

INTERNATIONAL COMMISSION

FOR THE
NORTHWEST ATLANTIC FISHERIES



ANNUAL PROCEEDINGS

Vol. 18

for the year

1967 – 68

Issued from the Headquarters of the Commission

Dartmouth, N. S., Canada

1968

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 1967-68.

This is the 18th annual report of proceedings of the Commission and is an authoritative record of its activities and achievements from 1 July 1967 to 30 June 1968. The report contains an account of the activities of the Commission's Secretariat; an account of the 18th Annual Meeting; summaries of research carried out in each of the five Convention subareas; new Financial Regulations for the Commission adopted by the 18th Annual Meeting to be effective on 1 July 1968.

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 'V. M. Kamentsev', is written over a solid horizontal line.

V. M. Kamentsev,
Chairman,
International Commission for the
Northwest Atlantic Fisheries.

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PART 1

Administrative Report for the Year Ending 30 June 1968

1. The Commission's Officers

Chairman of Commission	—	Mr V. M. Kamentsev (USSR)
Vice-Chairman of Commission	—	Dr A. W. H. Needler (Canada)
Chairman of Panel 1	—	Mr O. Lund (Norway)
Chairman of Panel 2	—	Mr W. C. Tame (UK) (to September 1967)
Chairman of Panel 3	—	Dr F. Chrzan (Poland)
Chairman of Panel 4	—	Captain T. de Almeida (Portugal)
Chairman of Panel 5	—	Mr T. A. Fulham (USA)
Chairman of Panel A (Seals)	—	Dr A. W. H. Needler (Canada)

These officers, with one exception, were elected at the 1967 Annual Meeting to serve for a period of 2 years. Dr A. W. H. Needler was elected Chairman of Panel A at the 1966 Annual Meeting to serve for a period of 2 years.

Chairman of Standing Committee on Research and Statistics	—	Mr Sv. Aa. Horsted (Denmark)
Chairman of Standing Committee on Finance and Administration	—	Mr R. Green (USA)
Chairman of Standing Committee on Regulatory Measures	—	Mr J. Graham (UK)

The Chairmen of Research and Statistics and Finance and Administration were elected at the 1967 Annual Meeting to serve for a period of 1 year. The Chairman of the Standing Committee on Regulatory Measures was elected at the first meeting of the Committee, 30 January 1968.

2. Panel Memberships for 1967-68

Panel:	1	2	3	4	5	A	Total
Canada		+	+	+	+	+	5
Denmark	+					+	2
France	+	+	+	+			4
Germany	+	+					2
Iceland	+						1
Italy			+	+			2
Norway	+					+	2
Poland	+	+	+				3
Portugal	+	+	+	+			4
Romania						+	1
Spain	+	+	+	+			4
USSR	+	+	+	+	+		5
UK	+	+	+				3
USA			+	+	+		3
TOTAL	10	8	9	7	4	3	41

3. The Commission's Office Accommodation

The office of the Commission has, since 1 August 1963, been located in the Bedford Institute under a lease arrangement with the Canadian Department of Energy, Mines and Resources. The present lease arrangement has been approved by the Canadian Government for a period of 3 years to 1 August 1970.

4. The Commission's Secretariat

The staff members of the Secretariat are:

Executive Secretary	—	L. R. Day
Assistant Executive Secretary	—	B. J. Kowalewski
Editorial Assistant	—	W. H. Champion
Secretary	—	(Miss) J. S. Maclellan
Clerk-Stenographer	—	(Miss) G. F. Schrader
Clerk-Typist	—	(Mrs) C. A. Turple

Additional clerical help was provided by:

(Mrs) Vivian Kerr (Redbook Pt. III and Pt. IV, Special Publication No. 7)

(Miss) Marilyn Saunders (indexing of ICNAF documents and library holdings).

Following the 1967 Annual Meeting in Boston, the Executive Secretary discussed with Depository Government the presentation to member governments of the 1967 Commission proposals re (a) amendments to the ICNAF trawl regulations in Subareas 1-5 and (b) the international regulation of the seal fisheries in the "Front Area" (Washington, 10 July 1967); attended the 55th Statutory Meeting of ICES, the meeting of the ICES/ICNAF Joint Working Party on North Atlantic Salmon, and the meeting of ICNAF Panel A (Seals) (Hamburg, 12 October 1967); the FAO Gear Conference (Bergen, October 1967); discussed with officials of the Ministry of Agriculture, Fisheries and Food arrangements for the 18th Annual Meeting of the Commission (London, November 1967); attended the first meeting of the new Standing Committee on Regulatory Measures (London, 30 January-1 February 1968); met with Mr W. L. Sullivan of the US Department of State and Mr E. B. Young of the Canadian Department of Fisheries to discuss the Commission's Financial Regulations (Montreal, 5-6 February 1968); met with Mr E. B. Young of the Canadian Department of Fisheries and officials of the Canadian Departments of National Revenue and Finance to discuss the Commission's position in the Canadian income tax field (Ottawa, 5 March 1968); finalized revision and reprinting of coloured ICNAF map with officials of Canadian Department of Energy, Mines and Resources (Ottawa, 26 April 1968).

The Editorial Assistant discussed format and preparation of ICNAF Special Publication No. 7 (NORWESTLANT 1-3 Surveys, 1963) with personnel of the Canadian Oceanographic Data Center of the Department of Energy, Mines and Resources (Ottawa, 28 and 29 March 1968).

5. The Commission's Publications

The 1967 Meeting Proceedings (88 p.) was distributed in July 1967. It contains the reports of the meetings of the Plenary and of the Panels, the

Standing Committee on Finance and Administration, the *ad hoc* Committee on Trawl Regulations and the special *ad hoc* Committee on Fishery Management, held during the Commission's 17th Annual Meeting, Boston, 5-9 June 1967.

The *Redbook 1967* was issued in four parts. Part I (79 p.) contains the proceedings of the 1967 meeting of the Standing Committee on Research and Statistics and its subcommittees. It was distributed in September 1967. Part II (151 p.) contains the reports by member countries on research conducted in the Convention Area in 1966. It was distributed in October 1967. Part III (115 p.) contains selected scientific papers presented to the 1967 meetings. It was distributed in December 1967. Part IV (105 p.) contains selected papers from a special meeting of the Environmental Subcommittee, May 1967, on fluctuations in sea and air temperatures in the ICNAF Area since 1950. It was distributed in December 1967.

The *Statistical Bulletin* Vol. 16 for the year 1966 (104 p.) was distributed in April 1968.

The *Annual Proceedings* Vol. 17 for the year 1967-68 (91 p.) was distributed in April 1968. It contains the Administrative Report with audited financial statements for the year ending 30 June 1967, the Report of the Seventeenth Annual Meeting, 1967, Summaries of Research carried out in each subarea of the Convention Area in 1966, and the Report of the Working Group on Joint Biological and Economic Assessment of Conservation Actions.

The *Research Bulletin of ICNAF* No. 4 (123 p.) was distributed in November 1967. It contains 11 scientific papers on research important to the Commission.

The *Research Bulletin of ICNAF* No. 5 (about 170 p.) contains 11 scientific contributions. The book will be distributed in autumn 1968.

The *Research Bulletin of ICNAF* No. 6 is in preparation with six scientific contributions which, because of limited space, could not be included in No. 5 of the series.

The *Sampling Yearbook* Vol. 11 for the year 1966 (199 p.) was distributed in April 1968. 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 1966.

The *ICNAF Special Publication No. 7* (ICNAF Environmental Survey: NORWEST-LANT 1-3, 1963) consisting of four parts as follows: Part I, Text; Part II, Atlas; Part III, Oceanographic Data Record; and Part IV, Biological Data Record, is in preparation.

6. Cooperation with Other International Organizations

In accordance with Convention Article X, the Secretariat, on behalf of the Commission, has continued to seek to establish and maintain working arrangements with other public international organizations which have related objectives, particularly the Department of Fisheries of the Food and Agriculture Organization of the United Nations (FAO) and the International Council for the Exploration of the Sea (ICES), to ensure effective collaboration and coordination with respect to their work and, in the case of ICES, the avoidance of duplication of scientific investigations.

The Secretariat continues to work closely with Mr L. P. D. Gertenbach of FAO as Secretary to the FAO/ICES/ICNAF Continuing Working Party (CWP) on North Atlantic Statistics. Plans to change the composition and title of the CWP have been worked out and recommended to FAO, ICES and ICNAF. The new name proposed for the inter-agency body is the **Coordinating Working Party on Atlantic Fisheries Statistics**. It is hoped the proposed changes can become effective from 1 November 1968.

Preparation of a Bibliography on North Atlantic Publications supported by FAO, ICES and ICNAF has now been completed. Preparations have been completed for handling the documentation and printing of the proceedings and papers to be presented to the ICES/FAO/ICNAF/UNESCO/IBP Symposium on Marine Food Chains to be held at the University of Aarhus, Denmark, 23-26 July 1968. A review of the scope, organization and activities of ICNAF was prepared for the secretariat of the FAO Com-

mittee on Fisheries' Subcommittee on the development of cooperation with international organizations concerned with fisheries. Actions have been taken to keep abreast of developments in regard to the United Nations Resolution 2172 (XXI) on Resources of the Sea. Dr Needler (Canada) represented the Commission's interests at two meetings of the UN Group of Experts established to advise the Secretary General of the UN.

Culmination of Commission collaboration with FAO, NEAFC and OECD was the editing and publishing as Part 4 of ICNAF Annual Proceedings Vol. 17, the Report of the Working Group on Joint Biological and Economic Assessment of Conservation Actions.

Proposals by IOC for a joint IOC/ICES/ICNAF body for development and co-ordination of oceanographic programs in the North Atlantic are being examined. Mr Lee (UK) again represented the Commission at the Fifth IOC meeting, October 1967.

Close collaboration continues with NEAFC in developing wise fishing practices for the North Atlantic, including a workable international inspection scheme to ensure adherence to international fishery regulations in the North Atlantic.

Commission observers provided closer relationships with INPFC, SCOR, and OECD. Reports on subjects of mutual interest and concern were exchanged with these and other international organizations.

Close working arrangements have continued between ICES and ICNAF. The first report of the Joint Working Party on North Atlantic Salmon problems has been approved and was published jointly as ICES Cooperative Research Report, Series A, No. 8. Meeting papers and reports have been exchanged.

7. Cooperation with Non-Member Countries

Commission publications and documents are forwarded regularly to the Government of Japan which maintains its interest in the work of the Commission and in the fisheries in the Northwest

Atlantic. The Government of Japan has again accepted an invitation to be represented by an observer at the 1968 Annual Meeting of the Commission.

The Government of the Republic of Cuba has fished in the Convention Area during the past year and, on 11 May 1968, formally requested a Commission invitation to be represented by an observer at the Annual Meeting. In accordance with Commission Rules of Procedure, an invitation was extended on 17 May 1968 to Cuba with the approval of two-thirds of the member countries. No information is yet available on the number of Cuban fishing vessels or their catches in the Convention Area.

8. Programs and Reports of Research

Programs of research for 1968 and national research reports for 1967 were received from most member countries and distributed. Selected papers from a special meeting of the Environmental Subcommittee, May 1967, on fluctuations in sea and air temperature in the ICNAF Area since 1950 were edited by the Chairman, Mr Lee (UK), and published as Part IV of ICNAF Redbook 1967.

9. Mid-Year Meetings

The ICES/ICNAF Joint Working Party on North Atlantic Salmon met under the chairmanship of Mr B. B. Parrish (UK) in October 1967 at the time of the 55th Statutory Meeting of ICES in Hamburg. Available statistics on catch and effort in European, North American and Greenland waters were reviewed and plans for the 1968 research program drawn up. The Working Party took cognizance of a developing international fishery for salmon off Norway. Arrangements have been completed for the Working Party to meet 21 and 22 May prior to the Annual Meeting of ICNAF in London.

