

INTERNATIONAL COMMISSION
FOR THE
NORTHWEST ATLANTIC FISHERIES



ANNUAL PROCEEDINGS
Vol. 16
for the year
1965 - 66

Issued from the Headquarters of the Commission
Dartmouth, N. S., Canada
1966

LETTER OF TRANSMITTAL

The Chairman of the International Commission for the Northwest Atlantic Fisheries presents his compliments to the Governments signatory of the International Convention for the Northwest Atlantic Fisheries signed at Washington under date of 8 February 1949, and to the Commissioners and observers representing those Governments and has the honour to transmit herewith annual proceedings of the International Commission for the Northwest Atlantic Fisheries for the year 1965-66.

This is the sixteenth annual report of proceedings of the Commission and is an authoritative record of its activities and achievements during the period 1 July 1965 to 30 June 1966. The report contains an account of the activities of the Commission's Secretariat, an account of the Sixteenth Annual Meeting, and summaries of research carried out in each of the five Convention subareas.

This report is prepared and transmitted in conformity with the requirements of Article VI (1) (f) of the International Convention for the Northwest Atlantic Fisheries and Rules 8 (g) and 22 (a) of the Rules of Procedure of the Commission.

A handwritten signature in black ink, appearing to read 'Thomas A. Fulham', written in a cursive style.

Thomas A. Fulham,
Chairman,
International Commission for the
Northwest Atlantic Fisheries.

CONTENTS

PART 1.	Administrative Report for the Year Ending 30 June 1966, with Financial Statements for the Fiscal Year Ending 30 June 1966.....	5
PART 2.	Report of the Sixteenth Annual Meeting, 6-10 June 1966.....	14
	Appendix I. List of Participants.....	30
	Appendix II. Agenda.....	34
PART 3.	Summaries of Research and Status of Fisheries by Subareas, 1965.....	35
	Subarea 1.....	35
	Subarea 2.....	37
	Subarea 3.....	39
	Subarea 4.....	41
	Subarea 5.....	44

PART 1

Administrative Report for the Year Ending 30 June 1966

1. The Commission's Officers

Chairman of Commission	—	Mr T. A. Fulham (USA)
Vice-Chairman of Commission	—	Mr V. M. Kamentsev (USSR)
Chairman of Panel 1	—	Dr H. A. Cole (UK)
Chairman of Panel 2	—	Mr A. J. Aglen (UK)
Chairman of Panel 3	—	Dr O. Rodríguez Martín (Spain)
Chairman of Panel 4	—	Mr J. Rougé (France)
Chairman of Panel 5	—	Dr A. S. Bogdanov (USSR) (to March 1966)

These officers were elected at the 1965 Annual Meeting to serve for a period of 2 years.

Chairman of Standing Committee on Research and Statistics	—	Dr W. Templeman (Canada)
---	---	--------------------------

Chairman of Standing Committee on Finance and Administration	—	Mr R. Green (USA)
--	---	-------------------

These officers were elected at the 1965 Annual Meeting to serve for a period of 1 year.

2. Panel Memberships for 1965-66

Panel:	1	2	3	4	5	Total
Canada		+	+	+	+	4
Denmark	+					1
France	+	+	+	+		4
Germany	+	+				2
Iceland	+					1
Italy			+	+		2
Norway	+					1
Poland	+	+	+			3
Portugal	+	+	+	+		4
Spain	+	+	+	+		4
USSR	+	+	+	+	+	5
UK	+	+	+			3
USA			+	+	+	3
TOTAL	10	8	9	7	3	37

3. The Commission's Office Accommodation

The Commission has occupied space in the Bedford Institute of Oceanography at Dartmouth, Nova Scotia, since 1 August 1963. The period of the lease arrangement with the Department of Mines and Technical Surveys expires on 1 August 1963.

The Executive Secretary has approached the Canadian Government through the Canadian Commissioners requesting that the possibility of extending the lease arrangement at the Bedford Institute of Oceanography for a further period of 3 years to 1 August 1969 be examined.

4. The Commission's Secretariat

The staff members of the Secretariat are:

Executive Secretary	—	L. R. Day
Assistant Executive Secretary	—	B. J. Kowalewski (from 1 February 1966)
Editorial Assistant	—	W. H. Champion
Secretary	—	Miss Jean Maclellan
Clerk -Typist	—	Miss Gertrude Schrader
Clerk	—	Mrs Barbara MacKenzie (to 17 December 1965)
	—	Mrs Carol Turple (from 1 January 1966)

Additional clerical help was provided by:

Miss Mabel Parker (Environmental Symposium and Annual Meeting)

Mrs Valerie Caton (Annual Meeting)

Herbert Morse (Statistics)

Following the 1965 Annual Meeting, the Executive Secretary discussed the presentation to Depository Government of proposed amendments to the ICNAF trawl regulations with Mr Wm. Sullivan of the Office of the Special Assistant in Fish and Wildlife to the Under Secretary of State (Washington, USA, 28-29 June 1965);

attended an FAO Study Group on Economic Indicators (Rome, 27-28 September 1965); attended a mid-year meeting of the ICNAF Assessments Sub-committee (Rome, 29-30 September 1965); attended the ICES/ICNAF Sampling Meeting (Rome, 1-2 October 1965); attended the 53rd Statutory Meeting of ICES (Rome, 4-13 October 1965); discussed preparations for the Sixteenth Annual Meeting of ICNAF with Mr I. Cuvillo and Dr O. Rodriguez Martin of the Dirección General de Pesca Marítima and visited the Instituto Oceanográfico (Madrid, 15-18 October 1965); held discussions with Captain T. de Almeida, Comissão Consultiva Nacional das Pescarias do Noroeste do Atlântico and with Dr R. Monteiro, Instituto de Biologia Marítima and interviewed three applicants for the position of Assistant Executive Secretary to the Commission (Lisbon, 19-22 October 1965); visited Sea Fisheries Institute and fishery units and interviewed Dr B. J. Kowalewski, applicant for the position of Assistant Executive Secretary (Gdynia, 25-26 October 1965) and held discussions on ICNAF matters with Polish officials at the Central Fisheries Board (Warsaw, 27 October 1965); attended 4th Session of the Intergovernmental Oceanographic Commission (IOC) (Paris, 3-12 November 1965) and attended the meetings of the FAO Technical Committee on Fisheries, Rome (13-18 November 1965).

Dr B. J. Kowalewski, an economist on the staff of the Sea Fisheries Institute, Gdynia, Poland, joined the Commission as Assistant Executive Secretary on 1 February 1966. After spending some time with Mr L. P. D. Gertenbach and his staff of the Department of Fisheries of FAO discussing statistical procedures and problems and assisting in the preparation of the manuscript of Tables 2, 4, and 5 of Volume 14 for 1964 of the ICNAF Statistical Bulletin in Rome, he arrived at the Commission headquarters on 26 March 1966.

Mrs Barbara MacKenzie left the Commission's employ on 17 December 1966 and was replaced by Mrs Carol Turple on 1 January 1966.

Integration of the Commission's pension plan with the Canadian Pension Plan for personnel of the Secretariat was completed with the unanimous approval of Contracting Governments following a telegraphic vote in January 1966.

5. The Commission's Publications

The 1965 *Meeting Proceedings* (53 p.) was distributed in July 1965. It contains the reports of the Plenary Sessions and of meetings of the Panels, Commissioners, the Standing Committee on Finance and Administration and the *ad hoc* Committee on Trawl Regulations held in connection with the Commission's Fifteenth Annual Meeting held at the Nova Scotian Hotel, Halifax, Nova Scotia from 7 to 12 June 1965.

The *Redbook* 1965 was again issued in three parts. Part I (one book of 77 p.) contains the proceedings of the 1965 meeting of the Standing Committee on Research and Statistics and its subcommittees. It was distributed in October 1965. Parts II and III (one book of 201 p.) contains the reports by member countries on research conducted in the Convention Area in 1964 and selected scientific papers presented to the 1965 meetings. Parts II and III were distributed in January 1966.

The *Statistical Bulletin* Vol. 13 for the year 1963 (87 p.) was distributed in July 1965.

The *Statistical Bulletin* Vol. 14 for the year 1964 was sent to the printer on 16 May 1966. It will be ready for distribution in September 1966.

The *Annual Proceedings* Vol. 15 for the year 1965-66 (61 p.) was distributed in February 1966. It contains the Administrative Report with audited financial statements for the year ending 30 June 1965, the Report of the Fifteenth Annual Meeting, 1965, and summaries of research carried out in each subarea of the Convention Area in 1965. This volume also contains the paper "Review of Possible Conservation Actions for the ICNAF Area" prepared by the Chairmen of the Standing Committee on Research and Statistics and of the Assessments Subcommittee.

The *Research Bulletin of ICNAF* No. 2 (84 p.) was distributed in November 1965. It contains 13 scientific papers on research important to the Commission.

The *Research Bulletin of ICNAF* No. 3 (about 110 p.) contains 13 scientific contributions. The papers are now in the page-proof

stage. The book will be distributed in December 1966.

The *Sampling Yearbook* Vol. 9 for the year 1964 (205 p.) was distributed in May 1966. The volume contains length frequencies, age frequencies and age/length keys and tables for the major species sampled by the research agencies of member countries in the ICNAF divisions in 1964.

The *ICNAF Handbook* (121 p.) was distributed in September 1965. It contains the Articles of the Convention, the Protocols to the Convention, the Rules of Procedure and Financial Regulations for the Commission, the Rules of Procedure for the Panels, the Commission's Trawl Regulations, the statistical divisions of the Convention Area and other useful items. Replacement pages amending the Handbook and bringing it up to date are being prepared and will be printed and distributed after the Commission's Sixteenth Annual Meeting.

The *ICNAF Special Publication* No. 6 (ICNAF Environmental Symposium, 1964) (914 p.) has been printed and will be distributed in September 1966.

6. Newsletter

Newsletter No. 48 covers the period January - May 1965 and contains items preparatory to the Commission's Annual Meeting in Halifax, Nova Scotia, 7-12 June 1965 and an item on trends in major ICNAF fisheries 1952-63.

Newsletter No. 49 covers the period June -December 1965 and includes highlights from the Fifteenth Annual Meeting, items on mid-year meetings and plans for the Commission's Sixteenth Annual Meeting.

7. Cooperation with Other International Organizations

At the Fifteenth Annual Meeting of the Commission, funds were authorized for travel by the Executive Secretary to establish personal contact and closer working relations with FAO, as the international body with world-wide responsibility for fisheries, and with IOC, as the international body with world-wide responsibility for study of the ocean environment. As a re-

sult, the Executive Secretary was able to attend meetings of FAO, IOC, and ICES, from early October to mid-November 1965.

Arrangements have been made with ICES to exchange reports of meetings of the respective Statistical Committees. ICNAF Gear and Selectivity reports will be sent to ICES in exchange for reports of the ICES Comparative Fishing Committee. Joint investigation of common problems is exemplified in the ICES/ICNAF Working Group on North Atlantic Salmon. Again in 1966 the Commission has been privileged to have before it for study the 1966 Report of the ICES Liaison Committee to NEAFC. The Executive Secretary was pleased to meet the new Secretary-General of ICES, Mr Hans Tambs-Lyche, and to offer the full cooperation of the Commission Secretariat.

Closer cooperation is developing with the newly-formed Department of Fisheries of FAO. The FAO/ICES/ICNAF Continuing Working Party on North Atlantic Statistics, with Mr L. P. D. Gertenbach as Secretary, continues to provide an excellent organ for improving and integrating statistical procedures. In 1966, Mr Gertenbach and his staff prepared a major portion of the Commission's Statistical Bulletin Volume 14 for 1964, under contract, and are continuing to prepare preliminary current annual statistics on catches in the Convention Area for the Commission's Annual Meetings. FAO and ICNAF continue to provide opportunity for exploration of the economic aspects of fishery management. FAO, ICES, and ICNAF will collaborate in the Symposium on Food Chains in the Sea.

Studies on variability in the ocean and on the dynamics and properties of the North Atlantic which are being considered by IOC are of great interest and importance to the Commission. Possibilities of cooperative investigations in areas including the Convention Area are being studied by SCOR and ACMRR in cooperation with ICES and ICNAF. Mr A. Lee of UK, Chairman of the ICNAF Environmental Subcommittee, has continued to forward the Commission's interests in both IOC and SCOR.

Closer relationship is being established with Fisheries Division, OECD. Advance copies of the OECD study "Economic Study of Fishery

Developments in the North Atlantic", for which ICNAF provided statistical data, has been completed and is being studied by a group of experts, 23-24 May 1966. A summary presentation of the study was made to the special open meeting of the Research and Statistics Committee on 6 June 1966.

The Commission continues to welcome observers from and to send observers to NEAFC. Close liaison and cooperation is especially important because of the common problems and the effects that proposed regulation in one Convention Area can have on the fisheries in the other Convention Area.

8. Cooperation with Non-Member Countries

Although Japanese fishing vessels were not active in the Convention Area in 1965, the Government of Japan has maintained an interest in the activities of the Commission. An invitation to send an observer to the Sixteenth Meeting in Madrid, Spain, has been accepted by the Government of Japan.

The development of Rumanian interests in the fishing in the Convention Area and in the work of the Commission has continued. The Government of Rumania has provided statistics on their fishing vessels (two stern trawlers) and catches (3,083 tons) in the Convention Area (Div. 5Z) in 1965 (22 August-14 October). On 5 April 1966 the Government of Rumania advised the US Department of State, as Depositary for the Commission, that it intends to adhere to the International Convention for the Northwest Atlantic Fisheries. An invitation to send observers to the Commission's meeting in Madrid was extended to the Rumanian Government with the majority approval of member countries. Unfortunately meetings of the Permanent Commission of the International Fishing Convention in the Danube conflicted, and the Rumanian Government forwarded their regrets.

Expansion of Cuban interests in the fisheries of the Northwest Atlantic has resulted in a request for information on the Commission's organization and publications being fulfilled by the Secretariat.

9. Programs and Reports of Research

Proposed programs of research in the Convention Area by member countries during 1966 were received and distributed.

National research reports were received from member countries active in the Convention Area. Italian vessels did not fish in the Convention Area again in 1966. The reports were prepared for detailed study at the 1966 Annual Meeting and will appear in Redbook 1966, Part II.

Most of the text for the Report on the Environmental Survey (NORWESTLANT 1-3, April-June 1963) has been prepared and will be submitted to the printer as ICNAF Special Publication No. 7.

Following the meeting of the FAO Study Group on Economic Aspects of Fishery Management, Rome, 26-27 September 1965, and the recommendations of the mid-year meeting of the ICNAF Assessment Subcommittee, 29-30 September 1965, a special open meeting of the Standing Committee on Research and Statistics was organized to hear presentations on 6 June 1966 at the Annual Meeting from Professor J. A. Crutchfield and other leading fishery economists on the economic aspects of fishery regulation.

Special consideration was given to the effect of closure to fishing of Store Hellefiske Bank to protect the small cod, at a mid-year meeting of an ICNAF Working Group on Greenland Cod held 21-25 February 1966 at Copenhagen under the chairmanship of Mr J. Gulland. Reports for the attention of the Assessment Subcommittee and the Research and Statistics Committee were prepared and circulated.

Plans for joint consideration of the effect of the Greenland salmon fishery on the salmon stocks in North American and European waters were forwarded following endorsement by ICES at its 1965 meeting of the ICNAF salmon research program formulated at the 1965 ICNAF meeting. The first meeting of a joint ICES/ICNAF Working Group on North Atlantic Salmon was arranged for 25-26 May 1966 before the ICNAF Annual Meeting. Reports and papers from Denmark, England, Ireland, Scotland

Sweden, Canada, and USA will be studied and future plans recommended under the chairmanship of Mr Gulland.

