$ 57,426.58
DEPOSITS	$ 151.56	$ 19,035.77			
TOTAL		$ 57,426.58	Undersecretariat of Merchant Marine of Spain, furniture ceded		$ 3,365.38
Furniture ceded by Undersecretariat of Merchant Marine of Spain		$ 3,365.38			

International Commission for the Conservation of Atlantic Tunas
Liquidation of Estimated Expenditures for 1972

Headings	*Budget Appropriations*	*Expenditures for Year*	*Equipment*	*Expended Over*	*Expended Under*
1. Salaries, allowances	$ 79,500.00	$ 77,919.23			$ 1,580.77
2. Travel	12,000.00	11,491.49			508.51
3. Meetings	16,000.00	15,130.55			869.45
4. Publications	11,000.00	11,461.50		$ 461.50	
5. Office Equipment	2,000.00		$ 7,374.73	5,374.73	
6. General Office Expenses	12,000.00	11,902.48			97.52
7. Miscellaneous Expenses	2,500.00	2,425.61			74.39
8. Coordination & Research	9,000.00	1,893.78			7,106.22
Totals for the Year	$ 144,000.00	$ 132,224.64	$ 7,374.73	$ 5,836.23	$ 10,236.86

Deduct:	Expended under the budget	$ 10,236.86
	Expended over the budget	$ 5,836.23
	Fiscal Year Results	$ 4,400.63

Madrid, February 20, 1973

The Executive Secretary:
OLEGARIO RODRÍGUEZ MARTÍN

Certified:
Auditor
ALEJANDRO OLIVER Y TRUJILLO

CHAPTER II

PROCEEDINGS OF THE SECOND REGULAR MEETING OF THE COUNCIL

Madrid, November 29 - December 5, 1972

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Proceedings of the First Plenary Session, November 29, 1972

Item 1. — *Opening*

1. The Council held its Second Regular Meeting at the Casa Sindical, Madrid, Spain.

2. The Chairman welcomed the delegates and advisers of member countries and the observers (see List of Participants — Annex 1). The scientists were com-

mended on their excellent work during the previous eight days. Special mention was made of their efforts in studying the biological aspects of possible fisheries regulations. Also, the efforts of the scientists who met in Abidjan in June 1972 to study this problem were recognized. Difficulties in collecting complete statistical data were commented on, and the Chairman requested close cooperation by every nation concerned. Brief comments were made on international tagging projects and the «Field Manual» prepared by ICCAT. The Secretariat was thanked for its efficient work. The Chairman also stressed the necessity of close cooperation with FAO, IATTC, and ICSEAF.

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

3. The Council adopted the Agenda (attached as Annex 2).

Item 3. — *Admission of Observers*

4. The Chairman expressed satisfaction at the interest shown by the many countries that sent observers. All observers were admitted (see Annex 1 for list).

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

5. The Council established a Working Group on Finance and Administration and decided that Agenda Items 5, 6, 7, 8, 9, 10, 17, 18, 21 and 22 should be considered by this Group. Brazil, Canada, France, Japan, Korea, Portugal, Spain, the United States, and representatives of FAO expressed a desire to participate in the Group. It was agreed that membership should be kept open. It was decided that the Chairman should be chosen when the Group meets.

6. The Working Group on International Inspection decided at the second Regular Meeting of the Commission (December 1971) to meet again this year concurrently with the Council. This decision was reconfirmed. The present members of the group are: Brazil, Canada, France, Japan, Korea, Portugal, Spain, the United States, and representatives of FAO. Since the Chair was left vacant after the retirement of Mr. Lagarde, it was decided that a Chairman would be elected when the group meets.

7. The Council decided to form a drafting committee to review the proceedings of each session in the three official languages, and Mr. Bermejo (Spain), Mr. Labrousse (France), and Mr. Van Campen (U.S.A.) were assigned as its members.

Proceedings of the Second Plenary Session, November 30, 1972

Item 11. — *Presentation of the Report of the Standing Committee on Research and Statistics (SCRS)*

8. Mr. Valdez, Chairman of the Standing Committe on Research and Statistics, presented the Report (Annex 9) to the Council and discussed it very thoroughly. Dr. Hayasi, Convenor of the Sub-Committee on Statistics, commented on the Sub-Committee's Report (Appendix 9 to Annex 9). The Chairman of the Council expressed his appreciation to SCRS and commended it on the progress made during the past year.

Item 19. — *Relations with FAO*

9. The Council reviewed the Draft Agreement between FAO and ICCAT (Document CON/72/10 and CON/72/10 — Supplement 1). It endorsed the text of the Draft Agreement and *recommended* its approval by the Commission. The Council noted that this text would be submitted to the FAO Council for approval, subject to later confirmation by the FAO Conference (Annex 3).

Item 20. — *Relations with other organizations*

10. The Executive Secretary explained ICCAT relations with other international organizations, namely IATTC, ICES, Codex Alimentarius, WHO, and ICSEAF, making reference to the pertinent section of the Administrative Report (CON/72/7 included here in Chapter I). Special attention was called to establishing a formal relationship with the International Commission for the Southeast Atlantic Fisheries (ICSEAF), referring to Document CON/72/19. The Executive Secretary was instructed by the Council to make a careful study of the situation, consulting the ICSEAF Secretariat, and to submit to the next Commission meeting a draft for establishing an official relationship. In the meantime, an unofficial relationship should be maintained with ICSEAF.

11. A representative of FAO stated that ICSEAF had applied to join the Coordinating Working Party on Atlantic Fisheries Statistics (CWP) and that its application had been approved by all members of the Party with the exception of ICCAT (i. e., approved by ICNAF, FAO and ICES). Thus, the Council unanimously approved the ICSEAF application to join the CWP.

Proceedings of the Third Plenary Session, December 1, 1972

Item 12. — *Review of the SCRS Report*

12. The Chairman and all scientists who participated in the SCRS were congratulated for combining in the Report all knowledge available on the present state of tuna stocks. The reliability of this information was also carefully studied.

13. The SCRS Report was thoroughly reviewed and discussed. The improvement of the basic data was stressed and, in particular, the statistics on tuna fisheries. Though much progress had been made in the past, the scientists felt that their work had been hampered by the inadequacy and lack of timeliness of statistics. It was understood that, in principle, the responsibility of collecting statistics lies in the hands of national offices. However, the Council *recommended* to the Commission that it consider expanding the responsibilities and capabilities of the Commission and relaxing the limitations imposed on the Secretariat. It was recognized that the Council could not increase the resources available to the Secretariat at present since the budget for 1973 had already been settled. The Council *recommended* that the SCRS initiate studies on possible westward extension of the surface fishery from the present grounds, paying particular attention to environmental conditions.

14. Following the above discussion, the SCRS Report was formally adopted.

15. The terms of reference for the SCRS were carefully studied. It was confirmed that the present work of the SCRS is satisfactory in this respect and that it should remain a scientific body to advise the Commission and Council. It was also reconfirmed that any member government has the right to appoint to this Committee those persons it deems appropriate.

Proceedings of the Fourth Plenary Session, December 4, 1972

Item 13. — *Reports of Panels 1 and 2*

16. The Report of the meeting of Panel 2 (Annex 7) was submitted by its Rapporteur, and subsequently approved by the Council.

Item 14. — *Report of subsidiary bodies appointed by the Council for the meeting*

17. The Report of the Working Group on Finance and Administration (Annex 4) was presented by its Chairman and the Report, as a whole, was adopted

by the Council. The Items that had been studied by the Working Group were reviewed by the Council.

Item 15. — *Administrative Report*

18. The Administrative Report (CON/72/7 — included here in Chapter I) was reviewed and approved as recommended by the Working Group. It was noted that there was a proposal made by the U.S. delegation concerning assistance for the Secretariat staff. The Council decided that this matter should be discussed under Agenda Item 23.

Item 6. — *Auditor's Report*

19. The Council reviewed the Report of the Working Group on Finance and Administration on this Item together with the Auditor's Report for 1971 (CON/72/9) and approved the recommendation made by the Group.

Item 7. — *Review of Present Financial Status of the Commission*

20. The Council reviewed and approved the Financial Report (CON/72/8 — included here in Chapter I) together with the pertinent section of the Report of the Working Group on Finance and Administration.

Item 8. — *Review of member country contributions*

21. The Council reviewed pertinent parts of the Financial Report (CON/72/8).

Item 9. — *Review of the second half of the Biennial Budget*

22. The Council reviewed the Financial Report (CON/72/8), together with the pertinent section of the Report of the Working Group on Finance and Administration, and noted that, at present, the final decision could not be made because of a few related items still pending. It was decided to postpone the discussion until the following Plenary Session.

Item 10. — *Working Capital Fund*

23. The Council reviewed the Financial Report (CON/72/8) and the pertinent section of the Report of the Working Group on Finance and Administration. The FAO Representative announced that the Government of the Ivory Coast had adhered to the International Convention for the Conservation of Atlantic Tunas, and that the country would be a member of the Commission as of December 6, 1972. The Chairman, on behalf of all those present, said he was pleased to welcome the Ivory Coast into the Commission.

Item 18. — *Amendment to Rule 12 of the Rules of Procedure*

24. The Council reviewed Document CON/72/11 and the pertinent parts of the Report of the Working Group on Finance and Administration. After some discussion, it decided that Draft 2, with the amendment proposed by Spain, should be adopted (Appendix 1 to Annex 4).

Item 17. — *Type of Commission publications*

25. The Council reviewed Document CON/72/14, together with the pertinent parts of the Report of the Working Group on Finance and Administration and approved the policy on format and distribution of publications as recommended by the Group (Appendix 2 to Annex 4).

Item 14. — *Reports of subsidiary bodies appointed by the Council for the meeting (continued)*

26. The Interim Report of the Working Group on International Inspection (Annex 5) was presented by its Chairman. The Council noted that the work had not been completed at this time and decided that this Group should meet again at the same time and place as the 1973 Commission meeting.

Item 23. — *Other matters*

27. The United States presented a written proposal «Resolution concerning the improvement of ICCAT data collecting procedures». It was understood by the Council that the expert or experts referred to in this proposal would be provided at very little or no additional expense to the Commission. Following some discussion and slight modification of the U.S. proposal, the Resolution was agreed on and is attached here as Annex 8.

Proceedings of the Fifth Plenary Session, December 5, 1972

Item 13. — *Reports of Panels 1 and 2 (continued)*

28. The Report of the meeting of Panel 1 (Annex 6) was presented by its Chairman. The Council reviewed and adopted the Report with slight modifications. Special attention was paid to Section 6. Senegal stressed the importance of carrying out extensive research on skipjack tuna, taking into consideration the regulatory measures agreed on for yellowfin tuna. This view was supported by all participants and the Council *recommended* that the Standing Committee on Research and Statistics conduct an intensive study on the state of skipjack stocks, on the possible

effects a minimum size regulation would have on the fishery, and on stocks in relation to the yellowfin population. It was expected that some results would become available at the next meeting of the Commission, and would enable the Commission to take any necessary action, based on scientific evidence.

Item 15. — *Stock conservation measures*

a) *Minimum size for yellowfin and bluefin*

29. The Council studied the Report of the meeting of Panel 1 (Annex 6) and, in accordance with the authorization given the Council by the Commission at its Second Regular Meeting, December 1971, adopted the recommendation drafted by Panel 1 (Appendix 2 to Annex 6). It instructed the Secretariat to take appropriate action following recommendations made by Panel 1.

30. The Council also *recommended* that the Secretariat prepare a press communication, stating that the ICCAT Council had met and describing its accomplishments.

b) *Others regulations*

31. The Council studied the Report of Panel 1 and concurred with the Panel's *recommendation* to the Council to create a Working Group, the functions of which are described in Appendix 4 to Annex 6.

32. The Senegalese Delegate stated that he was in full agreement with the setting up of this Working Group, providing that it does not call into question those regulatory measures which have already been decided on, but that he was opposed to the Japanese proposal, both in principle and in practice.

Item 21. — *Date and place of next meeting of the Commission*

33. The French Delegate extended to the Commission an invitation to hold its Third Regular Meeting in Paris, France. The Chairman and all members welcomed the invitation. Thus, the Council decided that the next meeting of the Commission would be held in Paris for a period of approximately one week, beginning Wednesday, November 28, 1973 and that the Standing Committee on Research and Statistics and the Working Group on Yellowfin Regulations would meet during the week immediately preceding the Commission meeting.

Item 9. — *Review of the second half of the Biennial Budget*

34. The Financial Report (CON/72/8) and the Report of the Working Group on Finance and Administration (Annex 4) were carefully studied and reviewed by the Council. The Council noted that the next Commission meeting would be held

in Paris and that the generous French invitation included assisting the Secretariat in many necessary matters. Considering the slight increase in the meeting budget that might be expected because of Secretariat staff transportation and accomodation, etc., the Council decided that all the unused balance of the 1972 Budget should be allocated to the 1973 Budget, and that approximately US $ 1,700 of the balance should be allocated to Chapter 3 «Meeting expenses». The Council noted that it had already been proposed to allot US $ 2,000 of the unused balance of the 1972 Budget to Chapter 1, «Salaries, allowances, etc.». With these modifications, the Council adopted the revised Budget proposed by the Executive Secretary.

Item 22. — *Date and place of next meeting of the Council*

35. The Council noted that the next Council meeting would be held in Madrid in late 1974, but the exact date and place were left to be decided at the 1973 Commission Meeting.

Item 23. — *Other matters (continued)*

36. Observers from Senegal, the USSR, EEC and ICSEAF expressed their appreciation for having been able to participate in the meeting.

Item 24. — *Adoption of the report*

37. The Proceedings of the First to Fourth Plenary Sessions had been distributed and approved. It was noted that the Proceedings of the Fifth Session, as well as the final combined proceedings of the five sessions, would be reviewed by the Drafting Committee by correspondence and that they would be mailed to all participants for their final approval.

Adjournment

38. The meeting was adjourned.

Annex I

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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 and Finance

5. Administrative Report.
6. Auditor's Report (1971).
7. Review of present financial status of the Commission.

8. Review of member country contributions.
9. Review of second half of Biennial Budget.
10. Review of Working Capital Fund.

Report of the Standing Committee on Research and Statistics

11. Presentation of Report.
12. Review of Report with reference to:
    a) Progress of the Committee's Research Program as outlined in SCRS/71 recommendations, particularly with regard to Activities I to V.
    b) Future activities.
    c) Management measures aimed at conservation of resources.
    d) Publications.
    e) Next scientific meetings.

Other Reports to Council

13. Reports of Panels 1 and 2.
14. Reports of subsidiary bodies appointed by the Council for the meeting.

Fishery Regulations

15. Stock conservation measures:
    a) Minimum size for yellowfin and bluefin.
    b) Other regulations.

International Inspection

16. Measures for rendering effective the provisions of the Convention and the decisions of the Commission.

Publications

17. Type of Commission publications.

Rules of Procedure of the Commission

18. Amendment to Rule 12.

International Cooperation

19. Relations with FAO.
20. Relations with other organizations.

Other matters

21. Date and place of next meeting of the Commission.
22. Date and place of next meeting of the Council.
23. Other matters.
24. Adoption of report.

Adjournment

Annex 3

DRAFT AGREEMENT BETWEEN THE FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS AND THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS

Preamble

Whereas the Constitution of the Food and Agriculture Organization of the United Nations (hereinafter referred to as FAO) provides that the Organization may enter into agreements with other intergovernmental organizations with related activities in order to define methods of cooperation; and

Whereas the Convention establishing the International Commission for the Conservation of Atlantic Tunas (hereinafter referred to as ICCAT) provides for the conclusion of an agreement between ICCAT and FAO;

FAO and ICCAT have agreed as follows:

Article 1. — Purpose of the Agreement

The purpose of the Agreement is to ensure cooperation between FAO and ICCAT by consultation, coordination of effort, mutual assistance and joint action in fields of common interest in accordance with the objectives and principles of FAO and ICCAT, in particular in regard to the collection and analysis of statistics, stock assessment and the formulation of conservation and management measures relating to tunas and tuna-like fishes of the Atlantic Ocean.

Article 2. — Reciprocal representation

1. ICCAT shall be invited to send Observers to sessions of the FAO Committee on Fisheries and its subsidiary bodies, and to sessions of the Conference and Council and other meetings of FAO when they deal with matters relating to conservation and management of the living resources of the sea.

2. FAO shall be invited to send a representative to all meetings of ICCAT and its subsidiary bodies. Such representative, who may be accompanied by experts and advisers, shall not have the right to vote.

Article 3. — Exchange of information and documents

1. Subject to such arrangements as may be necessary for the safeguarding of confidential material, FAO and ICCAT shall arrange for the fullest exchange of information and documents concerning matters of common interest.

2. The Director-General of FAO and the Executive Secretary of ICCAT, or their authorized representatives, shall, upon the request of either Party, consult with each other regarding the provision by either Party of such special information as may be of interest to the other Party.

Article 4. — Cooperation and Consultation

FAO and ICCAT agree that with a view to facilitating the effective attainment of the objectives set forth in the Constitution of FAO and the Convention establishing ICCAT, they will act in close cooperation with each other and will consult each other regularly in regard to matters of common interest. In particular, each Party shall inform the other at an early stage of any plans for the development of its activities whenever this is required to secure effective coordination and to avoid duplication of effort.

Article 5. — Technical Cooperation

1. Whenever desirable, ICCAT and FAO may each seek other's technical cooperation with a view to promoting the development of activites in the fields of mutual concern.

2. Every effort shall be made to meet any request for technical cooperation. Any such technical cooperation shall be provided in a manner to be agreed between the Parties.

Article 6. — Joint Action

1. ICCAT and FAO may, through their competent organs, conclude special agreements or arrangements for joint action with a view to attaining objectives of common interest.

2. These agreements or arrangements shall define the manner and extent of participation by each Party and shall specify the financial commitment, if any, that each is to assume.

3. ICCAT and FAO may set up joint committees or working parties to consider matters of mutual interest.

Article 7. — Proposals for the inclusion of agenda items

Subject to such preliminary consultation as may be necessary, ICCAT may propose the inclusion of items on the provisional agenda of the FAO Committee on Fisheries or of its subsidiary bodies. FAO may propose the inclusion of items on the provisional agenda of the meetings of ICCAT and of its subsidiary bodies. Proposals for the inclusion of items shall be accompanied by an explanatory memorandum.

Article 8. — Entry into Force

This Agreement shall come into force on its approval by ICCAT and by the FAO Council, subject to confirmation by the FAO Conference.

Article 9. — Modification and Denunciation

1. This Agreement may be amended by mutual consent of the Parties.

2. Either of the Parties may terminate this Agreement by giving six months' written notice to the other Party.

Annex 4

REPORT OF THE WORKING GROUP ON FINANCE AND ADMINISTRATION

1. The Working Group met at the Casa Sindical, Madrid, on November 29, 1972 and subsequent days. Mr. R. Acín (Spain) was elected chairman and the Secretariat acted as Rapporteur. Present were: Brazil, Canada, France, Japan, Korea, Morocco, Portugal, Spain, the U.S.A. and representatives of FAO. The Observer from the Dominican Republic was also present.

2. *Council Agenda Item 5: Administrative Report (CON/72/7)*

The Administrative Report (CON/72/7) was presented and explained in detail by the Executive Secretary.

The U.S. Delegate asked the Secretariat whether or not an increase in funds and staff would help to improve the statistical system. The Executive and Assistant Executive Secretaries responded that strengthening the Secretariat would certainly improve the statistical work. However, under the present scheme for reporting statistics through national offices, not much improvement can be expected unless a country is extremely cooperative in accepting extensive technical assistance from the Secretariat. The Moroccan Delegate expressed a desire that the Secretariat take a more active part in helping countries less experienced in collecting and compiling statistics, including sending technical advisers into the field. Since the above problem is not within the terms of reference to the present Group, it *recommended* that this should be discussed at Council meetings.

Following the discussions, the Group agreed to *recommend* to the Council the adoption of the Report.

3. *Council Agenda Item 6: Auditor's Report (1971)*

The Auditor's Report — 1971 (CON/72/9) was presented by the Executive Secretary and was found to be excellent. The Group *recommended* that the Council approve the Report. It also *recommended* that a single complete copy in the original language should be sent by the Secretariat to each member government.

4. *Council Agenda Item 7: Review of present Financial Status of the Commission*

The Financial Report (CON/72/8) was presented by the Executive Secretary, and was reviewed by the Working Group. Statements 1 and 2, together with the text of said Report, give the Commission's financial status accurately. The Group noted that Madrid had been reclassified with respect to the U.N. salary scheme, its category having been raised on January 1 and again on June 1, 1972. Noting that the staff salary increase is, on the average, about 7 %, and taking into account the recent devaluation of the dollar, along with the countinuous rise in the cost of living, the Group agreed to *recommend* to the Council the adoption of the new U.N. category, retroactive to the date on which the recategorization came into effect. These salary adjustments had already been taken into account in the 1972 and 1973 budgets. The Group studied reallocations between some chapters in the 1972 budget and found them satisfactory. It also noted that approximately US $ 3,700 will be left as unused balance at the end of 1972.

5. *Council Agenda Item 8: Review of member country contributions*

Statement 3 of the Financial Report (CON/72/8) was reviewed. Delegates from France and Brazil stated that the contributions of their countries had been delayed because of internal procedures, but were expected to be forwarded in the near future.

6. *Council Agenda Item 9: Review of the second half of the Biennial Budget*

Statements 4 and 5 and pertinent parts of the text of the Financial Report (CON/72/8) were reviewed by the Working Group. Some reallocations of funds between chapters were proposed by the Executive Secretary. Although these proposals seemed appropriate, final decision on the 1973 budget was postponed until all items related to the future activites of the Commission were discussed so that the budget could be finalized.

7. *Council Agenda Item 10: Working Capital Fund*

The Executive Secretary gave a detailed report on the Working Capital Fund, referring to Statement 6 of the Financial Report (CON/72/8). The Working Group was satisfied with the current Working Capital Fund and *recommended* that the Council not take any special action on the matter at this time.

8. *Council Agenda Item 18: Amendment to Rule 12 of the Rules of Procedure*

The Group reviewed Document CON/72/11 prepared by the Secretariat in accordance with instructions given at the time of the second Regular Meeting of the Commission, December 1971. The Group noted that two alternative plans (Drafts 1 and 2) for amendment to Rule 12 of the Rules of Procedure were proposed by the Secretariat more than 60 days before the Council meeting, and a third alternative plan was later proposed by South Africa. Canada, Spain and Morocco had previously communicated to the Secretariat their preference to Draft 2. Spain had proposed an amendment to Item 5 of Draft 2, and it appears in Document CON/72/11. The Working Group supported Draft 2 with the above amendment (Appendix 1) and agreed to *recommend* its adoption to the Council.

9. *Council Agenda Item 17: Type of Commission publications*

The «Secretariat Report on Commission Publications» (CON/72/14) was presented and explained in detail by the Secretariat. Also, all publications prepared by ICCAT during 1972 were introduced. The relatively high cost per copy due to the small number of copies published in each language, and the high cost of mailing were mentioned. The Group felt that the current policy of the Secretariat with regard to the format of publications was acceptable (Appendix 2), and *recommended* its approval to the Council. With respect to the distribution of official publications, the Group considered that the Secretariat's proposal (Appendix 2) are reasonable for the present. The policy presently employed by ICNAF, that is, that each member country is entitled to a certain number of complimentary copies and that any copies distributed in excess of this number are charged to the country, should be studied carefully by the Secretariat for future reference. The Secretariat presented a distribution list for ICCAT regular official publications (Appendix 3).

10. *Council Agenda Item 21: Date and place of next meeting of the Commission*

The French Delegate announced that, at the Council meeting, he will extend an invitation to hold the Third Regular ICCAT Commission Meeting (1973) in Paris.

Possible financial implications were mentioned, keeping in mind that the French Government is willing to facilitate assistance.

The Group has decided to leave it to the Council to decide on the date and place of the next meeting.

Appendix 1 to Annex 4

Amendment

Rule 12
Panels

1.
2.
3.
4.
} no amendment

5. Countries joining the Commission in the interval between two of its regular meetings may become members of one or more Panels upon prior written notification to the Chairman of the Commission, who shall inform the other member countries. The Chairman shall likewise inform the Commission at its first subsequent regular meeting regarding the incorporation of the new member to one or more Panels. Incorporation shall be considered effective on the date on which the Chairman is notified, unless another date is expressly stated in above notification.

6. No member country may withdraw from the Panels to which it belongs during the interval between two regular meetings of the Commission.

7. (Currently No. 5).

Appendix 2 to Annex 4

Publication Policies

Secretariat proposals for printing and format:

a) All official publications of the Commission should be continued in the same sizes, following the same printing techniques and using the same quality of paper as for Parts II and III of the 1970-71 Biennial Report.

b) All other publications, of a less formal or of a temporary nature, should be 21 × 29.7 cm (size of the Abidjan report), in each case applying the technique considered most appropriate by the Secretariat.