The Panel on Seals (A) and the Scientific Advisers to the Panel also met in October 1967 at the time of the ICES Meeting in Hamburg. The Panel meeting was chaired by Dr A. W. H. Needler (Canada), the Scientific Advisers meeting by Dr B. Rasmussen (Norway). Reports were heard on the status of the seal fisheries in the "Gulf" and on

the "Front". Research programs designed to provide information on the maximum sustainable yield of harp seals in the Front area were discussed and will be reviewed with the Assessment Subcommittee at the 1968 Annual Meeting of the Commission. Briefs were presented by the World Federation for the Protection of Animals and the Survival Service Commission of the International Union for the Conservation of Nature regarding the killing and conservation of seals.

The first meeting of the new Standing Committee on Regulatory Measures met in London, 30 January-1 February 1968, under the chairmanship of Mr J. Graham (UK). Terms of reference were drawn up for studies of the biological aspects and for studies of the administrative, economic and practical aspects of limiting fishing in the North Atlantic. A report on the biological studies will be presented to the Committee at the coming Annual Meeting.

The Subcommittee on Financial Matters set up at the 1967 Annual Meeting to review the Commission's Financial Regulations and to consider reducing the size of the Standing Committee on Finance and Administration met in Montreal, 5 and 6 February 1968, and drafted a new set of Financial Regulations for consideration by the upcoming Annual Meeting.

A special meeting of the *ad hoc* Committee on Trawl Regulations has been arranged for 30 and 31 May 1968, London, to consider international inspection in general and the applicability of the proposed NEAFC scheme of international inspection for ICNAF.

Arrangements have been completed by the Secretariat and Dr A. Meyer (Fed. Rep. Germany) to hold a meeting of a Working Group on Redfish Problems, 20-22 May 1968, Lowestoft. Invitations to attend have also been extended to redfish research workers from ICES member countries.

10. Statistics and Sampling

During the past year, considerable effort and expense has gone into increasing the coverage and quality of the ICNAF Statistical Bulletin. Statistical Bulletin Vol. 16 for 1966 includes for the first time the nominal catches from the new

ICNAF Statistical Area 6 which extends the collection and publication of the Commissions' fisheries statistics to the latitude of Cape Hatteras. (ICNAF Notification Series No. 6 dated 3 August 1967).

It also includes, for the first time in Table 3, nominal catches of species of common interest in the Northwest Atlantic (ICNAF) and the Northeast Atlantic (NEAFC) for comparative purposes. Both items have increased the size and therefore the cost of the publication considerably.

Again, the Secretariat acknowledges the invaluable help of Mr Gertenbach of FAO, who as Secretary of CWP, distributed the common STANA reporting forms and assisted in their timely submission.

Data on length and age of commercial species by species, subarea, division, gear, month, country, vessel type and tonnage were presented for 1966 as length frequencies, age frequencies, age/length keys and tables in ICNAF Sampling Yearbook Vol. 11.

The Secretariat prepared a summary of quantitative data on the length and age sampling by species, subarea, and country in relation to the nominal catch in 1964-66 for use by the Commission's scientists in assessing the adequacy of sampling.

Essential data on quantities of fish discarded at sea or turned into industrial fish at sea in 1967 were documented in summary form for study by Commission scientists.

Preliminary statistics on nominal catch by major species, country and division and by principal species, division and month for 1967 were compiled and presented to the Annual Meeting.

The Secretariat is particularly grateful to the statistical and research personnel from all member countries for their good cooperation and for the quality and timeliness of their reporting.

11. International Regulation of Trawl Fisheries

Amendments to previous proposals for Sub-areas 1, 2, 3, 4, and 5 to provide that the pressure

or pull specified for ICNAF mesh measuring regulations be 5 kg and that the ICNAF standard used in measuring a codend be 20 consecutive meshes were adopted by the Commission on 9 June 1967 and transmitted by the Secretariat to Depositary Government on 4 July 1967. Transmittal to Contracting Governments was completed on 13 November 1967.

A simplified guide to the ICNAF fishery regulations, 1967-68, adopted by the Commission on 9 June 1967 was circulated to Contracting Governments on 29 September 1967.

On 14 August 1967, Contracting Governments were notified of (1) the mesh measuring gauge and mesh size differentials authorized for use in the Convention Area in 1967-68 (ICNAF Notification Series No. 3 dated 28 July 1967), (2) amendments to the specifications of the Polish-type (large-mesh) topside chafing gear authorized for use in the ICNAF trawl fisheries (ICNAF Notification Series No. 4 dated 28 July 1967).

12. International Regulation of Seal Fisheries

Proposals respecting (1) the date and time of opening and closing of season for taking harp seals in the "Front Area" in the 1968 season and (2) the prohibiting of killing of adult seals in whelping patches in the Front Area were adopted by the Commission on 9 June 1967 and transmitted by the Secretariat to Depositary Government on 4 July 1967. Following transmittal to Contracting Governments on 10 July 1967 the proposals became effective 10 February 1968 with (2) relating to both harp and hood seals. On 1 March 1968, Depositary Government transmitted to Contracting Governments a letter of 26 February 1968 from the Commission Secretariat showing that proposal (2) was intended to relate to adult harp seals only and not to adult hood seals and that the members of Panel A (Canada, Denmark, and Norway) would assume the intended application acceptable and would propose to so apply it provided there was no objection thereto by 12 March, the date of the opening of the 1968 sealing season. No objections were registered.

13. Financial Matters

Canadian Government Order-in-Council P.C. 1967-2313 dated 14 December 1967 specified

ICNAF as an international organization under the Privileges and Immunities (International Organizations) Act. ICNAF therefore qualifies under Section 3 of this Act for a tax credit system in accordance with Section 41(4) of the Canadian Income Tax Act, which allows that a federal tax credit can be provided for a Canadian resident if he (or she) is an employee of ICNAF and is required to pay a levy imposed by ICNAF to defray its expenses.

An ICNAF staff assessment scheme was set up with Canadian Government approval, effective 1 January 1968, based on the federal tax portion only of the basic tax for Canadian employees of ICNAF. The Nova Scotian taxation authorities have been approached regarding a possible amendment to the Nova Scotia Income Tax Act to provide for a tax credit similar to that allowed by the Canadian Income Tax Act. In the case of the Assistant Executive Secretary, the ICNAF levy or staff assessment is the equivalent of Canadian income tax on his ICNAF salary.

Claims were presented to the Canadian Government and the Nova Scotia Government in May 1968 for refund of Federal Sales Tax and Provincial Hospital Tax paid on certain ICNAF publications shipped to member countries of the Commission other than Canada, in the case of the Canadian Government, and outside of Nova Scotia in the case of the Nova Scotia Government.

14. Financial Statement for the Fiscal Year Ending 30 June 1968

The accounts of the Commission for the year ending 30 June 1968 show an assessment against Member States for ordinary expenses of Can \$98,500 and an authorized transfer of Can \$7,500 to the General Fund from the Working Capital Fund to cover additional costs of the Environmental Survey publication and retroactive salaries.

Obligations incurred during the year totalled Can \$105,988 which was Can \$12 less than the Can \$106,000 appropriated by the Commission.

Appendix I is presented here in addition to Exhibits I, II, and III to show an adjusted balance of surplus as at 30 June 1967 (appropriated for 1967-68 obligations), reduced to Can \$544 from the balance of Can \$1,094 previously reported. In the preceding year a supplementary appropriation of Can \$550 was in effect erroneously charged against the Working Capital Fund whereas, in accordance with the Financial Regulations, it should have been a General Fund transaction.

The audit of the Commission's finances was completed by the office of the Auditor General of Canada, in accordance with Section XI of the Commission's Financial Regulations, in July 1968.

The report of the Auditor General dated 19 September 1968 to the Chairman and Members of the Commission reads, in part, as follows:

EXHIBIT I

Statement of Budget Appropriations, Obligations Incurred, and Balances of Appropriations for the Year Ended
30 June 1968

(Expressed in Canadian Dollars)

Purposes of Appropriation	Appropriated by Commission	Obligations Incurred	Surplus or Deficit (-) Balances of Appropriations
Personal services—			
Salaries	\$ 55,200	\$ 55,143	\$ 57
Superannuation and Canada Pension Plan	1,500	1,744	- 244
Additional help	1,200	1,309	- 109
Group medical and insurance plans	500	368	132
Retroactive salaries	1,000	919	81
Travel	6,500	5,462	1,038
Transportation	500	171	329
Communications	3,000	3,695	- 695
Publications	13,600	16,275	-2,675
Other contractual services	4,000	4,163	- 163
Materials and supplies	3,500	2,932	568
Equipment	1,000	893	107
Annual meeting	6,000	5,414	586
Contingencies	1,000	—	1,000
	<hr/>	<hr/>	<hr/>
Totals, ordinary budget	98,500	98,488	12
Transferred from Working Capital Fund—			
Environmental survey	4,000	4,000	—
Retroactive salaries	3,500	3,500	—
	<hr/>	<hr/>	<hr/>
	<u>\$ 106,000</u>	<u>\$ 105,988</u>	<u>\$ 12</u>

EXHIBIT II—GENERAL FUND

Statement of Income and Expenditure for the Year Ended 30 June 1968 (with comparative figures for the year ended 30 June 1967)

(Expressed in Canadian Dollars)

	<u>1968</u>	<u>1967</u>
Income (and Source of Funds):		
Members' contributions assessed—		
Canada	\$ 11,418	\$ 10,314
Denmark	4,850	4,442
France	9,229	8,357
Germany, Federal Republic	4,850	4,442
Iceland	2,661	2,483
Italy	4,815	4,442
Norway	4,850	4,442
Poland	7,040	6,399
Portugal	9,229	8,357
Romania	2,723	—
Spain	9,229	8,357
Union of Soviet Socialist Republic	10,067	10,314
United Kingdom	7,040	6,399
United States of America	6,900	6,399
	<hr/>	<hr/>
	\$ 94,901	\$ 85,147
Miscellaneous income—		
Staff assessment	4,326	—
Bank interest	995	1,094
Deduct: Supplementary appropriation	—	550
	<hr/>	<hr/>
	5,321	544
Transferred from Working Capital Fund—		
Retroactive salaries	3,500	
Environmental survey	4,000	
	<hr/>	
	7,500	5,241
Credits due to Member Governments	2,505	—
Surplus, 30 June 1967 (adjusted) appropriated for 1967–68 obligations ...	544	1,863
Supplementary appropriation from surplus	—	550
	<hr/>	<hr/>
	110,771	93,345
Obligations incurred (Exhibit I)	105,988	92,309
	<hr/>	<hr/>
	4,783	1,036
Deduct: Balances of appropriations carried to Working Capital Fund (Appendix I)	12	492
	<hr/>	<hr/>
Amount carried to surplus account (Appendix I)	\$ 4,771	\$ 544
	<hr/> <hr/>	<hr/> <hr/>

EXHIBIT III

Statement of Assets and Liabilities as at 30 June 1968
(with comparative figures as at 30 June 1967)

(Expressed in Canadian Dollars)

Assets		Liabilities	
1968	1967	1968	1967
GENERAL FUND			
Cash on hand and in bank..	\$ 11,591	\$ 8,099	Unliquidated obligations:
Accounts receivable.....	3,943	1,026	Environmental survey.....
			Other.....
			\$ 9,854
			737
			\$ 10,591
			6,076
			Credits due to Member Governments:
			Romania's contribution.....
			Advances on 1968-69 contributions
			—
			172
			172
			2,505
			Surplus Account (Appendix I).....
			4,771
			544
			\$ 15,534
			\$ 9,125
WORKING CAPITAL FUND			
Cash on deposit.....	\$ 17,620	\$ 19,118	Principal of Fund (Appendix I).....
			\$ 17,620
			\$ 19,118

APPENDIX I

SURPLUS ACCOUNT

Balance per report of 30 June 1967.....	\$ 1,094
Deduct: Adjustment for supplementary appropriation, 1966-67.....	550
Adjusted balance, 30 June 1967.....	544
Deduct: Appropriated for 1967-68 obligations.....	544
Add: Transfer from Statement of Income and Expenditure (Exhibit II).....	4,771
Balance, 30 June 1968.....	\$ 4,771

WORKING CAPITAL FUND

Balance per report of 30 June 1967.....	\$ 18,568
Add: Adjustment for supplementary appropriation, 1966-67.....	550
Adjusted balance, 30 June 1967.....	19,118
Deduct: Transfers to General Fund—	
Retroactive salaries.....	\$ 3,500
Environmental survey.....	4,000
	7,500
Add:	11,618
Sales of publications.....	3,236
Tax refund on cost of publications.....	2,754
Transfer from Statement of Income and Expenditure (Exhibit II).....	12
Balance, 30 June 1968.....	\$ 17,620

PART 2

Report of 18th Annual Meeting

of the

International Commission for the Northwest Atlantic Fisheries

London, England, 4–8 June 1968

BY THE CHAIRMAN, MR V. M. KAMENTSEV

1. Introduction

Under the terms of a Convention signed in 1949, the International Commission for the Northwest Atlantic Fisheries (ICNAF) 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 these fisheries. Based on the results of scientific investigations promoted and coordinated by the Commission, measures to ensure wise use of the stocks of commercial fish are recommended to member governments.