10. Statistics and Sampling

Despite the lack of a Commission statistician throughout most of the 1965-66 fiscal year, the statistical services to the Commission have been maintained and even improved. This has been due, in large part, to the understanding and co-operation of the statistical offices in member countries and in the newly-formed Department of Fisheries of FAO.

Beginning with the statistical submissions for the year 1965, all member countries including Canada and USA are now using the common statistical reporting forms STANA 1W and STANA 2.

By means of a contract with FAO, Tables 2, 4, and 5 of the Statistical Bulletin of ICNAF Vol. 14 for the year 1964 were prepared by the Fisheries Statistics Section, Department of Fisheries, FAO. Since his arrival at Commission headquarters, Dr B. J. Kowalewski has completed manuscript and the complete volume, with considerable improvement to the format, has gone to the printers and will be distributed in August 1966. Meantime, Tables 1, 3, and 5 of the Statistical Bulletin Vol. 14 for 1964 have been multigraphed for use, by the Assessment Subcommittee at the 1966 Annual Meeting.

Through the kindness of Mr L. P. D. Gertenbach of the Fisheries Statistics Section, Department of Fisheries, FAO, Tables 1 and 3 of the Statistical Bulletin Vol. 15 for the year 1965 were available at the 1966 Annual Meeting.

Summary statistics on both discards and fishing effort for 1964 have been documented for the 1966 Annual Meeting. Similar statistics for 1965 will be prepared when submissions have been received from all member countries.

The Fisheries Laboratory of the US Bureau of Commercial Fisheries at Woods Hole has kindly consented to transfer the age/length key data for 1961, 1962, and 1963 on file in the Secretariat to data processing cards. Sampling Yearbook Vol. 9 with length frequency, age frequency, age/length key, and age/length table data was

completed and includes improvements in presentation and format.

Lists of vessels over 50 gross tons fishing in the Convention Area in 1965 have been submitted on the 1965 revised form by all member countries.

Representation at an informal FAO/ICES/ICNAF meeting on North Atlantic statistics, Copenhagen, 9-11 February 1966, was impossible. Items of concern to the Commission were considered at the regular annual meeting of the Statistical Subcommittee of ICNAF at Madrid, 1966.

11. Harp and Hood Seals

With the deposition with the Government of United States of America on 29 April 1966 of the ratification by Italy of the Protocol to the International Convention for the Northwest Atlantic Fisheries extending the provisions of the Convention to harp and hood seals, the Protocol, in accordance with the provisions of its Article IV, paragraph 2, entered into force on 29 April 1966.

Member countries exploiting the seal stocks in the Northwest Atlantic were asked to be prepared to review the status of the fishery and research and consider conservation measures as members of a Panel to be established at the Sixteenth Annual Meeting.

12. International Regulation of Trawl Fisheries

Following notification to Depository Government on 21 June 1965 of acceptance by the USSR of the proposal from the 1964 Annual Meeting for amendment to regulation of the cod and haddock trawl fisheries in Subarea 5 adopted by the Commission at the 1955 Annual Meeting, which amendment defines mesh size with standard gauge and net twine and provides for adoption of equivalent mesh sizes for alternate gauges and other net twines, the proposal, in accordance with the provision of Convention Article VIII, paragraph 8, entered into force on 21 October 1965.

Amendments to regulations (a) to define the term "groundfish" as used in regulations for

Subareas 1, 2, and 3 now pending entry into force (b) to clarify pending exemption regulations and add an annual exemption provision for Subarea 3 (c) to add an annual exemption provision to pending regulations for Subarea 4 (d) to add an annual exemption provision to the regulations now in force in Subareas 3 and 4, were adopted by the Commission on 12 June 1965 along with (e) a codification of regulations proposed in 1961 with subsequent recommended amendments, including those from the 1965 Annual Meeting for Subareas 1, 2, 3, and 4, and forwarded to Depository Government, 9 July 1965. Transmittal to Contracting Governments was completed on 25 October 1965.

13. Financial Statement for the Fiscal Year ending 30 June 1966

The accounts of the Commission for the year ending 30 June show an assessment against Member States for ordinary expenses of \$84,370 and an authorized transfer of \$11,000 to the General

Fund from the Working Capital Fund to finance the special Environmental Projects.

Obligations incurred during the year totalled \$86,379 which was \$9,351 less than the total \$95,370 appropriated by the Commission.

Appendix I is presented in addition to Exhibits I, II, and III, to show the effect of revision to the Financial Regulations on balances of the Surplus Account and the Principal of the Working Capital Fund as at 30 June 1965 and subsequent entries to reconcile with the balances shown in the Statement of Assets and Liabilities as at 30 June 1966.

The audit of the Commission's finances was made by the office of the Auditor General of Canada in July 1966.

The report of the Auditor General reads, in part, as follows:

EXHIBIT I

Statement of Budget Appropriations, Obligations Incurred, and Balances of Appropriations for the year ended 30 June 1966

(Expressed in Canadian Dollars)

Purposes of Appropriation	Appropriated by Commission	Obligations Incurred	Surplus or Deficit (-) Balances of Appropriations
Personal services—			
Salaries.....	\$45,030	\$41,242	\$3,788
Superannuation and Canada Pension Plan.....	1,200	1,248	-- 48
Additional help.....	1,200	933	267
Medical plan.....	300	216	84
Travel.....	5,000	4,564	436
Transportation.....	500	150	350
Communications.....	2,500	2,875	- 375
Publication.....	11,000	9,611	1,389
Other contractual services.....	5,500	4,494	1,006
Materials and supplies.....	3,500	2,169	1,331
Equipment.....	2,000	1,254	746
Annual meeting.....	6,000	6,623	- 623
Contingencies.....	1,000	—	1,000
Totals, ordinary budget.....	84,730	75,379	9,351
Environmental Symposium.....	5,000	5,000	—
Environmental Survey.....	6,000	6,000	—
	<u>\$95,730</u>	<u>\$86,379</u>	<u>\$9,351</u>

EXHIBIT II

Statement of Income and Expenditure for the year ended 30 June 1966

(with comparative figures for the year ended 30 June 1965)

(Expressed in Canadian Dollars)

	<u>1966</u>	<u>1965</u>
Income:		
Members' contributions assessed—		
Canada.....	\$ 8,946	\$ 7,530
Denmark.....	2,632	2,277
France.....	8,946	7,530
Germany, Federal Republic.....	4,737	4,028
Iceland.....	2,632	2,277
Italy.....	4,737	4,028
Norway.....	2,632	2,277
Poland.....	6,842	5,779
Portugal.....	8,946	7,530
Spain.....	8,946	7,530
Union of Soviet Socialist Republics.....	11,050	9,282
United Kingdom.....	6,842	5,779
United States of America.....	6,842	5,779
	<u>\$84,730</u>	<u>\$71,626</u>
Miscellaneous Income—		
Bank interest.....	1,185	678
Sales of publications.....	2,530	2,611
Refund of previous years' expenditure.....	—	1,808
Cancelled prior year obligations.....	—	1,276
	<u>3,715</u>	<u>6,373</u>
Obligations incurred, ordinary budget (Exhibit I).....	88,445	77,999
	<u>75,379</u>	<u>72,442</u>
	13,066	5,557
Deduct: Amounts carried to Working Capital Fund—		
Balances of appropriations.....	9,351	
Income from sales of publications.....	2,530	
	<u>11,881</u>	<u>—</u>
Amount carried to surplus account (Appendix I).....	<u>\$ 1,185</u>	<u>\$ 5,557</u>

EXHIBIT III
Statement of Assets and Liabilities as at 30 June 1966
 (with comparative figures as at 30 June 1965)
 (Expressed in Canadian Dollars)

Assets			Liabilities		
	1966	1965		1966	1965
GENERAL FUND					
Cash on hand and on deposit.....	\$ 26,388	\$ 31,163	Unliquidated Obligations	\$ 13,887	\$ 6,642
Accounts receivable.....	1,028	1,250	Advance on future contributions. . .	11,666	9,340
			Advance from Working Capital Fund	—	7,500
			Surplus account (Appendix I)	1,863	7,931
	\$ 27,416	\$ 31,413		\$ 27,416	\$ 31,413
WORKING CAPITAL FUND					
Cash on deposit	\$ 18,134	\$ 2,500	Principal of Fund (Appendix I)	\$ 18,134	\$ 10,000
Advance to General Fund	—	7,500			
	\$ 18,134	\$ 10,000		\$ 18,134	\$ 10,000

APPENDIX I

Statement showing effect of revision to the Financial Regulations on balances of the Surplus Account and the Principal of the Working Capital Fund as at 30 June 1965 and subsequent entries to reconcile with the balances shown in the Statement of Assets and Liabilities as at 30 June 1966

Surplus Account

Balance 30 June 1965.....		\$ 7,931	
Add: Transfer from Working Capital Fund.....		7,500	
		<u>15,431</u>	
Deduct: Transfers to Working Capital Fund—			
Unobligated appropriation, 1964-65.....	\$ 9,058		
Sales of publications, 1964-65.....	2,611		
Cancelled obligations, 1963-64.....	<u>1,276</u>		
		12,945	
Revised balance in accordance with the Financial Regulations revised effective 12 June 1965.....		2,486	
Deduct: Transfer to Working Capital Fund of refunds of previous years' expenditures in accordance with the Financial Regulations revised effective 7 June 1966.....		<u>1,808</u>	
		678	
Add: Transfer from Statement of Income and Expenditure (Exhibit II).....		<u>1,185</u>	<u>\$ 1,863</u>

Working Capital Fund

Balance 30 June 1965.....		\$10,000	
Add: Transfers from Surplus Account.....		<u>12,945</u>	
		22,945	
Deduct: Transfer to Surplus Account.....		<u>7,500</u>	
		15,445	
Revised balance in accordance with the Financial Regulations revised effective 12 June 1965...		15,445	
Add: Refunds of previous years' expenditure, transferred from Surplus Account...	\$ 1,808		
Transfer from Statement of Income and Expenditure (Exhibit II).....	<u>11,881</u>	<u>13,689</u>	
		29,134	
Deduct: Transfers to General Fund—			
Environmental Symposium.....	5,000		
Environmental Survey.....	<u>6,000</u>	<u>11,000</u>	<u>\$ 18,134</u>

PART 2
Report of Sixteenth Annual Meeting
of the
International Commission for the Northwest Atlantic Fisheries
Madrid, Spain 6 – 11 June 1966

BY THE CHAIRMAN MR T. A. FULHAM

1. Introduction

The International Commission for the Northwest Atlantic Fisheries (ICNAF), under the terms of a Convention signed in 1949, is responsible for the investigation, protection, and conservation of the fisheries of the Northwest Atlantic in order to make possible the maintenance of a maximum sustained catch from those fisheries. Based on the results of scientific investigations promoted and co-ordinated by the Commission, measures to ensure wise use of the stocks of commercial fish are recommended to member governments.

The Commission has five panels, each one reviewing the fisheries and recommending conservation measures in a geographic subarea of the Convention area (Subarea 1, off West Greenland; Subarea 2, off Labrador; Subarea 3, off South and East Newfoundland; Subarea 4, the Gulf of St. Lawrence and Nova Scotian Banks; and Subarea 5, the Gulf of Maine).

2. Time and Place of Meeting

The Sixteenth Annual Meeting of the International Commission for the Northwest Atlantic Fisheries was held in the Instituto Nacional de Industria, 46 Calle de Padilla, Madrid, Spain from 6 to 11 June 1966 under the chairmanship of Mr T. A. Fulham.

Previous to the plenary sessions of the Commission, meetings of the various subcommittees and working groups of the Standing Committee on Research and Statistics were completed between 27 May–3 June under the general chairmanship of Dr W. Templeman of Canada. In addition the ICES/ICNAF Joint Working Party on North Atlantic Salmon met on 25–26 May under the chairmanship of Mr J. Gulland of UK.

The Subcommittee on Fishery Assessments met on 27–28 May under the chairmanship of Mr J. Gulland of UK. The Steering and Publications Subcommittee met on 29 May and at intervals during the week under Dr W. Templeman of Canada. Between 30 May–3 June, the Subcommittee on Herring and Other Pelagic Species met under Mr B. Skud of USA, the Subcommittee on Statistics and Sampling under Dr F. D. McCracken, the Subcommittee on Environmental Studies under Mr A. Lee of UK, the Subcommittee on Gear and Selectivity under Dr H. Bohl of the Federal Republic of Germany, the Subcommittee on Ageing Techniques under Mr E. Bratberg of Norway. The Standing Committee on Research and Statistics met regularly throughout the week to co-ordinate the work and receive the Reports of the Subcommittees. Scientific Advisers to each of the five panels met on 4 June.

Between 6–11 June 1966, the Commission considered agenda items in Plenary Session, and heard reports and recommendations from meetings of Commissioners, an *ad hoc* Committee on Trawl Regulations, meetings of each of the subarea panels including a joint meeting of all five panels, in addition from meetings of the newly-formed panel on harp and hood seals (Panel A) and the Standing Committees on Research and Statistics, and on Finance and Administration.

3. Participants (Appendix 1)

Commissioners, Advisers, and Experts from all 13 member countries were present. In addition, Observers from the Food and Agriculture Organization of the United Nations (FAO), the International Council for the Exploration of the Sea (ICES), the North-East Atlantic Fisheries Commission (NEAFC), the General Fisheries Council of the Mediterranean (GFCM), the

International Pacific Halibut Commission (IPHC), the International North Pacific Fisheries Commission (INPFC), the Organization for Economic Cooperation and Development (OECD) and the Scientific Committee on Oceanic Research of the International Council of Scientific Unions (SCOR) had, at the invitation of the Commission, sent observers to the Meeting. Observers from the Government of Japan attended their consecutive meeting. In addition, the Commission welcomed Professor James A. Crutchfield of the University of Washington, Seattle, USA, as a consultant on the economic aspects of fishery management.

Accredited participants are listed in Appendix I to this Report. The organization and officers of the Commission for the year 1966-67 are presented on the inside front cover of these Proceedings.

4. Opening of the Meeting (Agenda Item 1)

The Chairman, Mr. T. A. Fulham of the USA, opened the meeting and welcomed the Commissioners, Advisers, Observers, and Guests to the Sixteenth Annual Meeting of the Commission. The opening session was convened in the Instituto Nacional de Industria, 46 Calle de Padilla, Madrid, Spain on 6 June 1966. The Chairman introduced the following distinguished Spanish officials: Ilmo. Sr. D. Dámaro Berenguer, Director, Oceanographic Institute of Spain; Ilmo. Sr. D. Ignacio del Cuvillo y Merello, Director General of Fisheries; Excmo. Sr. D. Leopoldo Boada Enderza, Undersecretary of the Merchant Navy.

The Chairman then invited the Minister of Commerce, Excmo. Sr. D. Faustino Garcia Monco to address the meeting. The text of the Minister's address follows:

"It has been a great honour for us that the International Commission for the Northwest Atlantic Fisheries has accepted the Spanish Government's invitation to celebrate its Sixteenth Annual Meeting at Madrid, and I have the pleasure of welcoming the Delegates, Advisers, and Technicians from all the member countries of this Commission, as well as the Observers who attend representing other international organizations or interests or interests

relative to the fishing matters in the Northwest Atlantic.

"The exploitation of the biological resources of the sea, that is to say the fishing industry, is no longer an enterprise subject to unforeseen hazards, but has turned into a highly technical industry, and since human beings need for their sustenance the products obtained from the oceans, we must live in good harmony, not only among ourselves, but also with nature, in order to be able to avail ourselves of the resources that it generously offers us in the sea; but, at the same time, respecting the natural laws and principles that rule the development of such resources in order to avoid their exhaustion.