Secretariat proposals for distribution:

a) Publications should be distributed free of charge to all governments of member countries, and documents on meetings sent free of charge indiscriminately to all attendants and to the governments of member countries.

b) Publications should be sent free of charge on an exchange basis to official organizations of other countries, international organizations and non-profit national bodies.

c) Publications should be sold at average cost to commercial and industrial concerns or to private parties requesting them.

d) If an organization or private party desires a considerable number of copies of a given publication, arrangements can be made with ICCAT to increase the number of copies published, and these can be provided at marginal cost. This will apply to reprints an author may request.

When publications are sold, the addressee will be charged for mailing costs, depending on the transportation means preferred by same. Otherwise, publications will be mailed in the most expeditous manner.

Appendix 3 to Annex 4

Distribution List of ICCAT Regular Publications as of November 1, 1972

Countries	*Languages*	*People or organizations directly concerned with ICCAT*	*People not directly concerned with ICCAT*
Members			
Brazil	S (Spanish)	5	0
Canada	E (English)	5	3
France	F (French)	13	8
Ghana	E	3	0
Ivory Coast *	F	7	2
Japan	E	9	7
Korea	E	4	10
Morocco	F	5	0
Portugal	S	6	2
Senegal	F	3	0
South Africa	E	3	1
Spain	S	12	16
U.S.A.	E	15	26
Sub-total		90	75

* The Ivory Coast became a member of the Commission on December 6th, 1972.

Countries	Languages	People or organizations directly concerned with ICCAT	People not directly concerned with ICCAT
Non-members			
Argentina	S	1	3
Cuba	S	2	2
Gabon	F		1
German Fed. Rep.	E		3
Great Britain	E	1	1
Greece	E	1	
Guyana	E	1	
Italy	S		1
Libya	E	2	
Mauritania	F	1	
Mexico	S	2	7
Norway	E	2	3
Panama	S	1	
Peru	S		1
Poland	E	1	2
Taiwan	E	2	4
Tunisia	F	2	
Turkey	E	1	1
Uruguay	S	1	1
USSR	E	3	1
Venezuela	S	1	3
Sub-total		25	34
International Organizations			
FAO		9	6
IATTC		3	
Others		12	
Sub-total		24	6
Total		139	115

Annex 5

INTERIM REPORT OF THE WORKING GROUP ON INTERNATIONAL INSPECTION

The Working Group on International Inspection met on November 30 and December 4 and discussed the adaptation of ICNAF inspection articles to ICCAT needs for tuna. Considerable progress was made in the wording of some paragraphs and these are being retained by the Working Group as material for further elaboration or change when the probable form and type of ICCAT fishery regulations are clearer. It was the consensus of the Working Group that it could not finish its task of providing a precisely worded recommendation at this time.

Annex 6

REPORT OF THE MEETING OF PANEL 1

Madrid, December 2 and 4, 1972

1. *Opening*

The meeting was called to order by the Chairman, Mr. W. G. Van Campen (U.S.A.).

2. *Adoption of Agenda*

The provisional agenda was adopted and is attached as Appendix 1.

3. *Election of Rapporteur*

Dr. M. Miyake (Secretariat) was elected Rapporteur.

4. *Review of Panel Membership*

Panel 1 membership was noted as now being: Brazil, Canada, France, Ghana, Japan, Korea, Morocco, Portugal, Spain and U.S.A. All members, with the exception of Ghana, were present. Representatives of FAO, Observers from member countries Ivory Coast, Senegal and South Africa and non-member countries Argentina, Cuba, Dominican Republic, Mauritania, Tunisia, and U.S.S.R., Taiwanese Fisheries and the organizations EEC and ICSEAF attended.

5. *Review of Report of Standing Committee on Research and Statistics*

Panel 1 adopted pertinent sections of the SCRS Report, expressing satisfaction with the work presented.

6. *Review of possible stock conservation measures*

(a) *Minimum size limit*

According to the proposal for the conservation of yellowfin stocks made by seven countries at the last Commission meeting (paragraph 24, Proceedings of

Fourth Plenary Session, December 6, 1971), where the Council was authorized by the Commission to decide on a minimum size limit of yellowfin tuna somewhere between 3.2 and 10 kg, Panel 1 discussed this matter extensively.

France proposed prohibiting the taking and landing of yellowfin tuna weighing less than 3.2 kg. The proposal was seconded by the United States and agreed on by all other members. Following considerable discussion, it was decided that a tolerance level of 15 % of the number of fish less than minimum size limit per landing would be permitted. Thus, the Panel prepared a draft recommendation (attached here as Appendix 2) for the Council, suggesting that the Council forward the recommendation to the Contracting Parties and seek the cooperation of non-member countries on this matter.

Senegal proposed that a minimum size regulation (although not necessarily the same size as for yellowfin tuna) should be adopted for skipjack. This was supported by France, Morocco and Portugal. Such a regulation has been in existence in Senegal, Ivory Coast and the Congo for some time. The United States proposed that the Council refer the problem to the SCRS for further study since there has been no scientific evidence on which to base such a regulation on skipjack. The U.S. view was supported by Canada and Japan.

The Panel *recommended* that the Council study the Senegalese proposal on skipjack and, if necessary, instruct the SCRS to carry out an extensive study on the state of skipjack population and on the possible effects of a minimum size regulation on fisheries and stocks in relation to the yellowfin population.

(b) *Other regulatory measures*

The Panel noted that Japan had formally proposed a regulatory measure to limit total catch of yellowfin in the Atlantic Ocean to a level of 70,000 metric tons (CON/72/70 and Suppl. 1, attached here as Appendix 3).

Japan gave a detailed explanation of the documents, and considerable discussion followed. Owing to the complex nature of the proposal and the extent of technical review which it would require, the Panel decided to *recommend* that the Council create a Working Group to handle the matter. The suggested terms of reference, membership and time schedule of the Group are attached as Appendix 4.

7. *Need for research to be carried out*

This subject was covered in the discussion of Agenda Item 6. The Panel noted that future research needs for yellowfin tuna are dealt with in Appendix 4 of the SCRS Report.

8. *Date and Place of next Panel meeting*

It was decided to hold the next Panel 1 meeting at the same time and place as the next Commission meeting.

9. *Election of Chairman*

It was reconfirmed that the U.S. will remain as Chairman of Panel 1 until the biennial period is up in 1973.

10. *Other Matters*

The report was adopted.

11. Adjournment

Appendix 1 to Annex 6

Agenda for Panel 1

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 6

Recommendation

The Council:

— *Referring* to Item 13 of the Proceedings of the Second Regular Meeting of the Commission, held in Madrid in 1971, authorizing the Council to recommend to the Contracting States to take regulatory measures regarding yellowfin,

— *Recommends* that the Contracting States take the necessary measures to prohibit any taking and landing of yellowfin tuna weighing less than 3.2 kg.

— Notwithstanding the above regulation, the Contracting States may grant tolerances to boats which have incidentally captured yellowfin weighing less than

3.2 kg, with the condition that this incidental catch should not exceed 15 % of the number of fish per landing of the total yellowfin catch of said boats.

Appendix 3 to Annex 6

Proposal of the Government of Japan

Proposal for Regulation of Yellowfin Tuna in the Atlantic Ocean

The total catch of yellowfin tuna in the Atlantic Ocean declined for the two consecutive years from an all time high of 82.1 thousand tons in 1969 to 76.9 thousand tons in 1970 and 68.6 thousand tons in 1971. As the report of the Sub-Committee on Stock Assessment of the Commission in 1971 and that of the Abidjan meeting of the Commission this year indicate, there is an apparent need for some form of regulation of the amount of fishing of yellowfin in the Atlantic.

This regulation can be effected either by the restriction of fishing efforts or that of total catch, or by the combination of the two methods. Of the two methods, the restriction of fishing efforts is, in the view of the Japanese Government, more appropriate. However, in view of the difficulties involved in coming to an agreement on this method in the short period of time available, the Japanese Government proposes the adoption of a quota system designed to maintain the yellowfin stock at the present level.

At the same time, the Government of Japan strongly urges that the Commission study the possibility of early implementation of the restriction of fishing efforts.

In accordance with Article VIII of the Convention and the provisions of Rule 8, paragraph 2 of the Rules of Procedure, the Government of Japan has the honour to submit the following proposal for consideration by the Contracting Parties.

1. Annual catch limit shall be established on the total catch of yellowfin in the Convention area defined in Article I of the International Convention for the Conservation of Atlantic Tunas.

The catch limit for the calendar year shall be fixed at 70,000 metric tons which represents the average annual catch from 1962 to 1971.

2. Tuna vessels shall be allowed to fish yellowfin tuna during the free fishing season which begins January 1. The free fishing season shall be closed at such date as the quantity already caught and the expected catch of yellowfin tuna under paragraphs 3 and 4 hereunder reaches 70,000 metric tons.

3. Incidental catch shall be allowed after the closure of the free fishing season.

4. Special allowances shall be recognized for small-size tuna vessels of those countries whose fisheries of yellowfin tuna are not of significance, taking into account the precedent of the system of IATTC.

5. A study group should be established for examining possible methods to limit fishing efforts.

Explanatory Note to the Proposal of Japan for Regulation of Yellowfin Tuna in the Atlantic Ocean

In accordance with the provisions of Article VIII of the Convention and of Rule 8, paragraph 2 of the Rules of Procedure, the Government of Japan has the honour to submit the following explanatory note to the Japanese proposal for consideration by the Contracting Parties at the next session of the Council, to be held from November 29, 1972.

I. The total catch of yellowfin tuna in the Atlantic Ocean declined for the two consecutive years from an all-time high of 82.1 thousand tons in 1969 to 76.9 thousand tons in 1970 and 68.6 thousand tons in 1971. Paragraph 2.4 of the report of the Sub-Committee on Stock Assessment of the Commission of 1971, states that «... it appears fairly clear that the yellowfin fishery in the Atlantic is approaching or may even have reached the point where control of the amount of fishing and/or sizes of fish caught is desirable». It is also stated in the report of the Special Working Group on Stock Assessment of Yellowfin held in Abidjan last June that «since increasing effort will not give much increase in catch-per-recruit, and may cause a reduction in recruitment and therefore in total catch, the group believes it would be desirable to discourage any rapid increase in fishing beyond the present level, particularly in the existing geographical boundaries of the surface fishery of the eastern Atlantic».

As the above mentioned reports indicate, it can be considered that the resources condition of yellowfin has reached a stage where consideration should be given as a matter of urgency to taking some regulatory measures.

The control of the amount of fishing can be effected either by the restriction of fishing efforts or by the limitation of total catch. The Government of Japan considers that the restriction of fishing efforts has advantages over the limitation of total catch in that the former method is easier to enforce as well as that, to quote from the 1971 report of SCRS, «it has merit in that if established properly, it may not be necessary to adjust effort each year, nor to collect catch statistics on a current basis».

However, in view of the complexity of the Atlantic operation and problems of Member States in regard to their fishery, it might be difficult for the Commission to come to an agreement on this method in the short period of time available. The

Japanese Government therefore proposes that the Council of this session establish an annual total catch quota of yellowfin tuna.

II. *Principal Points of the Proposal*

1. Annual catch limit shall be established on the total catch of yellowfin in «the Convention area» as defined in Article I of the International Convention for the Conservation of Atlantic Tunas.

The annual catch limit shall be fixed provisionally at 70,000 metric tons.

Note

The figure of 70,000 metric tons suggested as a possible annual amount of fishing represents the average annual catch from 1962 to 1971. This figure may be reviewed yearly and amended on the basis of scientific data.

2. Tuna vessels shall be allowed to fish yellowfin tuna during the free fishing season which begins on January 1 every year. The free fishing season shall be closed at such date as the quantity already caught and the expected catch of yellowfin tuna under paragraphs 3 and 4 hereunder reach 70,000 metric tons.

Note

Total annual catch quota system may be implemented either by free competition or national allocation. The latter method, however, may raise certain difficulties for Member States to agree in the limited time of the Council, as is shown by the experiences of IATTC and ICNAF. This is the reason why the Japanese Government suggests free competition.

3. Incidental catch shall be allowed after the closure of the free fishing season.

Note

In implementing the restriction of the amount of fishing of a stock, the regulatory measures to be adopted should not obstruct the fishing of other stocks. The very nature of tuna fishery, in particular longline fishery, necessitates incidental catch to a certain extent. Paragraph 3 above is intended to accommodate this necessity. It is to be reminded that incidental catch is admitted in the fishing regulations adopted by IATTC, ICNAF and CECAF.

4. Special allowances shall be recognized for small-size tuna vessels and those countries whose fisheries of yellowfin tuna are not of significance.

Note

In implementing the regulatory method as given in the preceding paragraphs, consideration should be given to the interests of small vessels and of the countries whose fisheries of yellowfin tuna are not at a significant level.

Paragraph 4 is intended to ensure adequate participation of these countries in the Atlantic tuna fishery as well as to protect small fishing vessels from the impact of free competition. In formulating its view in this respect, the Council may take into account the following principle adopted by IATTC.

1) «In order to not curtail their fisheries, those countries whose Government accept the Commission's recommendations but whose fisheries of yellowfin tuna are not of significance will be exempted of their obligations of compliance with the restrictive measure. Under present conditions, and according to the information available, an annual capture of 1,000 tons of yellowfin tuna is the upper limit to enjoy said exemption.»

2) «Permit the flag vessels of each country of 400 short tons capacity and less, fishing tuna in the CYRA after the closure date for yellowfin tuna fisheries to fish freely until 6,000 short tons of yellowfin tuna are taken by such vessels...»

5. A study group should be established with a view to studying at the earliest opportunity possible methods to limit fishing efforts.

Summary of the Japanese Proposal for Regulation of Yellowfin Tuna in the Atlantic Ocean

1. *Annual catch limit*

Total annual catch limit shall be provisionally fixed at 70,000 metric tons. The figure of 70,000 metric tons represents the average annual catch from 1962 to 1971.

The Commission or the Council, as appropriate, may review this figure annually on scientific advice and, if necessary, modify it.

2. *Implementation*

Regulation of yellowfin tuna fishing may be implemented through the method adopted by IATTC which is based primarily on free competition. Under this method, the free fishing season starts on January 1 every year, and will continue until such a date as the combined amount of yellowfin tuna already caught and the expected amount of incidental catch (para. 3) and special allowances (para. 4) reach the total annual catch limit. Thereafter, no fishing may be allowed except as permitted under paragraphs 3 and 4.

Each Contracting Party will take appropriate measures to ensure that yellowfin catch by its nationals or vessels during the free season be reported without delay to the Executive Secretary of the Commission in accordance with the procedure to be agreed upon by the Contracting Parties.

The Executive Secretary will determine the closing date of the free season on

the basis of the yellowfin catch reported to him. The closing date will be communicated to each Contracting Party five days in advance of such date.

The free season will be deemed to continue for any tuna vessel operating at sea on the date of closure until it returns to its port.

3. *Incidental catch*

An incidental catch (to be decided between 15 to 20 %) will be allowed after the closure of the free season in order to ensure the continued operation of those tuna fisheries which aim primarily at the other tuna species than yellowfin.

4. *Special allowances*

Small vessels (with capacity of 400 short tons or less) of each Contracting Party will be permitted to fish yellowfin tuna freely after the date of closure until 3,000 metric tons of yellowfin tuna are taken by such vessels.

Any Contracting Party whose yellowfin catch of the preceding year is less than 1,000 metric tons will be exempted from the catch quota regulation.

5. *Enforcement*

Each Contracting Party shall take appropriate measures in order to carry out the regulation effectively.

Inspection of tuna vessels at unloading ports may be envisaged as one of such measures.

Appendix 4 to Annex 6

Working Group on Yellowfin Tuna Regulations

1. *Terms of reference*

To study the desirability and feasibility of concrete measures for the conservation and management of yellowfin stocks in the Convention area from a scientific and practical viewpoint.

The study would include, among other matters, the following:

1) the need for regulatory measures,
2) size of total catch quota,
3) ways of implementing the total catch quota, for example, free competition, a national catch quota system, or any feasible method of implementation,

4) possibility of curtailing fishing effort,
5) other possible regulatory measures,
6) data requirements for implementation, and
7) factors involved in enforcement.

2. *Membership*

— Member countries of the Commission, representatives of FAO, and the Secretariat

— Any non-member countries and international organizations may attend the working group meeting as observers.

3. *Date and place of the meeting*

During the week before the next Commission meeting or, if necessary, during the Commission meeting.

Annex 7

REPORT OF THE MEETING OF PANEL 2

Madrid, December 1 and 2, 1972

1. *Opening*

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

2. *Adoption of Agenda*

The provisional agenda was adopted and is attached here as Appendix 1.

3. *Election of Rapporteur*

Dr. M. Miyake (Secretariat) was elected 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 of America. All members were present.

5. *Review of Report of Standing Committee on Research and Statistics*

Sections of the SCRS report related to albacore and bluefi tuna were reviewed and adopted.

6. *Review of possible stock conservation measures*

It was agreed that no decision on regulation of fisheries could be made at this time due to lack of concrete evidence.

7. *Need for research to be carried out*

The Panel *recommended* that the Council instruct the Standing Committee on Research and Statistics to intensify its work, particularly with respect to:

(a) Improvement of basic statistics;
(b) Stock structure of bluefin tuna in the Atlantic;

(c) Composition and distribution of bluefin tuna schools and in particular, the relative amount of small size fish in the schools; and
(d) Cooperative albacore studies.

8. *Date and place of next Panel meeting*

It was *recommended* that the next meeting of Panel 2 be held at the same time and place as the next ICCAT Commission Meeting.

9. *Election of Chairman*

It was reconfirmed that Morocco will remain as Chairman of Panel 2 until the end of its biennial period in 1973.

10. *Other matters*

The Report of Panel 2 was formally adopted.

11. *Adjournment*

Appendix I to Annex 7

Agenda for Panel 2

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.

Annex 8

RESOLUTION CONCERNING THE IMPROVEMENT OF ICCAT DATA COLLECTING PROCEDURES

The Council:

Noting the deficiencies in Atlantic tuna catch-effort statistics reported in the SCRS report of November 20-28, 1972.

Noting further the view expressed in the SCRS Report that a substantial improvement in availability of accurate catch-effort statistics on a timely basis is necessary «if the status of stocks is to be assessed accurately and on a timely basis, and the stocks managed on a rational basis...»,

Realizing that decisions regarding conservation programs to achieve the fundamental purposes of the Commission depend upon the availability of reliable stock assessments,

Recognizing the need to remedy deficiencies in catch-effort data on an urgent basis,

Noting with appreciation the cooperation of FAO in assisting in the establishment of efficient data collection systems by national offices,

Considering the long-term nature of programs to develop and refine national statistical systems, and noting particularly the problems created by transshipments of tuna in certain Atlantic ports which place great burdens on certain national statistical systems,

Taking into account present limitations on the size of the ICCAT Secretariat and existing budgetary constraints during the 1972-73 biennium,

1. *Urges* Governments of all countries concerned with Atlantic tuna fisheries to make special efforts to establish efficient systems for the timely collection of tuna catch-effort data,

2. *Invites,* as an experiment applicable to 1973 only, member Governments to assist in the data collection work of ICCAT by offering to provide technical experts to the ICCAT Secretariat to participate in the collection of statistics in problem areas, such work to include the collection, as appropriate, of catch-effort data directly from fishing vessels in important transshipment areas, such as the Canary Islands, the Cape Verde Islands, Dakar, Luanda, Tema, Abidjan and Pointe Noire,

3. *Authorizes* the Executive Secretary to select one or more experts from the list of the experts offered by member Governments in order to carry out the program drawn up by the Executive Secretary and under his direction, after previous consultation with the concerned member Governments.

4. *Urges* all Governments concerned with Atlantic tuna fisheries to assist in arranging for such data to be made fully available to the technical experts collecting data for ICCAT, and

5. *Requests* the Commission at its 1973 Biennial Meeting to evaluate the experimental data collection program in the light of overall data needs, and to decide whether or not to continue the program on the basis of such evaluation.

Annex 9

REPORT OF STANDING COMMITTEE ON RESEARCH AND STATISTICS (SCRS)

Madrid, November 20-28, 1972

Table of contents

1. Opening of the meeting

1. — The meeting was opened by the Chairman, V. Valdez (Portugal). Delegates from Brazil, Canada, France, Japan, Korea, Morocco, Portugal, Spain and the United States, representatives from FAO and Observers from Argentina, Cuba, Gabon, Ivory Coast, Mauritania, the USSR, Taiwanese Fisheries, IATTC and ICES were present (see Annex 1).

2. Adoption of the agenda and arrangements for the meeting

2. — The agenda, as given in Appendix 1, was adopted. In discussing the agenda it was suggested that for future SCRS meetings some rearrangement of the agenda

and the pattern of work might be desirable so as to facilitate the work of the Committee, and to shorten the meeting. It was agreed that a small ad hoc steering committee should be set up to assist the Chairman in this matter. The members nominated were, for America: B. Rothschild (U.S.A.), for Asia: S. Hayasi (Japan), for Africa: J. C. Le Guen (France), for Europe: O. Cendrero (Spain), the Chairman and the Rapporteur J. A. Gulland (FAO).

3. — The following Rapporteurs were appointed:

O. Cendrero (Spain), A. Fonteneau (France), J. A. Gulland (FAO) and G. Sakagawa (U.S.A.)

3. Admission of observers

4. — The Chairman welcomed all observers to the meeting. A particular welcome was given to the observers from Cuba and the Ivory Coast. These countries were expected to join the Commission shortly.

4. Publicity

5. — It was agreed that it was, in principle, undesirable to attract publicity to the activities of a purely scientific body such as the SCRS and that any publicity should be handled by the Council or the Commission itself, in consultation with the Chairman of the SCRS.

5. Brief review of tuna fisheries and national research programs of each country

6. — Reports on fisheries and research activities were presented by Brazil, Canada, France, Japan, Korea, Portugal, South Africa, Spain and the U.S.A. Observers from Cuba, the USSR and Taiwan Fisheries also presented reports on their fisheries and research activities. Most of the reports were in the form of documents. The reported activities were summarized according to four major fisheries: bluefin tuna, yellowfin tuna, albacore and skipjack tuna.

5.1. Bluefin Tuna (Thunnus thynnus thynnus). Table 1

BRAZIL (SCRS/72/57)

7. — Bluefin catch of the Brazilian longline fleet was 67 metric tons in 1971.

CANADA (SCRS/72/12)

8. — The Canadian bluefin tuna catch declined from 1,700 metric tons in 1970 to 1,100 metric tons in 1971. The 1971 catch was composed of 935 metric tons of small bluefin and 205 metric tons of large bluefin. About 66 % of the catch of large bluefin was caught by the Canadian sport fishery.

9. — Tagging experiments on bluefin were continued. During the 1971-72 season, 165 fish over 200 kg each were tagged; no returns have been received to date.

FRANCE (SCRS/72/33)

10. — Bluefin catches have remained relatively stable. The 1971 catch was similar to that of 1970. Data on catch and effort and sizes of fish in the catch for the Bay of Biscay fishery were collected and analyzed. Only 5 bluefin tuna were tagged in 1972.

JAPAN (SCRS/72/13)

11. — A marked increase in the Japanese catch of bluefin tuna occurred in 1970. This increase was caused by a large catch of southern bluefin tuna in that year. Catches of bluefin and southern bluefin tunas were reported together in the years 1967 through 1970.

SPAIN (SCRS/72/16)

12. — The catch of bluefin tuna declined from 5,500 metric tons in 1970 to 3,900 metric tons in 1971. This downward trend has been evident since 1962. Collection of catch and effort, and size composition data for bluefin caught in the trap fishery was described.

U.S.A. (SCRS/72/29; 26)

13. — The United States bluefin catch showed a slight decrease (100 metric tons) in 1971 from the 3,300 metric tons caught in 1970. However, the apparent catch rate decreased substantially from 23.3 metric tons/boat day in 1970 to 18.4 metric tons/boat day in 1971.

14. — Double tagging experiments were continued to obtain estimates of tag shedding and to compare tag types. A total of 152 bluefin were double tagged in 1971. Preliminary estimates of mortality and a review of the population dynamics of bluefin tuna were described.

Table 1. Bluefin Tuna Catch (thousand metric tons) in the Atlantic Ocean and Mediterranean Sea, 1965-1972.