The Commission has six panels, five of which review the fisheries and recommend conservation measures in geographic subareas 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). The sixth panel has jurisdiction respecting harp and hood seals in the Convention Area.

In addition, the Commission has Standing Committees on Research and Statistics, on Finance and Administration and on Regulatory Measures.

2. Time and Place of Meeting

The 18th Annual Meeting of ICNAF was held, at the invitation of Her Majesty's Government, in Church House, Great Smith Street, London, England, from 4 to 8 June 1968 under the chairmanship of Mr V. M. Kamentsev of the USSR.

Plenary sessions of the Commission were preceded by scientific meetings of the Standing Committee on Research and Statistics with its various subcommittees and working groups between 20–31 May under the general chairmanship of Mr Sv. Aa. Horsted of Denmark. The ICNAF Working Group of Redfish Experts met at the Fisheries Laboratory, Lowestoft, Suffolk, 20–22 May under the chairmanship of Dr J. Messtorff of the Federal Republic of Germany. The Joint ICES/ICNAF Working Party on North Atlantic Salmon met 21 and 22 May under the chairmanship of Mr B. B. Parrish of the U. K. The Subcommittee on Assessments met 23 and 24 May and during the following week under Mr B. B. Parrish. The Subcommittee on Statistics and Sampling met 25 May under Dr F. D. McCracken of Canada. The Steering and Publications Subcommittee met 26 May under Mr Sv. Aa. Horsted of Denmark. Between 27 May–1 June, the Subcommittee on Gear and Selectivity met under Dr A. W. May of Canada, the Subcommittee on Environmental Studies under Dr H. W. Graham of USA, the Subcommittee on Herring and Other Pelagic Species under Dr G. J. Ridgway of USA, the Subcommittee on Ageing Techniques under Dr J. Messtorff. The Standing Committee on Research and Statistics met regularly in plenary session throughout the week to coordinate the work and to receive the reports and recommendations of the various subcommittees and working groups.

On 30 May, the Commission's *ad hoc* Committee on Trawl Regulations held a special meeting regarding an international inspection scheme for ICNAF, under the chairmanship of Mr J. Aglen of the UK. Scientific Advisers to each of the Commission's six panels met on 31 May and 1 June.

From 4 to 8 June 1968, the Commission met in plenary session and assigned various agenda items and other matters to, and heard reports and recommendations from, meetings of each of the three Standing Committees and the six panels as well as the *ad hoc* Committee on Trawl Regulations.

3. Participants (Appendix I)

Commissioners from all member countries, except Italy, were present with their Advisers and Experts. Observers were present, at the invitation of the Commission, 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 Intergovernmental Oceanographic Commission (IOC), the Scientific Committee on Oceanic Research of the International Council of Scientific Unions (SCOR), the Organization for Economic Co-operation and Development (OECD), the Government of Cuba, the Government of Ireland, and the Government of Japan.

Accredited participants are recorded in Appendix I to this Report. The organization and officers of the Commission for the year 1968-69 are presented on the inside cover of these Proceedings.

4. Opening of the Meeting (Agenda Item 1)

The Opening Session of the 18th Annual Meeting of ICNAF was convened in the Hoare Memorial Hall, Church House, Great Smith Street, London, on 4 June 1968. The Chairman, Mr V. M. Kamentsev, welcomed the Commissioners, Advisers, Observers, and Guests and thanked Her Majesty's Government for the excellent meeting accommodation and hospitality.

The Chairman then introduced Mr Norman Buchan, M.P., Joint Parliamentary Under Secretary of State for Scotland, who welcomed the Commission on behalf of Her Majesty's Government, as follows:

"It is a very great pleasure for me to welcome you to London on behalf of Her Majesty's Government for this, the 18th Annual Meeting of the

International Commission for the Northwest Atlantic Fisheries. Although some of the Commission's Committees and Working Parties have met here from time to time, this is the first occasion that the Commission has held its Annual Meeting in this country. As a founder member of the Commission, we are very pleased to be your hosts and we very much hope that you will enjoy your short stay here.

"I have not had the opportunity of attending earlier meetings of the Commission but I recognize here today some familiar faces; friends from many countries whom I have met in connection with other international meetings, and I am very glad of the opportunity of meeting you here once more.

"In welcoming you here, Mr Chairman, it might be useful if I were to say a word or two about the work of the Commission.

"As I see it, your work over the 18 years of the Commission's existence can be divided into three broad phases. In the early years—the first phase—the Commission was mainly concerned with the research which was necessary to provide a proper and sound basis for regulatory measures. I know that a great deal of collaborative study was given by the scientists to the fisheries in the Convention Area and the stocks on which they depend, and only when that work was done was the Commission able to enter the second phase and to approach its real task of considering the regulations needed to achieve the objectives for which the Convention, and the Commission, was established.

"In that second phase the scientific work has, of course, continued, but as it has developed the emphasis has greatly changed and more time and energy have been devoted by the Commission to conservation measures to protect the stocks. The regulations which it has recommended to Governments—I might almost say the mass of recommendations it has made—bears eloquent testimony to the labours of the Commission. Many of these recommendations are however not yet in force. I know that the time lag between the making of recommendations and their taking effect has caused a good deal of concern, and that the Commission has devoted much thought to ways of reducing it. I was very happy to learn therefore that the log jam had recently been broken and that there is

now a prospect of many of the outstanding recommendations becoming effective fairly soon. This is welcome news and will bring to fruition much of the Commission's work in this second phase.

"And now I come to the third phase of its work, of which I believe the Commission is only at the beginning.

"The development of fishing power and intensity have already shown that the measures which the Commission may recommend under the Convention are not by themselves sufficient to secure the objectives of the Convention. Some widening of the Commission's powers therefore seems essential: but I think it goes deeper than that and affects the philosophy embodied in the Convention itself. In 1949 it seemed possible that the general aim of rational utilization of marine resources could be defined in terms of the maximum sustainable catch, which is the phrase embodied in your Convention. I am sure that this concept has not outlived its usefulness; but it is, I suggest, becoming increasingly clear that it is perhaps not a complete definition of what the objectives should be if one takes economic considerations into account. In many fisheries a situation which has yielded the maximum sustainable catch may be thoroughly unsatisfactory from the economic point of view because an excessive amount of effort is being deployed to obtain that catch. The scientists tell us that in some cases very large reductions could be made in the effort deployed without any appreciable loss of catch; clearly, if ways could be found of securing this all round reduction of effort while maintaining the catch, the profitability, the cost efficiency, of fisheries would be greatly increased. I have no doubt there will be complex and difficult questions to solve; but the problems should be stimulating. The situation is perhaps more acute in the North East Atlantic; but I am encouraged to see that you are already giving thought to the issues involved.

"This I think illustrates how, as the fisheries develop and your activities expand, you find yourselves increasingly dealing with problems which are common to both sides of the Atlantic, and increasingly you are working closely with your sister commission for the North East. I am sure this is desirable and it is a process which is of course facilitated by the fact that so many coun-

tries are members of both Commissions. The same process is seen to work in the field of international inspection and enforcement of your regulations, to which you will be giving consideration; I believe this cooperation is valuable and it is perhaps a good augury for the future that, in a related field, the member states of the two commissions have been able to agree on the new convention dealing with the policing of the fisheries in the whole of the North Atlantic.

"When I look at these developments and the possibilities they open up, I feel sure that you have much useful work to do. The way in which the Commission is beginning to grapple with the problems gives ample grounds for confidence that it will continue to show the resource and adaptability needed to tackle whatever problems the future may have in store.

"In wishing you well in your deliberations, I should like to assure you, Mr Chairman, that Her Majesty's Government will continue to do everything in its power to support and advance the aim of the Commission. May I add the personal hope that you will not be so exclusively preoccupied with your business as to have no time left over to see something of London and enjoy your visit to this country. We are very glad to have you here. I wish you success in your work and a happy stay in London."

The Chairman thanked the Under Secretary for his excellent review of past developments in the work of the Commission and for his encouragement and assurance of good prospects for its work in the future. He then declared the 18th Annual Meeting of the Commission opened.

After adjournment of the Opening Session, the First Plenary Session was convened by the Chairman. Second, Third, Fourth, and Fifth Plenary Sessions were convened on 4, 6, 7, and 8 June. During these meetings the following business of the Commission was concluded.

5. Agenda (Item 2)

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

6. Publicity for the Meeting (Item 3)

The Commission agreed that the Chairman of the Commission and the Chairmen of the three Standing Committees, with the Executive Secretary, should constitute a committee to control policy regarding publicity.

7. Report of the Standing Committee on Finance and Administration (Item 26)

At the First Plenary Session, the Commission assigned all financial and administrative items on its agenda (Items 4, 5, 6, 7, 8, 9, and 29) to the Standing Committee for consideration. These items and others on the Standing Committee's agenda were given attention at three meetings held on 4, 5, and 7 June 1968. Reports and recommendations of the Standing Committee were presented to the Fifth Plenary Session of the Commission on 8 June 1968.

a) Panel memberships

The Standing Committee reviewed panel memberships as required under Article IV(2) of the Convention. Application by Norway and the Federal Republic of Germany for membership in Panel 3 and by Poland for membership in Panels 4 and 5 were adopted by the Commission on the recommendation of Panels 3, 4, and 5 and the Standing Committee on Finance and Administration. The number of panel memberships is therefore increased to 45 for the year 1968-69. Panel memberships are distributed among the 14 member countries as follows:

Panel:	1	2	3	4	5	A	Total
Canada		+	+	+	+	+	5
Denmark	+					+	2
France	+	+	+	+			4
Germany	+	+	+				3
Iceland	+						1
Italy			+	+			2
Norway	+		+			+	3
Poland	+	+	+	+	+		5
Portugal	+	+	+	+			4
Romania					+		1
Spain	+	+	+	+			4
USSR	+	+	+	+	+		5
UK	+	+	+				3
USA			+	+	+		3
TOTAL	10	8	11	8	5	3	45

b) Reports by the Secretariat

The Executive Secretary submitted the following reports on administrative and financial matters:

- i) Auditor's Report for the fiscal year ending 30 June 1967 (1967 Annu. Proc. Vol. 17, p. 10-12);
- ii) Administrative and Financial Report for the fiscal year ending 30 June 1967 (complete to 15 May 1968) (Comm. Doc. 68/8);
- iii) Budget estimate for the fiscal year ending 30 June 1969 (Appendix I to the 1968 Agenda for the Standing Committee on Finance and Administration);
- iv) Budget forecast for the fiscal year ending 30 June 1970 (Appendix II to the 1968 Agenda for the Standing Committee on Finance and Administration).