"For a long time, fishing has been exercised in an anarchical way, with the sole idea of increasing the catch, without paying any attention to the harmful consequences that this 'abundance economy' could cause in the biological balance of species.

"Today things have changed, and we observe, with pleasure, that new ideas, the consequence of thorough technical investigations, are channeling the fishing industry toward a 'more reasonable exploitation of the sea. This is more significant to us because, for Spain which is a country with mariner vocations, the fishing industry constitutes a most important part of its economy.

"Spain has the maximum interest in the preservation of the Northwest Atlantic fishing wealth, because the Newfoundland, Labrador, Nova Scotia, and Greenland 'stocks' have been for hundreds of years important food sources for our people, as dried or salted fish, in times when we have been short of fresh fish or, in the interior, where the latter could not arrive in good condition.

"The developments introduced in the fishing fleets and the better transportation have made it easier to bring the fish to all towns, no matter where they are located, but nevertheless the Spanish people continue to like dried and salted codfish, notwithstanding the available facilities for obtaining it fresh.

"The preference of the Spanish people for the codfish began in historical times when the

Vasco fishermen (the French and Spanish ones) pursuing whales, discovered the rich Newfoundland 'stocks'.

"By the second quarter of the XVIth century, our fishermen were already carrying out normal fishing operations based on these 'stocks' and about 6,000 men went to the Newfoundland fishery each year, manning more than 200 fishing vessels, that left from our ports at the Cantábrico.

"Our anxiety and interest in the future of these fisheries has already been made evident and consequently we were present at Washington in 1949 for collaborating first in the wording, and afterwards signing, the 'International Fisheries Convention' which handed over to this 'Commission' the difficult task of attaining the objective established by it, that is to say 'to maintain the Northwest Atlantic fisheries at the highest production level and in a continued way'.

"Today any regulation intended to attain the maximum benefits in the exploitation of live resources must necessarily have a technical and scientific basis.

"From the very beginning this Commission has been lucky to be able to count on the invaluable services of its Standing Committee on Research and Statistics, where the most prominent technicians come together to study the resource and give valuable scientific advice.

"This Committee has done extraordinary work, collecting and publishing the international statistics of catches, production, determining 'selectivity', etc., studying the species 'demographie', the physical and chemical conditions of the sea and even more, the Committee has succeeded when it has ventured into the intricate problem of 'predicting' the catches.

"Recommendations and suggestions made by the Research and Statistics Committee have helped the Commission to take decisions that have crystallized in the wording of international regulations that, for several reasons, need to be firmly seconded in order to put them into force and produce advantageous effects.

"Here are gathered delegations of the fishery science and of the administrations of several

countries, which are willing to maintain and, if possible, increase the catches from an ocean area that we must exploit together, without producing any harm to its natural development.

"I hope that we shall agree with the idea that, in order to attain our objective, we need the efficient collaboration of the fisherman and if we want to get it, we must pay particular attention to his professional qualifications, giving him a thorough understanding of his responsibility.

"By our doing so, the fisherman shall be able to understand better the need for regulations and shall be better repared to comply with them, to collaborate in the research work, to recover 'tags', to furnish true statistics, etc., because we can't forget that the fisherman is the one who maintains a permanent contact with the sea and fishes and, therefore, he shall be not only the first one to benefit from our success but constitutes the first link of its elaboration.

"In consequence, I am glad to be able to inform you that in Spain we are trying hard to give greater improvement to those professional qualifications by establishing schools of a high technical level; some of them, as the one at Vigo, are already at work and we hope that in a short time our fishermen shall attain the professional qualifications needed to facilitate and encourage the attainment of our objectives.

"I don't want to take the time that you need for your interesting discussions. I know that you have a very full agenda with plenty of items to be studied during the next few days.

"I wish you great success in your discussions and I must tell you, at the same time, that I have confidence in your knowledge and experience and that I am sure that you will attain your proposed objectives.

"I hope that you will feel at home in our country and we sincerely wish that, when the time to say good-bye arrives, besides the satisfaction of accomplished duty, you will have good and lasting memories of Spain and her people."

The Chairman thanked the Minister for his warm welcome and good wishes and declared the Sixteenth Annual Meeting of the International

Commission for the Northwest Atlantic Fisheries officially opened.

The first Plenary Session was convened by Chairman Fulham following adjournment of the opening session. Second and third Plenary Sessions were convened on 8 and 10 June respectively. The Commission concluded the following business during these meetings.

5. The Agenda (Item 2, Appendix II)

The Commission adopted the agenda which in accordance with Rule 12 of the Commission Rules of Procedure was circulated 60 days in advance of the meeting.

6. Publicity for the Meeting (Item 3)

The Commission agreed that in accordance with past practice, the Chairman of the Commission and the Chairman of the Standing Committees on Research and Statistics and on Finance and Administration should constitute a Committee to control policy regarding public relations.

7. Review of Panel Membership (Item 4)

The Commission reviewed panel memberships as required under Article IV (2) of the Convention. There were no applications for new membership to Panels 1-5 during the year 1965-66.

Pursuant to the entry into force on 29 April 1966 of the Protocol relating to harp and hood seals, the Commission under Article II of the Protocol and on the recommendation of the Standing Committee of Finance and Administration set up Panel A (Harp and Hood Seals) and admitted Canada, Denmark, and Norway to membership at a Special Plenary Session on 8 June 1966.

Panel Memberships for the year 1966-67 total 40 and are distributed among member countries as follow:

Panel:	1	2	3	4	5	A	Total
Canada		+	+	+	+	+	5
Denmark	+					+	2
France	+	+	+	+			4
Germany, Fed. Rep.	+	+					2
Iceland	+						1
Italy			+	+			2
Norway	+					+	2
Poland	+	+	+				3
Portugal	+	+	+	+			4
Spain	+	+	+	+			4
USSR	+	+	+	+	+		5
UK	+	+	+				3
USA			+	+	+		3
TOTAL	10	8	9	7	3	3	40

8. Consideration of Administrative Matters

(a) Reports by the Secretariat

The Executive Secretary submitted the following reports:

- (i) Auditor's Report (1965 Annual Proceedings, Vol. 15, p. 9-11) and Schedules I and II to Exhibit III of the Auditor's Report (Commissioner's Document 66/3) for the fiscal year ending 30 June 1965;
- (ii) Administration and Financial Report for the fiscal year ending 30 June 1966 (complete to 13 May 1966) (Commissioner's Document 66/2);
- (iii) Budget estimate for the fiscal year ending 30 June 1967 (Appendix I to the 1966 Agenda for the Standing Committee on Finance and Administration);
- (iv) Budget forecast for the fiscal year ending 30 June 1968 (Appendix II to the 1966 Agenda for the Standing Committee on Finance and Administration).

(b) **Report of the Standing Committee on Finance and Administration** (Items 4, 5, 6, 7, 8, 9, 18, 21, and 26)

All financial and administrative items were assigned to the Standing Committee on Finance and Administration by the Commission at its first Plenary Session on 6 June 1966. Consideration was given to the items by the Committee at four meetings held on 7, 8, and 10 June 1966. Reports of the Committee were presented to the Plenary Sessions of the Commission on 8 and 10 June 1966. The Commission adopted the following Committee recommendations:

- (i) that the report of the Auditor General showing appropriations of \$ Can. 81,500 and expenditures totalling \$ Can. 72,442 for the fiscal year ending 30 June 1965 (1965 Annual Proceedings, Vol. 15, p. 9-11) and Schedule I showing details of the "transfer to Working Capital Fund from General Fund in accordance with the revised Financial Regulations effective 12 June 1965" and Schedule II "Statement of Assets and Liabilities after incorporating the transfers to the Working Capital Fund" (Commissioner's Document 66/3), be adopted and that Schedules I and II be published in the 1966 Annual Proceedings, Vol. 16 (*Note*: Schedules I and II have been published herein as Appendix I to Part 1 of the 1966 Annual Proceedings, Vol. 16,);
- (ii) that the provisional Administrative and Financial Report by the Executive Secretary for the fiscal year ending 30 June 1966 (estimated from 12 May 1966) (Commissioner's Document 66/2), be adopted;
- (iii) that Canada, Denmark, and Norway participate in a panel on harp and hood seals, such a panel to be known as Panel S (*Note*: Name changed to Panel A by the third meeting of Commissioners, 8 June 1966);
- (iv) that Canadian Government salary revisions effective 1 October 1965 for the Clerk 2, Clerk 3, Clerk 4, Editor 2, and Administrative 7 grades, and effective 1 July 1965 for the Senior Officer 1 grade, appointments in which were authorized by the Commission for Secretariat personnel (1965 Annual Proceedings, Vol. 15, p. 15-16), be adopted;
- (v) that Commission Financial Regulation 7.1 (b) be amended to read "Refund of direct expenditures made during the current and previous financial years";
- (vi) that 1965 National Research Reports be not published in the 1966 Annual Proceedings;
- (vii) that the tentative proposal of the Government of the United Kingdom to have the Eighteenth Annual Meeting of the Commission in London, England from 3 to 8 June 1968 be accepted with thanks when confirmed;
- (viii) that the Contracting Governments be billed for payments due under the 1966-67 administrative budget of the Commission in accordance with Article XI of the Convention, on 15 August 1966;
- (ix) that the Commission appropriate a sum of \$ Can. 87,010 from Contracting Governments to meet ordinary expenses and \$ Can. 2,000 from the Working Capital Fund to help defray travel expenses of members of an ICNAF Working Group on Joint Biological and Economic Assessment of Conservation Actions, for the fiscal year ending 30 June 1967, the appropriations to be used for the following purposes:

1. Personal Services	
(a) Salaries.....	\$ 48,646
(b) Superannuation.....	1,200
(c) Additional help.....	1,200
(d) Medical plan.....	300
2. Travel.....	6,664
3. Transportation.....	500
4. Communications.....	3,000
5. Publications.....	13,000
6. Other Contractual Services.....	4,000
7. Materials and Supplies.....	3,500
8. Equipment.....	1,000
9. Annual Meeting.....	3,000
10. Contingencies.....	1,000
Total Ordinary Expenditures...	\$ 87,010
Expenses of Working Group of biologists and economists (Working Capital Fund).....	\$ 2,000

- (x) that the Contracting Governments note for consideration at the Seventeenth Annual Meeting, the following advance budget estimate of \$ Can. 91,271 to meet the administrative expenditures for the fiscal year ending 30 June 1968:

1. Personal Services	
(a) Salaries.....	\$ 49,571
(b) Superannuation.....	1,200
(c) Additional help.....	1,200
(d) Medical plan.....	300
(e) Salary Contingencies.....	1,500
2. Travel.....	6,500
3. Transportation.....	500
4. Communications.....	3,000
5. Publications.....	12,000
6. Other Contractual Services.....	4,000
7. Materials and Supplies.....	3,500
8. Equipment.....	1,000
9. Annual Meeting.....	6,000
10. Contingencies.....	1,000
Total Ordinary Expenditures...	\$ 91,271

- (xi) that the Commission note the unanimous re-election of Mr R. W. Green of USA as Chairman of the Committee for the year ending 30 June 1967.

9. Report of the *ad hoc* Committee on Trawl Regulations (Items 10, 11, 12, 13, 14, 16)

The *ad hoc* Committee, under the chairmanship of Mr A. J. Aglen of UK, was assigned Plenary agenda item 12 on infringements to the Com-

mission's trawl regulations, items 10(b), 11, 13(a), and 13(b) on topside chafing gear, and items 14 and 16 on mesh measuring. In addition the Committee drafted amendments, for the Commission's approval, to pending trawl regulations for increase of minimum mesh size of trawl codend to 130 mm (manila) in Subarea 1.

(a) Infringements to international regulations for the trawl fishery

Returns from Contracting Governments relating to mesh size, mesh obstruction and excess landings for the year 1965 were reviewed by the Committee and adopted by the Commission.

(b) Topside chafing gear (topside codend protection)

The Committee examined evidence approved by the Standing Committee on Research and Statistics that a Polish topside chafer with a mesh size at least twice as large as the codend mesh size and a width at least as great as that of the codend had a negligible effect on codend selectivity. It noted that approval of the Polish type chafer would result in withdrawal of reservations to proposed Commission trawl regulations affecting topside chafing gear in use on stern trawlers by Poland, USSR, and the UK and permit early ratification of pending trawl regulations. Recommendations of the Committee adopted by the Commission were:

- (i) that the Polish-type topside chafer be adopted for the purpose of the Commission's recommendations regarding trawl regulations which had not yet entered into force and,
- (ii) that the specifications of the chafer be precisely recorded in readily available form, further,
- (iii) that other chafers previously approved by the Commission be retained and that scientific advice on which they are retained should be kept under review and,
- (iv) that the specifications of the topside chafer previously approved by the Commission be set out in a document that is readily accessible.

(c) Measurement of mesh of net

The Committee reviewed mesh measuring problems noting the importance of mesh definition and methods of measurement in international inspection arrangements and the general agreement at the 1965 Annual Meeting of the Commission that a standard mesh measuring device for both ICNAF and NEAFC was desirable. No agreement could be reached regarding adoption of the "simple" gauge, the ICES gauge or the ICNAF gauge as a standard gauge for international inspection. As a result the following recommendations were made and were adopted by the Commission:

- (i) that as a temporary arrangement until the time of the Seventeenth Annual Meeting, the Commission approve the ICES gauge and the simple gauge described in the Red-book for 1964, Part III, p. 145, as alternatives to the ICNAF gauge for the purpose of the 1964 recommendation now in force in Subarea 5 and any other recommendation which may come into force in other subareas;
- (ii) (a) that the method of use of the ICES gauge be the same *mutatis mutandis* as that laid down for the ICNAF gauge but under an applied pressure of 8.8 lb. (4 kg);
- (b) that the method of use of the simple gauge be that the gauge must pass easily through the meshes when wet after use;
- (iii) that the Commission reaffirm the approval of the mesh size equivalents set out in the 1964 Annual Proceedings Vol. 14, p. 17;
- (iv) that a Working Group in which all member countries may participate if they so wish, be set up to study the whole question of mesh definition and method of measurement in the light of further discussion in NEAFC of international inspec-

tion arrangements with a view to further consideration being given at the Seventeenth Annual Meeting to the question of adopting a single gauge of uniform application;

- (v) that arrangements be made by the Executive Secretary for a meeting of the Working Group in London immediately after the Special Meeting of NEAFC on International Control, 15-18 November 1966.

(d) Amendments to Trawl Regulations

The Committee noted the recommendation of Panel 1 to introduce a minimum mesh size for trawl codends of 130 mm (manila) in Subarea 1, to come into effect, if possible, on 1 June 1967, the date of the introduction of 130 mm mesh size in the adjoining NEAFC area (see Section 12 (a) (ii)).

The Committee noted the need for amendments in respect of Subarea 1 in certain of the proposals adopted by the Commission on 23 June 1961, 6 June 1964, and 12 June 1965 for amendment of the 1961 proposal, as well as the proposal for Codification of the 1961, 1963, 1964, and 1965 regulations adopted on 12 June 1965. Such amendments would provide for changes in the mesh size for Subarea 1 from 114 mm or 4 1/2 inches to 130 mm or 5 1/8 inches.