	1965	*1966*	*1967*	*1968*	*1969*	*1970*	*1971*	*1972* [1]
Longline Fishery								
Brazil	...	...	...	...	...	...	0.1	
Japan	9.6	2.9	0.9 [3]	0.4 [3]	0.8 [3]	4.4 [3]	0.6	
Korea	...	--	--	--	--	--	3.0	
Taiwan	--	0.0	0.0	0.1	0.2	0.1	0.1	
TOTAL LONGLINE	9.6	2.9	0.9 [3]	0.5 [3]	1.0 [3]	4.5 [3]	3.8	
Surface Fishery								
Canada	0.8	0.3	0.4	0.5	0.6	1.7	1.1	
France [6]	1.4	1.6	1.0	0.6	0.6	0.8	0.8	0.8
Portugal [6]	9.4	3.5	8.5	2.1	6.1	5.2	...	
Spain [5]	11.2	8.7	10.6	8.7	7.1	5.5	3.9	0.1
U.S.A.	3.2	1.2	2.3	0.6	1.2	3.3	3.2	1.9 [2]
Others [5]	10.1	9.2	16.0	9.8	12.1	6.0	3.7	
TOTAL SURFACE [4]	36.1	24.5	38.8	22.3	27.7	22.5	12.7	
TOTAL ATLANTIC AND MEDITERRANEAN [4]	45.7	27.4	39.7 [3]	22.8 [3]	28.7 [3]	27.0 [3]	16.5	

1. Provisional estimate.
2. Includes Canadian catch.
3. Includes southern bluefin tuna.
4. Includes other species.
5. Figures include Atlantic and Mediterranean catches.
6. Not including French catch in the Mediterranean.

5.2. Yellowfin Tuna (Thunnus albacares). Table 2

BRAZIL (SCRS/72/57)

15. — Brazilian yellowfin catch in 1971 was 317 metric tons.

CANADA (SCRS/72/12)

16. — The 1971 yellowfin catch was 45 metric tons, which was below the 1970 catch of 200 metric tons. All the 1971 catch was made in the Gulf of Guinea.

FRANCE (SCRS/72/33)

17. — Total catch of yellowfin tuna by the French-Ivory Coast-Senegalese fleet increased by 300 metric tons in 1971 over that of 1970. The catch of the French fleet, on the other hand, decreased from 21,500 metric tons in 1970 to 20,100 metric tons in 1971. Part of this decrease was attributed to poor recruitment. Preliminary statistics on the 1972 French catch, as of November 15, 1972, indicate that the total French catch of yellowfin for 1972 will surpass the 1970 and 1971 French catch of this species, due in part to the activities of vessels in the Caribbean Sea, which took 3,000 tons of yellowfin in 1972. In the future the number of small baitboats is likely to decrease, and the number of purse seiners is likely to increase.

18. — Research continued on stock identification and growth and on understanding the migration routes of yellowfin tuna. In the Gulf of Guinea, 3,300 yellowfin were tagged during July-September, 1972. As of November 1972, approximately 200 returns had been received.

JAPAN (SCRS/72/13, 14, and 21)

19. — The Japanese catch of yellowfin tuna was 11,100 metric tons in 1971, 2,100 metric tons higher than the 1970 catch. This increase in catch occurred in the surface fishery; the catch of the longline fleet decreased in 1971.

20. — Research centered around calculating the size composition of the catches, determining the shape of the catch-effort and catch-fecundity curves and estimating the maximum sustainable yield and overall fishing intensity.

KOREA (SCRS/72/50)

21. — The Korean longline catch of yellowfin tuna was the largest among the longline fleets. It decreased from 13,200 metric tons in 1970 to 11,300 metric tons in 1971 (estimated round weight).

SOUTH AFRICA (SCRS/72/11)

22. — The South African total catch of tunas was well below 1,000 metric tons. Research on tunas was modest, six yellowfin being tagged in 1971.

SPAIN (SCRS/72/16)

23. — The Spanish catch increased from 7,100 metric tons in 1970 to 8,300 metric tons in 1971. Collection of catch statistics and breakdown of catch into species, especially those landed in the Canary Islands, were initiated.

U.S.A. (SCRS/72/29; 26)

24. — There was a marked decrease in the yellowfin tuna catch in 1971. In 1971 the catch was 3,800 metric tons, 5,100 metric tons less than the 1970 catch. Preliminary catch statistics for 1972 suggest that the U.S. yellowfin catch will be substantially higher than that of 1971.

25. — Minimum size and catch quotas for yellowfin were studied. Collection of size data on yellowfin tuna in single schools was also initiated.

Table 2. Yellowfin Tuna Catch (thousand metric tons) in the Atlantic Ocean, 1965-1972.

	1965	*1966*	*1967*	*1968*	*1969*	*1970*	*1971*	*1972*
Longline Fishery								
Argentina	0.1	0.0	0.0	0.1	0.1	0.0	0.1	
Cuba	0.8	0.8	3.0	1.9	1.6	1.6	1.7	
Japan	36.6	22.1	12.8	13.9	9.8	6.7	5.8	
Korea [1]	...	--	--	2.3	6.0	13.2	11.3	
	--	--	--	(2.0)	(5.2)	(11.5)	(9.9)	
Taiwan	0.1	0.9	2.3	6.8	10.0	7.2	4.1	
Venezuela	1.8	2.1	2.1	1.2	1.6	1.4	1.3	
TOTAL LONGLINE	39.4	25.9	20.2	26.2	29.1	30.1	24.3	
Surface Fishery								
Canada	0.0	0.6	0.7	0.7	0.9	0.2	0.0	
France, Ivory Coast Senegal	20.1	23.4	23.8	32.5	28.8	26.1	26.4	
(France) [3]	...	(22.0)	(20.7)	(29.2)	(26.4)	(21.5)	(20.1)	(23.4) [2]
Japan	2.4	5.3	6.5	9.7	6.7	2.3	5.3	
Portugal (Angola)	2.8	2.4	1.6	1.6	1.0	0.1	...	
Spain	1.5	6.0	2.8	4.0	5.9	7.1	8.3	
U.S.A.	--	--	1.0	6.1	18.2	8.9	3.8	
TOTAL SURFACE	26.8	37.7	36.4	54.6	61.5	44.7	43.9	
Others (Unclassified)								
Brazil	0.6	0.4	0.7	0.7	0.4	0.7	0.3	
TOTAL ATLANTIC	66.8	64.0	57.3	81.5	91.0	75.5	68.4	

1. Converted by ICCAT into rough round weight. Figures in brackets represent those originally reported, expressed gilled and gutted weight.
2. Estimated catch as of November 15, 1972.
3. Catch of French fleet only.

5.3. *Albacore (Thunnus alalunga). Table 3*

BRAZIL (SCRS/72/57)

26. — Brazilian longliners caught 151 metric tons of albacore in 1971.

FRANCE (SCRS/72/33)

27. — The French albacore fishery is conducted in the Bay of Biscay and adjacent waters. In 1971 the catch was 9,800 metric tons, an increase of 3,200 metric tons over the 1970 catch.

28. — Studies were conducted on population dynamics and biology of albacore; these include analyses of fishing efficiency of vessels, relationship between occurrence of fish and location of thermal fronts, size composition of catches of commercial and research vessels, tagging, body temperature, migration and the relation between stock and recruitment.

JAPAN (SCRS/72/13; 18)

29. — The Japanese catch of albacore decreased from 11,800 metric tons in 1970 to 6,800 metric tons in 1971. Studies on the relation between catch and effort and the distribution of sizes of fish in the fishing grounds were continued.

KOREA (SCRS/72/50)

30. — The Korean longline catch increased from 10,041 metric tons in 1970 to 11,539 metric tons in 1971. The number of boats in the Korean fleet increased from 105 in 1970 to 117 in 1971.

SPAIN (SCRS/72/45)

31. — Albacore is caught by the Spanish fleet in the Bay of Biscay and adjacent waters and off the Canary Islands. In 1971 the catch was 27,900 metric tons, in 1970, 26,900 metric tons.

32. — Catch data, results of research on sizes of fish caught, fishing effort and migration were described.

Table 3. Albacore Tuna Catch (thousand metric tons) in the Atlantic Ocean, 1965-1971.

	1965	*1966*	*1967*	*1968*	*1969*	*1970*	*1971*
Longline fishery							
Argentina	1.1	0.8	0.7	1.2	0.4	0.5	0.3
Brazil	...	...	...	...	...	...	0.2
Japan	42.6	26.9	12.5	15.2	11.0	11.8	6.8
Korea	0.5	6.7	10.3	7.3	16.0	10.0	11.5
Taiwan	0.1	0.2	1.8	8.7	11.5	11.9	19.2
Venezuela	...	...	...	0.6	0.8	0.5	0.8
TOTAL LONGLINE	44.3	34.6	25.3	33.0	39.7	34.7	38.8
Surface fishery							
France	13.8	14.3	16.6	14.3	10.0	6.6	9.8
Grenada	0.1	0.1	0.1	...	...	...	...
Spain	29.6	26.4	34.1	24.6	25.4	26.9	27.9
Yugoslavia	0.0	0.0	0.0	0.0	0.2	0.1	--
TOTAL SURFACE	43.5	40.8	50.8	38.9	35.6	33.6	37.7
TOTAL ATLANTIC	87.8	75.4	76.1	71.9	75.3	68.3	76.5

5.4. Skipjack Tuna (Katsuwonus pelamis). Table 4

BRAZIL (SCRS/72/57)

33. — The Brazilian catch of all smaller tunas, including skipjack, was 507 metric tons in 1971.

CANADA (SCRS/72/12)

34. — The Canadian fleet caught 1,200 metric tons of skipjack in 1971, twice the 1970 Canadian catch. In 1971, 205 metric tons of skipjack were caught off the east coast of the U.S.A. and the remainder in the Gulf of Guinea. There was no Canadian fishery for skipjack in 1972.

FRANCE (SCRS/72/33)

35. — The French skipjack catch was 15,800 metric tons in 1971, increased from 11,400 metric tons in 1970. Studies on the migration and distribution of skipjack were continued.

JAPAN (SCRS/72/13)

36. — The Japanese fleet catch skipjack off West Africa. In 1971 the catch was 14,700 metric tons, the highest catch on record for this fleet. Collection and analysis of statistics on this fishery are continuing.

SPAIN

37. — The Spanish catch of skipjack increased from 22,200 metric tons in 1970 to 27,100 metric tons in 1971.

U.S.A. (SCRS/72/26)

38. — The total U.S. catch of skipjack continued to increase. In 1971 the catch increased by 6,200 metric tons over the 1970 catch. The increased catch was primarily from the Gulf of Guinea. A slight decrease in catch is expected in 1972.

Table 4. Skipjack Tuna Catch (thousand metric tons) in the Atlantic Ocean, 1965-1972.

	1965	*1966*	*1967*	*1968*	*1969*	*1970*	*1971*	*1972*
Surface fishery								
Brazil [2]	0.5	0.7	1.5	0.8	0.4	0.4	...	
Canada	0.0	--	0.6	1.0	0.1	0.6	1.2	
Cuba	1.0	1.0	1.1	1.6	1.2	1.8	1.6	
France, Ivory Coast and Senegal	4.2	6.4	5.5	13.0	8.4	13.5	20.1	
(France) [3]	...	(6.2)	(4.8)	(12.5)	(7.9)	(11.4)	(15.8)	(12.1) [1]
Japan	8.1	5.8	5.9	13.6	5.6	11.0	14.7	
Morocco	3.2	1.5	0.9	0.9	0.1	1.1	0.1	
Portugal	6.4	6.3	8.3	10.6	4.6	1.6	...	
Spain	9.5	18.5	13.6	19.1	18.3	22.2	27.1	
U.S.A.	0.1	0.0	0.5	3.2	3.8	10.7	16.9	
TOTAL SURFACE	33.0	40.2	37.9	63.8	42.5	62.9	81.7	

1. Estimated catch as of November 15, 1972.
2. Includes other species of small tunas.
3. Catch of French fleet only.

6. Review of recommendations made at the last SCRS meeting

39. — At the 1971 SCRS meeting, five specific research activities were recommended. They were:

Activity I. — Task 1 Statistics (total catch by species and effort). «Bring Task 1 statistics up to date and ensure that they are timely and accurate.»

Activity II. — Task 2 Statistics (detailed catch and effort data). «Develop plan for implementing Task 2 statistical development.»

Activity III. — Length Sampling. «1. — Lack of length sampling in certain fisheries (e. g., bluefin in central eastern Atlantic, albacore in longline). 2. — Reporting system for summarized data (catch by age).»

Activity IV. — Yellowfin Tuna. «Dynamics of yellowfin tuna on an Atlantic-wide basis.»

Activity V. — Bluefin Tuna. «Dynamics of bluefin tuna on an Atlantic-wide basis. Essentially same as IV but also need encouragement and plans for major tagging effort and improvement of collection of statistics in Bay of Biscay.»

A complete report on progress of Activities I-III is given in the Report of the Sub-Committee on Statistics (Appendix 9). A summary of progress in the activities follows.

6.1. Activity I

40. — Considerable progress was made in recognizing the deficiencies in the statistics of each country and in initiating action to upgrade the catch statistics by 90-95 %. This latter task was accomplished by concentrating on the major fishing nations. However, the Sub-Committee felt that there is still need for accurate and timely statistics on catch by species from some major fishing nations. In an attempt to identify the problems of accuracy and timeliness of statistics, the Sub-Committee requested that each country submit a flow chart of the processes of data collection, reporting, and analyses. The Sub-Committee agreed that the Secretariat should continue to encourage all countries to submit accurate and timely statistics, attempt to obtain statistics from nations with vessels flying the Panamanian flag, and arrange to separate, as far as possible, the catch of bluefin tuna in the Atlantic Ocean from that in the Mediterranean Sea. The Sub-Committee expressed its satisfaction and commended the Secretariat on the progress made to date in coordinating Activities I-III.

6.2. Activity II

41. — The Sub-Committee stressed the necessity for three types of information for stock assessment: (1) catch-per-unit-effort or other indices of stock size,

(2) amount of effective effort or other indices proportional to the instantaneous fishing rate, and (3) catch by length (age) class. Activity II statistics deal with the first two types of information. Only a few countries submit detailed and accurate catch-effort statistics on a timely basis. If the status of the stocks is to be assessed accurately and on a timely basis, and the stocks managed on a rational basis, a substantial improvement in availability of timely and accurate catch-effort statistics is necessary. The Sub-Committee noted that the ICCAT Field Manual and the report of Task Force I (Appendix 7) should be helpful to those countries that do not already have a sampling system to obtain catch and effort statistics. Further recommendations by the Sub-Committee are found in paragraph 42.

6.3. Activity III

42. — As mentioned in paragraph 41, information on catch by length (age) class is currently needed for stock assessment. As in the case of catch-effort statistics, only a few countries are submitting accurate and detailed statistics on length samples. The Sub-Committee urged all nations to increase their efforts to obtain length samples. Furthermore, the Sub-Committee recommended, with respect to Activities II and III, «that all countries should submit to the Secretariat by June 1, 1973 a paper describing the methods used in the collection and compilation of catch-per-unit-effort data, together with a critical review of their adequacy and reliability, the sampling plans, problems in length measurement, age studies, and other related aspects». (Appendix 9)

43. — The Sub-Committee took special note of the increasing importance of having timely, complete, and accurate statistics because of scientific concern over the state of several of the tuna stocks in the Atlantic. Because of this situation, it is clear that the problems associated with improved statistics are critical to the Commission and need to be given the highest priority by the Commission and by all countries fishing tuna in the Atlantic.

6.4. Yellowfin tuna

44. — General. — The status of the yellowfin stocks was reviewed by the Working Group that met in Abidjan in June, 1972 and whose report was presented to the meeting (SCRS/72/7). After some discussion the Committee agreed to formally adopt and approve the Abidjan Report, though it was pointed out that further studies have been made since the time of the Abidjan meeting. The Committee *recommended* that the Commission send a message of thanks to the Government of the Ivory Coast for its hospitality and for the facilities made available to the Working Group. Further studies were presented to the Committee including written reports by scientists from Japan (SCRS/72/14 and 21) and the United States

(SCRS/72/23, 24 and 28). In addition, basic data are still being collected in Africa, and reported to the Committee by the French scientists.

45. — These studies have provided a basic understanding of the population dynamics of the yellowfin stocks that are presently being fished in the Atlantic, and enable some definite guidance, as set out below, to be provided to the Commission as to the effect of possible decisions. However, it must be stressed that much still remains to be learned. In particular, the analyses generally refer to the recent pattern of fishing, both in area and time with respect to the different gears. A big change in the pattern could affect the conclusions.

46. — The calculation of the status of the stocks is, as has been stressed, based on the present pattern of fishing. As far as the surface fishery is concerned, the present geographical distribution of fishing effort is similar to that of the surface fishery in the eastern tropical Pacific around 1960, with fishing being concentrated close to the eastern boundary of the Ocean. In the Pacific fishery the total catch has been considerably increased above the sustainable level estimated by the analysis of pre-1960 fishery data, due to the westward extension of the fishing area (though other factors, such as change in gear, and the consequent increase in sizes of fish caught, also affected the catches). It is not unlikely that an increase in catch would also be obtained in the Atlantic if fishing were increased in the western part, though it should be stressed that so far as the Atlantic is concerned this is only an assumption and there is little direct evidence of the existence of large quantities of fish in the western region. There is also little evidence on the possible mixing and interaction of fish between the east and west Atlantic. The latter is very important in determining the extent to which increased catches in the west could be achieved independently of events in the eastern Atlantic.

47. — Also the possible variation of the best estimate of yield, e.g., the relation between catch-per-unit-effort and effort, is large. For example, the confidence limits calculated by the U.S. scientists for the maximum sustained average yield are about five times larger than those calculated for similar data for the yellowfin fishery in the eastern tropical Pacific when the regulation was first contemplated there. This is probably due partly to the shorter time period in the Atlantic analysis, and partly because the Pacific analysis is based on a more homogenous set of catch and effort statistics. Equally there are large variations in the annual estimates of total and fishing mortality (e.g. Table 9 of the Abidjan report).

48. — Despite these variations it should be noted that there was broad agreement at the Abidjan meeting that the natural mortality was in the range of 0.6 to 0.8, and that in recent years the average total mortality was somewhat less than 1.8.

49. — Because of the large variation, the analyses below include, as far as possible, descriptions of the main possible extreme situations, as well as the «best» central estimate.

50. — In the following sections two basic relations have been considered: between catch and the amount of fishing, and between catch and the sizes of fish caught. For convenience, these relations, and particularly their implications with respect to possible management action, are best considered separately, although in practice there is a great deal of interaction. For example, as the amount of fishing increases, the relative advantage of concentrating fishing on the medium to large-sized fish increases. Similarly, a substantial decrease in the effective size at first capture along with increased fishing effort might have detrimental effects on the fishery.

6.4.1. *Size at entry into the fishery*

51. — The yellowfin is a fast-growing (relative to its natural mortality) and potentially large fish. In general terms it is therefore obvious that there could be advantages in avoiding catching small fish, and giving them a chance to grow. This general conclusion has been confirmed by several theoretical calculations, presented both to the Abidjan meeting and to the present meeting. Precise calculation of the yield at the optimum size at first capture, and of the difference in yield taken with the present pattern of fishing compared with that taken at the optimum, are difficult because the theoretical models generally used do not approximate very closely to the actual fishery. The simple models usually consider that fishing mortality is zero up to some size (the size at first capture) and constant for all greater sizes. Analysis of the yellowfin data, however, suggests that there is no long period of life over which fishing mortality is even approximately constant. This makes it unlikely that the simple concept of size at first capture can be easily applied to the yellowfin fishery. Nevertheless calculations of the yield-per-recruit as a function of both fishing mortality and size at first capture can give useful insight into the true relation between yield and sizes of fish caught. For example, the calculations in Table 6 of the Abidjan Report show that for smaller values of fishing mortality the optimum length at recruitment is probably around 70 cm (6.5 kg) and for higher fishing mortalities, 80 cm (10 kg) or greater. This implies that other things being equal, the yield with the lower values of fishing mortality used would be increased if fish less than 6.5 kg (or 10 kg, or greater for higher fishing mortality) were not captured, but were allowed to grow.

52. — Though the effective size at first capture has not been calculated, the number of fish under 6.5 kg increased after 1968 (see Table 5).

Table 5. Percentage of yellowfin less than 6.5 kg. landed by different fleets (from Abidjan Report, tables 10, 11 and 12).

	1968	*1969*	*1970*	*1971*
Fleet				
French-Ivory Coast-Senegalese (FIS)	...	72	80	67
American	35	7	81	64

53. — It is clear that at least in 1970 the effective size at first capture must have been less than 6.5 kg. It has therefore fallen below the optimum and, at present, an appreciable number of yellowfin less than 6.5 kg are being landed.

54. — The total yield will be decreased unless the size at first capture is increased. It can be noted that the year-to-year changes in the table are probably due, among other reasons, to year-class fluctuations.

55. — In principle a number of techniques and regulations may be considered and, among these, a minimum landing size seems immediately applicable to the yellowfin fishery and has in fact been introduced in some areas, e.g. California (7 ½ lbs.), Ivory Coast, Senegal and Congo (3.2 kg). A theoretical problem is the choice of a minimum size to achieve a given effective size at first capture, bearing in mind the fact that the effective size at first capture will be larger (and possibly substantially larger) than the size of the smallest fish in the catch.

56. — A more important practical problem is that a limit on the size of fish that can be landed does not in itself guarantee that such small fish will not be caught. In fact, if fishermen were not to change their practice the result would be that the small fish would be dumped after being caught. Since these would be dead, this procedure would cause immediate and long-term losses. Yellowfin tuna occur in schools of mixed sizes in which some of the fish would be smaller than a given size limit. Furthermore, small yellowfin and skipjack are frequently mixed in the same school, making it difficult to set on some skipjack schools without catching small yellowfin.

57. — The effect of size limits has been calculated (Lenarz *et al*, SCRS/72/23, tables 3 and 4 and p. 42) in terms of the change in yield resulting from the introduction of a size limit, assuming either that all undersized fish survive, or that all are dumped dead. The results are set out in Table 6 below, for a range of possible sets of fishing mortality. Though these figures are only preliminary and further studies will be carried out by French and U.S. scientists, they give guidance as to the probable range of the true value.

Table 6. Changes (percent) in yield-per-recruit after the application of a size limit in yellowfin fishery.

	55 cm (3.2 kg) limit		77.5 cm (8.9 kg) limit	
Dumping	Nil	100 %	Nil	100 %
Fishing mortality				
Lower set of values	+4	−3	+ 9	−13
Higher set of values	+8	−5	+23	−21

This table shows that the possible gains from protecting the small fish especially if the effort increases, are quite considerable, but equally the risk of losses from dumping can also be large. The smaller size limits offer smaller possible gains, but lesser risk of loss.

58. — Fortunately there is some difference in distribution between the very small fish and the others so that if the very small fish are unmarketable, the fishermen can avoid them to some extent. For example, the variation by season is shown in SCRS/72/47. Thus a size limit can cause changes in fishing practice, and hence increase the effective size at first capture. The differences in distribution decrease as the fish grow, and there is an increasing mixture between fish of different sizes. This puts an upper bound on the minimum size that can be usefully applied. The Committee believes that at least up to the size limits currently in force in some countries (3.2 kg), the potential benefits are greater than any probable losses from dumping. Above this size, however, there is (based on data presently available) an increasing risk that losses will outweigh any potential benefit.

6.4.2. *Effect of changes in the amount of fishing*

59. — Previous reports, including the 1971 SCRS Report, have indicated that the yellowfin stock is now so heavily exploited that further increases in fishing (with respect to areas fished, sizes caught, etc.) would be unlikely to result in any appreciable increase in average total catch. Subsequent analyses at the Abidjan meeting confirm these findings in general terms. At the same time, these analyses have left a degree of uncertainty on several matters, for example, concerning the precise magnitude of the average catch that could be obtained, fishing at the optimum level.

60. — There are a number of reasons for this uncertainty. Firstly, the effect of increased fishing will depend on the kinds of gear involved; increased baitboat

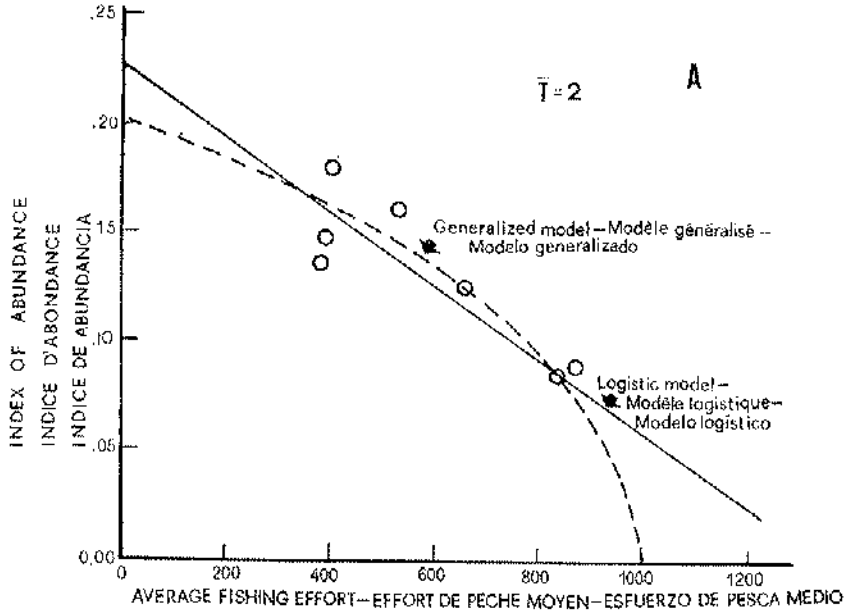
catches of small fish will have rather different effects from increased longline catches of big fish. Secondly, as mentioned elsewhere in this report, there are still shortcomings in much of the data used in the analyses, and where reliable data are available, they usually cover only a few years. Thirdly, there are some definite scientific doubts as to how some of the data should be best interpreted, for example, the extent to which fishing may be affecting recruitment.