c) Recommendations on finance and administration

The Commission adopted the following recommendations:

- i) that the Auditor's Report showing appropriations of \$ Can. 92,801 and obligations incurred of \$ Can. 92,309 for the fiscal year ending 30 June 1967 (1967 Annu. Proc. Vol. 17, p. 10-12) be returned to the auditor for re-examination and comment regarding the source of the supplementary appropriation of \$ Can. 550 towards the 1966-67 budget, the Executive Secretary to circulate the explanation by mail for approval of the Report or of any revised Report which the Auditor may see fit to submit;
- ii) that the Executive Secretary discuss with the Auditor the possible revision of the financial statements to be included in future Audit Reports and consider the possible revision of the financial statements to be included in future Administrative Reports, bearing in mind the sample statement submitted by the USA;

- iii) that the Romanian contribution of \$ Can. 714.28 to the Working Capital Fund on joining the Commission be shown as a deduction against other Member Countries' assessment on the 1967-68 billing;
- iv) that the provisional Administrative Report with financial statements for the fiscal year ending 30 June 1968 (estimated from 15 May 1968), be adopted;
- v) that Contracting Governments be billed by the Commission for payments due under the 1968-69 administrative budget, in accordance with Article XI of the Convention, on 15 August 1968;
- vi) that the Commission accept the status of the Working Capital Fund as satisfactory;
- vii) that the Subcommittee on Financial Matters established at the 1967 Annual Meeting review the Commission Rules of Procedure and Panel Rules of Procedure *in toto* and revise the timing of the research and Commission meetings and make proposals for consideration at the 1969 Annual Meeting;
- viii) that Norway and the Federal Republic of Germany be admitted to membership in Panel 3 and that Poland be admitted to membership in Panels 4 and 5;
- ix) that the ICNAF staff assessment scheme based on Canadian tax paid on income from the Commission by its staff members and set up by the Executive Secretary and the Canadian Government authorities, be approved with effect from 1 January 1968;
- x) that a commendation be sent to the Canadian Government for its efforts in providing financial relief for the Commission through the staff assessment scheme;
- xi) that the Commission extend its thanks to the Canadian Government whose Surveys and Mapping Branch, Department of Energy, Mines and Resources kindly revised and reprinted the coloured map of the ICNAF Statistical Area;
- xii) that the Financial Regulations adopted by the Commission 5 April 1951, 30 May 1960, 12 June 1965, 10 June 1966, and 9 June 1967, be repealed and new Financial Regulations, as revised by the Subcommittee on Financial Regulations (Appendix III), be adopted with effect from 1 July 1968;
- xiii) that the Rules of Procedure for the Commission adopted 5 April 1951 and 30 May 1953 be amended as follows:
 - 1) Rule 11 (a) Delete second sentence, and delete in the fourth sentence "prepare and submit to the Chairman a draft of the Commission's budgets (Article XI of the Convention) for each year and"
 - 2) Rule 13 Delete
 - 3) Rule 15 Delete "in North America"
 - 4) Rule 16 Add the following "Rule 16(d). There shall be a Standing Committee on Regulatory Measures consisting of one nominee from each Contracting Government who may be assisted by experts or advisers and by observers from non-Contracting Governments, and from the Food and Agriculture Organization of the United Nations, the International Council for the Exploration of the Sea, the North-East Atlantic Fisheries Commission and the Organization for Economic Co-Operation and Development. The Committee shall (a) consider possible measures for the regulation of fishing in relation to the stocks of fish, or of any particular species of fish in the Convention Area, or any part thereof, and (b) consider the economic and administrative problems involved in the application of such measures and, in consultation with the Standing Committee on Research and

Statistics, the scientific and statistical information required for their solution, and (e) make appropriate recommendations to the Commission. The Committee shall choose its own chairman. The Executive Secretary shall be an *ex officio* member of this Committee without vote."

- 5) Rule 16(b) Replace with the following:

"There shall be a Standing Committee on Finance and Administration consisting of one nominee from each of five Contracting Governments who may be assisted by experts and advisers and which shall advise the Commission on matters relating to the Executive Secretary and his staff, on the budget of the Commission, and on the time and place of meetings of the Commission, and on publications of the Commission. The Committee shall choose its own Chairman from among the nominees. The Chairman shall have no vote but his Contracting Government may designate an alternate nominee who shall cast its vote. The Executive Secretary shall be an *ex officio* member of this Committee without vote."

- 6) Rule 23(a) Delete all after "Convention" and insert "Area, the Chairman's Report of the Annual Meeting, and a financial statement."

- 7) Rules 15-24 Renumber taking into account the deletion of Rule 13 and the lack of a Rule 14 (deleted by the 1953 Annual Meeting).

- xiv) that the Commission appropriate a sum of \$ Can. 105,700 from Contracting Governments, the staff assessment fund and the 1967-68 surplus to meet ordinary expenditures and \$ Can. 8,000 from the Working Capital Fund to meet special expenditures in connection with the Marine Food Chains Symposium, for the fiscal year ending 30 June 1969, the ap-

propriation to be used for the following purposes:

1.	Personal Services	
	a) Salaries.....	\$ 59,000
	b) Superannuation and Canada Pension Plan.....	1,800
	c) Additional help.....	1,200
	d) Group medical and insurance plans.....	500
	e) Retroactive salaries.....	1,200
2.	Travel.....	6,500
3.	Transportation.....	500
4.	Communications.....	3,500
5.	Publications.....	14,000
6.	Other Contractual Services....	4,000
7.	Materials and Supplies.....	3,500
8.	Equipment.....	1,000
9.	Annual Meeting.....	6,000
10.	Contingencies.....	3,000

Total ordinary expenditures to be met from the staff assessment fund, the 1967-68 surplus and appropriations from Contracting Governments..... \$ 105,700

Total special expenditures (Marine Food Chains Symposium) to be met by appropriations from the Working Capital Fund..... \$ 8,000

- xv) that the Contracting Governments note for consideration at the 19th Annual Meeting, the following advance budget estimate of \$ Can. 107,700 to be met by appropriations from Contracting Governments, the staff assessment fund and the 1968-69 surplus, for the fiscal year ending 30 June 1970:

1.	Personal Services	
	a) Salaries.....	\$ 60,000
	b) Superannuation and Canada Pension Plan.....	2,000
	c) Additional help.....	1,200
	d) Group medical and insurance plans.....	500
	e) Contingencies.....	5,000
2.	Travel.....	6,500
3.	Transportation.....	500

4.	Communications.....	3,500
5.	Publications.....	15,000
6.	Other contractual services.....	4,000
7.	Materials and Supplies.....	3,500
8.	Equipment.....	1,000
9.	Annual Meeting.....	4,000
10.	Contingencies.....	1,000

Total ordinary expenditures to be met from the staff assessment fund, the 1968-69 surplus and appropriations from Contracting Governments..... \$ 107,700

xvi) that the Commission accept with thanks the kind invitation of the Government of Canada to hold its 20th Annual Meeting in St. John's, Newfoundland, Canada, during the first full week in June 1970, the exact dates to be fixed later.

xvii) that one nominee from each of Canada, Denmark, USSR, UK, and USA form the membership of the new Standing Committee on Finance and Administration effective 1 July 1968 (amended Commission Rule of Procedure 16(b));

xviii) that the Commission note the unanimous election of Mr R. W. Green of USA as Chairman of the new Standing Committee on Finance and Administration effective 1 July 1968 (amended Commission Rule of Procedure 16(b)).

8. Report of the *ad hoc* Committee on Trawl Regulations (Items 12, 13, 14, and 15)

The *ad hoc* Committee, under the Chairmanship of Mr A. J. Aglen (UK), was assigned plenary agenda item 12 on annual returns of infringements to the Commission's trawl regulations, item 13 on simplification of the Commission's trawl regulations, item 14 on topside chafing gear and item 15 on mesh measuring.

a) Reports of infringements to the Commission's trawl regulations

Reports from Contracting Governments relating to mesh size, mesh obstruction and excess land-

ings for the year 1967 were reviewed by the Committee which expressed the hope that Contracting Governments would take note that reports of infringements were particularly desirable for 1968 since trawl regulations would then be in effect in all Subareas.

b) Simplification of the Commission's trawl regulations

The Committee reviewed the Simplified Guide to ICNAF Trawl Regulations, 1967-68. The Committee's **recommendation** that, in future, the Executive Secretary update the Simplified Guide and circulate it as an ICNAF Notification Series Document was adopted by the Commission.

c) Topside chafing gear

The Committee heard the report of the Standing Committee on Research and Statistics on the results of deliberations on topside chafers. The Committee agreed that there was nothing to recommend to the Commission at this time.

d) Mesh measuring

The Committee **noted** that there was no scientific basis for choosing any one mesh measuring gauge. The Committee **agreed** to the Canadian proposal that mesh measuring gauges of 2.0 mm thickness of NEAFC or of 2.3 mm thickness of ICNAF were acceptable for use in the ICNAF Area.

9. Status of International Trawl Regulations (Item 10 b)

The Commission, in Plenary session, reviewed the status of the Commission proposals for international regulation of the trawl fisheries. It was pleased to **note** that, with the acceptance by Poland of the 10 proposals of the 1965 Annual Meeting, all trawl regulations proposed by the Commission will enter into force on a current basis on 21 September 1968 with the exception of the 1963 proposal relating to chafing gear in Subarea 5 and the 1967 proposals relating to mesh measuring in Subareas 1-5.

10. International Control (Item 10a, 16, and 17)

a) Status of Protocol relating to measures of control

The Commission **noted** with regret, that the 1963 Protocol, which would allow it to make proposals for national and international measures of control on the high seas to ensure application of the regulatory measures in force under the Convention, had not yet been ratified by Denmark, Federal Republic of Germany, Italy, Poland, and Portugal.

b) National exchange of inspection officers

The Commission was pleased to **note** that successful exchanges were completed between Canadian and USA fisheries enforcement officers in 1968 and that exchanges were planned between USA and Spanish fisheries officers, Canadian and Polish officers, Canadian and French officers and USA and USSR officers in 1968. Portugal invited exchanges in Subareas 2, 3, and 4 in 1968. It was agreed that the exchanges were extremely beneficial as background for establishing a suitable international inspection scheme.

c) Form of international inspection scheme

The Commission had before it the report of the special meeting of the *ad hoc* Committee on Trawl Regulations (Comm. Doc. 68/23) which, in accordance with a decision of the 1967 Annual Meeting, considered the views of Member Countries in regard to an international inspection scheme for ICNAF based on the NEAFC scheme. Proposals by the *ad hoc* Committee for modifications to the NEAFC scheme to make it compatible with the ICNAF trawl regulations were examined. In the discussion which followed, the Commission agreed that an adequate and uniform scheme of inspection was desirable. Some Member Countries held the view that a strong and effective system of international control should be instituted in the Convention Area as soon as possible and proposed that the Commission consider accepting the ICNAF modified NEAFC scheme subject to ratification of the Protocol relating to measures of control. Other Member Countries felt that it was difficult to accept inspection of gear and catch below the decks of fishing vessels and that inspec-

tion should be carried out on a basis of mutuality under bilateral agreements. Finally, the Commission agreed that as a first step, all Member Countries should be encouraged to establish effective national control systems, and **adopted** the following resolution:

“The Commission, endorsing the idea derived from the ICNAF Convention that priority should be given in respect of establishing the national control system, **decides to encourage** all Member Countries to strengthen their national control systems at the earliest possible convenience, if necessary or possible.”