Recommendations of the Committee adopted by the Commission are summarized below:

- (i) that, as from 1 June 1967, or the date on which the proposal for regulation of the trawl fishery for groundfish in Subareas 1, 2, and 3 adopted by the Commission at its Eleventh Annual Meeting (Annual Proceedings Vol. 11, 1960-61, p. 15-17) comes into force, whichever date is later, the above-mentioned 1961 proposal for Subareas 1, 2, and 3 be amended to read:

"1. The Contracting Governments take appropriate action to prohibit (except as provided in paragraphs 2

and 3) the taking of groundfish by persons under their jurisdictions with trawl nets or seine nets (hereinafter called nets) having a mesh size less than 130 millimeters or 5 1/8 inches in Subarea 1, or less than 114 millimeters or 4 1/2 inches in Subarea 2 and 3, as measured by the ICNAF gauge specified in paragraphs (a) and (b) below. These mesh sizes relate to manila twine when measured wet after use or less than the equivalent thereof when measured dry before use. When nets other than manila are used, they shall have a selectivity equivalent to that of a manila trawl net of 130 millimeters or 5 1/8 inches in Subarea 1, or 114 millimeters or 4 1/2 inches in Subareas 2 and 3. For the purpose of this proposal the size of 130 millimeters or 5 1/8 inches in Subareas 1, or 114 millimeters or 4 1/2 inches in Subareas 2 and 3, when measured wet after use shall be taken to be:—

- (a) In the cod-end of the net, the average of the measurements of any fifty consecutive meshes running parallel to the long axis of the cod-end, beginning at the after end of the cod-end, and being at least ten meshes from the lacings, or, if the cod-end is less than 50 meshes in length, the average of the measurements of the meshes in any series of consecutive meshes running the full length of the cod-end, parallel to the long axis of the cod-end and at least ten meshes from the lacings, such measurements to be made with a flat wedge-shaped gauge having a taper of 2 cm in 8 cm and a thickness of 3/32 in or 2.3 mm, inserted into the meshes under a pressure of not less than 10 lb or 4.5 kg nor more than 15 lb or 6.8 kg and
- (b) In any part of the net other than the cod-end the average of the measurements of the meshes in any series of twenty consecutive meshes, such series to be at least ten meshes from the lacings, and such measurements to be made with a flat wedge-shaped gauge having a taper of 2 cm in 8 cm and a thickness of 3/32 in or 2.3 mm,

inserted into the meshes under a pressure of not less than 10 lb or 4.5 kg nor more than 15 lb or 6.8 kg.

2. The prohibition set out in paragraph 1 shall not apply to the taking of redfish (genus *Sebastes*) in the statistical division 3N, 3O and 3P of Subarea 3.

3. In order to avoid impairment of fisheries conducted primarily for redfish (genus *Sebastes*) in the area specified in paragraph 2 and which take small quantities of groundfish incidentally, the Contracting Government permit persons under their jurisdiction to take groundfish with nets having a mesh size less than that proposed in paragraph 1 so long as such persons do not have in possession on board a vessel fishing primarily for redfish, cod (together with other groundfish with the exception of haddock and redfish) or haddock (together with other groundfish with the exception of cod and redfish) in amounts in excess of 10% by weight for each of all fish on board such vessel.

4. The Contracting Governments prohibit the use, by any person to whom this proposal would apply, of any means or device, other than those described in paragraph 5, which would obstruct the meshes of the nets or which would otherwise, in effect, diminish the size of the meshes of the nets.

5. The Contracting Governments permit (1) any canvas, netting, or other material to be attached to the underside only of the cod-end of a net to reduce and prevent damage and (2) a rectangular piece of netting to be attached to the upper side of the cod-end of the net to reduce and prevent damage so long as such netting conforms to the following conditions:—

- (a) This netting shall not have a mesh size less than that specified in paragraph 1. For the purposes of this subparagraph, the mesh size of 130 millimeters or 5 1/8 inches in Subarea 1,

or 114 millimeters or 4 1/2 inches in Subareas 2 and 3, when measured wet after use shall be taken to be the average of the measurements of twenty consecutive meshes in a series across the netting, such measurements to be made with a like gauge inserted into the meshes as specified in paragraph 1 hereof.

- (b) This netting may be fastened to the cod-end only along the forward and lateral edges of the netting and at no other place in it and shall be fastened in such a manner that it extends forward of the splitting strap no more than 4 meshes and ends not less than 4 meshes in front of the codline mesh.
- (c) The width of this netting shall be at least one and a half times the width of the area of the cod-end which is covered, such widths to be measured at right angles to the long axis of the cod-end.

6. In these regulations groundfish shall include all those species defined as such in the Statistical Bulletin of ICNAF. Cod shall be defined as *Gadus morhua* L.; haddock as *Melanogrammus aeglefinus* (L.); and redfish as the genus *Sebastes*.

7. These provisions as regards mesh regulations shall be substituted for those at present in force in Subarea 3."

- (ii) that, as from 1 June 1967, or the date on which the proposal for regulation of the trawl fishery for groundfish in Subareas 1, 2, and 3 adopted by the Commission at its Fourteenth Annual Meeting (Annual Proceedings Vol. 14, 1963-64, p. 16) comes into force, whichever date is later, paragraph 1 of the above-mentioned 1964 proposal for Subareas 1, 2, and 3 be amended to read:

"1. The Contracting Governments take appropriate action to prohibit (except as provided in paragraphs 2 and 3) the taking of groundfish by

persons under their jurisdiction with trawl nets having in any part of the net meshes of dimensions less than 130 millimeters or 5 1/8 inches in Subarea 1, or less than 114 millimeter or 4 1/2 inches in Subareas 2 and 3, as measured by the ICNAF gauge specified in paragraphs (a) and (b) below. These mesh sizes relate to manila twine netting when measured wet after use or the equivalent thereof when measured dry before use. The Commission may, on the basis of scientific advice as to selectivity equivalents, determine the appropriate mesh sizes when trawl nets made of materials other than manila are used or when seine nets are used. The Commission may also, on the basis of scientific advice, approve not more than two alternative gauges, by defining the gauges, together with approved methods for their use and with accepted scales of equivalent mesh dimensions."

- (iii) that, as from 1 June 1967, or the date on which the proposal for regulation of the trawl fishery for cod, haddock, redfish, halibut, witch, American plaice, and Greenland halibut in Subarea 1 adopted by the Commission at its Fifteenth Annual Meeting (Annual Proceedings Vol. 15, 1964-65, p. 17-18) come into force, whichever date is later, paragraph 1 of the above-mentioned 1965 proposal for Subarea 1 be replaced by the following with the understanding that paragraphs 1 (a) and 1 (b) will follow and remain part of the new regulation:

"1. The Contracting Governments take appropriate action to prohibit the taking of cod (*Gadus morhua* L.); haddock (*Melanogrammus aeglefinus* (L.)); redfish (*Sebastes*); halibut (*Hippoglossus hippoglossus* (L.)); witch (*Glyptocephalus cynoglossus* (L.)); American plaice (*Hippoglossoides platessoides* (Fab.)); and Greenland halibut (*Reinhardtius hippoglossoides* (Walb.)); in Subarea 1 by persons under their jurisdiction with trawl nets having in any part

of the net meshes of dimensions less than 130 millimeters or 5 1/8 inches in Subarea 1, as measured by the ICNAF gauge specified in paragraphs (a) and (b) below. These mesh sizes relate to manila twine netting when measured wet after use or the equivalent thereof when measured dry before use. The Commission may, on the basis of scientific advice as to selectivity equivalents, determine the appropriate mesh sizes when trawl nets made of materials other than manila are used or when seine nets are used. The Commission may also, on the basis of scientific advice, approve not more than two alternative gauges, by defining the gauges, together with approved methods for their use and with accepted scales of equivalent mesh dimensions."

- (iv) that, as from 1 June 1967, or the date on which the proposal for Codification of the trawl fishery regulations for cod, haddock, redfish, halibut, witch, American plaice and Greenland halibut in Subarea 1 adopted by the Commission at its Fifteenth Annual Meeting (Annual Proceedings Vol. 15, 1964-65, p. 19-21) come into force, whichever date is later, the above-mentioned 1965 codification proposal for Subarea 1 be amended to read:

"1. The Contracting Governments take appropriate action to prohibit the taking of cod (*Gadus morhua* L.); haddock (*Melanogrammus aeglefinus* (L.)); redfish (*Sebastes*); halibut (*Hippoglossus hippoglossus* (L.)); witch (*Glyptocephalus cynoglossus* (L.)); American plaice (*Hippoglossoides platessoides* (Fab.)); and Greenland halibut (*Reinhardtius hippoglossoides* (Walb.)); in Subarea 1 by persons under their jurisdiction with trawl nets having in any part of the net meshes of dimensions less than 130 millimeters or 5 1/8 inches as measured by the ICNAF gauge specified in paragraphs (a) and (b) below. These mesh sizes relate to manila twine netting when measured

wet after use or the equivalent therefore when measured dry before use. The Commission may, on the basis of scientific advice as to selectivity equivalents, determine the appropriate mesh sizes when trawl nets made of materials other than manila are used or when seine nets are used. The Commission may also, on the basis of scientific advice, approve no more than two alternative gauges, by defining the gauges, together with approved methods for their use and with accepted scales of equivalent mesh dimensions."

- (a) In the cod-end of the net, the average of the measurements of any fifty consecutive meshes running parallel to the long axis of the cod-end, beginning at the after end of the cod-end, and being at least ten meshes from the lacings, or, if the cod-end is less than 50 meshes in length, the average of the measurement of the meshes in any series of consecutive meshes running the full length of the cod-end, parallel to the long axis of the cod-end and at least ten meshes from the lacings, such measurements to be made with a flat wedge-shaped gauge having a taper of 2 cm in 8 cm and a thickness of 3/32 in or 2.3 mm, inserted into the meshes under a pressure of not less than 10 lb or 4.5 kg nor more than 15 lb or 6.8 kg and
- (b) In any part of the net other than the cod-end, the average of the measurements of the meshes in any series of twenty consecutive meshes, such series to be at least ten meshes from the lacings, and such measurements to be made with a flat wedge-shaped gauge having a taper of 2 cm in 8 cm and a thickness of 3/32 in or 2.3 mm, inserted into the meshes under a pressure of not less than 10 lb or 4.5 kg nor more than 15 lb or 6.8 kg.

"2. The Contracting Governments prohibit the use, by any person to whom this proposal would apply, of any means or device, other than those described in paragraph 3, which

would obstruct the meshes of the nets or which would otherwise, in effect, diminish the size of the nets, provided that devices may be attached to the upper side of the cod-end in such a manner that they will not obstruct the meshes of the cod-end. Any such device must have the approval of the Commission based on scientific advice that the attached devices do not obstruct the meshes or reduce significantly the selectivity of the cod-end. Any approval so given may be withdrawn at any time on giving not less than twelve months' notice to the contracting government."

"3. The Contracting Governments permit any canvas, netting or other material to be attached to the underside only of the cod-end of a net to reduce and prevent damage."

10. Report of the Meetings of Commissioners (Items 10, 15, 16, 17, 19)

The Commissioners met 6, 7, 8, and 10 June 1966 under the chairmanship of Mr T. A. Fulham of USA to consider items assigned at the first Plenary Session. Reports of the meetings of Commissioners were adopted by the Commission at its final Plenary Session.

(a) International control

The Commissioners were pleased to note the Portuguese-Spanish exchange of inspection teams in May 1966 as a means of gaining further experience by member countries of each other's enforcement procedures and problems for use in future considerations of possible international inspection systems. Proposals for an exchange of inspection teams were agreed to in principal between Canada and France, and Canada and Poland during the 1966-67 season. Canada offered to provide transportation in the Convention area for the exchange of inspection teams from member countries with limited accomodation on fishing vessels.

In reviewing the possibilities for international inspection, the Commissioners agreed that, since many countries are members of both NEAFC and ICNAF, any system developed

should be common to the whole North Atlantic. The Commissioners noted the reports of the NEAFC Special Committee on International Control and the Fourth Meeting of NEAFC which agreed that a special meeting of NEAFC should be held in November 1966 to include Canada, USA, and Italy, the non-NEAFC countries, to settle a number of outstanding questions. The Commissioners agreed that one of the most important problems for solution in any form of international inspection scheme was measuring the mesh of net and they were, therefore, pleased to endorse the recommendation of the *ad hoc* Committee on Trawl Regulations that an ICNAF Working Group should meet in London immediately after the NEAFC special meeting on International Control to study the whole question of mesh definition and method of measurement (Section 9(c) (iv) and (v)).

(b) Possible conservation actions

The Commissioners continued consideration of the problem of management of the Northwest Atlantic fisheries in the face of increasing fishing activity which despite mesh regulations is already approaching or even beyond the level giving maximum sustained yield for the main cod and haddock stocks.

The Commissioners had before them the review of the possible conservation measures for the ICNAF area presented at the 1965 Annual Meeting of the Commission (Annu. Proc. Vol. 15, p. 47-56) which recommended that in addition to mesh regulations some limitation of effort or catch was required. It also had a memorandum from the UK Commissioners on the regulation of fishing effort (Commissioner's Document 66/17) and the result of its consideration by NEAFC in whose area the practical difficulties are also applicable. The Commissioners also had before them the report of an FAO Study Group on Economic Aspects of Fishery Management (Research Document 66/19) which met in September 1966 with the support of the Commission. Commissioners also heard and discussed with a foremost fishery economist, Dr James A. Crutchfield of the University of Washington, Seattle, USA, economic factors and analysis as an essential part of efficient solutions to the utilization and management of the fisheries in the Convention area (ICNAF Document Serial No. 1757).

Following considerable discussion in which the proposals of the Standing Committee on Research and Statistics for a joint assessment by the biologists and economists of the effects of possible conservation actions in the Convention area (Section 11 (a) (v)) were carefully considered, the Commissioners agreed to **recommend**

- (i) that, with respect to the recommendations of R & S for the establishment of an *ad hoc* group, including biologists and economists, the Commission resolves that the group carry out an examination of the problems of assessing the economic effects of possible conservation measures in time for the Seventeenth Annual Meeting of the Commission. The group will be expected to utilize available biological and economic information and to supplement this by clearly stated assumptions in order to estimate the likely economic effects of possible conservation measures, taking into account the possible redistribution of fishing effort.
- (ii) that the Commission express the hope that member countries will give further consideration to the problems involved in limiting fishing effort so that the Commission at its Seventeenth Annual Meeting will be able to review the whole matter in the light of the results of the work of the *ad hoc* group, and will be able to decide what further actions should be taken.

(c) Fishing and navigation practices

The Commissioners reviewed the Report of the Fisheries Policing Conference, 1966 and noted that the Conference gave provisional agreement to some of the draft Convention Articles and would meet again in London, 17-29 October 1966 to complete adoption of a Convention. The Commissioners agreed to take note of the Conference report and to follow closely the progress of the Conference.

11. Report of the Standing Committee on Research and Statistics (Items 13, 14, 17, and 20)

The Committee met under the chairmanship of Dr W. Templeman of Canada and with Mr B. B. Parrish of UK as rapporteur, from 30 May to 3 June. The Joint ICES/ICNAF Working Party on North Atlantic Salmon met 25-26 May, the Assessment Subcommittee, 27-28 May and the Working Group on West Greenland Cod, 30 May 1966. Further meetings of the Standing Committee were held from 6-10 June 1966.

The reports of the Standing Committee and its Subcommittees are contained in ICNAF Redbook 1966, Part I. The reports were adopted by the Commission at its final Plenary Session and are summarized below.