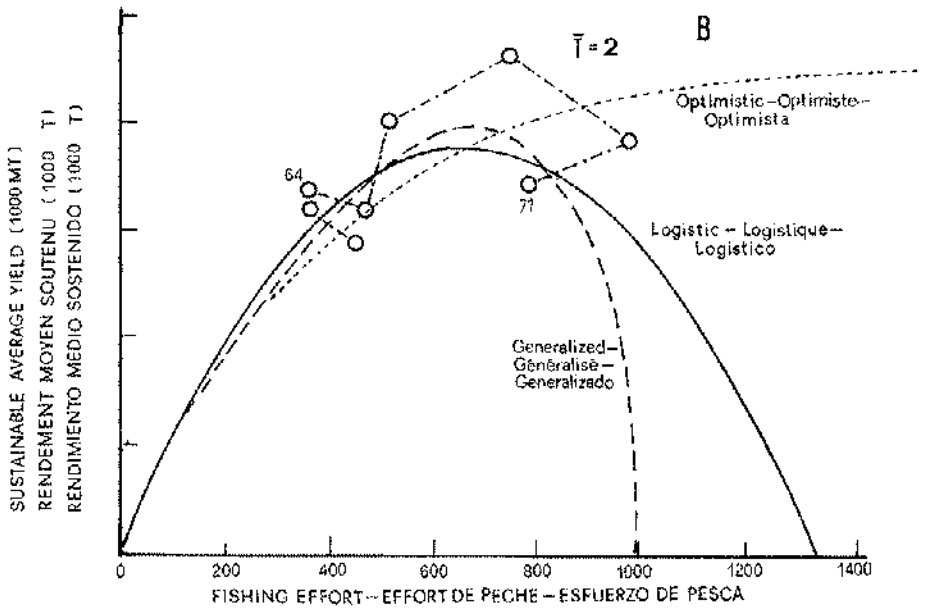
61. — Because of these doubts we must consider a variety of curves relating catch to the amount of fishing. The probable extreme range is illustrated in Fig. 1-B. The two full curves are taken directly from Figure 3 of Fox and Lenarz (SCRS/72/24) based on the analysis of catch and effort statistics. The other curve (dotted line) shows the result of yield-per-recruit calculations, using combinations of growth, mortality, and effective size at first capture parameters that tend to favor increased fishing. If the average recruitment is unaffected by fishing, the shape of the yield-per-recruit curve is the same as the curve of total yield. The main differences between the curves in Figure 1 are implicitly due to different assumptions made about the effect of fishing on recruitment. The generalized model implies that at levels of fishing not much above the present, the recruitment will become seriously reduced, leading to the collapse of the fishery. Since there is at present no sign of any serious reduction in recruitment as indicated by the magnitude of the 1972 catch, this interpretation is probably too pessimistic. The true relation between the amount of fishing and total catch, as the fishery is now constituted, is more likely to lie somewhere between the other two curves.

62. — The analyses presented did not use data for 1972 because they were not available. Though these are still very incomplete, available figures suggest that the total yellowfin catch in 1972 will be noticeably higher than in 1971, and that the effort has also increased. Thus the trend of steadily decreasing total catch observed over the previous three years has stopped, though the 1972 catch will probably turn out to be considerably below the 1969 peak. The drop in catches in 1970 and 1971, and the apparent recovery in 1972 could very well have been due more to fluctuations in year-class strength than to fishing effects. Quantitative estimates of year-class strength are not available, but a rough classification using data presented in SCRS/72/47 might be made as follows:

Good	1964, 1966, 1969 (1970?)
Moderate	1965
Poor	1967, 1968

63. — Since the fishery is largely based on two to four-year old fish (with some marked differences between types of vessel), it is not surprising that the fisheries in 1970 and 1971 (based on the weak 1967 and 1968 year-classes) were poor, and that there was a recovery when the 1969 year-class entered the fishery.


A
$\bar{T}$ = 2
INDEX OF ABUNDANCE
INDICE D'ABONDANCE
INDICE DE ABUNDANCIA
.25
.20
.15
.10
.05
0.00
0
200
400
600
800
1000
1200
Generalized model—Modèle généralisé—Modelo generalizado
Logistic model—Modèle logistique—Modelo logístico
AVERAGE FISHING EFFORT—EFFORT DE PECHE MOYEN—ESFUERZO DE PESCA MEDIO


B
$\bar{T}$ = 2
SUSTAINABLE AVERAGE YIELD (1000 MT)
RENDEMENT MOYEN SOUTENU (1000 T)
RENDIMIENTO MEDIO SOSTENIDO (1000 T)
Optimistic—Optimiste—Optimista
64
71
Logistic — Logistique—Logistico
Generalized—Généralisé—Generalizado
0
200
400
600
800
1000
1200
1400
FISHING EFFORT—EFFORT DE PECHE—ESFUERZO DE PESCA

64. — Inclusion of the 1972 data is therefore unlikely to change the conclusion significantly, though the combination of high catch and high effort will tend to change the catch-effort analyses toward predicting higher catches at higher levels of effort, i.e., narrow the gap in Figure 1 between the logistic and yield-per-recruit curves.

65. — In summary, the conclusion regarding the effects of changes in the amount of fishing with the present geographical pattern of fishing are as follows:

(i) increased fishing will not result in substantially increased average total catch taken over a period,
(ii) there is a risk that increased fishing will actually decrease the total catch,
(iii) increased fishing will certainly reduce the catch-per-unit-effort.

66. — Substantial changes in the structure of the fishery, such as the possible development of a surface fishery in more western areas, might change some of the above conclusions. It must be recognized that increase in effort could result in increased catches if it were applied to a larger effective population than that which is now being fished, if the yield-per-recruit were increased through some change in fishing strategy, or if the correct relation between catch and effort is not approximated owing to the short series of data. Therefore we should monitor the fishery very carefully particularly since it appears that fishing effort is increasing rapidly and this could have harmful effects on the population.

67. — The Committee therefore believed that the Council should consider the alternatives open to it regarding possible controls on the amount of fishing. These alternatives include:

1. No regulation.
2. Direct control of fishing effort.
3. Assignment of a fixed quota.
4. Assignment of country quotas.

While it is not within the prerogatives of the SCRS to choose among the alternatives, the Committee members felt it would be useful to provide a brief exposition on each of these.

68. — Any choice that the Commission makes among these alternatives will affect not only the yellowfin fishery as presently constituted but also the skipjack fishery, and the probability of changes in the pattern of yellowfin fishing (e.g. extending fishing to the west). The present belief is that, within limits, increased fishing will increase the yield of skipjack. Also there is a possibility of increasing yellowfin catches to some extent by extending fishing westward. The Committee, however, could not make any definite assessment of how these changes (in skipjack fishing, or pattern of yellowfin fishing) would be affected by the various choices.

69. — If Alternative 1 is chosen, it is expected that the fishing effort will continue to increase. So far as the yellowfin fishery at present is concerned, the effects will be as set out in paragraph 65.

70. — Alternative 2, direct control of fishing effort, requires the measurement of the total fishing effort in terms of, for example, the number of days fishing by standard vessels. In view of the great range of vessel and gear types currently employed in the yellowfin fishery, and the difficulty of ensuring that any changes in efficiency are observed and appropriate corrections made, the Committee believed that such a measure would, at least at present, be impracticable. Alternative 3 or 4 would seem to be the presently practicable method of regulating the amount of fishing.

71. — The annual quotas used for either Alternative 3 or 4 must be determined from the desired level of fishing and from the current status of the stock. That is, if the stock has been depleted by a high level of fishing, or is at a low level because of the presence of weak year-class, the quota set for the ensuing year will be less than that set to achieve the same level of fishing (or strictly, fishing mortality) when the stock is in a more healthy condition, e.g. due to the presence of good year-classes.

72. — The setting of annual catch quotas therefore requires up-to-date evaluation of the state of the stock, based on the quick supply and analysis of basic statistics. The present system of supplying basic data to ICCAT needs to be improved if catch quotas are to be set accurately. Until the necessary improvements in the data system are implemented, the Committee will have some difficulty in making definite statements about the precise effects likely to result from the introduction of various catch quotas.

73. — In order to provide some guidance as to the level of the quota required in 1973 to maintain the fishing mortality at its present level, the Committee noted that the fishing effort in 1972 was probably higher than the average of the previous five years. The stock in 1973 might therefore be expected to be slightly below the recent average. A catch quota slightly below the average catch in recent years (75,000 tons in 1967-71) will probably result in a fishing mortality at about the level of those years, but adjustments should be made for variations in year-class strength. In 1973 the medium sized fish are expected to be relatively abundant, but the very large fish scarce.

74. — If a quota is chosen, the Commission has two basic methods of implementing it, either by a single unallocated quota, or by allocation to countries. While this choice is not a matter for the Standing Committee on Research and Statistics, there are a number of scientific and technical points which must be borne in mind in making the choice.

75. — In the case of an unallocated quota, real time catch data must be collected by national offices and compiled at Commission headquarters. In the case of quota allocation to countries, the national offices are responsible for compiling such data in order to determine the closing date, or other relevant management information. In either case, very up-to-date information on the progress of the fishery and the magnitude of the total catch must be available.

76. — The second general point is that if the quota is effective in restricting the amount of fishing, then the open season is likely to become progressively shorter. This shortening has been observed in most fisheries that have regulated in this way, including the yellowfin fishery in the eastern tropical Pacific which has been subject to the IATTC regulation.

77. — The third point relates to the choice of opening date. Since the fishery is by no means uniform throughout the year, the choice of opening date will, once the duration of the open season becomes significantly less than the whole year, determine when fishing occurs. Hence this will affect, among other things, the sizes of fish caught, the level of catch-per-unit-effort, and the proportion of the catch taken by different classes of vessels.

78. — The future abundance of the stock, and the potential catches from it, are determined by the sizes of fish caught, as well as by the total weight taken. Capture of a given weight of medium or large fish will result in a larger stock the following year than the same total catch of smaller fish. There are seasonal differences in the size of fish caught as shown by the study of the length composition of catches in the FIS fleet (SCRS/72/47, see table 7). Thus the choice of opening date will to some extent affect the sizes of fish caught, and hence the magnitude of future catches.

Table 7. Number of yellowfin of less than 5 kg. per ton per quarter of fishing caught by the FIS [1] fleet

	Quarters			
Year	(1)	(2)	(3)	(4)
1969	2.3	4.9	29.6	24.3
1970	7.1	43.8	99.5	59.9
1971	46.4	42.0	42.8	24.3
Quarterly average	13.6	27.3	57.6	34.9
Biannual average	20.5		48.8	

1. FIS refers to France, Ivory Coast and Senegal.

Table 8. Monthly indices of catch-per-unit-effort of different classes of vessels (from Fox and Lenarz, Table 4).

	FIS [1] (1969-1971)			Japan (1968-70)
	Baitboats		*Average Seiners*	*Longline*
	With Ice Well	*With Freezer*		
January	1.355	1.056	1.080	1.157
February	1.263	0.862	0.723	1.421
March	0.724	0.825	0.963	1.525
April	1.043	0.961	0.816	1.350
May	1.083	0.747	0.864	0.828
June	2.003	0.783	1.850	0.929
July	1.599	1.121	1.137	0.866
August	0.721	0.964	1.142	1.085
September	0.694	1.297	1.306	0.806
October	0.432	1.253	0.808	0.843
November	0.464	1.151	0.610	0.565
December	0.617	0.981	0.701	0.626

1. FIS refers to France, Ivory Coast and Senegal.
Note: CPUE of large seiners not included.

79. — Table 8 shows the seasonal pattern of catch-per-unit-effort, which is not the same for all gears. Though the surface fisheries generally have their best catches after June, the best season for baitboats with ice wells from Dakar is noticeably earlier than for baitboats with freezers, and seiners. Thus the optimum opening date in terms of catch-per-unit-effort may differ for each class of vessel.

80. — The differences in the proportion of total catch taken by each class is likely to be affected to an even greater extent by the choice of opening date. Several groups of vessels do not fish uniformly throughout the year but concentrate on fishing during certain seasons.

81. — In view of the possibility of increased catches in the areas westward of the present surface fishing grounds, the Committee believes that, as far as possible, any regulation set to control the amount of fishing generally should not inhibit some development of more westerly fishing. At the same time these stocks are certainly not unlimited and, to the extent to which they are not completely independent of the groups of fish currently exploited, any fishing to the westward would be detrimental to the fishery on the present grounds. Also, the possible relation between upwelling and the distribution of yellowfin tuna and other tunas was

noted as an interesting scientific problem, as it may contribute to our knowledge of the population dynamics of the stocks.

82. — The yellowfin fishery does not exist in isolation. Vessels fishing yellowfin also catch other species (particularly albacore and bigeye in the case of longline vessels, and skipjack in the case of surface fisheries). Any action to control the amount of fishing of yellowfin will have some effect on the catches of other species.

6.5. Albacore

83. — A number of papers were presented (SCRS/72/17, 18, 19, 22, 33, 35, 38, 40, 45, 48 and 49) giving the results of the research activities carried out by national scientists. Several of these concerned the surface fisheries in the northeast Atlantic, and described such matters as the influence of environmental factors on the distribution of fish, size composition of the catches, and problems of collecting and interpreting catch and effort statistics.

84. — Two papers were of particular importance to the work of the Commission. In SCRS/72/35, Bard showed that the catch-per-unit-effort in the surface fishery was negatively correlated with the effort in the longline fishery some three to five years earlier. The mechanism would appear to be that the longline fishery reduces the abundance of the spawning stock, and the observed correlation suggests the possibility that this reduces the recruitment to the surface fishery. If this indeed occurs, the consequences would be serious. It implies that if the total fishing effort on albacore in the North Atlantic returns to the 1964-65 levels there would be, within one or two generations, a substantial drop in the total catch. Further study of the possible stock-recruitment relation using direct estimates of indices of abundance of spawning stock and subsequent year-class strength therefore requires urgent attention.

85. — In the other paper (SCRS/72/18) Shiohama analyzed the catch and effort statistics of the longline fishery. For the total Atlantic fishery this showed a substantial drop in hook-rate with increasing effort, and suggested that the fishing effort had already reached or passed the level at which further increases in effort would result in sustained increases in catch.

86. — Both these documents are in the form of progress reports. However, they do suggest that the albacore fishery could have been fully exploited, particularly in view of the fact that the longline effort has recently increased substantially, and the effect of this increase is not yet fully apparent in the fishery. The Commission may therefore, in the near future, be faced with the need to take appropriate regulatory action, although at the present session the Committee cannot offer detailed advice.

87. — Following some discussion it was agreed, in view of the importance to

the Commission's work, that the study of albacore should constitute a separate activity of the Committee, as described under Item 7 of the Committee's agenda.

6.6. Bluefin tuna

88. — Several documents (SCRS/72/39, 36, 27, 25, 46, 30 and 16) showing results of research on bluefin were presented to the Committee. These included reports on the bluefin fishery in the Bay of Biscay and on the results of tagging experiments on both sides of the Atlantic. Those of the large-scale tagging project in the New England fishery confirm the previous estimates of relatively high recapture rate in this fishery.

89. — A striking feature of the fisheries on larger fish has been the continuing absence of medium sized fish. Very large fish continue to be present in these fisheries, but apparently in decreasing numbers through the absence of new recruits to the large fish group. There have been marked decreases in the catches of some fisheries, such as the Spanish trap fisheries. There was some discussion as to the possible reason for this recruitment failure, but with the present data the Committee could not reach any definite conclusion.

90. — It was pointed out that for several bluefin fisheries there was a need for considerable improvement in the supply of basic catch and effort statistics as well as information on stock structure, because it is clear that the effects of immigration and emigration need to be taken into account in yield-per-recruit models.

The Committee urged the countries concerned to make every effort to rectify this unsatisfactory situation.

6.7. Stock identification

91. — The Committee received a report from the Sub-Committee on Stock Identification (SCRS/72/55). A summary of the report follows: (1) tag comparison experiments on bluefin tuna were continued in 1972 in the western Atlantic, and reports on preliminary results are included in SCRS/72/25 and SCRS/72/27; (2) yellowfin, skipjack and a few bigeye tuna were tagged off Africa by the ORSTOM laboratories (1,800 yellowfin and 800 skipjack in 1971, and 3,500 and 1,500 respectively in 1972); (3) French scientists tagged 600 albacore in 1971 and 1,580 in 1972; (4) it was requested that the Secretariat suggest procedures for handling tagging information so that a permanent archive of data can be established; and (5) a Canadian fish cannery worker received a prize of US $ 300 in the 1971 lottery.

92. — The Committee agreed that the Secretariat should maintain a complete and up-to-date record of tagged fish released in the Atlantic. The Secretariat should also serve as coordinator to ensure that information on current tagging activities is available to all concerned.

93. — It was brought to the attention of the Committee that the final report of FAO's Working Party on Tuna and Billfish Tagging in the Atlantic and Adjacent Seas (SCRS/72/43) had been published. The report summarizes all information on tuna and billfish tagging in the Atlantic and adjacent seas up to 1971.

94. — In order to better coordinate the tagging activities of member nations, the Secretariat submitted for consideration data forms for expeditious handling of tagging information (SCRS/72/6), as was requested by the Sub-Committee on Stock Identification. The Committee agreed that data forms containing (1) summary of recovery information, (2) envelope for forwarding tags, and (3) letter for finder and for reporting recoveries, should be adopted (SCRS/72/6). The Committee rejected, however, the use of a common computer coding for recovery and release information.

95. — The Committee was informed that a considerable number of tags were not being returned in Africa because of little interest shown in the annual ICCAT lottery. A proposal was made to hold two lotteries instead of one, as this would probably generate more publicity and interest in returning tags. An *ad hoc* group was formed and recommendations were set forth (Appendix 2). The recommendations were for two lotteries of US $ 300 each, one for yellowfin, skipjack and bigeye returns and another for all other tunas and tuna-like species. The recommendations were approved by the Committee.

96. — There was some discussion as to whether the Sub-Committee on Stock Identification was overemphasizing the technical problems of the tagging methods instead of formulating experimental designs to solve tuna fisheries problems. It was suggested that the activities of the Sub-Committee can be more effectively dealt with in the individual activities of the Committee. This topic was discussed more fully under Future Activities (Item 7).

7. Future activities

97. — The Committee reviewed the major activities with which it should be concerned. These should cover statistics, and studies of three major species —yellowfin, bluefin and albacore, but the yellowfin activity should also include consideration of the skipjack fishery. Small groups were established to draw up detailed programs for intersessional activities. These programs, as adopted by the Committee, are set out in Appendices 3 (Statistics), 4 (Yellowfin), 5 (Bluefin) and 6 (Albacore).

98. — The Committee noted that the problem of interaction of different fisheries exploiting the same stock of fish was common to all three species, and the

same problem also occurred in other fisheries, including tuna fisheries in other oceans. A general theoretical study of this problem might therefore be of wide interest. Although no specific proposal was made, the Committee believed that the Commission should encourage and support any such general study that might be made.

99. — The Committee examined the future of the present Sub-Committees. It agreed that it was desirable in principle for the number of Sub-Committees and other bodies to be kept to a minimum. It was also noted that most of the work of the Sub-Committees on Stock Identification and Stock Assessment was now included in the problem-oriented activities mentioned above.

100. — The Committee therefore decided to disband the Sub-Committee on Stock Identification. However, it was recommended that in view of the need for close contact and rapid exchange of information on tagging, each country be requested to nominate a tagging correspondent. Names of the correspondents should be given to the Secretariat by the end of 1972.

101. — The Committee also decided that for the present there was no need for further formal meetings of the Sub-Committee on Stock Assessment, but that the Sub-Committee should be kept in inactive existence, so that if a specific problem arises, the matter could be expeditiously referred to the Sub-Committee. In making these decisions, the Committee wished to place on record its appreciation of the work of these Sub-Committees and of their Convenors (A. C. Jones and J. C. Le Guen).

102. — As regards statistics, the Committee believed that the volume of work in this field justified the continuing existence of the Sub-Committee on Statistics. One day should be set aside for its meeting during the 1973 meeting of the SCRS. The agenda for this meeting should be drawn up by the Sub-Committee's Convenor (S. Hayasi) in consultation with the Secretariat and the Chairman of the SCRS.

8. Management measures and advice to panels

103. — *Panel 1. Yellowfin Tuna.* The Committee's advice concerning the status of the yellowfin stocks and the effect of possible management measures is set out in detail in paragraphs 44 to 82.

104. — *Skipjack.* The fisheries for skipjack and yellowfin are, to a large extent, interdependent and any regulation of yellowfin should take into account the possible effects on skipjack. It has generally been considered that skipjack has been underexploited, and that increased fishing would give increased catches. Catches of skipjack have indeed increased. The Committee has no new information to

confirm or reject earlier views on the possibility of substantial increases in skipjack catches, but intends to review the matter at its 1973 session.

105. — *Panel 2. Bluefin Tuna.* In its 1971 report, the Committee pointed out the benefits that would be obtained from protecting small fish, e.g. by a size limit. In its general discussion on bluefin (paragraphs 88-90) the Committee noted the influence of uncertainties concerning migration and stock structure of bluefin with regard to protecting small fish. Though no new evidence on this was presented to the present session, the Committee saw no reason to revise this advice.

106. — *Albacore.* Paragraphs 83-87 review the current knowledge on albacore. Though detailed assessments have not been made, it is possible that the albacore fishery is approaching or has reached full exploitation.

9. Environment

107. — No discussion took place on this topic because it was felt that it could be better discussed under the individual activities.

10. Miscellaneous papers

108. — The Observer from the U.S.S.R. summarized documents SCRS/72/51, 52, 53 and 54, and presented them to the Committee. Of particular interest to the Committee was the fact that about 5,000 metric tons of Atlantic tunas were caught by the U.S.S.R. using longline gear similar to the Japanese gear, and an average of about 90 % of the catch was bigeye tuna. The Committee expressed its interest in cooperating more fully with the U.S.S.R. in the future.

109. — The Observer from Taiwan Fisheries contributed a document on the Taiwanese tuna fishery and research program (SCRS/72/10). The Taiwanese catch of both bluefin and yellowfin tuna decreased in 1971; the bluefin catch decreased from 115 metric tons in 1970 to 96 metric tons in 1971; the yellowfin catch decreased from 7,156 metric tons in 1970 to 4,087 metric tons in 1971. On the other hand, the catch of albacore increased from 11,937 metric tons in 1970 to 12,223 metric tons in 1971. Increased emphasis is being exerted on the collection of more representative catch-effort statistics for the Taiwanese longline fleet.

110. — The Observer from Cuba presented a document (SCRS/72/68) on the developing Cuban tuna fishery. In 1971 the Cuban tuna fleet consisted of 18 long-

liners and one purse seiner. The total Atlantic catch was 1,700 metric tons of yellowfin tuna, 3,200 metric tons of bigeye tuna, 1,600 metric tons of skipjack and 1,400 metric tons of mixed species.

11. Relations with other Organizations

11.1. General

111. — The Secretariat reported to the Committee that exchange of scientific information and advice continued with a number of international fisheries organizations, e.g. FAO, IATTC, ICES, etc. Because of the recent awareness of high concentrations of mercury in tunas, the Secretariat has made contact with the World Health Organization, U.N. (WHO) in order to obtain timely information on concentrations of heavy metals in tuna.

11.2. Specific

112. — The Secretariat reported that FAO and IATTC were most helpful in providing information and assistance, e.g. tag returns, computer programs, statistics, etc. The Committee extended its appreciation to both organizations. The Representative from FAO and the Observer from IATTC indicated that the cooperation was mutually beneficial and they hoped that the relationship would continue.

113. — The Committee noted that a cooperative program (CINECA) was being organized to study the waters off northwestern Africa. It believed that ICCAT would benefit from some parts of this program, especially studies on the relation between environment and fisheries, and should cooperate in this project, due to be carried out in February and August 1973.

114. — The Representative of FAO reported that IOFC and IPFC, regional bodies of FAO, were taking an increasing interest in the tuna stocks of the Indian and western Pacific Oceans, and would welcome close cooperation with ICCAT.

12. Publications

115. — The Secretariat reported to the Committee that the Biennial Report, Statistical Bulletin and Field Manual had been published. An inquiry was made as to whether the present outlets for ICCAT publications were adequate. It was

agreed that some of the more important SCRS documents dealing with particular questions should be published as a compendium because they are not always available to all delegates if published individually. The Committee therefore proposed that the Secretariat compile, in separate volumes for internal use, all SCRS documents pertinent to specific problems. This compilation should be done in the cheapest possible manner, and should not be considered as a formal publication. The Committee also agreed that a document summarizing the length frequency data reported by each country, as was done for yellowfin in the Abidjan report, should be published by ICCAT. This publication should include information on number of fish, weight sampled, total catch, fishing effort, etc., for each sample taken.