11. Proposed Amendment to Convention Articles VII and VIII Dealing with Regulatory Measures (Item 11)

The Commission considered a US proposal putting forward a draft Protocol amending Convention Articles VII and VIII (Comm. Doc. 68/18) in order to provide greater flexibility in the types of fisheries regulatory measures which it might propose under the terms of Article VIII, paragraph 1 of the Convention. The Commission agreed that the first and fundamental basis for proposing regulatory measures was scientific investigations providing biological assessments of the state of the stocks and their yields and that the language of the US proposal through the use of “scientific investigations, or economic or technical considerations, or both” in Articles I and II of the draft Protocol tended to imply that the Commission might be authorized to make proposals on the basis of economic or technical considerations without regard to scientific considerations. In recognition of the implication, the Commission **agreed** that Article I of the US draft Protocol amending paragraph 2 of Article VII should be changed to read as follows:

“2. Each Panel, upon the basis of scientific investigations, and economic and technical considerations, may make recommendations to the Commission for joint action by the Contracting Governments within the scope of paragraph 1 of Article VIII”

and that Article II of the US draft Protocol amending paragraph 1 of Article VIII should be

changed to read as follows:

- “1. The Commission may, on the recommendation of one or more Panels, and on the basis of scientific investigations, and economic and technical considerations, transmit to the Depositary Government appropriate proposals, for joint action by the Contracting Governments, designed to achieve the optimum utilization of the stocks of those species of fish which support international fisheries in the Convention Area.”

The Commission then **adopted** the following resolution:

“The Commission, **having considered** Comm. Doc. 68/18 embodying a proposal from the delegation of the United States of America putting forward a draft Protocol for the amendment of Articles VII and VIII of the Convention and **taking into account** the views expressed by Delegations of other Member Countries and **noting** that there was general agreement in principle that the Convention should be amended to allow the Commission greater flexibility in the proposals for regulatory measures which it may make to Contracting Governments **resolved** that Contracting Governments be invited to consider the draft Protocol as amended by the USA in the light of the discussion and be requested to inform the Commission of their views so that at its meeting in 1969 the Commission may reach agreement on further action to be recommended to Governments.”

12. Report of the Standing Committee on Research and Statistics (Item 25)

The Committee met under the Chairmanship of Mr Sv. Aa. Horsted (Denmark) with Mr D. Garrod (UK) as Rapporteur from 27 to 31 May 1968. The Subcommittees on Assessments and on Statistics and Sampling met 23-25 May. An ICNAF Working Group of Redfish Experts met 20-22 May. The Committee held further meetings from 4 to 8 June 1968.

The complete Report of the Standing Committee with subcommittee reports as appendices is

published as ICNAF Redbook 1968, Part I. The Report, as adopted by the Commission on 8 June 1968, contains the following highlights:

a) Assessments

The Assessments Subcommittee reviewed nominal catches and fishing activity in the Convention Area and reported that total nominal catches increased by about 4% from 1966 to 1967; that there is an increase in Subareas 1-3, noticeable especially in Subarea 3, whereas there is a decrease in groundfish catches in Subareas 4 and 5 not compensated by an increase in herring catches, and that total fishing activity in 1966 shows no clear trends compared to 1965.

The Subcommittee gave major consideration to the Report of the First Meeting of the new Standing Committee on Regulatory Measures, January 1968 (Comm. Doc. 68/6), which set up guidelines to be used as the basis of a request for scientific information directed to the Standing Committee on Research and Statistics and posed four questions which it asked the Research and Statistics Committee to consider and prepare a progress report for the 1968 Annual Meeting. Because of the short time available since the first meeting of the Standing Committee on Regulatory Measures, the Subcommittee confined its attention to assessments of the effect of regulating fishing intensity (direct effort control or catch quota) on the basis of mesh-size regulations remaining as at present or as proposed and no further mesh assessments were attempted. On the basis of reports on the fish stocks in each subarea and their current state relative to fishing in each subarea, the Subcommittee reported the following general remarks to the guidelines of the Regulatory Measures Committee:

- i) *Possibility of estimating total annual catch so as to maintain the maximum sustainable yield.*

For most of the ICNAF stocks, with present data, it would be extremely difficult to estimate the level of fishing mortality giving the maximum sustainable yield. It is possible, however, to identify several stocks for which a reduction in fishing mortality would certainly not result in

any appreciable decrease in long-term yield-per-recruit and would probably increase it. For these stocks it is possible to estimate the short-term catch quota required to achieve any desired level of fishing mortality.

- ii) *Research required to establish annual catch quotas.*

The research requirements to establish annual catch quotas are set out in detail in ICNAF Redbook 1968, Part I, Appendix I, but the present research is sufficient to give useful results concerning the setting of catch quotas for some stocks.

- iii) *Precision with which annual quotas can be set with present data. Effect of errors in annual quotas on yield.*

There is a wide variation in the precision of the data available for different stocks. Errors in estimating the quota will not have a serious effect on yield provided the errors can be detected quickly and corrected by adjustments to the quotas in subsequent years. If an error made in one year is corrected in the next, the difference in yield for a long-lived species, e.g. cod, is negligible.

- iv) *Magnitude of year-to-year adjustment in quotas.*

The magnitudes of the necessary year-to-year adjustments in catch quotas are of the same order as the observed past year-to-year fluctuations in catch-per-unit effort, i.e. from 5 to 25 % depending on the stock.

and presented the following answers to the four specific questions from the Regulatory Measures Committee:

- v) *Stocks agreed to be demonstrably fully exploited or over-exploited, their sustainable yields and effect of effort regulation.*

The present knowledge of the state of the stocks is given in ICNAF Redbook 1968,

Part I, Appendix I, Tables 6-9 and Annexes I-IV. Cod in Subarea 1 and haddock in Subarea 5 are demonstrably over-exploited. The sustainable yields for these stocks are: Subarea 1 cod—400,000-450,000 tons (based on recruitment in recent years which has been high); Subarea 5 haddock—50,000 tons (based on long-term average recruitment). The catch quota in any year will depend on the strength of year-classes present. In the initial year of regulation the quota will be less than it would be in a steady state to an extent depending on the reduction in fishing mortality decided upon. Increase in catch-per-unit effort will result from the regulation.

- vi) *Which of these stocks can be fished independently of other species.*

Subarea 1 cod can be fished independently of other species. Sub-area 5 haddock cannot be fished entirely independently of other species but mixture with all other stocks except cod is small. Reduction of fishing intensity aimed at management of Subarea 5 haddock will probably also benefit the cod yields.

- vii) *Total yield of demersal species in each sub-area. Effect on these yields by regulating fisheries mentioned in (v) above.*

The available data on the potential yields of demersal species in each subarea are summarized in Tables 6-9 of Appendix I of the ICNAF Redbook 1968, Part I. Regulation of Subarea 1 cod and Subarea 5 haddock (and cod) fisheries will not directly affect the fisheries for other important demersal fisheries in these subareas. The indirect effect of diversion of fishing effort cannot be easily estimated.

- viii) *Additional information required. Preference between direct effort limitation and catch quota.*

The additional information required is set out in detail in ICNAF Redbook 1968, Part I, Appendix I, Annex V. The

direct limitation of effort requires detailed calibration of the fishing powers of all vessels of the regulated fleet fishing the stocks concerned; this appears difficult to achieve at present. Limitation of catch requires continued revision of quotas in accordance with changes in stock abundance.

As regards effectiveness, there is no preference between limitation of effort and limitation of catch since in any case the effectiveness of this limitation would be monitored in terms of catch. With regard to continued study and year-to-year adjustment, limitation of catch is preferable to limitation of effort because catch is easily determined whereas definition of effort is very difficult.

The scientific data needed to set up and operate a catch quota regulation on Subarea 1 cod and Subarea 5 haddock are currently available.

In further discussion of this question, the Subcommittee separated two requirements, (1) the initial assessment of the stock, and (2) the monitoring of the regulation.

(1) *Initial assessment.*

This requires a knowledge of the parameters of the stock which can be obtained through routine sampling programs. The Subcommittee therefore reaffirms the essential need, if good advice on management is desired, for full sampling coverage (length and age compositions) of all the major ICNAF fisheries.

The methods of analyzing these data are reasonably well known, but the individual peculiarities in the data from each stock mean that their application cannot be entirely a matter of routine. Thus there is rarely time during an annual Commission meeting to carry out any very detailed analysis. Equally,

since it is necessary to pool the data from all countries, analysis by individual scientists in their own laboratories is not easy. Mid-term meetings of the Assessment Group as a whole, or of those concerned with an individual stock (*e.g.* West Greenland cod), have been held very successfully in the past, and the Subcommittee strongly **recommends**

that continuing provision be made for mid-term meetings of the Subcommittee on Assessments or of appropriate working parties of that subcommittee, the costs of attendance of the chairman of the Subcommittee or of the working party to be borne by the Commission.

Even such meetings, however, can generally only analyze the situation in terms of the simpler population models, especially the constant parameter yield-per-recruit model. It is becoming clear that these models do not give an entirely adequate description of the situation and that if more precise assessment of the state of the stocks is required, more complex models using an increasing range of information will become necessary. It must, however, be emphasized that the use of the more realistic models will not change the general conclusions and advice of the past few years—that the fishing on several of the major ICNAF stocks has reached a level beyond which no appreciable increase in sustained yield is possible, and that future management will require some control of the total amount of fishing.

The more complex models require information from virtually any branch of marine science, and of biology generally, but certain aspects may be picked out as likely to

be particularly relevant to the most urgent problems.

The major problems concern the relation between the abundance of the adult stock and the average strength of the resultant year-classes. The importance of knowing this has already been pointed out in connection with Georges Bank haddock. Another important group of questions concerns the interaction between a fish stock and the population on which it feeds. This includes the case where the population of food organisms is itself the object of a commercial fishery (*e.g.* herring or capelin which are important food items for cod).

In both these problems future progress seems to depend less on the direct application of existing theories to data to be collected for the various ICNAF stocks, than on a definite advance in fishery science in those fields concerned with the more realistic population results. This requires more time for closer collaboration than generally exists at present between stock assessment experts and other research workers.

(2) *Monitoring the regulation.*

2.1) *Limitation of catch quotas.*

When mortality is known, quotas can be set from a knowledge of the relative abundance of year-classes already in the fishery, coupled with an estimate of recruitment expected during the year. This can be obtained from pre-recruit surveys and is currently available for several stocks. This is the most important source of variation but periodic adjust-

ment might be necessary owing to variation in other parameters, *e.g.* growth, which would have to be kept under review.

2.2) *Direct limitation of effort.*

The essential points concern the difficulties of calibrating international fishing effort to standard units. This has not yet been done so the precision which could be achieved is unknown. The calibration would, however, need to be reviewed periodically to adjust for changes in efficiency.

Some members of the Subcommittee also met with the Scientific Advisers to Panel A (Seals) to assess the state of the seal stocks in the Northwest Atlantic (see Section 7, Report of Panel A (Seals)).

b) Statistics and sampling

The Committee adopted the report of the Subcommittee which included the following summary **recommendations**:

- i) that sampling data for silver hake, yellowtail flounder, and herring be published in the Sampling Yearbook;
- ii) that ICNAF accept the proposed changes in (a) the name of the CWP from "Continuing Working Party on Fishery Statistics in the North Atlantic Area" to "Coordinating Working Party on Atlantic Fishery Statistics" and in (b) the appointment by ICNAF to the inter-agency CWP of up to four representatives (Executive Secretary, Chairman of Statistics and Sampling, Canada, and Denmark for the Sixth Session of CWP; Executive Secretary, Chairman of Statistics and Sampling, Denmark, and USA for that session of the CWP following the Sixth which would deal with the North Atlantic);

- iii) that the CWP be requested to review ways and means of compiling and publishing statistics on the "potential" fishing fleet in the Atlantic.

c) Gear and selectivity

The Committee adopted the report of the Subcommittee which initiated investigation of the compatibility of the ICNAF and ICES forms for collecting tabular summaries of selectivity data for the whole of the North Atlantic and **recommended**

that an ICNAF Working Group on Selectivity Analysis review variability in selectivity data including the scientific basis of mesh size differentials for different twine materials; that ICES be invited to participate and a report be made available to the next Annual Meeting of NEAFC as well as ICNAF.