(a) Assessments

The Assessments Subcommittee reported:

- (i) that the landings and fishing activity in the ICNAF area in 1965 confirm the trend reported for 1964 toward higher exploitation in the traditional fisheries for cod in Subarea 2 and haddock in Subareas 4 and 5 and continued rapid development of fisheries in the southern part of the area on species which had previously been of relatively minor importance.
- (ii) that fishing intensity in the cod fisheries in Subarea 2 especially on the stocks in Div. 2J and the northern Div. of Subarea 3 is, in 1965 along with the fishing intensities for cod in the other subareas as reported last year, approaching or may even be beyond the level giving the maximum sustained yield per recruit. For haddock, large increases in landings in Subareas 4 and 5 in 1965, despite earlier assessments that the fishing intensity on haddock is approaching or may even be beyond the maximum sustained yield, are temporary and are due to a rapid and

substantial increase in fishing intensity which if maintained will cause catches to fall to a level less than the maximum sustained yield.

- (iii) that long-term gains in catches of West Greenland cod could be expected in Subarea 1 as a whole both from the closure of Div. 1B to trawlers alone (4%) or to all forms of fishing (7%) and from an increase in size of mesh of codend to 150 mm either alone (7%) or together with closure (12%) (see also Section 12 (a)).
- (iv) that a report based on a study of state of the stocks of Atlantic salmon and the effects of the West Greenland fishery on salmon catches in the North Atlantic would be presented to the 1966 Meeting of ICES and the 1967 Meeting of ICNAF by a joint ICES/ICNAF Working Party on North Atlantic Salmon.
- (v) that a joint assessment by biologists and economists of the effects of possible conservation actions in the Convention area should be made in collaboration with any other appropriate international body willing to contribute for submission to the Commission at its 1967 Annual Meeting.

(b) **Statistics and sampling**

The Committee approved the report of the Statistics and Sampling Subcommittee, endorsing its view that there is an urgent need for collecting catch and fishing effort statistics for main ICNAF species in the region between the southern boundaries of the Convention area and Cape Hatteras and that the ICES/ICNAF/FAO Continuing Working Party on Fishery Statistics in the North Atlantic Area (CWP) should advise on the introduction of a suitable inter-agency statistical reporting scheme for these waters for consideration at the 1967 Annual Meeting of the Commission. The Committee also endorsed recommendations regarding a joint North Atlantic vessel list, items concerning the STANA report-

ing system, the reporting of statistics of discards from commercial catches, the collection of statistics for long range factory trawlers, common and scientific names of species, and reporting of age-length key data.

(c) **Gear and selectivity**

The Committee approved the report of the Subcommittee and noted that further selectivity data for codends made from polypropylene, polyethylene, and polyamide fibres showed that the difference in selectivity between them were 10% or less though the results for polyethylene were variable; that information on trawl materials and codend mesh sizes in use in the Convention area should be collected annually and summarized and published in the ICNAF Redbook every third year; that the list of trade names of twines used in fishing gears should be revised every 2 years. The Committee approved a recommendation based on scientific evidence available that a Polish-designed topside chafter which has a mesh size at least twice as large as the codend mesh size and a width at least as great as that of the codend, has a negligible effect on codend selectivity.

(d) **Environmental studies**

The Committee noted that the proposed plans for a Georges Bank Survey will be revised in the light of limited research vessel facilities likely to be available; that efforts will be made to ensure that physical oceanographers and marine meteorologists working in the fishery research field attend future meetings of the Committee. The Committee approved steps to have appropriate experts provide a synthesis of hydrographic and meteorological fluctuations in the Convention area in recent years and report to its 1967 meeting.

(e) **Herring and other pelagic species**

The Committee approved the report of the Subcommittee and noted that Canada, Poland, and the USA will exchange herring otoliths to compare ageing techniques.

(f) **Publications and other matters**

The Committee recommended the following items on publications from the various subcommittees:

- (i) that the Commission now assume a total of \$550 as its one-third share of the cost of preparation and publication of the FAO/ICES ICNAF Joint Index of North Atlantic Publications.
- (ii) that the Assessments Subcommittee meet on 25-26 May 1967, the Statistics and Sampling Subcommittee on 26-27 May 1967, the Steering and Publications Subcommittee on 28 May 1967 and the Standing Committee on Research and Statistics meet from 29 May to 2 June 1967 prior to the 1967 Annual Meeting of the Commission.
- (iii) that Dr H. A. Cole of UK represent the Commission at the 1966 meeting of ICES and that Mr A. Lee of UK represent the Commission at the forthcoming meetings of the Scientific Committee on Oceanic Research (SCOR) and the Intergovernmental Oceanographic Commission (IOC).

The Committee unanimously re-elected Dr W. Templeman of Canada its Chairman for the ensuing year.

12. Reports of the Meetings of Panels

(Items 4, 10, 17, 18, 22)

The Commission received the reports of Panels 1-5. The status of the fisheries, research carried out, and plans for future research were reviewed by each panel based on reports by its group of scientific advisers. In addition, the Commission received the report of the first meeting of the Commission's newly-authorized panel on harp and hood seals (Panel A).

- (a) **Panel 1.** The panel, under the Chairmanship of Dr H. A. Cole of UK considered the draft of a report by the ICES/ICNAF Joint Working Party on North Atlantic Salmon and **recommended**

- (i) that the ICES/ICNAF Joint Working Party on North At-

lantic Salmon continue its studies and be given the necessary support to enable it to do so and to present a further agreed report at the 1967 Annual Meeting of the Commission.

The panel considered the final report of the West Greenland Cod Working Group regarding further protective measures for small cod at West Greenland and the effects of a possible closure of Store Hellefiske

Bank. It also considered the relevant section of the report of the Standing Committee on Research and Statistics (see p. 25). The panel **recommended**

- (ii) that a minimum mesh size for trawl codends of 130 mm (manila) be introduced in Subarea 1, to come into effect, if possible, on 1 June 1967, the date of the introduction of 130 mm-mesh size in the adjoining NEAFC area.

- (b) **Panel 2.** The panel, under the Chairmanship of Mr A. J. Aglen of UK, **noted** the marked increase in landings of Subarea 2 cod from 213,000 tons in 1964 to 333,000 tons in 1965 and the increase in fishing activity which has occurred mainly in Div. 2J. It **noted** from the Assessment Subcommittee report, that the fishing intensity in the Subarea has now approached or is even beyond the level giving the maximum sustained yield and endorsed the recommendations for more intensive research on definition of the cod stock, on the mortality rates, growth rates, and recruitment, as well as environmental factors and their influence on cod in the Subarea.

- (c) **Panel 3.** The panel, under the Chairmanship of Dr O. Rodriguez Martin of Spain, **noted** that the cod catch decreased from an all-time high of 581,000 tons in 1964 to

496,000 tons in 1965, haddock catches were down 25% to 9,000 tons while redfish catches continued to increase steadily from 61,000 tons in 1962 to 112,000 tons in 1965. The panel noted that landings by Spanish pair trawlers for the first time exceeded those by Spanish otter trawlers and that technical changes were being made in Spanish fishing vessels to simplify changing from one type of fishing to the other.

- (d) **Panel 4.** The panel, under the Chairmanship of Mr R. Letaconoux of France, **noted** that, while cod catches remained stable, haddock catches increased from 60,000 tons in 1964 to 85,000 tons due entirely to increased USSR landings in the second half of 1965 after the catches of silver hake declined. The panel endorsed the recommendations for study of the changes in the character of the haddock fishery, for re-assessment of the cod fishery in Div. 4T, for further studies on the selectivity of the Polish topside chafing gear, for further research on the possible effect of Greenland salmon fishing on salmon fishery in Subarea 4 and a taxonomic study of the hakes in Subarea 4.
- (e) **Panel 5.** The panel, under the Chairmanship of Mr V. M. Kamentsev of USSR, noted that haddock catches more than doubled to 155,000 tons well above the calculated maximum sustained yield of 55,000 tons, due almost entirely to increased USSR catches. Recruitment to the fishery was well above average and mainly from the successful 1963 year-class. In view of the above and indications that the 1964 and 1965 year-classes are very small, the panel welcomed plans for detailed studies of future effects on the Georges Bank haddock stocks. The panel was pleased to note that despite an increase in catch of over 100,000 tons to 323,000 tons the silver hake stocks seemed to be in a

good state. The panel noted that the 1964 amendment to paragraph 1 of the ICNAF trawl regulations for cod and haddock in Subarea 5 which defines mesh size with standard gauges and net twine and provides for adoption of equivalent mesh sizes for alternate gauges and other net twine, had entered into force on 21 October 1965. After discussion, the panel adopted a **recommendation** to accept for Subarea 5 regulations for cod and haddock the table of mesh-size equivalents for nets made of different materials and measured by different gauges as published on p. 17 of the Commission's Annual Proceedings, Vol. 14 for the year 1963-64, Part 2, Section 9 (x). The panel **noted** the intention of the USSR, USA, UK, and Canada to produce a revised plan for an Environmental Survey of the Georges Bank-Gulf of Maine area for consideration at the 1967 meeting of the Research and Statistics Committee.

- (f) **Panel A (Harp and Hood Seals).** The panel, under the Chairmanship of Dr A. W. H. Needler of Canada, met for the first time with representation from Canada, Denmark, and Norway. It agreed that each member country would prepare summary papers of research, statistics, and domestic regulations relating to the harp and hood seal fisheries in the Northwest Atlantic and circulate these to the other member countries for review not later than September. It was agreed that no proposals for conservation measures and requirements could be made at this time and that the next meeting of the panel should be held in the autumn of 1966 at a convenient time and place.

13. Relations with Other International Organizations (Items 23 and 24)

The Commission continued its cooperation and exchange of information on problems of mutual concern related to the development of sound management programs and practices in

international fisheries in general and the North-west Atlantic fisheries in particular. Reports of the FAO Department of Fisheries, the ICES Liaison Committee to NEAFC and other internal Committees of ICES, the Fisheries Policing Conference, the Fourth Meeting of NEAFC, the Annual Meeting of INPEC and the 1965 meeting of ICES.

Mr A. J. Lee of the UK was appointed Commission observer at the 1966 meetings of IOC and SCOR; Dr H. A. Cole of the UK observer to the 1966 ICES Meeting.

14. Acknowledgement and Adjournment (Items 25 and 27)

The Chairman thanked the observers from

Japan, FAO, GFCM, ICES, IPHC, INPFC, NEAFC, OECD, and SCOR for their interest in and contributions to the Commission's problems. He expressed the best thanks of the Commission and its delegates and participants to the government of Spain for the meeting facilities and excellent hospitality and congratulated the scientists for their continuing efforts in the best interest of the Commission.

There being no other business, the Chairman declared the Sixteenth Annual Meeting of the Commission adjourned at 8:30 p.m., 10 June 1966.

APPENDIX I LIST OF PARTICIPANTS

CANADA

Commissioners:

Dr A. W. H. Needler, Department of Fisheries, Ottawa, Ontario.
Mr H. D. Pyke, P. O. Box 867, Lunenburg, Nova Scotia.

Advisers:

Mr K. R. Allen, Fisheries Research Board of Canada, St. Andrew's, New Brunswick.
Dr L. M. Dickie, Fisheries Research Board of Canada, Dartmouth, Nova Scotia.
Dr J. L. Hart, Fisheries Research Board of Canada, St. Andrew's, New Brunswick.
Mr R. E. S. Homans, Department of Fisheries, Halifax, Nova Scotia.
Mr S. G. Lake, H. B. Clyde Lake Ltd., Burgeo, Newfoundland.
Mr G. LeBlanc, Quebec United Fishermen, Montreal, Quebec.
Dr A. W. May, Fisheries Research Board of Canada, St. John's, Newfoundland.
Dr F. D. McCracken, Fisheries Research Board of Canada, St. Andrews, New Brunswick.
Mr W. C. MacKenzie, Department of Fisheries, Ottawa, Ontario.
Dr W. M. Sprules, Department of Fisheries, Ottawa, Ontario.
Dr W. Templeman, Fisheries Research Board of Canada, St. John's, Newfoundland.

DENMARK

Commissioners:

Dr P. M. Hansen, Grønlands Fiskeriundersøgelse, Charlottenlund.
Mr J. H. Lassen, Ministry for Greenland, Copenhagen.
Mr K. Løkkegaard, Ministry of Fisheries, Copenhagen.

Advisers:

Mr Sv. Aa. Horsted, Grønlands Fiskeriundersøgelse, Charlottenlund.
Dr E. M. Poulsen, Danmarks Fiskeri-og Havundersøgelse, Charlottenlund.
Dr E. Smidt, Grønlands Fiskeriundersøgelse, Charlottenlund.

FRANCE

Commissioners:

Mr J. Furnestin, Institut des Pêches Maritimes, Paris.
Mr R. Lagarde, Ministère de la Marine Marchande, Paris.

Adviser:

Mr R. Letaconnoux, Institut des Pêches Maritimes, Paris.

FEDERAL REPUBLIC OF GERMANY

Commissioners:

Dr G. Meseck, Bundesministerium für Ernährung, Landwirtschaft und Forsten, Bonn.
Mr G. Möcklinghoff, Bundesministerium für Ernährung, Landwirtschaft und Forsten, Bonn.

Advisers:

Dr H. Bohl, Institut für Fangtechnik, Bundesforschungsanstalt für Fischerei, Hamburg.
Dr J. Genschow, German Trawler Owners' Federation, Bremerhaven.
Dr. J. Messtorff, Institut für Seefischerei, Bundesforschungsanstalt für Fischerei, Bremerhaven.
Dr A. Meyer, Institut für Seefischerei, Bundesforschungsanstalt für Fischerei, Hamburg.

ICELAND

Commissioner:

Dr J. Jónsson, Marine Research Institute, Reykjavik.

ITALY

Commissioners:

Dr G. Cannone, Ministero de la Marina Mercantile, Rome.
Dr G. Meglio, Ministero de la Marine Mercantile, Rome.

NORWAY

Commissioners:

Mr Carl Bjørge, Ministry of Fisheries, Oslo.
Mr Olav Lund, Directorate of Fisheries,
Bergen.

Advisers:

Mr E. Bratberg, Institute of Marine Research, Bergen.
Mr P. Karlsen, Brandal via Aalesund.
Dr B. Rasmussen, Institute of Marine Research, Bergen.
Mr H. Rasmussen, Norges Fiskarlag, Trondheim.

POLAND

Commissioners:

Dr F. Chrzan, Sea Fisheries Institute, Gdynia.
Mr J. Soltan, Fisheries Central Board, Warsaw.

Adviser:

Mr Z. Polanski, Sea Fisheries Institute, Gdynia.

PORTUGAL

Commissioner:

Captain Tavares de Almeida, Comissão Consultiva Nacional das Pescarias do Noroeste do Atlântico, Lisbon.

Adviser:

Dr R. Monteiro, Instituto de Biologia Marítima, Lisbon.

SPAIN

Commissioners:

Mr I. del Cuvillo y Merello, Dirección General de Pesca Marítima, Madrid.
Mr J. Cabrero y Torres-Quevedo, Dirección de Organismos Internacionales, Madrid.
Dr O. Rodríguez Martín, Dirección General de Pesca Marítima, Madrid.

Advisers:

Mr G. Bauer, Federación de Armadores de Altura, Madrid.
Mr O. Cendrero Uceda, Instituto Español de Oceanografía, Santander.

Mr J. Corral Estrada, Instituto Español de Oceanografía, Madrid.

Dr J. Cuesta Urcelay, Instituto Español de Oceanografía, Madrid.

Mr P. Díaz de Espada, PYSBE en representación de la flota de Trawlers, San Sebastián.

Dr S. Figueras Monfort, Instituto de Investigaciones Pesqueras, Viho.

Dr F. Lozano Cabo, Instituto Español de Oceanografía, Madrid.

Mr R. Robles Pariente, Instituto Español de Oceanografía, Madrid.

Mr A. Serrats Urquiza, Pescadería, San Sebastián.

Mr M. Torre Corvigón, Instituto Español de Oceanografía, Madrid.