13. Other matters

116. — No matters additional to those discussed under the existing agenda items were raised.

14. Election of officers

117. — Dr. S. Hayasi (Japan) was confirmed as Convenor of the Sub-Committee on Statistics.

15. Date and place of next meeting

118. — It was agreed that the next meeting of the Committee should be held immediately preceding the 1973 meeting of the Commission and should last approximately one week.

16. Adoption of report

119. — After some discussion, the report, as amended, was adopted.

17. Adjournment

120. — The Chairman thanked the Secretariat, interpreters, and the staff of the Casa Sindical, Madrid, for their work during the meeting. He also emphasized, on behalf of the Committee, that he was pleased to have so many observers present, and thanked them for their cooperation in the work of the Committee. The hope was expressed that several of the observer countries would soon become members of the Commission. He also thanked the rapporteurs for their work. The meeting was adjourned on November 29 at 3:30 p.m.

Appendix 1 to Annex 9

AGENDA OF THE STANDING COMMITTEE ON RESEARCH AND STATISTICS

November 20-29, 1972

1. Opening of the meeting.
2. Adoption of the agenda and arrangements for the meeting.
3. Admission of observers.
4. Publicity.
5. Brief review of tuna fisheries and national research programs of each country.
6. Review of progress achieved by the Committee in its research program following recommendations of the SCRS/71 meeting.
   - 6.1. Activity I. Task 1 statistics.
   - 6.2. Activity II. Task 2 statistics.
   - 6.3. Activity III. Length sampling.
   - 6.4. Activity IV. Yellowfin tuna.
   - 6.5. Activity V. Albacore.
   - 6.6. Activity VI. Bluefin tuna.
   - 6.7. Stock identification studies.
7. Future activities
   - 7.1. Activities I-III (methods and procedures to be utilized for the collection of statistics).
   - 7.2. Activities IV and V.
   - 7.3. Stock identification studies.

8. Management measures.
   8.1. ICCAT requirements.
   8.2. Available management techniques.
   8.3. Suggested action.
   8.4. Scientific advice to Panels 1 and 2.
9. Environment.
10. Presentation of papers and results of research not covered in other items of the agenda.
11. Relations with other organizations.
   11.1. General — with all other fisheries management and research bodies.
   11.2. Specific (*a*) with other Atlantic fisheries management bodies.
   (*b*) with other tuna fisheries management and research bodies.
12. Dissemination of information: publications, editing, presentation.
13. Other matters.
14. Election of officers.
15. Date and place of next meeting.
16. Adoption of report and recommendations.
17. Adjournment.

Appendix 2 to Annex 9

RECOMMENDATIONS FROM AD HOC GROUP ON TUNA LOTTERY

That there be *two* lotteries, both conducted at the same time and both prizes to be US $ 300.

1. For taggings on yellowfin, skipjack and bigeye tuna.
2. For taggings on all other tunas and tuna-like species.

MEMBERS:

J. Joseph.
J. C. Le Guen.
M. P. Miyake
S. N. Tibbo.

Appendix 3 to Annex 9

ACTIVITIES I-III — STATISTICS AND SAMPLING

Activity I, Task 1 Statistics (Total catch by species)

Objectives

Improve Task 1 statistics so that they are up to date, accurate and more timely.

Special needs

1. The Secretariat must encourage problem countries to provide more accurate statistics.
2. More timely reporting of statistics must be emphasized.
3. Study the current reporting system of each country in order to identify problems in accuracy of statistics and to improve the timeliness of the statistics.

Tasks and Responsibility

The ICCAT Secretariat will have the responsibility of coordinating the activity in order that the objectives be accomplished.

Time schedule

A quarterly report on progress will be circulated among the scientists by the Secretariat.

Activity II, Task 2 Statistics (Detailed catch and effort)

Objectives

To obtain accurate Task 2 statistics from all major fisheries on a timely basis.

Special needs

1. Complete logbook or port survey systems for major fisheries that still do not have an adequate collection system.
2. Improve coverage of fleets for those countries that have a data collection system.
3. Study the current collecting system of each country in order to identify problems in accuracy and ways of improving the system.

Tasks and Responsibility

1. The Secretariat will continue to provide assistance and advice on data collection systems for those countries that need assistance.
2. The Secretariat will continue to receive processed catch-effort statistics and make them available on request. An inventory of information on file should be prepared.
3. The Secretariat will obtain summarized catch-effort data and publish the information in a single volume, keeping publishing costs to a minimum.
4. The Secretariat will compile into a single volume all summarized catch and effort data that are available in the documents presented at the 1972 SCRS meeting.

Time schedule

1. A quarterly progress report on Activity II will be circulated among the scientists by the Secretariat.
2. Summarized data on catch and effort which become available in 1973 will be prepared for circulation by November 1973.
3. Summarized data on catch and effort from the 1972 SCRS documents will be available for examination by May 1973.

Activity III, Length sampling

Objectives

To obtain accurate data on length samples from all major fisheries.

Special needs

1. Establish a sampling system for all major fisheries that do not yet have a system.

2. Study the current collecting system of each country to identify problems in accuracy and ways of improving the system.

Tasks and responsibility

1. The Secretariat will provide technical assistance to major fishing countries that do not yet have an adequate sampling system.
2. Each country will submit to the Secretariat a detailed description of its sampling systems. The Secretariat will prepare a document on the results.
3. The Secretariat will continue to receive processed data on length samples and make them available upon request.
4. The Secretariat will compile and publish an annual report of summarized data on length composition of *catch*. Countries should submit summarized data by September 15.
5. The Secretariat will compile in a single volume all summarized data that are contained in the documents of the 1972 SCRS meeting.

Time schedule

1. A quarterly progress report will be circulated among the scientists by the Secretariat.
2. A summary document on the sampling system will be prepared by October 1973.
3. The Secretariat will have all new data which become available in 1973 on length composition of catch compiled and ready for circulation by October 15, 1973.
4. Summarized data on length composition of catch from documents presented to the 1972 SCRS meeting will be available by May 1973.

Appendix 4 to Annex 9

ACTIVITY IV — YELLOWFIN

1. *Problem:*

What is the shape of yield-effort curve for longline, surface and combined fisheries? Will increased effort give increased or decreased yield?

Task:

Continue work on catch-effort, c.p.u.e. analysis of various fisheries as started at Abidjan meeting. It is particularly important to update studies as more data become available. (Japan and U.S.)

Preparatory work:

1972 catch and effort data should be submitted to Secretariat as soon as possible. ICCAT should compile and distribute preliminary data by June. FIS data prior to 1969 should be compiled as soon as possible. (France)

2. *Problem:*

Is fishing affecting recruitment?

Task:

(a) Strength of year classes should be estimated using Gulland-Murphy method. (France and U.S.)
(b) Spawning stock should be estimated using Gulland-Murphy method and estimates of size specific fecundity. (Japan and U.S.)
(c) Time trends in (a) and (b) should be examined along with relations between (a) and (b). (U.S.)

Preparatory work:

(a) Compile length frequencies by quarter (1968-1972).[1] (France, Japan, U.S.)
(b) Estimate size specific fecundity. (Japan)

3. *Problem:*

What is effect of changes in surface fishery and longline fishery on yield of surface, longline, and total fishery?

Task:

(a) Update estimates of size specific F. (Japan, U.S. and France)
(b) Calculate yield-per-recruit curve/isopleths. (U.S.)

Preparatory work:

Covered by 1 and 2.

4. *Problem:*

How many separate stocks of yellowfin are there in the Atlantic? Do doubts about stock separation affect assessments in (1), (2) or (3)?

1. 1968-1971 for longline fisheries.

Task:

(a) Prepare review paper on non-tagging evidence of stock separation. (France and Japan). Submit report to national correspondents, SCRS Chairman and Secretariat by March.
(b) Prepare review paper on tagging evidence of stock separation (Pianet: France). Submit report to national correspondents, SCRS Chairman and Secretariat by March.
(c) Prepare detailed plan for future tagging work. (France). Submit plan to national correspondents, SCRS Chairman and Secretariat by March.
(d) Consider implication on assessment.

5. *Problem:*

What is best unit of effort/c.p.u.e.?

Task:

(a) Continue work as started at Abidjan meeting with particular emphasis on updating analysis as more data become available.
(b) Continue work started by IATTC in Pacific on the interaction between c.p.u.e. of yellowfin and c.p.u.e. of skipjack in surface fisheries. (U.S., France)

Preparatory work:

Covered by 1.

Appendix 5 to Annex 9

ACTIVITY V — BLUEFIN

1. *Problem:*

What is the shape of yield-effort curve for various bluefin tuna fisheries? Will increased effort give increased yield?

Task:

Carry out detailed catch-effort, c.p.u.e. analysis of various fisheries, both separately and combined (France, Spain, U.S., Japan).

Preparatory work:

Need paper on stock structure (see Problem 4). Need to assemble fishery statistics.

2. *Problem:*

Is fishing affecting the recruitment to the small fish fisheries? What is the effect of fishing on recruitment to the large fish fisheries?

Task:

Examine data pertinent to change in recruitment (France, Spain, U.S.).

Preparatory work:

Produce series of c.p.u.e. for various fisheries. Obtain improved indices of year class strength.

3. *Problem:*

What effects do changes in surface fisheries have on yield of various fisheries and various stocks?

Task:

Estimate basic parameters, especially F and calculate Y/R curves (U.S. and France) if possible.

Preparatory work:

Assemble data.

4. *Problem:*

How may separate stocks of bluefin tuna are there in the Atlantic and adjacent seas? Do doubts about stock separation affect assessments in (1), (2) or (3)?

Task:

(a) Review evidence of stock separation (Mather and Jones: U.S.).
(b) Consider implications of stock structure on assessments (U.S.).

(c) Coordinate and facilitate field measurements (Mather and Dao: U.S. and France).
(d) U.S. will continue tagging operations. Tagging in Bay of Biscay, western Mediterranean, and off Morocco urged. (Mather and Dao will correspond.)

5. *Problem:*

Critique of best unit-of-effort in the surface fishery.

Task:

Examine unit-of-effort problem (France, U.S.).

Note: This problem should be looked at for the whole Atlantic and also for Atlantic plus Mediterranean. European countries should concentrate on the small fish fishery in the Bay of Biscay, and North American countries on fishery in N.W. Atlantic.

Appendix 6 to Annex 9

ACTIVITY VI — ALBACORE

1. *Problem:*

What is the shape of yield-effort curve for longline fishery? Will increased effort give increased yield?

Task:

Carry out detailed catch-effort, c.p.u.e. analysis of longline fishery. (a) Total Atlantic, (b) North and South separately (Hayasi, with help from Bae and Yang: Japan, Korea, Taiwan Fisheries).

Preparatory work:

Better statistics: catches should be separated at least by north and south Atlantic. Preferably data by 5° squares of the four areas as explained in Document SCRS/72/14 should be used. All gears should be covered, and estimates should be given when exact data are not available. Data should be submitted to Hayasi by March 1 (Korea, Taiwan Fisheries).

2. *Problem:*

Is fishing affecting recruitment?

Task:

(a) Revise Bard analysis.
(b) Examine other data of changes in recruitment (Bard: France).

Preparatory work:

(a) Produce series of c.p.u.e. data for longline fishery for large fish (spawners) in North Atlantic (Hayasi: Japan).
(b) Improve indices of year-class strength (Dao, in collaboration with Cendrero: France and Spain). Best estimates of spawning stock and year-class strength should be submitted to Bard by April 1.

3. *Problem:*

What are general effects of changes in the amount of fishing?

Task:

(a) Determine yield-effort curve for surface fishery.
(b) Obtain best estimate of fishing mortality for each age of fish.
(c) Incorporate these estimates in yield-per-recruit isopleths, showing yields in surface and longline fisheries separately.
(d) Assemble best series of fishing effort, both total and for each major fishery. (Hayasi, in collaboration with Dao and Yang: Japan, France, Taiwan Fisheries.) Report for 1973 meeting.

4. *Problem:*

How many separate stocks of albacore are there in the Atlantic? Do doubts about stock separation affect assessments in (1), (2) or (3)?

Task:

(a) Review evidence of stock separation (Aloncle: France). Prepare document by June 1.
(b) Consider implication on assessments (U.S. Southwest Fishery Center). Report to be ready for 1973 meeting.

5. *Problem:*

What is best unit of effort/c.p.u.e. in the surface fishery? What adjustments are necessary to correct for changes in environment?

Task:

Make integrated review of c.p.u.e data of France and Spain. (Bard in collaboration with Cendrero and Aloncle: France, Spain). Report to be ready for 1973 meeting.

Appendix 7 to Annex 9

REPORT OF TASK FORCE 1 (SCRS, Chairman's Special Committee)

Members: A. Fonteneau
S. Hayasi
G. Sakagawa

Background

Catch and effort statistics are submitted by member nations to the ICCAT Secretariat. The statistics are generally reported by $5° \times 5°$ areas for the longline fishery, and $1° \times 1°$ areas for surface fisheries. Because this data breakdown is relatively fine, the data are voluminous and difficult to interpret in general terms. Thus, a reasonably satisfactory means of summarizing the statistics by larger statistical areas would be convenient and probably more useful for examination of gross changes in catch and effort.

Task Force 1 was organized by the SCRS Chairman to examine the distribution of catch and effort of yellowfin tuna caught by the surface fishery and to devise a system of statistical areas in which catch and effort statistics can be summarized by the Secretariat for presentation to SCRS.

Average distribution — Results

Task Force 1 examined the distribution of catch by $1° \times 1°$ areas of the French-Ivory Coast-Senegalese (FIS) purse seine and baitboat fleets, 1969-71; catch by $1° \times 1°$ areas of the Japanese purse seine fleet, 1970; and combined catch and

effort for 1967-71 by 1° × 1° areas for the American purse seine fleet. The FIS data were relatively easy to group into three areas — Area 1, east of 3° E longitude; Area 2, west of 3° E longitude and south of 10° N latitude; and Area 3, north of 10° N latitude — according to concentration of catches of yellowfin tuna. A similar grouping appears applicable to the Japanese catches of yellowfin tuna. On the other hand, the American catch and effort are not easily subdivided into large areas. Catch and effort are primarily concentrated in the Gulf of Guinea, but relatively large catches are made off Abidjan and Luanda. With the present data, the areas described above for the FIS fleet seem applicable to the American fleet. However, further examination of yearly data is required in order to confirm this.

Recommendation

We suggest that the areas outlined here for the FIS catch of yellowfin tuna be tentatively used by the Secretariat for summarizing the catch and effort statistics of the yellowfin tuna surface fishery off Africa. We emphasize, however, that the boundaries of the areas are tentative and subject to revision, since seasonal shifts in the concentration of fish and/or movement of fleets will affect the distribution of catch and effort. Year-to-year changes of oceanographic conditions, especially shifts in the position of thermal fronts, may also affect the distribution of fish and the fishing fleet. Furthermore, the stock structure of the Atlantic yellowfin tuna population has not yet been defined and the area boundaries may not necessarily represent stock boundaries.

Appendix 8 to Annex 9

LIST OF DOCUMENTS

SCRS/72/1	Provisional Agenda.
SCRS/72/2	Provisional Agenda and Timetable.
SCRS/72/3	Provisional Agenda and Timetable (annotated).
SCRS/72/4	Statistical Bulletin.
SCRS/72/5	Secretariat Report on Progress in Collecting Statistics.
SCRS/72/6	Tagging Report.
SCRS/72/7	Abidjan Report.

SCRS/72/8 Catch statistics and sample length composition in Japanese Atlantic tuna purse seine fishery, 1970.
SCRS/72/9 Size composition of tuna and billfish samples from Japanese longline fishery in the Atlantic Ocean, 1970.
SCRS/72/10 Development of tuna longline fishery and tuna research in Taiwan.
SCRS/72/11 National Report of South Africa.
SCRS/72/12 Canadian Research Report, 1971-1972.
SCRS/72/13 Japanese fisheries and research activities on tunas and tuna-like fishes in the Atlantic Ocean, 1970-1972.
SCRS/72/14 Overall fishing intensity and catch by length class of yellowfin tuna in Japanese Atlantic longline fishery, 1956-1970.
SCRS/72/15 Oceanic tuna tagging program, Kanagawa Prefectural Fisheries Experimental Station.
SCRS/72/16 Las capturas de atún, *Thunnus thynnus* (L.) por las almadrabas del sur de España en el año 1972, y variación del rendimiento en el período de 1962 a 1972.
SCRS/72/17 La pesca española de atún blanco, *Thunnus alalunga*, en el verano de 1972.
SCRS/72/18 Overall fishing intensity and catch by length class of albacore in Japanese Atlantic longline fishery, 1956-1970.
SCRS/72/19 La pêche au germon dans le Golfe de Gascogne — Influence de la température sur le déplacement des mattes.
SCRS/72/20 Overall fishing intensity of Japanese longline fishery for bigeye tuna in the Atlantic Ocean.
SCRS/72/21 Biological views for conservation of yellowfin tuna in the Atlantic Ocean based on information obtained up to October 1972.
SCRS/72/22 La pêche au germon dans le Golfe de Gascogne — Définition d'une unité opérationnelle d'exploitation.
SCRS/72/23 An examination of the yield per recruit basis for a minimum size regulation for Atlantic yellowfin tuna.
SCRS/72/24 An examination of the basis for a catch quota regulation on Atlantic yellowfin tuna.
SCRS/72/25 Estimation of rates of tag sheddings of northwest Atlantic bluefin tuna.
SCRS/72/26 United States Fishery Report, 1972, to the International Commission for the Conservation of Atlantic Tunas.
SCRS/72/27 Preliminary analysis of bluefin tagging data.
SCRS/72/28 A review of the yellowfin tuna fishery of the Atlantic Ocean.
SCRS/72/29 United States Research Report, 1972, to the International Commission for the Conservation of Atlantic Tunas (ICCAT).
SCRS/72/30 A review of the bluefin tuna *(Thunnus thynnus)* fisheries of the Atlantic Ocean.

SCRS/72/31 Summary of recent information on tagging and tag returns for tunas and billfishes in the Atlantic Ocean.

SCRS/72/32 Migration and distribution of white marlin and blue marlin in the Atlantic Ocean.

SCRS/72/33 Rapport de recherches pour 1971 (France).

SCRS/72/34 Rapport sur la 60e Session Statutaire du Conseil International pour l'Exploration de la Mer.

SCRS/72/35 Evaluation of the fishing effort, and the CPUE of French and Spanish albacore fleets since 1960 — Apparent relationship with the fishing effort of longliners in the North Atlantic.

SCRS/72/36 La pêcherie de thon rouge du Golfe de Gascogne — Résultat des recherches 1972.

SCRS/72/37 La pêche au germon dans le Golfe de Gascogne — Influence de la température sur le déplacement des mattes.

SCRS/72/38 Estimation de la production de thon blanc *(Thunnus alalunga)* des thoniers-ligneurs français, 1971.

SCRS/72/39 Marquage de thons rouges dans le Golfe de Gascogne.

SCRS/72/40 Température interne du germon — Variations en fonction de la taille du poisson.

SCRS/72/41 Début des campagnes germonières au large des côtes européennes.

SCRS/72/42 La pêche thonière à Dakar en 1970 et 1971.

SCRS/72/43 Final Report of the Working Party on Tuna and Billfish Tagging in the Atlantic and Adjacent Seas.

SCRS/72/44 List of recovered tags.

SCRS/72/45 Distribución mensual de tallas de la albacora, *Thunnus alalunga* (Bonnaterre), en el año 1952 en la pesquería del Atlántico Noroeste y sus zonas de pesca.

SCRS/72/46 A note on bluefin tuna fishery in the Atlantic.

SCRS/72/47 Distribution de fréquences des albacores pêchés par la flottille FIS (exprimées en poids) par trimestres et par secteurs, tous engins réunis, en 1969, 1970, 1971.

SCRS/72/48 Distributions de fréquences de tailles de germon.

SCRS/72/49 Distributions de fréquences de tailles de germon.

SCRS/72/50 Review of Korean tuna fishery.

SCRS/72/51 On some biological characteristics of little tuna, *Euthynnus alletteratus* (Rafinesque, 1810), in the eastern part of the Tropical Atlantic.

SCRS/72/52 On the state of the bigeye tuna stock in the eastern part of the pre-equatorial Atlantic.

SCRS/72/53 Results of Soviet fisheries investigations on tuna from the Atlantic Ocean.

SCRS/72/54 On the biological character of longfin tuna *Thunnus alalunga* (Gmelin) concentrations in the southwest, southeast and some other areas of the Atlantic Ocean.
SCRS/72/55 Convenor's Report of Sub-Committee on Stock Identification.
SCRS/72/56 Agenda and timetable of Sub-Committee on Statistics.
SCRS/72/57 Las pesquerías de atunes y especies afines del Brasil en el año 1971.
SCRS/72/58 Flow chart of Japanese statistics.
SCRS/72/59 Organigramme des statistiques françaises.
SCRS/72/60 Organigramme des données statistiques FIS fournies par l'ORSTOM.
SCRS/72/61 Esquema de trabajo para la recopilación de datos estadísticos de la pesca industrial de atunes en el Brasil.
SCRS/72/62 Organigrama de la recogida de estadísticas en España.
SCRS/72/63 USSR statistics.
SCRS/72/64 Canadian statistics.
SCRS/72/65 Flowchart of U.S. statistics.
SCRS/72/66 Thons pêchés au Portugal continental insulaire.
SCRS/72/67 Cuba, diagrama de flujo de la información.
SCRS/72/68 Síntesis de las pesquerías cubanas en el Océano Atlántico durante el año 1971.
SCRS/72/69 France, germon (organigramme des statistiques).
SCRS/72/70 Present statistics collecting system of tuna of Korea.
SCRS/72/71 Taiwan statistics.
SCRS/72/72 Report of the SCRS, Rapport du SCRS, Informe del SCRS.
SCRS/72/73 Rapport national du Maroc.

Appendix 9 to Annex 9

REPORT OF SUB-COMMITTEE ON STATISTICS
(Madrid, November, 1972)

I. Introduction

The Sub-Committee on Statistics met at the Casa Sindical, Madrid, on November 23, 1972, under the chairmanship of Dr. S. Hayasi. All delegations, representatives and observers attending the SCRS meeting participated in the session of the Sub-Committee. Dr. D. Sahrhage acted as Rapporteur. After a welcome by the Convenor, the Sub-Committee adopted the Agenda (Addendum 1).

In his introduction the Convenor gave a brief summary of the present status of ICCAT statistics and efforts made towards their improvement. He referred in particular to the Report of the Meeting of the Special Working Group on Stock Assessment of Yellowfin Tuna, held in Abidjan in June 1972 (SCRS/72/7), which pointed out that the Secretariat should continue corresponding with fishing nations to encourage further improvements in collecting, compiling and in particular, timely reporting their statistics.

II. Statistics and sampling

The Assistant Executive Secretary reported on the action taken by the Secretariat for the rapid compilation, dissemination and improvement of statistics. His outline was based on the Secretariat progress report as contained in Document SCRS/72/5. He pointed out that the Secretariat, in accordance with the recommendation made by the Special Working Group on Stock Assessment of Yellowfin Tuna, distributed a circular among all member countries indicating specific deficiencies of their statistical data and stressing again the need for timeliness in the submission of statistics. Only one member country had replied so far but further responses were awaited.

The Sub-Committee then reviewed, country by country, the present status of the Task 1 and Task 2 statistics and the improvements required. Tables 1-3 of Document SCRS/72/5 were amended accordingly. The Secretariat received some additional data from both member and observer countries, and the submission of further data in the near future was announced in other cases. The Secretariat agreed to further update the tables contained in SCRS/72/5 so that they would show the situation as of the end of the 1972 Council session. These tables, as finally amended, are attached as Addendum 2.

The Sub-Committee also reviewed the present status of the biological sampling statistics on a country by country basis (SCRS/72/5, Table 4). The Secretariat indicated that this was mainly a list of available data and that it would not be possible to make an evaluation as regards the existing deficiencies. It was agreed that member and observer countries would send their corrections and additions to this Table directly to the Secretariat as soon as possible.

The Secretariat reported on its work of improving the tuna statistics in Spain in collaboration with Spanish authorities. The Assistant Executive Secretary offered the Secretariat's help also with regard to the Portuguese fishery. Furthermore, it was indicated that the Executive Secretary would visit a number of Latin American countries early in 1973. This would, *inter alia*, improve the submission of statistics from that side of the Atlantic.

A question was raised regarding statistics for tuna vessels in the Atlantic flying the Panamanian flag. The Secretariat reported on their continued efforts to obtain such data, which had not been successful so far, and explained the difficulties involved. The Sub-Committee encouraged the Secretariat to make further attempts, since the tuna catches by these vessels may be considerable and have not been covered so far. Attempts will be made by ORSTOM to obtain data on landings of these vessels in African ports.