The Committee was pleased to note progress towards means of eliminating topside chafers by means of heavier netting twines in the codend as by the UK.

d) Environmental studies

The Committee noted that ICNAF Special Publication No. 7 (Environmental Surveys NORWESTLANT 1-3) will be available in printed form by the 1969 Annual Meeting; that the Georges Bank-Gulf of Maine Environmental Survey, a joint USA-USSR exercise, shows large significant differences in the estimates of zooplankton abundance between ships, between areas and between times; that Canada, USSR and USA will attempt to define an egg production curve for spawning haddock, in the spring of 1969; that, on the whole, the hydrographical situation in the northern part of the ICNAF Area is characterized by colder water in the inshore areas and by warmer water in some offshore areas; and **recommended**

- i) that ICNAF accept the invitation of IOC to send two representatives to a coordinating group with IOC and ICES to coordinate hydrographic work undertaken under the auspices of the various international bodies;

- ii) that ICNAF accept the invitation of ICES to co-sponsor with ICES, UNESCO, SCOR and IAPSO the Symposium on Physical Variability of the North Atlantic to be held in Dublin in 1969 (Dr A. Alexeev, USSR, was appointed ICNAF member of the planning group).

e) Ageing techniques

The Committee reviewed reports from the Subcommittees on Ageing Techniques and on Herring and Pelagic Species and the Working Group of Redfish Experts and approved the following summary **recommendations**:

- i) that the cod otolith photograph exchange program (1963-67) which has resulted in an improvement in the consistency of readings by different countries be discontinued and that informal exchanges be made whenever required;
- ii) that the herring otolith exchange program be continued and exchange of scales and photographs of otoliths be made to allow comparison of criteria for age determination;
- iii) that an exchange of redfish otoliths and scales be started as detailed in ICNAF Redbook 1968, Part I, Appendix VI, Annex I.

f) ICES/ICNAF Joint Working Party on North Atlantic Salmon

The Committee, in considering the problem of the influence of the West Greenland salmon fisheries on the home river stocks, reviewed the Second Report of the ICES/ICNAF Joint Working Party on North Atlantic Salmon, London, May 1968 which **recommended**

- i) that separate records of grilse and salmon catches in home waters be provided, including information on gear used, length and weight of fish, and sex ratio and age composition of the catch;
- ii) that details of catch-per-unit effort for home water catches be provided when possible;

- iii) that the type of tag used for smolts in those countries which contribute fish to West Greenland be standardized.

The Committee, in approving the Report, noted that no new data concerning possible influence of the West Greenland fishery and high seas fishery on the spawning stock and subsequent recruitment (smolt production) have been presented. It, therefore, reiterates the statement of the First Report of the Working Party that "there is no direct evidence on the probable effects of increased exploitation on subsequent natural production of smolts. The West Greenland fishery may reduce spawning stocks but if this reduction is small, the effect on smolt production will be negligible."

The Committee also noted with approval the concern of the Working Party about high seas salmon fisheries developing in the Norwegian Sea and off Faroes.

g) Other matters

The Committee, in special session, heard reviews of two interesting and informative papers dealing with the results of the USA-USSR comparative groundfish survey studies in Subarea 5.

The Committee **recommended** the following items on publications and other matters:

- i) that the Second Report of the ICES/ICNAF Joint Working Party on North Atlantic Salmon be published in the ICES Cooperative Research Report Series A;
- ii) that research in statistical Subarea 6 be reported only on species of importance to the Commission and also exploited in Subarea 5;
- iii) that meeting papers on seal research be made available during the meetings of the Standing Committee on Research and Statistics each year;
- iv) that 50 free reprints of papers in ICNAF Redbook Part III be given to each author;
- v) that the Executive Secretary continue to explore possible schemes for indexing ICNAF publications and meeting documents;
- vi) that, because the assessment work requested by the Standing Committee on Regulatory Measures was only dealt with by a progress report and that additional assessment work was requested by Panels 3, 5, and A (Seals), a mid-year meeting of an Assessments Group be held preferably immediately after and at the same place as a possible mid-year session of the Standing Committee on Regulatory Measures.

The Committee expressed its appreciation of the able manner in which Mr Sv. Aa. Horsted led the Committee and unanimously elected him Chairman for the ensuing year.

13. Reports of the Standing Committee on Regulatory Measures (Items 18, 19, and 27)

The new Standing Committee, which was set up by the Commission at its 1967 Annual Meeting (Annu. Proc. Vol. 17, p. 22), met several times during the year under the chairmanship of Mr J. Graham (UK). At its first meeting in January 1968, the Standing Committee agreed to the following terms of reference for its future work:

- i) to consider possible measures for the regulation of fishing in relation to the stocks of fish, or of any particular species of fish in the ICNAF Area, or any part thereof;
- ii) to consider the economic and administrative problems involved in the application of such measures and, in consultation with the Research and Statistics Committee, the scientific and statistical information required for their solution, and
- iii) to make appropriate recommendations to the Commission.

and set up guidelines, which should form the basis of a request for scientific information directed to

the Standing Committee on Research and Statistics and posed four questions which it asked the Research and Statistics Committee to consider and to prepare a progress report for the 1968 Annual Meeting (Comm. Doc. 68/6).

At its subsequent meetings held on 5 and 7 June during the 1968 Annual Meeting, the Standing Committee reviewed the Report of the Standing Committee on Research and Statistics which contained, in the form of a progress report, general remarks to the guidelines and answers to the four questions posed by the Regulatory Measures Committee (see Section 12 (a)).

Following a USSR proposal to expanded research to get more and better data to determine maximum sustained catch for the main commercial species and to hold annual catches of main commercial species to the average for the last 3 years starting from January 1969 and a US proposal regarding the principles which might be followed in the application of a catch or effort quota regulation system, especially between countries, the Standing Committee **agreed**

- i) that there was a need for further research to determine the maximum sustained catch for the main commercial species,
- ii) that, in view of the need for more time for countries to study and express firm views on the USSR and USA proposals, there should be a mid-term meeting of the Committee which would give special attention to the principles and practical and administrative problems involved in the development of regulatory schemes based on limitation of catch, as embodied in the USSR and USA proposals. Items for attention would include *inter alia*
 - a) the choice of fish stocks which should be protected;
 - b) the allocation of quotas between countries, including
 - (i) the period of years for past catches to be taken as a basis for allocation;

- (ii) the provision of an unallocated proportion of the global quota;
- (iii) special provisions for coastal states with immobile fleets, and whose economies are heavily dependent on fishing;
- c) the enforcement and monitoring of the regulation;
- d) problems regarding the diversion of fishing effort following regulation.

The Commission, in Plenary Session, **adopted** the above reports and **agreed** that the Standing Committee on Regulatory Measures and a group of experts from the Assessments Subcommittee should meet, the former for 3 days and the latter for the four following days toward the end of June 1969 in London.

14. Reports of Meetings of Panels (Items 20 and 28)

The Commission received the reports of Panels 1-5 and Panel A (Seals) as well as the report of a joint meeting 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.

- a) **Panel 1.** The panel, under the chairmanship of Mr O. Lund (Norway), noted with satisfaction that the 130-mm-mesh size proposed for the Subarea in 1966 would be effective on 21 September 1968. It strongly supported the view of the scientific advisers that the collection of data urgently needed for cod assessment purposes should be intensified and was pleased to note that new research vessels had been commissioned by Denmark and Iceland and would be available for expanded research efforts. The panel noted the second report of the ICES/ICNAF Joint Working Party on North Atlantic Salmon and emphasized the need to collect more statistical and biological data on the increasing offshore salmon fishery and to develop suitable catching methods for tagging purposes.

- b) **Panel 2.** The panel, under the chairmanship of Mr G. Möcklinghoff (Federal Republic of Germany), noted that the scientific advisers, in considering the subarea as a whole, did not find any specific cases of definite over-exploitation of any of the species. However, recent work had shown that large increases in fishing and changes in the distribution of fishing both in area and in season has complicated the assessment of the cod stock of Subarea 2 which extends into Divisions 3K and 3L. Various approaches to the problem confirm that fishing is now at a level producing at least 90%, and may even be beyond the level of possible maximum sustainable yield. The importance of further research and particularly of surveys of the pre-recruit phases of the cod stock was emphasized.
- c) **Panel 3.** The panel, under the chairmanship of Dr F. Chrzan (Poland), noted that no firm conclusions were reached by the scientific advisers concerning the state of various stocks in the Subarea relative to present levels of effort. It seemed likely that several cod stocks were being fished at, or near, the level of maximum sustained yield. Cod stocks of Divisions 3N and 3O which in past years were reported as being fished near the level of maximum sustained yield yielded threefold increase in catches in 1967. Part of the increase is attributed to better recruitment, *i.e.* the good 1963 year-class, but part also to increased effort. Greater emphasis will be given to surveys of pre-recruit sizes, especially of cod.
- d) **Panel 4.** The panel, under the chairmanship of Captain T. de Almeida (Portugal), heard a review of the work done by the Assessments Subcommittee in relation to questions posed by the Standing Committee on Regulatory Measures with particular reference to Subarea 4. No firm recommendations about the status of the stocks were made, not because the stocks were believed to be underexploited but rather that firm conclusions could not be drawn from the data and analyses available. The need for more intensive studies and adequate sampling of the commercial landings was emphasized.
- e) **Panel 5.** The panel, under the chairmanship of Mr R. Green (USA), gave special consideration to the present low level of the haddock stocks. It was noted that the last four year-classes have been a failure and that it was not possible to state whether this is the result of heavy fishing or environmental conditions. Following a USA proposal requesting special management action for the haddock in Subarea 5, the panel **recommended** that the mid-year meeting of the assessments working group approved by the Standing Committee on Research and Statistics give high priority to 1) the kinds of information and the methods of sampling required to elucidate the environmental factors affecting recruitment, 2) specification and modelling of the population processes with regard to stock-recruitment relations, 3) examination of available data on stock recruitment with special reference to Subarea 5 haddock, it being understood that special attention to haddock apply to the three recommendations and not merely the third one. The panel noted that the joint environmental survey of Georges Bank and the Gulf of Maine was being advanced.
- f) **Panel A (Seals).** The panel, under the chairmanship of Dr A. W. H. Needler (Canada), adopted the report of the Panel A meeting held in Hamburg, 12 October 1967. The panel took note of the reduction of the catch in the Front area from a total of about 230,000 harp seals in 1967 to about 129,000 in 1968 as a result of the bilateral agreement between Norway and Canada to open the season at a later date and permit a shorter catching season. The panel noted the evidence from the high incidence of recovery in the Front of young harp seals

tagged in the Gulf and the need for further studies to establish the relationship between the Gulf and Front stocks. The panel, recognizing that the data were insufficient to enable any substantial revision of the assessment of the state of the stock presented at the 1967 Annual Meeting, adopted the following **recommendation** which was approved by the Commission in plenary session on 7 June 1968:

that the Standing Committee on Research and Statistics be requested to arrange for a special meeting between those working on sealing and on stock assessments at the time of the 1969 meeting, and to ensure that the relevant material is made available to the stock assessment workers at least 1 month in advance of this meeting.

The panel noted that representatives of the Governments interested in the seal question would hold a mid-year meeting to consider regulatory measures for the 1969 sealing season and to consider what should be recommended to the Commission as a long-term plan at its 1969 Annual Meeting.

The panel received briefs from the World Federation for the Protection of Animals and the Marine Productivity Section of the International Biological Programme.