UNION OF SOVIET SOCIALIST REPUBLICS

Commissioners:

Mr V. M. Kamentsev, Ministry of Fisheries of the USSR, Moscow.

Dr S. A. Studentsky, Atlantic Research Institute of Marine Fisheries and Oceanography (ATLANTNIRO), Kaliningrad.

Advisers:

Dr A. Alexeev, Polar Research Institute of Marine Fisheries and Oceanography, (PINRO), Murmansk.

Mr A. A. Volkov, Ministry of Fisheries, Moscow.

Mr L. M. Zheltov, Ministry of Fisheries, Moscow.

UNITED KINGDOM

Commissioners:

Mr A. J. Aglen, Department of Agriculture and Fisheries for Scotland, Edinburgh.

Dr H. A. Cole, Fisheries Laboratory, Lowestoft.

Mr B. B. Parrish, Marine Laboratory, Aberdeen.

Advisers:

Mr J. A. Gulland, Fisheries Laboratory, Lowestoft.

Mr A. J. Lee, Fisheries Laboratory, Lowestoft.

Mr B. E. Sealey, Chr. Salvesen & Co. Ltd., Grimsby.

UNITED STATES**Commissioners:**

- Dr S. A. Cain, Department of the Interior,
Washington, D.C.
Mr T. A. Fulham, 220 Northern Avenue,
Boston, Massachusetts.
Mr R. W. Green, Department of Sea and
Shore Fisheries, Augusta, Maine.

Advisers:

- Mr A. W. Anderson, American Embassy,
Copenhagen, Denmark.
Mr G. J. Davidson, Federated Fishing Boats,
Fish Pier, Boston, Massachusetts.
Mr J. J. Dykestra, Point Judith Fishermen's
Coop., Narragansett, Rhode Island.
Mr J. T. Gharrett, Bureau of Commercial
Fisheries, Gloucester, Massachusetts.
Dr H. W. Graham, Bureau of Commercial
Fisheries, Woods Hole, Massachusetts.
Mr R. Kershaw, Gloucester Whiting Associa-
tion, Gloucester, Massachusetts.
Mr D. L. McKernan, Bureau of Commercial
Fisheries, Washington, D.C.
Mr J. A. Posgay, Bureau of Commercial
Fisheries, Woods Hole, Massachusetts.
Mr A. M. Sandberg, American Embassy,
Copenhagen, Denmark.
Mr J. B. Skerry, Bureau of Commercial
Fisheries, Gloucester, Massachusetts.
Mr B. E. Skud, Bureau of Commercial
Fisheries, Boothbay Harbour, Maine.
Mr W. L. Sullivan, Jr., Department of State,
Washington, D.C.
Mr J. H. Wedin, 5202 New Senate Office,
Washington, D.C.
Mr D. Windley, Office of International Re-
lations, Department of the Interior, Wash-
ington, D.C.

**ICES/ICNAF WORKING PARTY ON
NORTH ATLANTIC SALMON**

- Mr J. A. Gulland, UK, Chairman
Mr K. R. Allen, Canada.
Dr W. Templeman, Canada.
Dr P. M. Hansen, Denmark.
Mr Sv. Aa. Horsted, Denmark.
Dr A. E. J. Went, Eire.
Mr L. Rosseland, Norway.
Dr B. Carlin, Sweden.
Mr I. R. H. Allan, UK.
Mr K. A. Pyefinch, UK.
Mr B. E. Skud, USA.

JAPAN**Observers:**

- Mr Y. Uchimura, Embassy of Japan, 46
Grosvenor St., London W. 1, England.
Mr S. Ueda, Taiyo Gyogyo Kaisha Ltd.,
5 Fenchurch St., London E.C. 3, England.

**FOOD AND AGRICULTURE ORGANIZA-
TION OF THE UNITED NATIONS****Observers:**

- Mr L. K. Boerema, Fisheries Department,
FAO, Rome, Italy.
Mr L. P. D. Gertenbach, Fisheries Depart-
ment, FAO, Rome, Italy.
Mr R. S. Holliman, Fisheries Department,
FAO, Rome, Italy.
Mr F. E. Popper, Fisheries Department,
FAO, Rome, Italy.

**GENERAL FISHERIES COUNCIL OF THE
MEDITERRANEAN****Observer:**

- Dr O. Rodríguez Martín, Dirección General
de Pesca Marítima, Madrid, Spain.

**INTERNATIONAL COUNCIL FOR THE EX-
PLORATION OF THE SEA****Observer:**

- Dr H. A. Cole, Fisheries Laboratory, Lowe-
stoft, England.

**INTERNATIONAL PACIFIC HALIBUT
COMMISSION****Observer:**

- Dr W. M. Sprules, Department of Fisheries,
Ottawa, Canada.

**INTERNATIONAL NORTH PACIFIC FISH-
ERIES COMMISSION****Observer:**

- Dr A. W. H. Needler, Department of Fisher-
ies, Ottawa, Canada.

NORTH-EAST ATLANTIC FISHERIES COMMISSION

Observer:

Mr G. Möcklinghoff, Bundesministerium für
Ernährung, Landwirtschaft und Forsten,
Bonn, Germany.

ORGANISATION FOR ECONOMIC CO- OPERATION AND DEVELOPMENT (OECD)

Observer:

Mr P. L. C. Adam, Fisheries Division,
OECD, Paris, France.

SCIENTIFIC COMMITTEE ON OCEANIC RESEARCH

Observer:

Mr A. J. Lee, Fisheries Laboratory, Lowe-
stoft, England.

CONSULTANT

Dr J. A. Crutchfield, University of Washing-
ton, Seattle, Washington, USA.

SECRETARIAT

Mr L. R. Day, Executive Secretary.
Dr B. J. Kowalewski, Assistant Executive
Secretary.
Miss J. Maclellan, Secretary.
Miss G. Schrader, Clerk-Stenographer.

SECRETARIAL ASSISTANTS

Miss M. J. Collado.
Miss M. García Queipo de Llano.
Miss C. Pardo de Santayana.
Miss N. F. Rueda Escardó.
Miss L. Samperio.
Mrs W. F. Small.
Mrs L. Tunstall.
Mr J. Valverde.

PUBLIC RELATIONS

Mr J. Barceló.
Mr J. Tapia.
Mr J. Vicente Jordana.

APPENDIX II AGENDA

PROCEDURES

1. Opening.
2. Agenda.
3. Publicity.

ADMINISTRATION

4. Panel Memberships.
5. Administrative Report.

FINANCE

6. Auditor's Report (to 30 June 1965).
7. Financial Statement, 1965-66 (preliminary).
8. Budget estimate 1966-67.
9. Budget forecast 1967-68.

COMMISSION PROPOSALS

10. Status of proposals adopted by Commission,
 - (a) for changes in Convention,
 - (b) for regulation of fisheries.
11. Consideration of possible actions to eliminate obstructions to the Commission's conservation proposals.

TRAWL REGULATIONS

12. Annual Returns of infringements to ICNAF trawl regulations.
13. Codend protection,
 - (a) Reports on selectivity of various types of topside codend protection devices,
 - (b) Reports of developments which would eliminate the need for topside codend protection devices.
14. Mesh measuring.

ENFORCEMENT

15. Reports of further exchanges of national inspection teams.
16. Further consideration of the form an international inspection system should take.

CONSERVATION

17. Consideration of further contributions to the problem of possible conservation actions for the ICNAF area, including the report of the FAO meeting on Economic Aspects of Fishery Regulations, 27-28 September 1965.
18. Harp and hood seals.

FISHING PRACTICES

19. Fishing and navigation practices.

REPORTS OF COMMITTEES AND PANELS

20. Report of Standing Committee on Research and Statistics.
21. Report of Standing Committee on Finance and Administration.
22. Report of Panels.

INTERNATIONAL COOPERATION

23. Reports by Commission observers.
24. Appointment of Commission observers.

OTHER MATTERS

25. Other business.
26. Date and place of 1968 Annual Meeting.
27. Adjournment.

PART 3

Summaries of Research and Status of Fisheries by Subareas, 1965

The following summaries were prepared from the research reports and other pertinent documents submitted to the 1966 Annual Meeting of the Commission from each member country. The summaries were prepared by the Chairmen of the Groups of Scientific Advisers to the Panels administering the work of the Commission in the subareas. These Chairmen were:

for Subarea 1 — P. M. Hansen (Denmark)

for Subarea 2 — A. W. May (Canada)

for Subarea 3 — H. W. Graham (USA)

for Subarea 4 — J. L. Hart (Canada)

for Subarea 5 — S. A. Studenetsky (USSR)

Subarea 1

Reports on researches in 1965 were submitted by a non-member country and the following countries: Canada, Denmark, Federal Republic Germany, Iceland, Norway, Poland, Portugal, Spain, USSR, and UK.

1. Status of the Fisheries

The total catch of all species was 412,000 metric tons (tons), a decrease of about 7,000 tons from 1964. Denmark (Faroes) took 66,000 tons (66,000 in 1964), Denmark (Greenland) 37,000 tons (40,000 in 1964), France 40,000 tons (35,000 in 1964), Fed. Rep. Germany 126,000 tons (130,000 in 1964), Iceland 5,000 tons (5,000 in 1964), Norway 34,000 tons (35,000 in 1964), Poland 45 tons (95 in 1964), Portugal 61,000 tons (53,000 tons in 1964), Spain 650 tons (743 tons in 1964), USSR 1,000 tons (nil in 1964), UK 15,000 tons (29,000 in 1964), and non-member countries 18,000 tons (22,000 tons in 1964).

Cod catches increased to 358,000 tons from 350,000 tons in 1964. The inshore fishery by the Greenlanders gave better catches (66,000 tons) than in 1964. Good pound net catches of small cod were obtained from May to June in Divisions 1B, 1C, and 1D. In Div. 1B the catches were filleted. In Div. 1C and 1D the greater part was used for the production of fish meal. The inshore longline and handline fisheries were also better than in 1964. Offshore fisheries were carried out by all the countries mentioned above except Canada. Catches by Poland, Spain, and USSR were insignificant. Federal Republic Germany, Norway, and UK had decreases in catch

while Portugal and Iceland had increases in catch. The catch by Fed. Rep. Germany also decreased off Southeast Greenland.

Redfish catches decreased by 9,000 tons to 21,000 tons in 1965. Catches by the Fed. Rep. Germany alone decreased by about 8,000 tons.

Salmon catches by the Greenlander's inshore gillnet fishery were only about one-half of the 1,400 tons taken in 1964. A Norwegian and Faroese vessel fished offshore with drift nets. The former ceased fishing early after poor catches while the latter caught 40 tons of high quality salmon.

2. Work Carried Out

a. Canada: R/V *A. T. Cameron*, 10 July–25 August. Oceanographic work in the Davis Strait. Plankton collections by 2-m stramin net. Collection of fish larvae. Sampling of material for studies of cod and redfish. Deep trawling and longlining experiments on the slopes of the banks. Drift net fishing for salmon was carried out in August. Catch, 33 salmon.

b. Denmark: R/V *Adolf Jensen*, Faroese trawler *Skalaberg* (R/V *Dana* not available owing to refit). Hydrographic work on offshore banks limited owing to lack of *Dana*. Hydrographic work in inshore waters especially at fixed stations in Div. 1D. Sampling of cod for age and length studies and tagging of cod and redfish. Salmon tagging on sampling of material for salmon studies in collaboration with Scottish experts.

c. Federal Republic Germany: R/V *Walther Herwig*, R/V *Anton Dohrn* and commercial trawlers. Hydrographic work in the Davis Strait and off Southeast Greenland. Sampling of cod. Cod tagging off West and East Greenland. Trawling in deep water.

d. Iceland: Commercial trawlers. Samples of material for studies on cod from commercial catches from West and East Greenland.

e. Norway: R/V *Johan Hort* April-May. Hydrographic work in the Davis Strait. Fishing with Hansen net for fish eggs and larvae. Otoliths and measurements of cod collected from trawl and longline catches for studies of differences in age composition.

f. Poland: No research work carried out.

g. Portugal: No research work carried out.

h. Spain: Commercial trawlers. Samples of cod otoliths in Div. 1B.

i. United Kingdom: Commercial trawlers. Samples of cod otoliths and measurements. Plankton recorders have been used for studies of the occurrence of fish larvae and of the food of larval redfish and cod.

j. USSR: R/V *Topseda* and R/V *Sevastopol* June, July, August, December. Meteorological and oceanographic observations in Subarea 1. Research on occurrence of cod in the Davis Strait. Sampling of cod otoliths and measurements.

k. Non-members: R/V *Ernest Haeckel* 2-15 May and 30 May-16 June. Oceanographic work in the Davis Strait. Research on occurrence of cod and sampling of material of cod otoliths and measurements. Cod tagging. Trawling in deep water west of Lille Hellefiske Bank and Fylla Bank. Experiments with transference of cod from Southwest Iceland to Southwest Greenland and from southern to northern banks in Davis Strait.

3. Hydrography and Plankton

The winter of 1964-65 was unusually mild. In the deep waters of Davis Strait the temperatures were high. The Atlantic component of the West Greenland current was stronger than nor-

mal. There was a heavy ice drift from East Greenland to Div. 1F and 1E. Samples of zooplankton and phytoplankton were collected.

4. Cod

a. Eggs and larvae

Cod eggs were collected by Norway in April and May in Davis Strait and by Denmark in inshore waters. The material has not yet been worked up. Owing to the rather high sea temperatures, it is possible that the 1965 cod year-class will be good.

b. Cod age-groups 1, 2, and 3

Very few small cod belonging to these age-groups were caught in seines and shrimp trawls and few were observed in shallow water, suggesting that the 1964, 1963, and 1962 year-classes are poor or at least below average.

c. Commercial stock of cod

In inshore waters many small cod were caught in pound nets. Large amounts of these small cod were used for the production of fish meal. In handline and longline catches, the 1960 and 1961 year-classes predominated, the former especially in the northern Div. 1A-1D, the latter in the southern divisions. Of the older year-classes, the 1957 year-class was found in Div. 1A while the 1958 year-class occurred mostly in Div. 1E and 1F.

In offshore waters the distribution of cod year-classes was rather similar to that in inshore waters. Nearly all samples analysed were from trawl catches.

The cod fishery in 1965 was based mainly on the two rich year-classes, 1960 and 1961. These small cod have already been heavily exploited. Compared to these two year-classes, the older year-classes were of minor abundance although they, due to the greater weight of the single specimens, have contributed somewhat to the total landings. In the German samples the 1958, 1957, and 1956 year-classes were rather common in Div. 1D and 1F and in the samples from East Greenland they were the predominant year-classes. The 1958 and 1956 year-classes were considered to be of East Greenland origin,

whereas the 1957 year-class has been considered to belong to the West Greenland stock. The 1957 year-class was the predominating year-class in Div. 1A, 1B, 1C, and 1D some years ago, but in more recent years it has been found in larger numbers in Div. 1E and 1F. According to the German report the 1956 and 1957 year-classes occurred only in the spawning season and

in such small numbers that most trawlers went to Labrador where the fishery was better.

In the past 5 years, cod have had better growth than in the 1953-60 period and there has been an average increase in weight of 32% in each age-group.

Subarea 2

Research reports were submitted by the following member countries: Canada, France, Fed. Rep. Germany, Poland, Portugal, Spain, USSR, and UK.

1. Status of the Fisheries

Total catch increased from 251,000 metric tons in 1964 to 376,000 tons in 1965. The previous high was 297,000 tons in 1961. Most countries made increased catches in 1965. Canada took 27,000 tons (16,000 in 1964), France 26,000 tons (37,000 in 1964), Germany 43,000 tons (9,000 in 1964), Iceland 610 tons (471 in 1964), Poland 23,000 tons (7,000 in 1964), Portugal 73,000 tons (41,000 in 1964), Spain 59,000 tons (45,000 in 1964), USSR 67,000 tons (69,000 in 1964), UK 11,000 tons (2,000 in 1964) and non-members 46,000 tons (23,000 in 1964).