The Sub-Committee agreed that special efforts should be made to arrange, as far as possible, for a separation of statistical data on bluefin tuna fisheries in the Atlantic from those in the Mediterranean. It was also emphasized that the reasons for discrepancies between the official statistics and those based on more detailed scientific studies should be investigated and remedied wherever possible.

The Sub-Committee expressed its satisfaction and commended the Secretariat on the further progress made during the intersessional period in the compilation and dissemination of statistics. It welcomed in particular the publication of the Statistical Bulletin, Vol. II (SCRS/72/4) and the guidelines outlined in the Field Manual (Parts I and II).

III. Flow charts of national statistics

The Convenor introduced this subject by outlining the contents of Document SCRS/72/58, a flow chart of Japanese statistics. The Sub-Committee discussed the advantages of such flow charts; they will lead to a better understanding of the processes of data collection, reporting and analyses in the various countries. It was agreed that such flow charts would serve a useful purpose as they would provide a first step to check the quality and coverage of the data and give an indication of factors interfering with the rapid collection, processing and submission of the statistics. Consequently, first drafts of flow charts were prepared and presented during the meeting by all member and observer countries represented (SCRS/72/59-67, 69-71).

In considering the preliminary outlines of the flow charts submitted, the Sub-Committee realized that further action was required to prepare more refined flow charts which should show both the administrative setup as well as the technical channels existing in the countries for Atlantic tuna statistics. It was agreed that the flow charts should contain information on the time periods required between the catches and the submission of the data to ICCAT, indicating the name and address of the national correspondents, and should be covered by notes explaining the techniques used, coverage of data by area and time in comparison to the total fleets, evaluation of data qualities and difficulties involved, sampling frequencies,

etc. To the extent possible information should also be provided on ways to establish quick reporting systems which may be required in future for problem species under management regulations. The following time schedule was agreed on:

By January 31, 1973: Secretariat will circulate present drafts of flow charts.

By May 1: Countries will send ICCAT their revised drafts with a covering commentary. Secretariat will send reminders to countries not meeting deadline.

By August 1: Secretariat will prepare drafts for countries who have not replied and send to them for comment and clearance. Secretariat will also clarify remaining questions with reporting countries to ensure uniformity of format of flow charts as far as possible.

By October 1: Secretariat will compile a single document for consideration at next SCRS meeting, to be distributed in advance of that session.

IV. Semi-Processing of Task 2 and sampling data

In opening the discussion the Convenor described briefly the three types of data needed at present, namely (a) catch-per-unit-effort or other indices of stock size, (b) amount of effective effort or other indices proportional to the instantaneous fishing rate, and (c) catch by length (age) class. The Sub-Committee concluded that these were the most important data required. It was felt, however, that efforts should be made to arrange for, as far as possible, further improvements and greater uniformity of data provided by the various countries. As a first step in this direction the Sub-Committee recommended that all countries submit to the Secretariat by June 1, 1973 a paper describing the methods used in the collection and compilation of catch-per-unit-effort data, together with a critical review of their adequacy and reliability, the sampling plans, problems of length measurement, age studies and other related aspects. The Secretariat was asked to remind countries about submitting a short report, where required, and to reproduce and distribute the reports in due time before the next meting of the SCRS.

The Sub-Committee then considered the experience obtained during the intersessional period with the compilation and reporting of Task 2 data as regards time and area breakdown. It was observed that the definitions of time and area divisions agreed on during the previous SCRS meeting and reproduced in Part I.4 of the Field Manual were still not always followed by the countries in their submissions, and the Sub-Committee decided to urge countries to follow these guidelines. There was a concensus that the established system was satisfactory for the time being.

As regards area breakdown the Sub-Committee noted the Report of Task Force I (Appendix 7), set up to examine the distribution of catch and effort of

yellowfin tuna caught by the surface fisheries and to devise a system of statistical areas in which these data could be summarized by the Secretariat in less voluminous form than by 1° × 1° squares, as agreed on previously. It accepted the advice from Task Force 1 that data, at least for the French-Ivory Coast-Senegalese and Japanese surface fisheries, should be grouped into three areas: Area 1: east of 3° E longitude, Area 2: west of 3° E longitude and south of 10° N latitude, and Area 3: north of 10° N latitude. It agreed also that the boundaries would be tentative and subject to revision.

The Sub-Committee noted that the tables appended to the Report of the Special Working Group on Stock Assessment of Yellowfin Tuna (SCRS/72/7) contain substantial material in the form agreed on at the previous SCRS session. It was realized that a great amount of additional data on yellowfin tuna and the other species concerned had become available but was rather scattered in various contributions submitted to the present SCRS meeting. The Sub-Committee therefore asked the Secretariat to compile, using all these contributions, a consolidated comprehensive document containing the semi-processed Task 2 and length frequency data which could be considered by the Sub-Committee at its next meeting in order to arrive at a decision regarding the possible final publication of such material. The Sub-Committee recommended that countries do their utmost to submit the data processed up to 1973 as soon as possible, and not later than six weeks before the next meeting of the Commission, so that they could be compiled and circulated by the Secretariat as part of the above mentioned document in advance of the next SCRS meeting.

In concluding the session, the Convenor thanked the participants for their active collaboration and acknowledged especially the contribution made by observer countries.

Addendum 1 to Appendix 9 to Annex 9

Agenda for Sub-Committee on Statistics
Madrid, November 23, 1972

1. Opening of the meeting.
2. Adoption of the Agenda and arrangements for the meeting.
3. Review of achievements in 1972.
4. Discussion and drafting of flow charts of national statistics.
5. Discussion on semi-processing Task 2 and sampling data.
   5.1. Present requirements.
   5.2. Exchange of information.
6. Other matters.
7. Adjournment.

Table 1. Present Status of Task 1 Catch Statistics.

Country	*Last year for which ICCAT has data*	*Comments*	*Improvements required*
Argentina [1]	1971		Closer direct contact. Timely reporting.
Brazil	1971		
Canada	1971	Gear breakdown incomplete.	Gear breakdown.
Cuba [1]	1971		Closer direct contact. Timely reporting.
France	1971	Gear breakdown not available for earlier years. Reported together with Senegalese and Ivory Coast statistics.	Gear breakdown for earlier years.
Ghana	1971	Domestic catch is estimated.	Need actual data.
Ivory Coast	1971	Reported together with France and Senegal.	
Japan	1971	Statistics up to 1970 based on landing report. Longline data for 1971 converted from number of fish.	
Korea	1971	Not expressed in round weight nor 100 % coverage.	Round weight figures.
Mexico [1]	1970		Closer direct contact.
Morocco	1971		
Portugal (Angola)	1970		Timely reporting.
Portugal (mainland and islands)	1970	Tuna catch not broken down by species. Tuna-like catch not broken down by gear.	Breakdown by species and gear. Timely reporting.
Senegal	1971	Reported together with France and Ivory Coast.	
South Africa	1971	No commercial catch. Minor sport fisheries are not sampled.	
Spain	1971	Much of the data lacks gear breakdown. A part of data is based on rough estimates.	Accurate data rather than estimates. Gear breakdown.
Taiwan [1]	1971	Possibly not expressed in round weight.	Round weight figures.
United States	1971	Gear breakdown for minor local fisheries in western Atlantic not complete.	Gear breakdown for west Atlantic fishery.
U.S.S.R.[1]	1971		
Venezuela [1]	1971		

1. Non-member country.

Table 2. Present Status of Task 1 Effort Statistics (Number of boats)

Country	*Last year for which ICCAT has data*	*Comments*	*Improvements required*
Argentina [1]	No data		Closer contacts.
Brazil	1971	Partial control of effort.	
Canada	1971		
Cuba [1]	1971		
France	1971	Bluefin fishery data lacking. For tropical tuna, Senegalese and Ivory Coast boats included.	Need data for bluefin.
Ghana	No data	Only canoe fishing.	Need data.
Ivory Coast	1971	Included in French statistics.	
Japan	1971		
Korea	1971	For 1970 and 1971, some boats which moved from one part to another are double counted.	Eliminate double counting.
Mexico [1]	1970	Partially available.	Closer contacts.
Morocco	(1970)	Number traps only. No data for number of boats.	Need data.
Portugal (Angola)	1970		Timely reporting.
Portugal (mainland and islands)	No data		Timely reporting.
Senegal	(1970)	Included in French statistics.	
South Africa	No data	No commercial fisheries.	
Spain	(1971)	Large boats operating off Africa only (estimates by Secretariat). Lack information for major part of fleet.	Need data.
Taiwan [1]	1970		
United States	(1971)	Data available for bluefin, yellowfin and skipjack.	Need data for southeastern coastal fisheries.

1. Non-member country.

Table 3. Present Status of Task 2 Catch and Effort Statistics.

Country	*Last year for which ICCAT has data*	*Comments*	*Improvements required*

Argentina [1]	1960-64 1970-71	For longline only. Available in publications.	Closer contact.
Brazil	1971	For longline fishery only.	
Canada	1971	Data for swordfish and bluefin complete up to 1971. African fisheries are reported together with U.S.	
Cuba [1]	No data		Closer contact.
France	1971	Reported together with Senegal and Ivory Coast. Available in ORSTOM and CNEXO publications and in reports presented to ICCAT.	
Ghana	No data		Need data.
Ivory Coast	1971	Reported together with Senegal and France.	
Japan	1970	For longline only. Catch expressed in number of fish. Available in Fishery Agency publication, Tokyo. Partial data for purse seines (1970 only). No baitboat data.	Need more complete data for surface fishery. Timely reporting.
Korea	1969	Very low coverage. In number of fish only. Available in publication of Fishery Res. and Training Institute, Pusan.	Timely reporting. Increased coverage.
Mexico [1]	No data		Need closer contact.
Morocco	No data		Need data.
Portugal (Angola)	1969	Partial data.	Timeliness. More complete coverage.
Portugal (mainland and islands)	No data		Need data.
Senegal	1971	Included in French statistics.	
South Africa	No data	No commercial fisheries.	
Spain	No data		Need data.
Taiwan [1]	1971	Low coverage. In no. of fish. Available in Ocean Fish. Dev. Comm. also at ICCAT Hdqrs.	Need better coverage.
United States	1971	For African surface fishery only. Available as computer output at NMFS, La Jolla. No data on West Atlantic fishery.	Need data for West Atlantic fishery.
Venezuela [1]	1970	In number of fish.	

1. Non-member country.

Table 4. Present Status of Biological Sampling Statistics.

Country	*Years for which ICCAT has data*	*Species*	*Comments*
Argentina [1]	None		
Brazil	None		
Canada	1959-1970	Swordfish.	Bluefin sampling has been done and data are available at Fish. Res. Bd., St. Andrews, Canada.
Cuba [1]	None		
FIS	Up to 1971	Yellowfin, skipjack.	
(France, Senegal & Ivory Coast)	Up to 1970	Albacore, bluefin.	
Ghana	None		
Japan	1970	Bluefin, southern bluefin, albacore, bigeye, yellowfin, swordfish, blue marlin, white marlin, sailfish, skipjack (both longline and surface).	Data available for 1965-70 at Far Seas Fish. Res. Lab., Shimizu.
Korea	1970	Bigeye, albacore, yellowfin.	Low sample coverage.
Mexico [1]	None		
Morocco	1971	Skipjack, little tuna.	
Portugal	None		
South Africa	None		
Spain	1971	Albacore.	Some data available for bluefin caught by traps at Fish. Inst., Cadiz.
Taiwan [1]	None		
United States	1968-1971	Yellowfin and skipjack, bluefin tuna.	
Venezuela [1]	None		

1. Non-member country.

CHAPTER III

NATIONAL REPORTS

BRAZILIAN FISHERY OF TUNAS AND TUNA-LIKE SPECIES, 1972

by

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1. Initial Considerations

In 1971, fishery for tunas and tuna-like species was initiated by longliners of the national fleet. Fishery for these species is therefore somewhat more than purely seasonal and artisan, even though its contribution to the fishery yield of the country is very small.

The Government of the Federal Republic of Brazil shows continuing interest in developing the industrial exploitation of tunas and tuna-like species, and has granted this priority in obtaining incentives under the fisheries legislation. The first positive results appeared in the Central-Southern region of the country, where longliners are already operating from the ports of Santos (State of São Paulo) and Rio Grande (State of Rio Grande do Sul).

2. Recent Statistics

Brazilian production figures for only those species of interest to the International Commission for the Conservation of Atlantic Tunas show a total yield of 1,286 tons (Table 1).

The first 5 national longliners devoted to the fishery of tuna and tuna-like species started operating this year. Some general characteristics and fishing effort are shown in Tables 2 and 3. These vessels, new to the national fishing fleet, totalled

Original Report in Spanish.

catches of 644.8 tons, almost 50 % of the national production of these species. Yellowfin and albacore predominated (Table 4).

3. Research being Conducted and/or Planned

The research program on the biology of blackfin tuna, sponsored by the Instituto de Biologia Marinha at the Federal University, Rio Grande do Norte, is still under way. Results have been obtained on age and growth of the species.

With a view to offering greater scientific support to the new longline fleet operating in the Central-Southern region of Brazil, the Superintendência do Desenvolvimento da Pesca has initiated research cruises and studies on the biology and fishery of tunas and tuna-like species. These are being carried out in temperate southwest Atlantic waters, close to the Brazilian coast.

Table 1. Brazilian yield of tunas and tuna-like species in 1971

Species	*Tons*
Yellowfin	317
Albacore	151
Blackfin tuna	75
Bluefin	67
Bigeye	27
Total of tunas	637
Atlantic bonito	141
Total of bonitos *	507
Atlantic sailfish	70
Broadbill swordfish	36
Black marlin	21
Atlantic white marlin	15
Total of Marlins	142
GRAND TOTAL	1,286

* Includes Atlantic little tuna, skipjack and frigate mackerel.

Table 2. Data on the Brazilian longliner fleet operating during 1971 from the ports of Santos (State of São Paulo) and Rio Grande (State of Rio Grande do Sul)

Fleet	*Santos*	*Rio Grande*
Average power (HP)	371.0	367.0
Average length (m)	27.0	28.8
Vessel operating	3	2

Table 3. Fishing effort of the Brazilian longliner fleet operating during 1971 from the ports of Santos (State of São Paulo) and Rio Grande (State of Rio Grande do Sul)

Effort	*Santos*	*Rio Grande*
No. of hooks used	560.26	37.70
Fishing days	514	40
Days out of port	634	59
No. of trips	47	4

Table 4. Tuna and tuna-like species caught in 1971 by the Brazilian longliner fleet operating from the ports of Santos (State of São Paulo) and Rio Grande (State of Rio Grande do Sul) (Unit = 1 metric ton)

Species	*Santos*	*Rio Grande*
Yellowfin	301.3	15.9
Albacore	133.9	17.0
Bigeye	25.8	1.4
Atlantic sailfish	35.4	0.5
Broadbill swordfish/marlins	107.5	6.1
TOTAL	603.9	40.9

CANADIAN RESEARCH REPORT, 1971-1972

by

S. N. TIBBO and J.S. BECKETT

Canadian research on tunas and tuna-like fishes in the Atlantic Ocean is carried out chiefly from the St. Andrews Biological Station of the Fisheries Research Board of Canada. The program is restricted to following changes in the fisheries along with life history studies and a few special research projects. The Halifax Laboratory of the Fisheries Research Board supports the program as does the Royal Ontario Museum in Toronto. This report includes contributions from many scientists engaged in research of interest to the International Commission for the Conservation of Atlantic Tunas (ICCAT).

A. Status of the Fisheries

1. *Swordfish*

There were no swordfish landings in 1971. The fishery was abandoned early in the year following discovery of unacceptable levels of mercury in swordfish flesh. Two vessels were at sea when sales were prohibited and their catches (17.2 metric tons) were destroyed. Research vessels caught an additional 13.3 metric tons.

2. *Tuna*

The Canadian catch of tuna in the Atlantic was approximately 2,415 metric tons round weight, about the same as in 1970. The purse seine fishery off the east coast of the United States took 935 metric tons of small bluefin and 205 tons of skipjack. Purse seining in the Gulf of Guinea accounted for 45 tons of yellowfin and 1,025 tons of skipjack. Inshore trap and harpoon fisheries off the east coast of Nova Scotia took about 70 tons of large bluefin, and about 135 tons of large bluefin were caught by sport fishermen, chiefly in the Newfoundland and Prince Edward Island areas.

Original Report in English.

B. Special Research Studies

Swordfish

Attempts have been made to assess the impact of the longline fishery on swordfish stocks throughout the period of its operation (1963-1970). This study is incomplete but it appears that by 1970 the stock was being overexploited. Effort (number of hooks fished) almost tripled over the eight-year period and, while catch (weight) per day's fishing showed little or no change, hooking rates declined from 2.88 fish per hundred hooks in 1963 to 1.03 in 1970. The most obvious effect of the longline fishery on the stock was a progressive and drastic reduction in average size of fish caught, from 108 kg in 1963 to 53 kg in 1970.

Investigations of the biology and life history of swordfish were continued in conjunction with a new program to study mercury contamination. Four longline cruises in 1971 and six in 1972 yielded 339 swordfish for study of mercury levels, maturity, food and morphometrics while an additional 16 were tagged.

The eighth in a series of surveys for larval swordfish to the Caribbean and adjacent region, during February and March 1972, yielded 18 small swordfish from 68 stations and 399 plankton net tows. Our total collection of swordfish larvae is now 121. Plankton collections have been sorted for tunas, istiophorids and other major groups but await specific identification. Swordfish larvae have consistently been found to have a discontinuous distribution during January-March, suggesting localized spawning areas (Northwest Caribbean, Windward Passage, Virgin Islands, Guinea current south of Trinidad, and the Florida current).

Examination of stomachs of 141 swordfish captured from July to October 1971 between the Grand Bank and the southeast part of Georges Bank in the Northwest Atlantic showed that a wide variety of fish species made up about 80 percent of the diet — the remainder was squid. Species and size composition of food fishes depended on the feeding area. Barracudinas, family Paralepididae, occurred most frequently and constituted about 20 percent of the fish diet for all areas. Redfish *(Sebastes marinus)* were the most important food item in the Western Bank and Grand Bank areas, whereas silver hake *(Merluccius bilinearis)* made the greatest contribution in the Georges Bank area.

Analysis of total mercury content of the flesh (average 1.15 ppm) and various organs (red muscle, visceral muscle, dorsal muscle, liver, kidney, heart, brain, gill, vertebral disc, and stomach) have been carried out on 210 swordfish, although all tissues were not retained from all fish. A number of conclusions have been reached; (a) mercury levels are linearly related to size but the regression coefficients vary with area; (b) males have higher levels than females of the same size; (c) kidney and liver values vary more than other tissues, but values are characteristic of

particular localities, and suggest that swordfish in the Caribbean and southern Gulf Stream are ingesting greater quantities of mercury; (d) intake is less, and body levels decrease with time, in northern areas; and (e) locally important food species may have an effect on predator mercury levels in the area especially where mercury rich species form significant parts of the diet.

Determinations of mercury have been performed on body muscle of 15 other species of large pelagic fish. The results show higher levels in predatory species. Basking sharks *(Cetorhinus maximus)* for example, had a mean level of 0.08 ppm in dorsal muscle tissue whereas the comparable value for a white shark *(Carcharodon carcharias)* was 18.85 ppm.

Tuna

Size sampling of purse seined catches in 1971 included 2,624 bluefin and 501 skipjack from the west Atlantic. Age groups 1 and 2 (1970 and 1969 year classes) predominated in early catches of bluefin off the United States Middle Atlantic coast, while older fish (ages 3-7) made up most of the catch later in the season. This pattern was similar to that seen in 1970 and again, as in 1970 and 1969, the 1966 year class was poorly represented.

Some size data are available for bluefin from the Canadian sports fishery by courtesy of Provincial Tourist Development offices, and include both round weights (257 individuals) and fork lengths (181). The fish from Prince Edward Island (average 330 kg) and western Nova Scotia (average 335 kg) are considerably larger than those from Newfoundland (average 260 kg).

The joint Fisheries Research Board of Canada/Woods Hole Oceanographic Institution tagging program which was initiated in 1971 was continued in 1972, but Canadian efforts resulted in only one fish being released during a three week cruise. To date 26 Canadian tags have been recovered in 1972 from 1971 taggings. This represents 9.8 % of those fish still at liberty at the end of the 1971 season that were marked with two «D» type (single nylon barb) tags (50 % had lost one tag), and 11.9 % of those marked with two «H» type (Stainless steel anchor) tags (43 % had lost one tag). Tagging of large bluefin in more northern waters is being continued and 165 fish over 200 kg were released in 1971-1972, 56 from fish traps in St. Margaret's Bay, N.S. and 109 by anglers along the east coast of Newfoundland. There were no recoveries in 1971 or to date in 1972.

A program of longline explorations for commercial concentrations of tuna was initiated in 1972, and four cruises were completed. A total of 47 sets (266-812 hooks per set) were made but only one produced significant quantities of tuna (19 yellowfin on 630 hooks). The area of exploration was between longitudes 47 and 73° west and included the Gulf Stream and associated waters (surface temperatures 15.0-26.5°C).

FRANCE — RESEARCH REPORT FOR 1971

by

R. LETACONNOUX

Status of Fishing in France

In 1971 more than 46,000 tons of tunas were caught by French vessels in the northeast and central-east Atlantic, operating from Bay of Biscay and African ports.

These figures, compared with those of previous years, show an increase in albacore and skipjack fishing while yellowfin figures remained the same as in 1970. The best statistics presently available for recent years show the following figures:

	1966	*1967*	*1968*	*1969*	*1970*	*1971*
Albacore	14.3	16.6	14.3	10.0	6.6	9.8
Yellowfin	22.0	20.7	29.2	26.4	21.5	20.1
Skipjack	6.2	4.8	12.5	7.9	11.4	15.8
Bigeye				1.3	0.9	0.4
Bluefin	1.6	1.0	0.6	0.6	0.8	0.8
TOTAL	44.1	43.1	56.6	46.2	41.2	46.9

As regards albacore, the improvement shown in 1971 is due to:

— a slight increase in the number of vessels participating in the fishery and an increase in the number of fishing trips,

— an improvement in catches by trollers in July (around 16 tons per trip as compared to the 10-12 tons average of previous years) which has brought the average catch per trip during the fishing season to almost 10 tons, as compared to 8-9 tons from 1967 to 1970.

Original Report in French.

	1966	1967	1968	1969	1970	1971
No. of trollers	368	328	380	313	212	254
Tons unloaded	10.6	12.4	11.9	8.2	4.6	8.2
No. of baitboats	102	86	80	33	54	57
Tons unloaded	3.7	4.2	2.4	1.8	2.0	1.6

The fishing in Africa has shown a marked increase in skipjack catches by purse-seiners while yellowfin catches remained stable, with a fishing effort similar to that of 1970.

Data taken at Pointe Noire show that the large catches of young immature tunas in 1970 were reflected in 1971 by a shortage of 2 to 3 year olds when compared to recruitment in the preceding year. On the other hand, fishing of 4 year olds and over was quite good.

The recruitment of yellowfin in 1971 appears to have been average, and catches of immatures less than that in 1970. This age class will undoubtedly appear in fisheries in 1972.

The apparent mortality coefficients in 1971 have duly confirmed the overfishing of the class recruited in 1970 but are lower than those for 1970, which may reflect the marked decline in fishing effort since 1970. The fact that yellowfin catch-per-unit-effort remained stable this year is relatively encouraging.

In 1971, baitboat fishing and, to a lesser degree, small purse seiner fishing have been directed selectively at the class of immatures which corresponds to 80 % of landings (in no. of fish).

Research

1. Yellowfin and Skipjack

Studies on African tunas carried out by ORSTOM at their Dakar, Abidjan and Pointe Noire laboratories have enabled:

— the collection of fishing statistics by species, day and region to be continued;
— a study to be made of environment, using the vessel «Capricorne»;
— parasite studies on yellowfin to be continued in order to identify sub-populations;

— an extensive tagging program to be undertaken from July to September on board the research vessel «A. Nizery» in the zone between Fernando Po, Anno Bon and the coasts of Gabon and Portuguese Guinea, as well as on board several fishing boats (approximately 2,600 taggings). As of the end of September 1972, 24 tags had been recovered.

2. *Albacore*

Studies on albacore were carried out by CNEXO using the vessel «Ludovic Pierre», and by ISTPM using «La Pélagia».

An important sampling program was carried out, both at sea and at the time of landing, with approximately 9,500 albacore.

a) *CNEXO Research*

Research was continued in 1971 on board the «Ludovic-Pierre», a patrol boat for the French tuna fishing fleet (albacore) in the northeast Atlantic. The data collected from four cruises (June 15-July 10; July 15-August 8; August 12-September 4; September 7-September 30) made it possible to pursue collaboration with professional fishermen on the following two aspects:

- Dynamics of northeast Atlantic population.

Continuation of the sampling work started in 1967-1968 at the same level.