- g) **Joint Meeting of Panels 1-5.** A joint meeting of Panels 1-5 was held on 6 June 1968 under the chairmanship of Mr V. Kamentsev (USSR) to consider a Canadian proposal that pending development of adequate scientific information, there be no increase in offshore fishing of Atlantic salmon in the Convention Area. Following discussion of the proposal and other possible recommendations, the following resolution as amended by the Commission in plenary session under agenda item 20 on 7 June 1968 was **adopted**:

“The Commission calls the attention of Member Governments to the serious con-

cern expressed by several Delegations who considered that the high seas fishery for salmon should either be prohibited or stabilized at its present level in view of the potential danger which it presents to the Atlantic salmon resources and **recommends** to Member Governments that they consider urgently the desirability of preventing increase in high seas fishing for salmon by their nationals in the ICNAF Area for the time being, and that high priority be given to studies of the effects of such high seas fishing on the resources.”

15. International Cooperation (Items 21, 22, 23, 24)

a) UN Resolution 2172 XXI on Resources of the Sea

The Commission reviewed the work of the UN Group of Experts established to advise the Secretary General of the United Nations on the Resolution which called for (1) a survey of activities in marine science and technology and (2) proposals for more effective international cooperation in the study and exploitation of marine resources including conservation. The Commission **noted** that, in relation to the survey, a factual report has been prepared by the UN Secretariat based on replies to a questionnaire and that, in relation to international cooperation, the report recommends strengthening of IOC and the continuance of FAO as the foremost international body for fisheries.

b) Cooperative systematic studies in the North Atlantic

The Commission approved the recommendation of the Standing Committee on Research and Statistics for the formation of a coordinating group with representatives from IOC, ICES, and ICNAF for the coordination of hydrographic work being undertaken under the auspices of the various international bodies.

c) Relations with other International Organizations

The Commission has continued to cooperate with FAO, ICES, IOC, NEAFC, OECD, and

SCOR in the development of new ideas and techniques for the solution of international fisheries management problems.

16. Acknowledgements and Adjournment

The Chairman of the Commission acknowledged the observers from FAO, ICES, IOC, Japan, and Cuba who expressed appreciation on behalf of their organization or country for the opportunity of participating in the meeting. Captain T. de Almeida (Portugal), speaking for himself and on behalf of the Commission, thanked Her

Majesty's Government for the excellent meeting facilities and warm hospitality and commended Mr Kamentsev for his efficient work as Chairman of the 18th Annual Meeting.

The Chairman expressed his gratitude to Her Majesty's Government, to the Commissioners and their advisers and to the Commission Secretariat for their cooperation and good efforts.

There being no other business, the Chairman declared the 18th Annual Meeting of the Commission adjourned at 1400 hrs, 8 June 1968.

APPENDIX I

List of Participants

CANADA

Commissioners:

Dr A. W. H. Needler, Department of Fisheries, Ottawa, Ontario.
 Mr H. D. Pyke, National Sea Products, Lunenburg, Nova Scotia.
 Mr S. G. Lake, H. B. Clyde Lake Limited, Burgeo, Newfoundland.

Advisers:

Mr R. E. S. Homans, Department of Fisheries, Halifax, Nova Scotia.
 Dr Y. Jean, Department of Industry and Commerce, Quebec, P.Q.
 Dr A. C. Kohler, Fisheries Research Board of Canada, St. Andrews, New Brunswick.
 Dr F. D. McCracken, Fisheries Research Board of Canada, St. Andrews, New Brunswick.
 Dr A. W. May, Fisheries Research Board of Canada, St. John's, Newfoundland.
 Mr E. J. Sandeman, Fisheries Research Board of Canada, St. John's, Newfoundland.
 Dr D. E. Sergeant, Fisheries Research Board of Canada, Ste. Anne de Bellevue, P.Q.
 Dr G. F. M. Smith, Fisheries Research Board of Canada, Ottawa, Ontario.
 Dr W. Templeman, Fisheries Research Board of Canada, St. John's, Newfoundland.
 Mr E. B. Young, Department of Fisheries, Ottawa, Ontario.

DENMARK

Commissioners:

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

Advisers:

Mr Sv. Aa. Horsted, Grønlands Fiskeriundersøgelse, Charlottenlund.
 Mr O. Skardhamar, Faroese Commercial Attaché, Aberdeen, Scotland.
 Dr E. B. Smidt, Grønlands Fiskeriundersøgelse, Charlottenlund.

FRANCE**Commissioner:**

Mr J. L. Touya, Ministère de la Marine Marchande, Paris.

Advisers:

Mr R. A. Lagarde, Ministère de la Marine Marchande, Paris.

Mr J. Morice, Institut Scientifique et Technique des Pêches Maritimes, La Rochelle.

FEDERAL REPUBLIC OF GERMANY**Commissioner:**

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

Advisers:

Dr H. Bohl, Bundesforschungsanstalt für Fischerei, Hamburg.

Dr J. Genschow, Association of German Trawler Owners, Bremerhaven.

Dr J. Messtorff, Bundesforschungsanstalt für Fischerei, Bremerhaven.

Dr U. Schmidt, Bundesforschungsanstalt für Fischerei, Hamburg.

Dr A. Schumacher, Bundesforschungsanstalt für Fischerei, Hamburg.

ICELAND**Commissioner:**

Dr J. Jónsson, Marine Research Institute, Reykjavik.

ITALY**Commissioner:**

Dr E. Capodilupo, Ministero de la Marina Mercantile, Rome.

NORWAY**Commissioners:**

Mr E. Kvammen, Ministry of Fisheries, Oslo.

Mr O. Lund, Directorate of Fisheries, Bergen.

Dr B. Rasmussen, Institute of Marine Research, Bergen.

Advisers:

Mr G. Garshol, Fishing Boat Owners' Association, Aalesund.

Mr K. Jensen, Kråkstadvegen 3, Ski.

Mr T. Øritsland, Institute of Marine Research, Bergen.

Mr S. Remøy, Royal Norwegian Embassy, London.

POLAND**Commissioners:**

Dr F. Chrzan, Sea Fisheries Institute, Gdynia.

Mr M. Fila, Polish Maritime Mission, 52-54 Gracechurch St., London E.C. 3.

PORTUGAL

Commissioner:

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

Adviser:

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

ROMANIA

Commissioner:

Mr C. Nicolau, Ministry of Foodstuff Industry, Bucharest.

Advisers:

Dr M. Niculescu-Duvaz, Research and Designing Fish Culture Institute, Bucharest.

Mr L. Popescu, Ministry of Foodstuff Industry, Bucharest.

SPAIN

Commissioner:

Dr O. Rodriguez Martin, Direccion General de Pesca Maritima, Madrid.

UNION OF SOVIET SOCIALIST REPUBLICS

Commissioners:

Dr A. S. Bogdanov, All-Union Research Institute of Marine Fisheries and Oceanography, (VNIRO), Moscow.

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

Advisers:

Dr A. P. Alexeev, Polar Research Institute of 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 J. Graham, Ministry of Agriculture, Fisheries and Food, London.

Advisers:

Mr R. W. Blacker, Fisheries Laboratory, Lowestoft.

Mr D. J. Garrod, Fisheries Laboratory, Lowestoft.

Mr R. Jones, Marine Laboratory, Aberdeen.

Mr A. Laing, British Trawlers' Federation, Hull.

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

Dr C. E. Lucas, Marine Laboratory, Aberdeen.

Mr B. A. Parkes, British Trawlers' Federation, Hull.

Mr P. Parkhouse, Ministry of Agriculture, Fisheries and Food, London.

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

UNITED STATES

Commissioners:

Dr S. A. Cain, Department of the Interior, Washington, D. C.
Mr R. W. Green, Department of Sea and Shore Fisheries, Augusta, Maine.

Advisers:

Mr H. R. Beasley, Bureau of Commercial Fisheries, Washington, D.C.
Dr H. W. Graham, Bureau of Commercial Fisheries, Woods Hole, Massachusetts.
Mr R. C. Hennemuth, Bureau of Commercial Fisheries, Woods Hole, Massachusetts.
Captain F. D. Heyward, US Coast Guard Headquarters, Washington, D.C.
Mr J. B. Kimsey, Bureau of Sport Fisheries and Wildlife, Washington, D.C.
Mr D. L. McKernan, Department of State, Washington, D.C.
Mr P. J. MacLean, 1 Fish Pier, Boston, Massachusetts.
Mr T. A. Norris, Trawler Oil Corporation, Boston, Massachusetts.
Mr J. A. Posgay, Bureau of Commercial Fisheries, Woods Hole, Massachusetts.
Mr G. J. Ridgway, Bureau of Commercial Fisheries, Boothbay Harbour, Maine.
Mr A. M. Sandberg, United States Embassy, Copenhagen, Denmark.
Mr J. B. Skerry, Bureau of Commercial Fisheries, Gloucester, Massachusetts.
Mr W. L. Sullivan, Department of State, Washington, D.C.
Mr W. M. Terry, Bureau of Commercial Fisheries, Washington, D.C.

CUBA

Observer:

Mr J. A. Varea Rivero, Fisheries National Institute, Havana.

FOOD AND AGRICULTURE ORGANIZATION

Observers:

Mr L. P. D. Gertonbach, Department of Fisheries, FAO, Rome, Italy.
Mr J. A. Gulland, Department of Fisheries, FAO, Rome, Italy.
Mr S. J. Holt, Department of Fisheries, FAO, Rome, Italy.

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

Observer:

Mr O. J. Ostvedt, IOC, UNESCO, Paris, France.

INTERNATIONAL BIOLOGICAL PROGRAMME

Guest:

Dr E. A. Smith, Monks Wood Experimental Station, Abbots Ripton, England.

INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA

Observer:

Mr H. Tambs-Lyche, General Secretary, ICES, Charlottenlund, Denmark.

INTERNATIONAL NORTH PACIFIC FISHERIES COMMISSION

Observer:

Mr D. L. McKernan, Department of State, Washington, D.C., USA.

IRELAND

Observer:

Mr H. G. Foster, Embassy of Ireland, London.

JAPAN

Observers:

Mr H. Akuzawa, Taiyo Gyogyo Kaisha Ltd., London.

Mr Y. Furuya, Embassy of Japan, London.

NORTH-EAST ATLANTIC FISHERIES COMMISSION

Observer:

Mr O. Lund, Directorate of Fisheries, Bergen.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Observer:

Mr P. Adam, Fisheries Division, OECD, Paris.

SCIENTIFIC COMMITTEE ON OCEANIC RESEARCH

Observer:

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

WORLD FEDERATION FOR THE PROTECTION OF ANIMALS

Guest:

Dr E. Simpson, Department of Animal Pathology, Cambridge, England.

SECRETARIAT

Mr L. R. Day, Executive Secretary.

Dr B. J. Kowalewski, Assistant Executive Secretary.

Mr W. H. Champion, Editorial Assistant.

Miss Jean Maclellan, Secretary.

Mrs C. Turple, Clerk-Typist.

SECRETARIAL ASSISTANCE STAFF

Mr W. Knock, Ministry of Agriculture, Fisheries and Food, London.

Mrs W. Small, Ministry of Agriculture, Fisheries and Food, London.

Mrs L. Tunstall, Department of Agriculture and Fisheries for Scotland, Edinburgh.

CONFERENCE LIAISON

Mr L. Goldthorpe, Ministry of Agriculture, Fisheries and Food, London.

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 1967) (Annu. Proc. Vol. 17, p. 10-12).
7. Financial Statement, 1967-68 (preliminary).
8. Budget estimate, 1968-69.
9. Budget forecast, 1969-70.

COMMISSION PROPOSALS

10. Status of proposals adopted by Commission;
 - a) for changes in the Convention;
 - b) for regulation of fisheries.

AMENDMENTS TO CONVENTION

11. Consideration of amendment of the Convention to provide greater flexibility in the types of fisheries regulatory measures which may be proposed by the Commission.

TRAWL REGULATIONS

12. Annual Returns of Infringements.
13. Simplification of international trawl regulations.
14. Topside chafer.
15. Mesh measuring.