Virtually all the increase was due to the increased catches of cod, from 213,000 tons in 1964 to 332,000 tons in 1965. Redfish landings declined from 27,000 tons in 1964 to 24,000 tons in 1965. Most fishing occurred in Div. 2J. Total catches of all species in this division increased from 217,000 tons in 1964 to 276,000 tons in 1965. Catches in Div. 2G and 2H combined increased to 53,000 tons from 10,000 tons.

2. Work Carried Out

a. Canada: R/Vs *A. T. Cameron*, *Marinus*, and *Calanus*. Research from laboratories in St. John's, and Montreal. Size and age composition from inshore cod fishery. Hydrographic section from Seal Islands across Hamilton Inlet Bank. Coastal plankton collections and hydrographic stations.

b. France: Fishing trials with pelagic trawls from the trawler *Ville de Fecamp*.

c. Federal Republic Germany: R/Vs *Walther Herwig*, *Anton Dohrn*, and *Kap Farvel*.

Hydrographic observations from Baffin Island to Div. 2J. Size and age composition of cod and redfish.

d. Portugal and Spain: Commercial trawlers. Cod size and age composition, growth, and maturity.

e. USSR: R/Vs *Sevastopol* and *Topseda*. Hydrographic and plankton studies. Cod size and age composition and tagging. Surveys for young cod.

f. UK: Sampling commercial landings of cod. Plankton surveys with continuous plankton recorder.

g. Non-member: Research vessel cruise. Cod and redfish size and age composition. Cod tagging.

3. Hydrography

Canada occupied a hydrographic section in August extending from Seal Islands across the southern part of Hamilton Inlet Bank. Temperatures in the upper layers were generally higher than in 1964 and above the average for recent years. There was a much smaller volume than usual of water with temperatures below 0°C. Salinities over the shallower parts of the section were higher than in the previous 2 years. Studies by USSR revealed that water temperatures during the winter of 1964-65 were below average for previous years and cold waters extended further south. However, in summer and autumn the Baffin and Labrador Currents became weaker, and this plus solar warming caused temperatures in shallow depths to be higher than in 1964. In December 1965 and January 1966 higher temperatures than in previous years were also experienced in the deeper layers. This was attributed to lesser transport of warm water of the North

Atlantic drift to northern Europe, with compensatory decrease in the flow from East Greenland and the eastern Canadian Arctic. Results of hydrographic observations by Germany for sections extending from Cape Chidley to Fiskenaes Bank and from southern Baffin Island to Store Hellefiske Bank are described in Research Document 66/33a. Other hydrographic observations by Germany are being prepared for separate publication.

4. Plankton

Canada made a small number of coastal plankton collections. USSR continued observations on quantity and species composition of plankton in the subarea. UK reported continuation of the Continuous Plankton Recorder Survey, covering almost 3,500 miles in Subarea 2.

5. Cod

Canada continued sampling for age and length composition from the inshore cod fishery. Research information bearing on otolith age validation, growth, mortality, and changes in inshore catch and effort, was summarized to 1964. Increased growth of those age groups taken by the fishery and decreased catch per man inshore appear to be related to the large increase in the offshore effort and catch since 1959. Age distributions from research vessel catches in spring of 1963 and 1964 indicated increased mortality in Div. 2J from the period of low fishing in 1950-58. A preliminary estimate of natural mortality was of the order of 0.2 (18% annually).

Results of surveys for young cod were summarized by USSR. It appears that there is a southward drift of eggs and larvae from spawning grounds in Subarea 2. Surveys were sometimes incomplete because of ice conditions but indicate only slight year-class fluctuations since 1961. Progressive increase in average size of young cod from south to north is attributed to gradual northward movement as the young cod increase in size. Fishing trials off Baffin Island by Germany resulted in small catches of I-group

cod. These may have drifted from West Greenland.

Large scale tagging of cod was carried out by USSR, mainly on the spawning concentrations in Div. 2J. Returns to date from tagging experiments since 1961 have been mainly from the Canadian summer inshore fishery along the Labrador and Newfoundland coasts. More than 1,400 cod were also tagged in Div. 2J by a non-member country. A small sample was tagged by Germany.

Yields of cod with pelagic trawls fished by France in March were 20% better than yields in the same fishing areas with bottom trawls. The cod catch per hour in 21 trials averaged 2.6 tons and on one occasion exceeded 5 tons.

Sampling of the offshore fishery for size and age distributions was conducted by Germany, Portugal, Spain, USSR, UK, and a non-member country. Results by Germany will be presented at the 1967 Annual Meeting. Information so far available indicates that the 1957 year-class dominated commercial catches, followed by year-classes of 1956, 1958, and 1959. The pattern in the inshore Canadian fishery was essentially the same, and both inshore and offshore was similar to 1964.

6. Other Species

Redfish were sampled for size and age by Germany and a non-member country. Of 300 specimens taken south of Hawke Channel in May, 290 were spawning and post-spawning females, mainly 41-47 cm in length. From June to August surveys revealed infestation of the flesh by parasites (*Sphyrion* and nematodes) at proportions up to 30%. Serological data on redfish in Subarea 2, collected by USSR in 1964, will be submitted at the 1967 or 1968 Annual Meeting. Germany reported that Greenland halibut were taken in small quantities off Baffin Island. *Coryphaenoides rapestri* (round-nosed grenadier) occurred in quantities up to 3.5 tons per hour in depths exceeding 600 m.

Subarea 3

Research reports were submitted by the following member countries: Canada, Fed. Rep. Germany, Iceland, Poland, Portugal, Spain, USSR, UK, and USA.

1. Status of the Fisheries

Commercial fishing was carried out by all member countries of the Commission except Italy. Total catches decreased by 38,000 tons to 784,000 tons in 1965. Catches by Canada (243,000 tons), France (59,000 tons), Portugal (49,000 tons), Spain (126,000 tons), and USSR (144,000 tons) constituted almost 80% of the total catch of all species.

Cod catches decreased 77,000 tons to 504,000 tons in 1965. This was due primarily to smaller catches by Canada 135,000 tons (165,000 in 1964), Denmark 14,000 tons (22,000 in 1964), France 54,000 tons (63,000 in 1964) and Portugal 49,000 tons (103,000 in 1964). Increases were noted for Spain 122,000 tons (117,000 in 1964), USSR 70,000 tons (56,000 in 1964), UK 27,000 tons (17,000 in 1964) and Fed. Rep. Germany 7,000 tons (2,000 in 1964). Spain reported that the catches by pair trawlers increased steadily until they equalled that of trawlers in 1964 and far exceeded catches of trawlers in 1965. United Kingdom reported a drop in catch per hour fishing of 10% to 1.0 tons. Iceland on the other hand reported a slight increase in catch per 100 hr from 52 tons in 1964 to 58 tons in 1965. The inshore Newfoundland catch was generally low in 1965 and made up of small fish from the young 1961 year-class just entering the fishery. The Fed. Rep. Germany reported an average catch per day of 10.9 tons. Poland reported poor catches in the spring months in Div. 3K (31.9 tons per 100 hr fishing) but catches of between 104-169 tons per 100 hr on Flemish Cap in the autumn months.

Haddock catches decreased from 12,000 tons in 1964 to 9,000 tons in 1965. All countries except Spain had smaller catches in 1965. Canada reported that haddock on the Grand Bank and St. Pierre Bank were still very scarce. Prospects are poor and there have been no good year-classes since 1955 and 1956.

Redfish catches increased to 109,000 tons from 95,000 tons in 1964, due to an increase from

31,000 tons to 54,000 tons in USSR catches made mostly on Flemish Cap. Iceland reported a decrease in catch per 100 hr from 117 in 1964 to 92 tons, Fed. Rep. Germany from 8.6 tons per day in 1964 to 1.4 tons per day, Poland from 217 tons per 100 hr trawling in April 1965 to 133 tons in August 1965.

Halibut catches dropped 11% to about 2,000 tons in 1965. In the past 2 years there has been a decline in longline catches and an increase in trawl catches with an accompanying smaller average size.

Catches of flounders increased from 54,000 tons in 1964 to 79,000 tons in 1965. The increase was due to greater catches by Canada of Greenland halibut, American plaice, yellowtail flounder, and herring, and by USSR of unidentified species of flounders and groundfish.

Harp seals were taken by Canada (about 95,000) and Norway (about 150,000) in 1965 on the "Front", an area east of Labrador and Newfoundland including Div. 2J, 3K, and sometimes 3L.

2. Work Carried Out

a. Canada: *A. T. Cameron* and other research vessels. Oceanographic sections (5) across the Labrador Current and Continental Shelf from Bonavista to the southern Grand Bank. Surveys and sampling of inshore and offshore cod fishery. Haddock surveys southwestern Grand Bank and St. Pierre Bank. Surveys for redfish, herring, and squid.

b. Federal Republic Germany: *R/Vs Walther Herwig, Anton Dohn* and *M/T Kap Farvel*. Hydrographic observations. Sampling cod, haddock, and redfish research vessel catches. Limited cod and haddock tagging.

c. Iceland: Sampling commercial cod landings.

d. Poland: *R/V Wieczno*. Oceanographic observations. Sampling commercial species. Plankton collections. Selectivity of topside chafers.

e. Portugal: Sampling commercial cod catches.

f. Spain: Sampling commercial cod catches.

g. USSR: Research and exploratory vessels. Hydrographic and plankton studies. Young cod and haddock surveys.

h. UK: Sampling commercial landings of cod, haddock, and pollock. Continuous plankton recorder studies.

i. USA: Hydrographic observations by International Ice Patrol (US Coast Guard).

3. Hydrography

Canada reported that surface temperatures were higher than in 1964 from Bonavista to the southern Grand Bank. Temperatures over the bank and shelf areas varied from higher to the same as those in 1964. Bedford Institute of Oceanography completed magnetometric and gravometric observations, echosounder tracks, and bacterial counts over the slope along 45° and 44° in spring. In December, temperatures were recorded to 500 m for 75 nautical miles Southwest from the Grand Bank.

USSR reported that water temperatures in the winter of 1964-65 near Labrador and Newfoundland were below the average recorded for many years. Off-bottom waters with negative temperatures did not penetrate as far south or southeast as in the very cold January 1963. In summer and autumn 1965 the Polar Canadian and Labrador Currents became weaker and in company with intense sun heating produced higher temperatures in September 1965 than in September 1964. By December 1965 the deep water temperatures were higher than in previous years. The southwest and southern slopes of the Grand Banks had water temperatures 1° to 2° C higher than in the moderate winter 1961-62.

USA studies of the hydrography in the Newfoundland area were continued by the US Coast Guard in the Ice Patrol program and while occupying Ocean Station Bravo.

4. Plankton

USSR studies on the distribution of plankton concluded that the second generation of Copepoda was in the egg and nauplii stages in mid-July and in the third to fifth stages in August off Flemish Cap Bank. Special studies of the copepod, *Calanus finmarchicus*, show it distributed in

the subarctic and Labrador water masses, an area characterized by boreal fauna. The southern boundary of its distribution is the northern edge of the North Atlantic Current.

The UK continuous plankton recorder program sampled almost 16,000 miles in the subarea in 1965.

5. Cod

Canadian surveys on the eastern slope of Grand Bank showed young fish (less than 45 cm in length) of the 1961 year-class occupied 60% of the large cod catches (11 tons per hour tow) and fed heavily on sand lance. Over 3,800 cod were tagged off Southwest Newfoundland. Polish sampling showed that the 1962-1958 year-classes (mean length 54 cm) were represented in the commercial fishery. Portuguese and Spanish trawl catches consisted mainly of the 1960-1958 year-classes. USSR reports on the assessment of young cod in winter over the last 5 years show that Div. 3K always has almost 2-3 year-old fish, the eggs and larvae drifting in from spawning grounds in Subarea 2. Young cod in the winter 1965-66 appeared to be more abundant than in the previous 4 years but this recruitment from Labrador is very constant compared with recruitment in the Barents Sea.

Tagging provides evidence that the Flemish Cap cod do not migrate.

6. Haddock

Canadian research shows that haddock on the Grand Bank and St. Pierre Bank are still very scarce. No good year-classes have occurred since 1955 and 1956. Spawning stock is at a low level. Both Fed. Rep. Germany and USSR reported few haddock in the subarea. The strongest year-classes were for 1961 and 1962. Otolith structure and vertebral counts suggest that haddock cross the Labrador Current from St. Pierre Bank to Grand Bank.

7. Redfish

Polish reports showed 90-100% of the redfish caught at 200 m were of the *mentella* type. Mean length of fish on Newfoundland Banks and Flemish Cap were 25.9 cm whereas mean length was 28.1 cm on Nova Scotia Banks. Newfoundland redfish are mainly in the resting stage of sexual maturity from April to June while the Nova Scotia fish have about 10% with larvae developing in the gonad and quite mature eggs.

Subarea 4

Reports on researches carried out in 1965 were submitted by the following member countries: Canada, Fed. Rep. Germany, Poland, Spain, USSR, UK, and USA.

1. Status of the Fisheries

In general, catches continued to increase with total production reaching 777,000 tons. This is 5% more than in 1964 and 23% above the average in the preceding 5 years. Commercial fisheries were carried out by nine member countries: Canada, France, Fed. Rep. Germany, Poland, Portugal, Spain, USSR, UK, and USA. Non-member countries took 11,000 tons. Total groundfish catch increased slightly to 536,000 tons from 517,000 tons in 1964 (and 537,000 tons in 1963). Total catch of pelagic fish was 193,000 tons.

Cod catches remained stable, down about 2% from 1964, but up almost 3% from the average of the 5 years 1960-64. Cod was the largest fishery in the subarea constituting practically 30% of the catch. Increased Canadian effort elsewhere in Subarea 4 produced increased landings. In Div. 4T fish sizes remained about the same while discards remained at about 1% by weight. In addition to Canada, with catches of 142,000 out of the total 225,000 tons, France, Portugal, Spain, and USSR pursued productive fisheries in the area.

Haddock landings increased from 60,000 to 85,000 tons. This was due almost entirely to increased USSR landings from 5,500 to 45,500 tons. This is attributed to increased size and density of haddock stock and the diversion of effort from the silver hake fishery. Canadian catches of haddock declined from 39,000 to 32,000 tons and the USA from 9,000 to 4,000 tons. The decline in USA landings is a result of reduced effort.

Redfish landings increased by some 15,000 tons to 68,000 tons. The increase can be assigned to larger landings in the northern Gulf of St. Lawrence (Div. 4R and S). US calculations show increased abundance with landings per day more than doubling in the area.

The silver hake fishery in the subarea is almost entirely carried on by USSR. The catch

of 50,000 tons is about 36% less than that for the previous year. The decline is attributed to a season shortened by unfavourable hydrographic conditions as well as to a decline in the abundance of silver hake stocks in the subarea. Further decline in abundance may be anticipated.

Interest in flounder fishing led to an increase of 41% to 48,000 tons with little change noted in size distribution of the several species.

Herring catches increased by 40,000 tons. For the most part this is a result of increased Canadian near-shore exploitation in Div. 4X. USSR exploitation continued at a relatively low level because of reduced effort.

Swordfish landings fell off markedly to just over 1,000 tons which is one third of 1964 production. Fishing effort in the subarea decreased a little and the average weights of fish taken has declined. These two factors together do not account for all of the decline in landings.