— Investigations made at sea among the tuna fleet (180 visits to tuna boats).
— Study of population structure: 6,300 albacore sampled in 180 visits.
— Complementary biological samplings: 200 serum, 150 scales, 300 gonads sampled.

- Environmental study for albacore.

Development of studies on two aspects of fishing: the hydrological structure of the surface by the use of temperature parameters, and the importance of feeding behavior.

— Surface temperature: testing of a working method, grouping together data from the National Meteorological Office (isotherm maps of the sea surface) and those furnished by the tuna boats (5 thermographs and 20 thermometers placed on board fishing vessels): daily analysis of changing conditions.
— Feeding behavior: 485 stomach contents were collected, or analyzed on the spot, 36 tows were made by the trawler «Isaac-Kidd».

These studies have not only allowed a summary to be made of the French tuna boat exploitation in 1971 (yields, fishing areas and periods, structure of the population fished) but also help to tackle the problems of transmitting results that are of interest to fishermen (fishing forecasts).

b) *ISTPM research*

Two research cruises (May 26 to July 9, and April 16 to September 25) were carried out with «La Pélagia». During these cruises, studies on the biology and ecology of albacore were continued, as well as on surface thermal conditions, and the catch-rate of trolling-lines, in accordance with line characteristics and environmental conditions.

Special attention was paid to the study of thermal conditions in the Cape Saint Vincent-Azores sector at the beginning of the season, in order to forecast the location and size of the first albacore concentrations.

An examination of the stomach contents of albacore has enabled feeding patterns to be determined, as well as the distribution of their bait in relation to thermal conditions. A study of mid-water temperature was also made, relating this to environment and size.

During the year, 609 new tags were released, bringing the total to 1,919. Also, this year, the following 24 tags were recovered:

— 1 tuna tagged in 1968
— 3 tuna tagged in 1969
— 6 tuna tagged in 1970
— 14 tuna tagged in 1971.

Tuna migration may be determined from these results, particularly along the Portuguese coast towards the Bay of Biscay. The existence of this group has been confirmed by the very low percentage of stomach parasites (less than 2 %), while the group found around the Azores shows approximately 30 %. The group between the Azores and Portugal has up to 70 % in the largest specimens.

Data thus obtained is being analyzed with a view to setting up a model that will show the structure of the different populations, and their migration in the northeast Atlantic.

Research Program for 1972

Studies on African fishery should be continued, at the same time increasing the investigations carried out at sea, and the tagging of yellowfin and albacore.

A program has been set up, in conjunction with Spanish research workers, to increase samplings of albacore and bluefin.

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JAPANESE FISHERIES AND RESEARCH ACTIVITIES ON TUNAS AND TUNA-LIKE FISHES IN THE ATLANTIC OCEAN, 1970-1972

by

SIGEITI HAYASI

1. Fishing activities

Japanese catch of tunas and tuna-like fishes in the Atlantic Ocean has been around 55,000 tons per year, 1969 through 1971 (Fig. 1).

1.1. *Longline fishery*

Longline is still the most important gear for the Japanese tuna fleet, even though its share of the catch decreased from 70 to 60 percent of national total catch in the last five years, 1967-1971 (Table 1). Increase of homeland-based operations and reduction of mother-boat and foreign-based operations are noted not only in the amount of catch, but also in number of boats (Tables 1 and 2). Increase in the number of home-land based longliners may be exaggerated, as many boats fishing southern bluefin around South Africa moved back and forth between the Atlantic and Indian Oceans.

Species preference of the longline fleet has changed very rapidly (see Shiohama 1971, Hayasi ms a). Yellowfin tuna catch decreased to below 20 percent of the total in 1970 and 1971. Albacore once made up about one-third of the total longline catch but comprised only 20 percent in 1971. Increasingly important species are bigeye and southern bluefin tunas, exceeding 40 and 10 percent respectively in 1971 (Table 3).

1.2. *Pole-and-line fishery*

Number of boats and amount of catch stayed at fairly constant levels up to 1971 (Fig. 1, Tables 1 and 2). Skipjack has comprised over half the catch and yellowfin tuna has occupied second place (Table 4).

Original Report in English.

1.3. *Purse seine fishery*

Japanese purse seine fleet is made up of both double and single boat seiners of various sizes. A group (*tō* in Japanese) made up of two net-boats and several carrier boats has been operating in the Gulf of Guinea since 1964. The size of a group is expressed in gross tonnage of the larger net-boat. Among the three groups that have operated there so far, two are around 90 tons each and one around 145 tons. Three single boat seiners joined the eastern Atlantic tuna fishing in 1968 and 1969. The smallest boat, 90 gross tons, has no fish-well, and loads her catch on to a carrier boat as double boat seiners do. Two other boats, nearly 500 gross tons, have capacities of 225 and 195 metric tons. In 1971, a large size seiner, 990 gross tons with carrying capacity of 800 metric tons, started to catch tunas together with the U.S. fleet in the eastern Atlantic as well as in the eastern Pacific (Table 2). Annual catch of Japanese purse seiners has fluctuated between 5,600 and 16,000 tons (Fig. 1, Table 1). Although yellowfin tuna and skipjack have comprised the major portion of the catch, the ratio of these two species has shown remarkable variation from year to year (Table 5). The fishing grounds in 1970 were the northern Gulf along the Greenwich meridian, and western waters along the Equator (Honma and Suzuki, ms).

2. Research activities

2.1. *Catch statistics*

The Statistics and Survey Division, Ministry of Agriculture and Forestry, provides the official catch and effort statistics for longline and pole-and-line boats. The Fisheries Agency compiles similar data for purse seiners in the Gulf of Guinea. The final statistics for 1971 and successive years will be compiled by *year of catch* but not by *year of landing*, and will then completely meet the requirements of Task 1 defined at the first SCRS meeting. In March 1972, the Division (1972 a) published the final version for 1970. The Division (1972 b) disclosed that Japan's total fishery production had reached 9,792,000 tons in 1971. Breakdown of figures will be provided early in 1973. The Fisheries Agency and Far Seas Fisheries Research Laboratory compiled provisional figures showing the activities of Atlantic tuna fisheries in 1971: *landing* and *number of hooks* of longline fishery, and *catch* and *number of boats* of pole-and-line and purse seine fisheries. Provisional estimate of the number of longliners believed to have operated in the Atlantic Ocean is supplied by the Federation of Japan Tuna Fishermen's Cooperative Associations.

The Fisheries Agency and its research laboratories collect detailed catch records from the major fisheries. These data fulfil the Task 2 statistics requirements. However, processing systems are not yet completed for the Atlantic pole-and-line fishery.

In April 1972, the yearbook for 1970 longline statistics was published (Fisheries Agency 1972 b). The data for succeeding years are now being processed, and the yearbook for 1971 will come out early in 1973. Based on logbooks, catch in tons of live weight and effort in number of boats and poles are compiled by 1° square and by month since 1968. The 1969 yearbook was published in March 1972 (Fisheries Agency 1972 a), but failed to include the Atlantic data. Purse seiners also submitted their logbooks to the Fisheries Agency. Honma and Suzuki (ms) processed the Atlantic data and compiled catch in 0.1 tons of live weight and effort in number of boats and sets by 1° square and by month.

2.2. *Length statistics*

Length composition data on tunas and billfishes taken in 1970 and reported to the Far Seas Fisheries Research Laboratory by the end of August 1971 were compiled in 1971. The results of catches from the Atlantic Ocean are mentioned in separate papers (Shingu and Hisada ms, Honma and Suzuki ms, Honma ms, Shiohama ms). The data of fish taken in 1971 and reported by August 1972 will be processed by early 1973.

Since May 1972, 15 commercial longliners have been selected to measure body length of yellowfin, albacore and bigeye tunas taken in the Atlantic Ocean. It is essential to collect length data in the open ocean, broken down by month and by location of catch, because longliners, especially those based in homeland ports, cruise quite a wide range, often extending over two oceans, during six to fifteen months.

2.3. *Keys for species identification and size estimation*

Honma *et al.* (ms) prepared keys to distinguish young yellowfin tuna from bigeye tuna both of which are caught incidently by surface gears in the western Pacific. The keys were useful in preparing the ICCAT Field Manual for Statistics and Biological Sampling of Atlantic Tunas, even though some morphological features differ between the Atlantic and Pacific fish.

Another paper by Mori (1972 a) describes a way to estimate body length of skipjack found in stomachs of predatory fish. This is also based on the Pacific samples, but may be useful in estimating size of skipjack collected by stomach surveys everywhere.

2.4. *Distribution of tunas and tuna-like fishes*

Hayasi (ms c) and Hayasi and Shingu (ms) reviewed information on distribution and other data on yellowfin and bluefin tunas in the Atlantic Ocean. Mori (1972 b) obtained 5,851 skipjack from the stomachs of tunas and billfishes taken by Japanese

longliners operated in the Pacific, Indian and Atlantic Oceans. A report by Warashina and Hisada (1972) covers catch records and length data of butterfly mackerel and slender tuna occasionally taken by Japanese longliners in higer latitudes of the southern hemisphere.

2.5. *Stocks assessment of yellowfin, albacore and bigeye tunas*

Analyses of catch statistics and examinations of models of yield-per-recruit and relative stock fecundity of yellowfin tuna indicate that further increase of fishing activities may result in only slight increase in catch and in decline of catch-per-unit-effort, and might possibly lead to a decrease in reproduction. Decrease of hook-rate of albacore does not seem to indicate a reduction of parent stocks serious enough to reduce the recruitment (Hayasi *et al.* ms., Hayasi ms. b, d).

In order to progress in international cooperative studies, the staff of the Far Seas Fisheries Research Laboratory calculated overall fishing intensities of Japanese longline fishery on yellowfin, albacore and bigeye tunas in the Atlantic Ocean during 1956 through 1970, together with catch by length class of the former two species during 1965 through 1970 (Honma ms, Shiohama ms, Hisada ms).

2.6. *Incidental tagging in open sea*

Nakagome (ms) prepared a list of incidental tagging conducted on board longliners during 1954 through 1972.

3. List of Papers

FISHERIES AGENCY.

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(a) Papers published previously, but cited in this report.

(b) Papers published in Japan during the period from November 1971 to September 1972.

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(d) Unpublished papers prepared for the Meeting of the ICCAT Special Working Group on Stock Assessment of Yellowfin Tuna, Abidjan, June 12-16, 1972.

(e) Unpublished papers prepared for the 1972 SCRS meeting.

Table 1. Catch (upper numerals) and percentage (lower numerals) of tunas and tuna-like fishes taken by different types of Japanese gear in the Atlantic Ocean, 1957, 1962 and 1967-1971

Type of gear		*1957*	*1962*	*1967*	*1968*	*1969*	*1970*	*1971 **
Total		15,810	97,343	55,224	72,456	53,914	56,243	57,090
Longline	Subtotal	15,810	94,597	39,704	44,896	37,535	38,980	35,526
		100	97	72	62	70	69	62
	Deckloaded-type mother-boat	—	18,285	17,859	22,845	19,857	10,161	4,034
		—	(19)	(45)	(51)	(53)	(26)	(11)
	Homeland-based boat	—	—	—	546	3,548	14,823	27,402
		—	—	—	(1)	(9)	(38)	(77)
	Foreign-based boat	15,810	76,312	21,845	21,505	14,130	13,996	4,090
		(100)	(81)	(55)	(48)	(38)	(36)	(12)
Purse seiner	Subtotal	—	—	8,005	15,861	6,989	5,639	7,978
		—	—	14	22	13	10	14
	Single-boat seiner	—	—	—	1,582	1,442	875	…
		—	—	—	(10)	(21)	(16)	…
	Double-boat seiner	—	—	8,005	14,279	5,547	4,674	…
		—	—	(100)	(90)	(79)	(84)	…
Pole-and-line		—	2,746	7,515	11,699	9,390	11,624	13,586
		—	3	14	16	17	21	24

Source of data: Statistics and Survey Division for landings of longline and pole-and-line fisheries in the years preceding 1971. Fisheries Agency and Far Seas Fisheries Research Laboratory for landings of longline fishery in 1971, catch of pole-and-line fishery in 1971, and purse seine fishery catch for the whole period.

* Preliminary estimates. Longline landings are expressed in amount of fish production based on specific and regional average body weight in kg and number of fish landed in 1971. The total figures for different types of longliners do not necessarily correspond to the sum of the categories, because of rounding error.

Those lower figures which are enclosed in parentheses and those which are not, show percentages of gear subtotals and totals, respectively.

Table 2. Number of Japanese tuna boats operated in the Atlantic Ocean, 1957, 1962 and 1967-1971

	Type of gear	*Size class*[1]	*1957*	*1962*	*1967*	*1968*	*1969*	*1970*	*1971*[2]
Longline	Deckloaded-type mother-boats	Total	—	11	16	21	15	11	11
		200- 500	—	1	2	—	—	—	—
		500-1,000	—	4	14	21	15	6	7
		1,000-	—	6				5	4
	Homeland-based boats	Total	—	—	—	3	13	43	142
		50- 200	—	—	—	1	—	—	142
		200- 500	—	—	—	2	13	40	
		500-1,000	—	—	—	—	—	3	—
	Foreign-based boats	Total	26	95	49	47	35	38	26
		50- 200	...	—	13	9	6	8	25
		200- 500	...	79	34	35	29	30	
		500-1,000	...	16	2	3	—	—	1
		1,000-	...	—			—	—	—
Purse seiner	Single-boat purse seiners	Total	—	—	—	3	3	1	3
		0- 50	—	—	—	1	1	—	—
		50- 100	—	—	—	—	—	—	—
		100- 200	—	—	—	1	1	—	1
		200- 400	—	—	—	1	1	1	1
		400-	—	—	—	—	—	—	1
	Double-boat purse seiners[3]	Total	—	—	4	4	4	3	3
		50- 150	—	—	4	4	4	3	3
Pole-and-line boats		Total	—	5	6	6	6	6	7
		150-	—	5	6	6	6	6	7

Source of data: Statistics and Survey Division for longliners for years preceeding 1971, Fisheries Agency for other fisheries, except for size classification of pole-and-line fishery in 1962 given by Honma *et al.* (1969, p. 90). Numbers of longliners in 1971 are preliminary estimates provided by the Federation of Japan Tuna Fishermen's Cooperative Association.

1. Size is expressed in gross tonnage for fisheries except for single-boat purse seine which is expressed in carrying capacity.
2. Preliminary estimates.
3. Number of double-boat purse seiners is given in number of groups, each of which is made up of two net-boats and several carriers.

Table 3. Landings (upper numerals) and permilages (lower numerals) of tunas and tuna-like fishes taken by Japanese longline fishery operated in the Atlantic Ocean, 1957, 1962 and 1967-1971

Year	*Total*	*Albacore*	*Bigeye*	*Blue-fin*	*Southern bluefin*	*Yellow-fin*	*Youngs*	*Skip-jack*	*Blue marlin*	*Sword-fish*	*White marlin*	*Sail-fish*	*Unclas-sified and others*
1957	15,810	860	454	63		13,198	—	3		1,176			56
		354	29	4		835	—	0		74			4
1962	94,597	22,138	15,720	3,703		41,973	—	—	7,044	427	1,915	600	1,077
		234	166	39		444	—	—	74	5	20	6	11
1967	39,704	12,490	8,549	858		12,809	15	7	1,073	754	668	678	1,803
		315	215	22		323	0	0	29	19	17	17	45
1968	44,896	15,163	10,286	363		13,857	56	30	946	1,121	1,088	970	1,016
		338	229	8		309	1	1	21	25	24	22	23
1969	37,535	11,048	10,266	822		9,823	143	6	960	2,273	843	458	893
		294	274	22		262	4	0	26	61	22	12	24
1970	38,980	11,773	8,993	4,374		6,674	135	5	1,005	3,175	702	594	1,550
		302	231	112		171	3	0	26	81	18	15	40
1971 *	35,526	6,798	14,295	858	4,375	5,809	—	1	933	974	586	357	536
		191	402	24	123	164	—	0	26	27	16	10	15

See footnote of Table 1 for source of data.
* Preliminary estimates.

Table 4. Landings (upper numerals) and percentage (lower numerals) of tunas and tuna-like fishes taken by Japanese pole-and-line fishery operated in the Atlantic Ocean, 1962 and 1967-1971

Year	Total	Bigeye tuna	Yellow-fin tuna	Youngs (mainly yellowfin tuna)	Skipjack	Frigate mackerels	Unclas-sified and others
1962	2,746	26	1,164	—	1,542	—	14
		(1)	(42)		(56)		(1)
1967	7,515	381	1,303	—	3,735	625	1,471
		(5)	(17)		(50)	(8)	(20)
1968	11,699	646	416	1,735	7,306	1,558	38
		(6)	(4)	(15)	(62)	(13)	(0)
1969	9,390	312	405	539	4,926	3,208	—
		(3)	(4)	(6)	(52)	(34)	
1970	11,624	32	22	972	7,481	3,117	—
		(0)	(0)	(8)	(64)	(27)	
1971 *	13,586	—	584	2,187	10,016	—	799
			(4)	(16)	(74)		(6)

See footnote of Table 1 for source of data.
* Preliminary estimates.

Table 5. Catch (upper numerals) and percentage (lower numerals) of tunas and tuna-like fishes taken by Japanese purse seine fishery operated in the Atlantic Ocean, 1967-1971

Year	*Total*	*Yellowfin tuna*	*Bigeye tuna*	*Skip-jack*	*Bonito*	*Frigate mackerels*	*Others*
1967	8,005	5,246	82	2,171	2	443	63
		(66)	(1)	(27)	(0)	(6)	(1)
1968	15,861	7,463	413	6,256	—	1,256	476
		(47)	(3)	(39)		(8)	(3)
1969	6,989	5,805	161	679	—	177	166
		(83)	(2)	(10)		(3)	(2)
1970	5,639	1,318	92	3,519	—	687	23
		(23)	(2)	(62)		(12)	(0)
1971 *	7,978	2,556	—	4,721	—	—	701
		(32)		(59)			(9)

See footnote of Table 1 for source of data.
* Preliminary estimates.

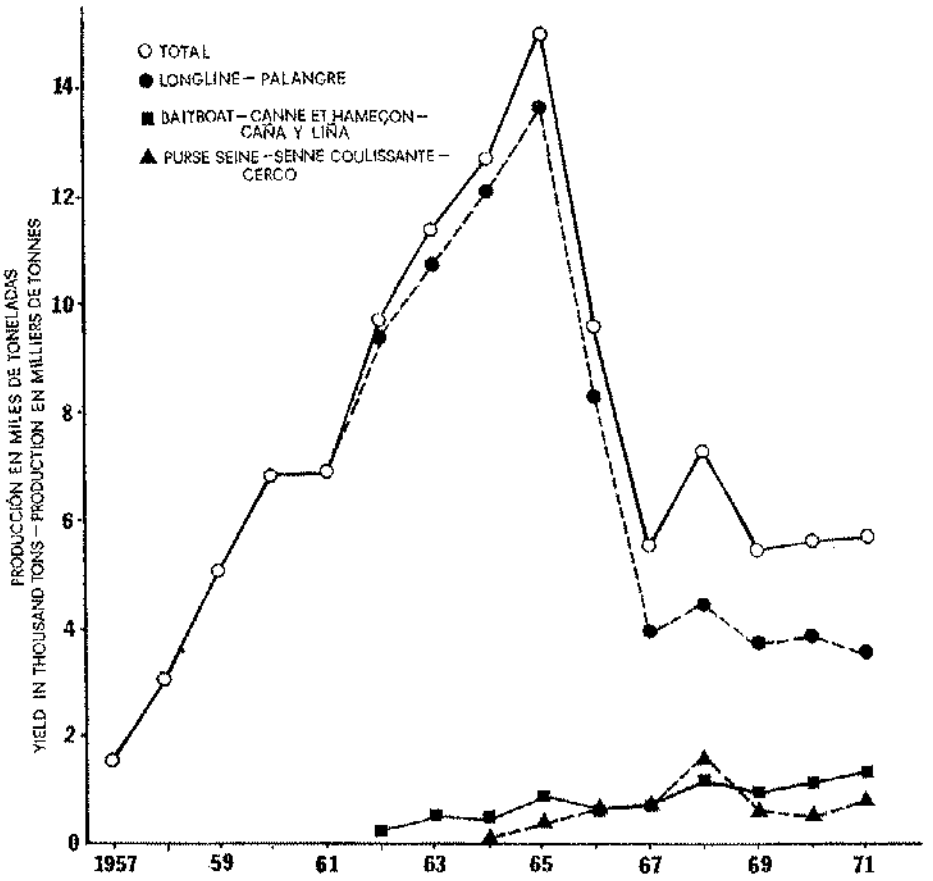

FIG. 1. Yield or landing of Japanese tuna fisheries in the Atlantic Ocean, 1967-1971. Data given in ICCAT Statistical Bull. 1, ST/JA/71/2 for 1957-1969, and recent compilation given in footnote of Table 1 for 1970 and 1971.

REVIEW ON THE KOREAN TUNA FISHERY

by

OFFICE OF FISHERIES
Republic of Korea

1. Production

A. Since 1957, when exploratory fishing started in the Indian Ocean, the Korean high-seas fisheries have developed rapidly. As of the end of 1971, a total of 291 tuna longliners were engaged in fishing operations throughout all of the Oceans. The fleet landed 83,784 metric tons in 1971 of which 37,142 metric tons or 44.4 % of the total catch was taken in the Atlantic Ocean by 117 vessels (40.2 % of the total tuna fleet).

B. The number of vessels and amount of catch by Oceans in 1971 are shown in the following table.

Oceans	*Vessels*		*Catch*	
	No. of vessels	%	*Metric tons*	%
Atlantic	117	40.2	37,142	44.4
Pacific	122	42.0	29,856	35.6
Indian	52	17.8	16,786	20.0
Total	291	100.0	83,784	100.0

At the end of September 1972, 121 vessels were operating in the Atlantic Ocean. As of the same date, 28,692 metric tons have been landed by that fleet.

2. Fishing Vessels

A. *Vessels by fishing base*

As of the end of 1971, Korea holds 14 foreign bases, 7 of which are located in the Atlantic Ocean. The following table shows number of vessels by Atlantic bases.

Original Report in English.

Name of base	*Number of operating vessels*
Freetown	7
Tema	4
St. Martin	12
Abidjan	46
Tenerife	17
Port of Spain	13
Las Palmas	18
Total	117

B. *Vessels by size*

At the end of 1971, 39.5 % of the 291 longliners were boats between 200 and 300 gross tons. The small-size vessels between 100 and 200 gross tons constituted 32.3 % and these operated mainly in the Pacific Ocean due to the limitation of the cruising range of vessels.

The following table shows number of vessels by size and by area.

Size (gross tons)	*Atlantic*	*Pacific*	*Indian*	%
100-200	11	81	2	32.3
201-300	12	26	27	39.5
301-400	29	11	18	19.9
401-500	1	4	4	3.2
above 500	14	—	1	5.1
Total	117	122	52	
%	40.2	41.9	17.9	100.0

3. Status of Research Activities

In order to collect scientific data on distribution, population index and the structure of some important fishery resources and to provide basic information for making the conservation scheme of the resources, the following research cruises were carried out.

A. *Activities already completed*

Year	*Type of fishery*	*Size of research vessel (gross ton)*	*Area*	*Period*
1971	Trawl	325	North Pacific	3 May - 3 Nov.
	Skipjack	310	Eastern central Pacific	1st cruise 1 May - 25 June 2nd cruise 20 Oct. - 29 Nov.
1972	Trawl	1,000	South China Sea including Gulf of Thailand	28 Oct. - 16 Dec.
	Skipjack	250	Sea Adjacent to Palau Is.	28 Oct. - 28 Nov.

B. *Future project*

Year	*Type of fishery*	*Size of research vessels (gross ton)*	*Area*	*Period*
1973	Tuna longline	300	Sea Adjacent to Java Island	1 Aug. - 28 Oct.
	Trawl	1,000	Indian Ocean	Not yet decided (cooperative project with FAO)

STATUS OF TUNA FISHERIES AND RESEARCH PROGRAM IN MOROCCO

by

M. LAMBOEUF

I. Status of tuna fishery

Moroccan tuna catches in 1971 for the Mediterranean and the Atlantic are shown in Table 1 by gear and fishing area.

Catches decreased from 4,437 metric tons in 1970 to 2,514 metric tons in 1971. This would seem to indicate that the decreasing trend observed since 1965 is continuing.

This decrease has been noticed chiefly in bluefin tuna *(Thunnus thynnus)*, skipjack *(Katsuwonus pelamis)* and frigate mackerel *(Auxis thazard)*, whereas catches of swordfish, Atlantic bonito *(Sarda sarda)* and Atlantic little tuna *(Euthynnus alletteratus)* have shown slight increases.

II. Tuna research program

During the summer and fall of 1972, Morocco organized fifteen tuna fishing cruises, during which 44 bluefin *(Thunnus thynnus)*, 14 albacore *(Thunnus alalunga)* and 2 skipjack *(Katsuwonus pelamis)* were tagged (see Tables 2, 3 and 4).