The mackerel fishery showed slight improvement with increased landings along the south coast of Nova Scotia Div. 4W and X. Total catch was 11,000 tons.

The pollock fishery showed a decline of about 10% to about 28,000 tons.

Sea scallop landings from Subarea 4 were down somewhat in whole weight landed to 10,000 from 11,000 tons. Landings were divided about equally between the southern Gulf of St. Lawrence (Div. 4T) and grounds off Southwest Nova Scotia (Div. 4X and W). Increased fishing success was shown in Div. 4T.

Miscellaneous species. Landings of almost 50,000 tons made up of over 20 additional species were recorded. This includes 14,000 tons of hake, reported as red hake, by Canada in Div. 4T and X and by USSR in Div. 4W.

2. Work Carried Out

a. Canada: *A. T. Cameron* and other research vessels. Oceanographic conditions at coastwise stations and at the established Halifax

section. Cod populations in Div. 4T. Egg and larva studies in Div. 4T and R. Haddock year-class strength. Age, growth, and validation studies on witch. Preliminary studies on yellowtail flounder, argentines, silver hake, cusk, and mackerel. Tagging of witch, herring, and other species. Herring ages, growth, and fatness. Potential scallop recruitment. Studies on the Canadian halibut fishery. Length-weight relationships for American plaice and yellowtail flounder. Stock assessments of harp seals in the Gulf of St. Lawrence and studies on hood seals. Studies of landed fish size in relation to fishing practices.

b. Federal Republic Germany: R/V *Walther Herwig*. Hydrography. Research sampling of cod in Div. 4 Vn and Vs and haddock. Locating fish concentrations. Tagging cod.

c. Poland: R/V *Wieczno*. Hydrographic observations and plankton sampling. Water temperatures on fishing grounds. Cod, redfish, American plaice, yellowtail flounder, silver hake, and argentines were sampled from commercial catches. Selectivity and economic studies. Size and sexual maturity of redfish, of size, age, and sexual maturity of American plaice and of cod.

d. Spain: Discard observations, tag recoveries.

e. UK: Continuous plankton recorder survey.

f. USSR: Six research and exploratory vessels. Five sections across the shelf. Length and age composition of commercial and experimental silver hake catches. Relationship between hydrographic conditions and distribution of silver hake.

g. USA: Cooperative (with Canada) study of haddock in Div. 4X. Life history of argentines.

3. Hydrography

Canadian observations showed surface temperatures to be well below average in all areas with general decreases in temperature from 1964 to 1965. The greatest reduction in temperature was along the coasts of western and southwestern

Nova Scotia (Div. 4X and W). It was least around the Magdalen Islands (Div. 4T). Bottom temperatures in the Bay of Fundy (Div. 4X) followed the cooling trend. USSR observations in Div. 4X and W showed the cooling which began in 1963 to continue into 1965 although the volume of warm water increased in 1965.

Circulation studies by Canada were intensified. They were mainly on the bottom drift over the Scotian Shelf (Div. 4V, W, and X) and surface and bottom drifts in the Gulf of St. Lawrence (Div. 4R and T). For the most part increased effort in hydrographic research was directly related to fisheries studies.

4. Plankton

Egg and larva studies were carried out by Canada in Div. 4T and R to study the mechanisms involved in the recruitment of cod.

5. Cod

Routine surveys during September with small-meshed nets in the southern Gulf of St. Lawrence (Div. 4T) by Canada showed the cod length distribution to be little changed from the previous year, although catch per two decreased by 45%. The 1961 year-class is best represented and is expected to be dominant in Div. 4T during 1966.

Poland found cod from Subarea 4 to be smaller (length 47.5 cm) than those from Subarea 3 (length 57.9 cm). Scatari (Div. 4V) cod averaged 19.73 fin rays in the first dorsal fin in comparison with 21.68 from Flemish Cap Bank. Off Nova Scotia 1961 and 1963 year-class cod were found most prevalent.

6. Haddock

A Canadian cruise in Div. 4W in March and early April showed none of the 1958-62 year-classes to be outstanding. The Canadian fishery relied mainly on the 1959 year-class as both the 1958 and 1960 year-classes were notably weak. The 1965 survey showed the 1963 year-class to be relatively strong.

In the USA fishery also, the 1959 year-class provided most of the catch. Haddock abundance on Browns Bank is expected to decline until 1967 when the 1963 year-class enters the fishery.

7. Silver Hake

Canadian studies of silver hake distribution reported them in large quantities only near the western end of Sable Island (Div. 4W) in early August. Best catches were from depths of 35 m and the fish were mainly between 25-46 cm in length.

USSR observations on commercial and experimental catches in Div. 4W showed average lengths to have increased from 30.4 cm in 1963 to 31.3 cm in 1964, and 32.2 cm in 1965. The percentage of 4-year-olds in the catch is increasing and the catch per unit of effort is falling off, suggesting a decrease in recruitment in year-classes later than 1960.

Analysis of 1963-64 USSR data on the relationship between hydrographic conditions and the distribution of silver hake showed that the influence of warm Atlantic water on Georges Bank and off the Nova Scotia Shelf was much weaker in 1964 than in 1963. In early spring 1964, the resulting lower temperatures on the southern slope of Georges Bank were more favourable for maturing hake and less favourable for spawning than in 1963.

8. Halibut

Canadian analyses show that the halibut fishery now exploits more immature fish than formerly. This may have an undesirable effect on spawning and subsequent recruitment.

9. Flounders

Results from Canadian tagging of witch show only local recoveries. Back calculations from witch otoliths showed good correspondence with length-at-age from length distributions.

Results of analysis by Poland showed that American plaice are larger, older, and more numerous in Subarea 3 than in Subarea 4.

10. Herring

Herring otoliths from the Passamaquoddy region of Div. 4X showed 3% opaque nuclei associated with spring spawning. Fish were young with age-group II representing 78% of the catch. Off Southwest Nova Scotia (Div. 4X) 4% were spring spawning type and the 1961 year-class dominated. Trials with a spaghetti tag provided 4.1% recoveries but showed no long migrations.

11. Argentines

Canadian surveys showed argentines most abundant between the 180 and 365 m depths along the edge of the Scotian Shelf (Div. 4W and X). They were 2-7 years of age and 20-25 cm long. In deep water basins on top of the Shelf, they were older, 6-11 years, and longer, 30-38 cm.

Poland found argentines producing up to 4 tons per hour's trawling on the Scotian Shelf in August and September. In spring on Sambro Bank (Div. 4W) two size groups of fish were observed at 17-19 cm and 27-28 cm. Sampling showed half the fish to be between 4-7 years of age and some to be old (30 years) and large (50 cm).

12. Cusk

Canadian preliminary life-history studies on cusk in Div. 4W and X showed depth and size distribution, age distribution, size at age, size at maturity, and spawning season.

13. Mackerel

Canadian sampling is extending knowledge of the mackerel population. In Div. 4X and W mackerel sizes decrease with the advance of the season. This is caused by a migration up the coast into the Gulf of St. Lawrence (Div. 4T) with larger fish migrating first. The 1961 year-class dominated the catch. Spawning in Div. 4T was mainly in July.

14. Redfish

A survey by Poland showed that redfish, of size suitable for profitable operations for factory ships, were not available in quantity in Subarea 4.

15. Sea Scallops

In Div. 4T Canadian sampling of inshore scallop beds gave good catches of small scallops on several grounds, suggesting prospects for subsequent good recruitment to the fishery.

16. Seals

Canadian analysis of population data on harp seals in the Gulf of St. Lawrence (Div. 4T, R, and S) indicates that the current controlled take of about 90,000 young with 15,000 older individuals is close to the highest possible sustained yield.

Subarea 5

Reports on research were submitted by the following countries: Canada, Fed. Rep. Germany, Poland, USSR, and USA.

1. Status of the Fisheries

Commercial fishing was carried out by Canada, USSR, and USA. In addition small quantities of herring, cod, and haddock were taken by Poland, Spain, and non-member countries.

Total catches of all species increased to 890,000 tons from 756,000 tons in 1964. Canada took 68,000 tons (75,000 in 1964), Poland took 5,000 tons (1,000 in 1964), USSR took 501,000 tons (336,000 in 1964) and USA took 314,000 tons (343,000 in 1964).

Total catches of silver hake again exceeded those of other species and increased from 220,000 tons in 1964 to 323,000 tons, due entirely to increased USSR effort. Soviet stern trawlers fished the southern and southwestern slopes of Georges Bank. In addition almost 16,000 tons were taken south of the ICNAF area in the vicinity of Hudson Canyon. The inshore fishery by USA for silver hake declined from 53,000 tons in 1964 to 42,000 tons, with about 20% of this amount going for industrial purposes.

Haddock catches more than doubled to 155,000 tons due almost entirely to increased catches by the USSR from 5,000 tons in 1964 to 82,000 tons in 1965. Canadian catches showed an increase of 3,000 tons to 15,000 tons while USA catches increased 5,000 tons to 57,000 tons. Heavy catches of scrod haddock resulted from the successful 1963 year-class. The unusually heavy fishing effort on the Georges Bank haddock stocks and the indications that the 1964 and 1965 year-classes are very small suggest the need for careful studies of future effects.

Herring catches decreased from 159,000 tons in 1964 to 74,000 tons. Decline in the consumer demand in USSR for Georges Bank herring resulted in decreased effort and consequent decline in USSR herring catches from 131,000 tons in 1964 to 36,000 tons. USA inshore catches increased from 28,000 tons in 1964 to 35,000 tons. USSR catches by BMRT-type vessels

varied from 2 tons per hour trawling in June and October to 10.4 tons per hour trawling. Off-shore herring stocks were considered to be in good supply.

Total catches of all flounders as in 1964 was 57,000 tons, of which 54,000 tons was taken by the USA fishery for mainly yellowtail and winter flounders. Landings of yellowtail flounder per day fished by the USA fleet in both southern New England and on Georges Bank have declined steadily from a peak in 1963. Landings have been maintained due to increased effort.

Total catches of sea scallops from Georges Bank have decreased over 50% from 103,000 tons in 1964 to 50,000 tons in 1965. Canadian catches dropped from 49,000 tons to 37,000 tons while USA catches dropped drastically from 54,000 tons to 13,000 tons. Decreases have been due primarily to diversion of effort southward outside the ICNAF area, where landings per day fished were higher. USA landings per day fished and research vessel abundance indices show continuous decrease since 1961.

Total catches of cod increased from 28,000 tons in 1964 to 42,000 tons. USA catches were steady at 15,000 tons while both Canadian and USSR catches increased, the former from 7,000 to 11,000 tons and the latter from 5,000 to 14,000 tons. The bulk of cod are taken as by-catch in the haddock and silver hake fisheries.

Total catches of other groundfish species, 70% of which was red hake, increased from 56,000 tons in 1964 to 110,000 tons. USA catches decreased from 48,000 tons to 37,000 tons. USSR catches increased from 6,000 to 70,000 tons as red hake became the object of special fisheries along the southwestern slopes of Georges Bank where BMRT-type vessels took 4-6 tons per hour trawling in January-April 1965.

2. Work Carried Out

a. Canada: Various research vessels. Exploratory fishing and studies of argentine, silver hake, herring, swordfish, and tuna.

b. Federal Republic Germany: R/V *Walther Herwig*. Hydrography. Market

sampling of cod, haddock, pollock, and American plaice.

c. Poland: R/T *Weiczno*. Exploratory fishing. Studies of haddock, silver hake, herring, butterfish, and ocean pout.

d. USSR: Exploratory and commercial trawlers. Hydrography and plankton surveys. Studies of silver hake, herring, red hake and haddock. Tagging and serological investigations.

e. USA: R/V *Albatross IV*. Plankton, benthic, and groundfish surveys. Serological studies on haddock and herring. Age and growth studies in silver hake and redfish. Behaviour, racial, and age studies of herring.

3. Hydrography

In the Gulf of Maine during all seasons there was an eastward reduction in the vertical ranges of temperature and salinity and the water column to the east was subject to great mixing. This areal trend was especially marked in the spring and summer. Temperatures, salinities, and transparencies in the western part of the Gulf appeared related to river discharge. Major circulation features common to the Gulf of Maine were evident. Anomalies on Georges Bank were observed only on the northern slopes in contrast to the Nova Scotia banks where they were found everywhere in 1965.

4. Plankton

USSR completed seven plankton surveys from April through November. Six surveys were completed from June to October on the silver hake spawning grounds. Silver hake eggs were found in large numbers only on the southern and southwestern slopes. Collections were also taken in the herring spawning areas. A pictorial key to the identification of the eggs and larvae of 30 common fishes of the Gulf of Maine is being completed by the USA investigators. Seasonal volumes of zooplankton were found by the USA investigators to be significantly higher than in the previous 2 years due primarily to a marked increase in abundance of *Calanus finmarchicus*.

5. Benthos

USA charts based on 2,000 samples of benthic invertebrates in Subarea 5 and vicinity since 1957 are being prepared to show the density distribution of each of the 42 major taxonomic groups in terms of weight and numbers per unit area of bottom.

6. Groundfish Surveys

The USA 3-year program of seasonal surveys between Hudson Canyon and the Bay of Fundy with a view to describing the seasonal distributions and relative abundance of all groundfish available to the trawl, to get a more complete picture of the structure of the demersal communities was completed.

7. Silver Hake

USSR investigations showed that catches were composed mainly of 3- (52%) and 4- (34%) year-old fish. Mean length of fish has decreased steadily each year from 31.7 cm in 1962 to 28.3 cm in 1965 while the percentage of 3-year-old fish in the catches has increased in relation to the percentage of 4-year-old fish. USA research indicates that a valid index of abundance of young of the year may be possible from survey cruises. Validation studies of scale and otolith age determinations are continuing.

8. Haddock

USSR experimental catches with 40-mm mesh of codend confirmed the USA reports of a rich year-class with the bulk of the fish from 30 to 42 cm in length. USA serological studies have continued in an attempt to differentiate stocks of haddock from the various areas.

9. Herring

Polish, USSR, and USA reports show that from 50% to 60% of the Georges Bank catches were composed of fish of the 1960 year-class. USA sampling of coastal fisheries revealed a similar situation. USSR investigations showed that mass spawning took place in two areas of the northern part of Georges Bank; one area was

about 2 sq miles where spawning lasted from 11 to 13 September; the other was 6 sq miles where spawning took place from 20 to 25 September. Eggs were deposited 5-7 cm thick. Temperatures were 5° to 6° C at spawning and 8° to 10° C during egg development. USA investigations indicated offshore and inshore fall spawning started late August and reached a peak in October. There was no evidence of spring spawning on Georges Bank but a few spring spawners were obtained from samples collected in the coastal Gulf of Maine waters. Samples for racial studies using meristic counts, blood types, and serum differences were continued. Behaviour of juvenile herring in relation to temperature, salinity, and dissolved gases were initiated by the USA.

10. Yellowtail Flounder

USA studies of the commercial landings over the past 5 years show major contributions beginning in 1962 from the strong 1959 and 1960

year-classes. The 1961 and 1962 year-classes are of only moderate strength.

11. Red Hake (*Urophycis chuss*)

Studies by USSR on age and size composition of commercial catches showed the bulk of the fish to be 2-4 years of age, 27-39 cm in length and 150-250 g in weight.

12. Large Pelagic Fish

Canadian studies of swordfish and tuna ranged from Subarea 4 south through Subarea 5 to as far as the Caribbean Sea. Post larval swordfish were taken off Cape Hatteras in Florida Straits and in the Northeast Caribbean Sea. Size composition of swordfish has decreased 9% annually since the introduction of highly successful longlining methods in 1962. Tuna were sampled for size and age from the purse seine and longline landings.