Research was first carried out in the area between Rabat and Cap Blanc in August and September, and in the Agadir area at the beginning of November.

Fish were caught by trolling. Some specimens damaged during fishing operations and therefore unfit for tagging purposes were used for biometric studies. Stomach contents and gonads were also examined.

1) *Bluefin*

Individuals vary in size from 50 to 80 cm and weigh approximately 3 to 10 kg. They are immatures, and appear to be two year olds. A preliminary analysis of

Original Report in French.

stomach contents has shown the presence of snipefish (genus *Macrorhamposus*). It should be noted that this genus has been particularly abundant this year on the Moroccan continental shelf.

In the Casablanca area bluefin were found in waters about 22°C, whereas water temperature in Agadir was only 20°C.

It should also be noted that the Agadir tunas were larger (67 cm average) than those in Casablanca (53 cm average).

Up to the present, three tagged bluefin have been recovered by Moroccan fishermen:

— the first one, tagged (trolling) off Azemmour in waters of 90 m profundity, was recovered only one day afterwards;

— the second one, tagged (purse seine) off Azemmour in waters of 80 m profundity, was recaptured 22 days afterwards. It had grown 4 cm and travelled 70 nautical miles, in the direction of 250°;

— the third one, tagged (purse seine) off Azemmour in waters of 90 m profundity, was recaptured 42 days afterwards. It had grown 4 cm and travelled 15 nautical miles, in the direction of 235°.

2) *Albacore*

Albacore tagging took place in the Agadir area at the beginning of November, and young specimens about 50 cm long were tagged.

Stomach contents were composed almost exclusively of snipefish, with some anchovies and sardines. Water temperature was 20°C.

3) *Skipjack*

Only two specimens could be tagged in the Casablanca area due to the frailness of the fish jaws. Trolling is an unsuitable gear for fishing this species as the fish are damaged to such an extent that maximum post-tagging survival cannot be guaranteed.

4) *Comments*

The first conclusions to be drawn from these tagging operations are that bluefin well withstand being caught by troller and being tagged. Their feeding habits do not seem to be affected since the first one was recovered by line and the other two (caught in nets) had grown 4 cm.

It also seems that during August and September bluefin stay in the area between Kenitra and Cap Blanc du Nord.

Throughout the winter of 1972-73, tagging of very young individuals (average length 25-30 cm), found in Moroccan waters between Casablanca and Cap Cantin at this time of year, will continue.

An increase in research and tagging of bluefin and other tuna species is planned for 1973. More cruises will be organized as well as informative sessions with the fishermen to assure their maximum cooperation in recovering tags.

Table 1. Tuna catch statistics
Final Data, 1971

Country: MOROCCO

Flag: MOROCCO

Person responsible: M. El Bacha

Address of the Organization presenting the report:

Office National des Pêches
3-15, Rue Chevalier Bayard - CASABLANCA

Landings
Weight in metric tons
Live weight

Year	*Area*	*Gear*	*Total*	*Blue-fin*	*Skip-jack*	*Broadbill swordfish*	*Atlan-tic bonito*	*Frigate mackerel*	*Atlantic little tuna*	*Plain bonito*
1971	Mediterranean	Vessels . . .	140	42	2	—	37	16	36	7
		Traps	212	37	—	1	17	156	1	—
		Total . .	352	79	2	1	54	172	37	7
	Atlantic	Vessels . . .	1,928	30	118	347	159	59	582	633
		Traps	234	63	—	12	118	26	15	—
		Total . .	2,162	93	118	359	277	85	597	633
	Moroccan total	Vessels . . .	2,068	72	120	347	196	75	618	640
		Traps	446	100	—	13	135	182	16	—
		Total . .	2,514	172	120	360	331	257	634	640

Table 2. Tagging of bluefin *(Thunnus thynnus)* off the Moroccan coast

Date	*Longitude*	*Latitude*	*Depth*	*Surface Temperature °C*	*Length cm*	*Tag No.*
4-8-72	33° 39′ 18″ N	8° 14′ 24″ W	105 m	22°	56	P1 - 500
10-8-72	from	from	from 70	21.8°	55	P1 - 501
»	33° 24′ N	8° 23′ W	to 100 m	»	58	P1 - 502
»	to	to		»	52	P1 - 503
»	33° 35′ N	8° 37′ W		»	51	P1 - 504
»				»	52	P1 - 505
»				»	52	P1 - 506
»				»	50	P1 - 507
»				»	51	P1 - 508
»				»	51	P1 - 509
»				»	52	P1 - 510
»				»	55	P1 - 511
»				»	55	P1 - 512
»				»	51	P1 - 513
»				»	54	P1 - 514
»				»	55	P1 - 515
»				»	53	P1 - 516
»				»	53	P1 - 517
»				»	55	P1 - 518
»				»	53	P1 - 519
23-8-72	33° 58′ 30″ N	7° 11′ 10″ W	100 m	22°	59	P1 - 520
»	»	»	»	»	58	P1 - 521
»	33° 49′ 00″ N	7° 35′ 38″ W	105 m	»	59	P1 - 522
1-11-72	9° 46′ W	30° 06′ N	85 m	20.5°	72	P1 - 531
2-11-72	9° 52′ W	30° 00′ N	90 m	20°	67	P1 - 532
»			»	»	67	P1 - 535
»			»	»	65	P1 - 536
»			»	»	65	P1 - 537
»			»	»	67	P1 - 538
»			»	»	67	P1 - 539
»			»	»	65	P1 - 541
»			»	»	68	P1 - 542
»			»	»	53	P1 - 543
»			»	»	73	P1 - 544
»			»	»	73	P1 - 545
»			»	»	71	P1 - 551
»			»	»	70	P1 - 552
»			»	»	67	P1 - 553
»			»	»	67	P1 - 554
»			»	»	72	P1 555
»			»	»	66	P1 - 556
»			»	»	69	P1 - 557
»			»	»	63	P1 - 558
»			»	»	69	P1 - 559

Table 3. Tagging of Albacore *(Thunnus alalunga)* off the Moroccan coast

Date	*Longitude*	*Latitude*	*Depth*	*Temperature °C*	*Length cm*	*Tag No.*
1-11-72	9° 46′ W	30° 06′ N	85 m	20.5°	51	P1 - 525
»			»	»	51	P1 - 526
»			»	»	51	P1 - 527
»			»	»	55	P1 - 528
»			»	»	52	P1 - 529
»			»	»	49	P1 - 530
2-11-72	9° 52′ W	30° 00′ N	90 m	20°	52	P1 - 533
»			»	»	50	P1 - 534
»			»	»	53	P1 - 540
»			»	»	51	P1 - 546
»			»	»	52	P1 547
»			»	»	51	P1 - 548
»			»	»	53	P1 - 549
»			»	»	54	P1 - 550

Table 4. Tagging of Skipjack *(Katsuwonus pelamis)* off the Moroccan coast

Date	*Longitude*	*Latitude*	*Depth*	*Surface Temperature °C*	*Length cm*	*Tag No.*
22-9-72	33° 40′ 00″ N	07° 48′ 00″ W	85 m	22°	46	P1 - 523
					48	P1 - 524

TUNA FISHING IN SENEGAL, 1972

I. National Fishery

1) *Status of the Senegalese tuna fleet*

The entire national tuna fleet, baitboats and freezer seiners belong to the «Société Sénégalaise d'Armement à la Pêche» (SOSAP).

The characteristics of this fleet and its development since the first unit appeared in 1965 are shown in Table 1.

	Types					
	Baitboats			*Seiners*		
Year	*No. of Units*	*Gross Tons*	*Capacity (T)*	*No. of Units*	*Gross Tons*	*Capacity (T)*
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.

2) *Catch comparison — 1971 and 1972 seasons*

In 1972, SOSAP landed 11,339 tons of tuna, compared with 8,900 in 1971, showing a catch increase of 24.4 %.

Species breakdown for these two years follows (Table 2).

		Yellowfin	*Skipjack*	*Bigeye*	*Albacore*	*Total*
1971	Tons	5,245	3,463	192	0	8,900
	%	58.93	38.91	2.16	0.00	100.00
1972	Tons	7,174	4,112	4	49	11,339
	%	63.27	36.26	0.04	0.43	100.00

Original Report in French.

3) *Catch composition by type of boat*

This composition (Table 3) shows a decrease in baitboat catches (−29.1 %) and a notable increase in seiner catches (+44.5 %).

		Yellowfin	*Skipjack*	*Bigeye*	*Albacore*	*Total*
Baitboats	1971	1,101	850	95	0	2,046
	1972	1,106	316	0	13	1,435
Seiners	1971	3,144	2,613	97	0	6,854
	1972	6,068	3,796	4	36	9,904

4) *Distribution of catch by fishing area*

The area of catch in 1971 and 1972 was very different.

In 1971, the Dakar region (from Cap des Palmes to Cap Blanc) was the most productive.

In 1972, catches were larger in the Pointe Noire region (from Gabon to Angola) where Senegalese tuna boats caught albacore for the first time.

Catch distribution by fishing area is shown in Table 4.

	Dakar		*Abidjan*		*Pointe Noire*		*Total*	
	1971	*1972*	*1971*	*1972*	*1971*	*1972*	*1971*	*1972*
Yellowfin	3,878	2,116	364	1,459	1,003	3,599	5,245	7,174
Skipjack	2,687	1,323	184	761	592	2,028	3,463	4,112
Bigeye	148	0	0	4	44	0	192	4
Albacore	0	0	0	0	0	49	0	49
Total	6,713	3,439	548	2,224	1,639	5,676	8,900	11,339

II. Local Study of Stocks in the Guinean-Mauretanian Area

Studies carried out since 1966 on board Senegalese and French tuna vessels landing or transshipping at Dakar show the monthly distribution of catches and fishing effort by $1° \times 1°$ squares in an area stretching from Cap des Palmes to Cap Blanc.

Since 1972, these studies have been extended to cover the Spanish seiner fleet which makes seasonal fishing trips to this area.

In 1972, 11,397 yellowfins, 6,702 skipjacks and 2,322 bigeyes were measured to determine the size composition of catch.

1) *Estimation of catch and catch-per-unit-effort*

The preliminary results of these studies are shown in Table 5.

Country	*Type of boat*	*No. of trips*	*No. of days at sea*	*YF*	*SJ*	*BE*	*Total*
Senegal	Baitboats	25	356	184	58	2	244
	Seiners	40	722	1,600	1,100	0	2,700
France	Baitboats	537	3,662	2,292	2,541	142	4,975
	Seiners	85	1,362	2,698	2,890	39	5,627
Spain	Seiners	70	1,481	2,424	8,482	5	10,911

Catch-per-unit-effort figures (tons/days at sea) appear in Table 6.

		YF	*SJ*	*BE*	*T*
Senegal	Baitboats	0.52	0.16	0.01	0.69
	Seiners	2.22	1.52	0.00	3.74
France	Baitboats	0.63	0.69	0.04	1.36
	Seiners	1.98	2.12	0.03	4.13
Spain	Seiners	1.64	5.73	0.00	7.37

The table shows a similarity in the figures for the group formed by the Senegalese and French vessels. However, there is a marked difference betwen the figures for these seiners and those of the Spanish fleet. The former mainly fish yellowfin, which are generally caught from April to July, while the latter fish in the area during the second half of the year, when the schools of young skipjack and yellowfin are especially dense.

2) *Trends in Total Catch*

Catch, effort, and catch-per-unit-effort figures for Senegalese and French baitboats and seiners for the last 3 years have been assembled in the following table:

		1970	*1971*	*1972*
Baitboats	Tons	5,803	8,315	5,218
	Effort (d/s)	3,879	4,211	4,018
	CPUE	1.50	1.97	1.30
Seiners	Tons	7,585	13,551	8,403
	Effort (d/s)	1,964	3,175	2,122
	CPUE	3.86	4.27	3.96

Fishing effort for baitboats is relatively stable. The catch-per-unit-effort of baitboats that fish in the region throughout the year clearly reflects the annual variations in the abundance of surface tuna. On the other hand the seiner effort varies considerably from one year to another since the seiners tend to concentrate around areas where fish are most abundant.

3) *Species Composition*

Species breakdown of the catches of the Senegalese and French fleets over the last three years was as follows (Table 8).

	1970		*1971*		*1972*	
	Tons	%	*Tons*	%	*Tons*	%
Yellowfin	6,877	52	11,513	53	6,814	50
Skipjack	5,931	44	9,949	45	6,625	48
Bigeye	580	4	404	2	182	2
Total	13,388	100	21,866	100	13,621	100

Catch composition is relatively stable. However, skipjack catches still tend to increase while those of bigeye, which are already small, continue to decrease.

4) *Distribution by fishing area*

Studies previously carried out on catch distribution, size composition and parasites, have led us to believe that in the case of yellowfin, there are two independent stocks, at least as far as young fish are concerned (under 3 years). The separation of the two lies between 10° and 11° N, latitude of the Bissagos Islands.

Catch distribution by area for the last 3 years (North Bissagos from latitude 10° North to Cap Blanc, South Bissagos from Cap des Palmes to 10° N) is as follows (Table 10):

	NB	*SB*	*Total*
1970	7,295	6,093	13,388
1971	12,366	9,500	21,866
1972	6,005	7,616	13,621

Decrease in catches in 1972 occurred mainly in the North Bissagos area. We had previously mentioned (Champagnat and Le Marrec, 1972) that too great an effort had been applied to the class recruited in 1971, and 1972 results seem to

confirm this theory. The seiners which spend more and more time fishing skipjack catch much more young yellowfin than before.

III. Research Programs

In 1972 no specific tuna research program (environment, tagging) could be undertaken. Intensive tagging programs are planned for 1973.

Senegal actively participated in the ICCAT Working Group which met in Abidjan in June, 1972 in order to evaluate the state of yellowfin stocks in the Atlantic.

The Oceanographic Research Center at Dakar-Thiaroye is presently carrying out a study on the growth of bigeye.

IV. Publication

CHAMPAGNAT, C. et R. LE MARREC.

1972. La pêche thonière à Dakar en 1970 et 1971 — D.S.P. du Centre de Recherches Océanographiques de Dakar-Thiaroye n.° 41.

REVIEW OF TUNA FISHERIES AND NATIONAL RESEARCH PROGRAMMES OF SOUTH AFRICA, 1971-1972

by

G. H. STANDER

a) The fishery

As during the previous year most fishing was conducted by sport fishermen trolling in the Cape Point area in the summer months. Their estimated landings totalled about 50 metric tons.

Purse seiners fishing for pelagic species also caught small quantities of tuna in the Danger Point — Cape Agulhas area.

Three permits were granted to operators of purse seine vessels to capture tuna. It is too early to report on the success of this venture.

Estimated landings of tuna in South Africa remain well below 1,000 metric tons.

b) Research

A tagging cruise in the area adjoining Cape Point during November 1971 resulted in six albacore and six yellowfin tuna being tagged. The fish were caught by trolling and were double-tagged.

An extensive tagging programme is scheduled for October-November 1972. The success of this venture will to a large extent depend on the availability of fish during the period allocated. Should this cruise prove reasonably successful, provision will also be made for tagging in 1973.

c) The environment

The data being generated by an intensive research programme on the west coast of South Africa, is making a substantial contribution towards our knowledge of the hydrographical environment of the area. Apart from three ships equipped with sophisticated sampling gear, extensive use is also made of aircraft fitted with radiation thermometry and fish-finding equipment. It is for example possible to produce quasi-synoptic maps of sea-surface temperature from Cape Agulhas to the Cunene River and up to about 100 miles off shore.

Original Report in English.

SPANISH NATIONAL REPORT, 1972

by

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Instituto Español de Oceanografía,
Santander.

Thunnus alalunga

1. *Biological sampling*

During the 1972 season, samplings of catches by tuna fleet were carried out in several Cantabrian and northwestern ports. Samplings were made of fish caught by trolling and by live-bait, 4,753 specimens being measured in the first case, and 1,453 in the second.

2. *Fishing effort*

Abundant data on effort and catch-per-unit-effort were collected in all the ports where biological sampling was carried out, and in several others. These data will be compared with those of the French fleet in order to obtain complete information regarding the fishing effort carried out on the *Thunnus alalunga* population in the Bay of Biscay and neighbouring waters.

3. *Tagging*

A short cruise was conducted in September, when 22 specimens of this species were tagged.

Thunnus thynnus

1. *Biological sampling*

Sampling has been carried out in the surface fishery of the Bay of Biscay, as well as in the trap fishery in the south of Spain.

Original Report in Spanish.

The results of the former appear in Document SCRS/72/36, submitted at the Third Meeting of the Standing Committee on Research and Statistics. The results corresponding to the trap nets are summarized in Document SCRS/72/16, which was submitted at the same meeting.

2. *Fishing effort*

Data were collected in a similar way as in the case of *T. alalunga*, and the results are also given in the above mentioned Document SCRS/72/36. Trap effort data are summarized in SCRS/72/16.

3. *Tagging*

A joint French-Spanish-Italian cruise was carried out in November for tagging young bluefin tunas, born during the year, in southeast Spain. Only nine were tagged since the 1972 year class appears to be weak, at least as far as the population born in the Mediterranean is concerned. One specimen of *Auxis thazard* was also tagged.

UNITED STATES FISHERY AND RESEARCH REPORTS, 1972, TO THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS

I. U. S. Tuna fisheries in 1971

United States landings of tuna and tuna-like fishes from the Atlantic Ocean in 1971 were at about the same level as in recent years (Table 1). As was pointed out in last year's report, U.S. tuna catches began to increase in the early 1960's, when purse seiners started to harvest small bluefin and skipjack off the east coast of the United States during the summer. Catch and effort statistics for this fishery for 1962-1971, collected by F. Mather, are shown in Table 2. Catch per effort during 1969-1971 is the highest on record, but the measure of effort has not been critically examined and the estimate of catch per effort may not be a reliable index of abundance.

The U.S. purse seine fishery in the eastern tropical Atlantic increased in 1969 and 1970 compared to 1967 and 1968, which were the first years of a regular fishery by U.S. boats in this area. The fishery then decreased in 1971. Some fishing had been conducted by U.S. vessels in this area as early as 1958. The vessels in this fishery, part of the U.S. fleet which normally fishes in the eastern tropical Pacific, fished West African waters in the summer and fall of these years. Statistics of this fishery are shown in Tables 3 and 4. Fishing effort in 1972 is expected to be greater than in 1971. The catch per fishing day for yellowfin tuna decreased from 10.91 to 2.49 (m. tons/day) from 1969 to 1971, while that for skipjack tuna increased from 2.44 to 10.31. A detailed report on catch and effort statistics for this fishery has been submitted to ICCAT.

Catches of bonito and little tunny have been mainly by traps fished off the east coast of the United States south of Cape Cod; the general decline in catches is probably due to a reduction of effort caused by economic reasons. Swordfish are harvested by longline and harpoon. This fishery was greatly reduced in 1971 because of the mercury content found in swordfish.

Original Report in English.

Table 1. United States Atlantic tuna catches[1] since 1945

	Species[2]							
Year	*Bluefin*	*Bonito*	*Little tunny*	*Yellowfin*	*Skipjack*	*Swordfish*	*Unclass*	*Total*
	Metric tons							
1945	626	300	132	—	—	1,280	—	2,338
1946	537	236	155	—	—	891	—	1,819
1947	493	100	300	—	—	735	—	1,628
1948	1,359	61	273	—	—	447	—	2,140
1949	1,242	65	331	—	—	438	—	2,076
1950	575	56	134	—	—	413	—	1,178
1951	799	26	168	158	—	92	—	1,243
1952	256	35	339	—	—	137	—	767
1953	882	84	31	—	—	110	—	1,107
1954	647	133	32	7	—	156	—	975
1955	407	68	48	—	—	161	—	684
1956	208	32	40	151	—	223	—	654
1957	454	42	15	302	—	367	—	1,180
1958	1,123	27	6	284	—	710	—	2,150
1959	1,278	113	81	111	—	690	—	2,273
1960	637	80	7	—	—	459	—	1,183
1961	1,074	63	1	—	—	409	—	1,547
1962	3,969	78	7	17	463	424	—	4,958
1963	5,672	96	5	207	2,995	1,250	5	10,230
1964	4,882	29	2	126	3,980	1,384	56	10,459
1965	3,184	83	10	—	64	1,226	114	4,681
1966	1,238	56	21	—	39	616	4	1,974
1967	2,319	22	7	977	489	474	10	4,298
1968	635	43	—	6,104	3,219	274	113	10,388
1969	1,226	98	7	17,394	5,712	171	1	24,609
1970	3,328	68	115	11,638	10,736	130	—	26,105
1971[3]	3,154	31	4	4,195	13,733	2	112	21,231

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 or 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 includes varying quantities of other small tunas); little tunny, *Euthynnus alletteratus*; yellowfin, *T. albacares*; skipjack, *Katsuwonus pelamis*; swordfish, *Xiphias gladius*.
3. Provisional.
4. Data for 1969-1971 and all data on swordfish catches are official statistics prepared by the Statistics and Market News Division of the National Marine Fisheries Service.

Table 2. Catch and effort statistics of bluefin tuna less than 120 kg by the purse seine fishery off the east coast of the United States between Cape Hatteras, North Carolina, and Cape Ann, Massachusetts, by year. Catches include fish landed by U. S. and Canadian vessels

	1962	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*1969*	*1970*	*1971*
M. tons caught	3,065	5,382	5,593	2,699	794	2,319	608	1,568	4,228	3,586
M. tons/boat day	7.7	12.0	8.5	8.0	4.8	14.9	9.0	19.6	23.3	18.4
No. of boats	7	18	21	13	6	11	5	4	8	12

Table 3. Description of U. S. vessels that participated in the tropical Atlantic purse seine fishery for yellowfin and skipjack tunas, 1967-1971 (source, IATTC)

Year	*Number of vessels*	*Flag*	*S. Class*
1967	3	U.S.	≥ 401 short tons
1968	8	U.S.	≥ 401 short tons
1969	1	U.S.	301-400 short tons
	21	U.S.	≥ 401 short tons
1970	22	U.S.	≥ 401 short tons
1971	22	U.S.	≥ 401 short tons

Table 4. Catch and effort statistics for yellowfin and skipjack tunas landed by the international purse seine fleet fishing in the tropical Atlantic Ocean 1967-1971 and reporting their catches to IATTC (source, IATTC)

Year	*Effort (fishing days)*	*Catch Yellowfin (M. tons)*	*Catch Skipjack (M. tons)*	*Catch yellowfin/effort (M. tons/ fishing days)*	*Catch skipjack/effort (M. tons/ fishing days)*
1967	129	978	473	7.58	3.67
1968	266	6,198	3,192	23.30	12.00
1969	1,818	19,845	4,441	10.91	2.44
1970	2,255	9,065	11,423	4.02	5.06
1971	1,488	3,750	16,900	2.49	10.31

II. U. S. Tuna research activities in 1972

A considerable amount of progress on research of Atlantic tunas has been made during 1972. Field work has been expanded and a number of analyses of available data on Atlantic yellowfin and bluefin have been made.

A technician was sent to West Africa to sample landings by U.S. vessels during the summer season. A contract was continued with the Inter-American Tropical Tuna Commission to supply Atlantic catch and effort statistics from the U.S. fleet based in California and Puerto Rico and to sample catches of Atlantic tuna landed at ports in these areas. Three technicians were assigned to duty aboard U.S. vessels fishing in the eastern tropical Atlantic to obtain length-frequency samples from single sets of tuna. Tagging studies on Atlantic bluefin and monitoring of the east coast bluefin fishery were continued. A total of 152 bluefin were tagged with two tags to obtain estimates of tag shedding and to compare types of tags. The National Marine Fisheries Service assisted ORSTOM in tagging tropical tunas off the west coast of Africa.

Three papers on Atlantic yellowfin were prepared. These papers review the fishery and data available from it, and examine possible regulations on minimum size and catch quotas. Three papers on Atlantic bluefin also were prepared. Two of these papers are on analyses of tagging studies, and the third is a general review of the Atlantic bluefin fishery.

Papers Prepared for 1972 SCRS Meeting

FOX, W., Jr. and W. LENARZ.
An examination of the basis for a catch quota regulation on Atlantic yellowfin tuna.

LENARZ, W., W. FOX, Jr., G. SAKAGAWA and B. ROTHSCHILD.
An examination of the yield per recruit basis for a minimum size regulation for Atlantic yellowfin tuna.

LENARZ, W., F. MATHER, J. BECKETT, A. JONES and J. MASON.
Estimation of rates of tag shedding of northwestern Atlantic bluefin tuna.

LENARZ, W. and G. SAKAGAWA.
A review of the yellowfin tuna fishery of the Atlantic Ocean.

MATHER, F., B. ROTHSCHILD and G. PAULIK.
Preliminary analysis of bluefin tagging data.

SAKAGAWA, G., W. LENARZ and W. FOX, Jr.
A review of the bluefin tuna *(Thunnus thynnus)* fisheries of the Atlantic Ocean.