ENFORCEMENT

16. Exchange of national inspection officers.
17. Form of international inspection scheme.

CONSERVATION

18. Recommendations of the First Meeting of the Standing Committee on Regulatory Measures.
19. Problems of limiting fishing as a conservation measure.
20. Consideration of need for conservation measures for Atlantic salmon.

INTERNATIONAL COOPERATION

21. UN Resolution 2172 (XXI) on Resources of the Sea, 6 December 1966.
22. Cooperative systematic studies in the North Atlantic, IOC, ICES, and ICNAF (Resolutions of the 5th Session of IOC).
23. Reports by Commission observers to meetings of other organizations concerned with fisheries (INPFC, NEAFC, ICES, FAO, IOC, SCOR).
24. Appointment of Commission observers to meetings of other organizations concerned with fisheries.

REPORTS OF COMMITTEES AND PANELS

25. Report of Standing Committee on Research and Statistics.
26. Report of Standing Committee on Finance and Administration.
27. Report of Standing Committee on Regulatory Measures.
28. Reports of Panels 1-5 and Panel A (Seals).

OTHER MATTERS

29. Date and place of 1970 Annual Meeting.
30. Press statement.
31. Other business.
32. Adjournment.

APPENDIX III

Financial Regulations for the Commission

Effective 1 July 1968

The following rules shall govern the financial administration of the International Commission for the Northwest Atlantic Fisheries Commission.

Financial Year

Rule 1

The financial year shall be the period 1 July – 30 June.

Budget

Rule 2

2.1. The Executive Secretary shall prepare and submit to the regular Annual Meeting estimates in Canadian dollars for the administrative budget and the special projects budget covering income and expenditures for the following financial year. He shall transmit these to all Contracting Governments at least 60 days before the opening of the regular annual meeting. At the same time he shall prepare a forecast budget for the subsequent financial year.

2.2. The estimates and forecast shall be divided by categories, and shall be accompanied by such information as the Commission may specify from time to time, and as the Executive Secretary may deem useful.

2.3. The Standing Committee on Finance and Administration shall meet during each regular annual meeting of the Commission to examine the estimates and shall report thereon to the Commission. The Commission shall adopt the budget after considering this report.

2.4. The Executive Secretary may submit to the Commission supplementary estimates as he deems necessary. Supplementary estimates shall be prepared, considered, and acted upon in the same manner as regular estimates.

Appropriations

Rule 3

3.1. The appropriations adopted by the Commission in the budgets shall constitute an authorization to the Executive Secretary to incur obligations and make payments for the purposes and up to the amounts so adopted.

3.2. Appropriations shall remain available for 12 months following the end of the financial year to which they relate to the extent that they are required to discharge obligations incurred during that financial year. At the end of the 12-month period any unliquidated prior year obligations shall be cancelled, or, where the obligation remains a valid charge, transferred as an obligation against current appropriations.

3.3. The Chairman of the Commission may authorize the Executive Secretary to transfer appropriations between categories in any budget adopted by the Commission.

Funds

Rule 4

4.1. There shall be established a General Fund, a Miscellaneous Fund, and a Working Capital Fund for purposes of accounting for the expenditures of the Commission.

4.2. The following monies shall be credited to the General Fund:

- a) Annual payments from Contracting Governments, except as provided in Rule 4.3 (a);
- b) Transfers from the Miscellaneous Fund as provided in Rule 4.8(b);
- c) Appropriations from the Working Capital Fund for capital and special expenditures.

4.3. The following monies shall be credited to the Miscellaneous Fund:

- a) Annual payments from new Contracting Governments, as provided in Rule 4.12;
- b) All monies not otherwise specified in Rule 4.

4.4. The following monies shall be credited to the Working Capital Fund:

- a) Contributions from Contracting Governments; new Contracting

Governments shall contribute as provided in Rule 4.12;

- b) Income from the sale of Commission publications;
- c) Appropriations remaining in the General Fund at the end of the financial year not required to discharge obligations in accordance with Rule 3.2;
- d) Appropriations remaining in the General Fund at the end of the 12-month period specified in Rule 3.2 for prior year obligations, but not disbursed;
- e) Refunds, from any source, of prior expenditures of the Commission;
- f) Bank interest.

4.5. Monies available in the Working Capital Fund may be transferred to the General Fund temporarily to the extent necessary to finance appropriations pending receipt of annual payments by Contracting Governments.

4.6. The Chairman of the Commission, after consultation with Commissioners, may authorize expenditure of available funds, not appropriated, for unforeseen and extraordinary expenses necessary to the good conduct of the business of the Commission. Such funds may not be in excess of twenty percent of the annual administrative budget for the current financial year, and except to the extent recoverable from some other source shall be reimbursed through the submission of supplementary estimates. Monies available in the Working Capital Fund may be transferred to the General Fund to finance such authorized expenses.

4.7. The Standing Committee on Finance and Administration and the Commission shall review the amount available in the Working Capital Fund during each annual meeting. Insofar as possible the Commission shall anticipate capital and special expenditures during the succeeding three years and shall attempt to maintain the Working Capital Fund at such a level that appro-

priations can be made from the Fund for such purposes instead of being included in the annual administrative or special projects budgets. However, the Working Capital Fund shall be maintained at a level, determined by the Commission, sufficient to finance appropriations in accordance with Rule 4.5 and for use in an emergency in accordance with Rule 4.6. Any monies determined to be in excess of the needs of the Working Capital Fund shall be transferred to the Miscellaneous Fund.

4.8. The Executive Secretary shall inform each Contracting Government of the annual payments due, in accordance with Article XI, paragraphs 3, 4, and 5, as soon as possible after the Commission has adopted the annual administrative and special projects budgets. In assessing the amounts due, the Executive Secretary shall make the following adjustments:

- a) Include supplementary appropriations for which assessments have not previously been made on Contracting Governments;
- b) Reduce the amount appropriated in the administrative budget by monies available in the Miscellaneous Fund, which shall be transferred to the General Fund on the first day of the financial year.

At the same time the Executive Secretary shall inform each Contracting Government of any new contributions required for the Working Capital Fund, which shall be determined in the same manner as the annual payment to the annual administrative budget.

- e) Reduce the amount appropriated in the administrative budget by the amount of staff assessments, if any.

4.9. The Standing Committee on Finance and Administration, in reporting on an estimate for a special projects budget, shall recommend a

scale for allocation of the budget to Contracting Governments.

4.10. Annual payments and contributions shall be due and payable in full within thirty days of receipt of the information from the Executive Secretary referred to in Rule 4.8, or the first day of the financial year, whichever is later. As of the first day of the following financial year, the unpaid balance shall be considered to be in arrears.

Any Contracting Government more than 2 years in arrears shall not vote at any meeting until the unpaid balance has been received by the Commission.

4.11. All payments and contributions from Contracting Governments shall be made in Canadian dollars, unless, upon recommendation of the Standing Committee on Finance and Administration, the Commission specifies otherwise in adopting the budget.

4.12. New Contracting Governments shall make an annual payment within 90 days of depositing an instrument of adherence with the Depository Government for that financial year. The payment shall be the same as for a Contracting Government with one Panel membership, provided that the payment shall be one-half this amount if the adherence is deposited during the last 6 months of the financial year. At the same time, new Contracting Governments shall contribute 1,000 Canadian dollars to the Working Capital Fund.

Accounts

Rule 5

5.1. The Executive Secretary shall establish detailed financial procedures in order to ensure effective financial administration and the exercise of economy.

5.2. The Executive Secretary shall maintain such accounting records as are necessary for each financial year, including:

- a) Income and expenditures;
- b) The status of appropriations, including:

- i) The original budget appropriation;
- ii) Transfers between appropriation categories;
- iii) Amounts charged against appropriation categories;
- c) The origin of miscellaneous income;
- d) The status of the Working Capital Fund;
- e) Funds held in currencies other than Canadian dollars.

5.3. The annual accounts shall be submitted by the Executive Secretary to the Auditors not later than 90 days following the end of the financial year.

5.4. The Executive Secretary may, after full investigation, authorize the writing off of losses of cash, stores, and other assets, provided that a statement of all such amounts written off shall be submitted to the Commission and the Auditors with the annual accounts.

Salaries

Rule 6

6.1. The Commission shall adopt from time to time a salary scale for the Executive Secretary and the staff based, to the extent possible, on the salary scale and position classification system of the Public Service of Canada.

6.2. The Executive Secretary shall consult appropriate Canadian authorities as he deems necessary concerning salary scales and position classifications and shall recommend appropriate modifications to the Commission.

6.3. The Executive Secretary shall include in the estimates for the following financial year salary amounts increased in accordance with the salary scale for each member of the staff whom he deems to be performing his duties in a satisfactory manner, and increased for the Executive Secretary (subject to review by the Commission). He shall also include such additional amounts as would be

necessary to implement a recommendation for modification of the salary scale or position classifications.

6.4. There shall be an assessment on the salary of each member of the staff, based on the amount of relief from Canadian Income Tax, the amount to be determined by the Executive Secretary in consultation with the Canadian authorities. The Staff assessment shall be applied in accordance with Rule 4.8(e).

Other Committees and Panels

Rule 7

Each other Committee and each Panel shall report to the Standing Committee on Finance and Administration on anticipated costs to the Commission if it were to adopt any program recommended by the Committee or Panel.

External Audit

Rule 8

8.1. The Commission shall employ external auditors who may be removed only by the Commission.

8.2. Having regard to the budgetary provisions for the audit, and after consultation with the Standing Committee on Finance and Administration relative to the scope of the audit, the Auditors shall perform such an audit as they deem necessary to certify:

- a) That the financial statements are in accord with the books and records of the Commission;
- b) That the financial transactions reflected in the statements have been in accordance with the rules and regulations, the budgetary provisions, and other applicable directives;
- c) That the monies on deposit and on hand have been verified by certificate received direct from the Commission's depositories or by actual count.

8.3. Subject to the directions of the Commission, the Auditors shall be the sole judge as to the acceptance in whole or in part of the certifications by the Executive Secretary and may proceed to such detailed examination and verifications as they choose of all financial records, including those relating to supplies and equipment.

8.4. The Auditors may affirm by test the reliability of the internal audit, and may make such reports with respect thereto as they may deem necessary to the Commission, to the Standing Committee on Finance and Administration or to the Executive Secretary.

8.5. The Auditors and their staff shall have free access at all convenient times to all books of account and records which are, in the opinion of the Auditors, necessary for the performance of the audit. Information classified in the records of the Executive Secretary as confidential, and which is required for the purposes of the audit, shall be made available on application to the Executive Secretary.

8.6. The Auditors, in addition to certifying the accounts, may make such observations as they deem necessary with respect to the efficiency of the financial procedures, the accounting system, the internal financial controls and, in general, the financial consequences of administrative practices. In no case, however, shall the Auditors include criticism in their audit report without first affording the Executive Secretary an opportunity of explanation to the Auditors of the matter under observation. Audit objections to any item in the accounts shall be immediately communicated to the Executive Secretary.

8.7. The Auditors shall have no power to disallow items in the accounts, but shall draw to the attention of the Executive Secretary for appropriate action any transaction concerning which they entertain doubt as to legality or propriety.

8.8. The Auditors shall prepare a report on the accounts certified, and on any matters on which the Commission by resolution thereon may from time to time give specific instructions.

8.9. The Auditors shall submit their report to the Commission not later than 6 months following the end of the financial year to which the

accounts relate. The Standing Committee on Finance and Administration shall forward to the Commission its comments, if any, on the audit report.

Bonding

Rule 9

9.1. The Executive Secretary and such staff as he deems necessary shall be bonded in Canadian currency by any reputable bonding company in such amount as may be determined by the Commission from time to time. The cost of the premium therefore shall be assumed by the Commission.

Delegation of Authority

Rule 10

10.1. The Executive Secretary may delegate to other staff of the Secretariat such of his powers as he considers necessary for the effective implementation of these regulations.

Interpretation

Rule 11

11.1. The Chairman may rule, after such consultation with Commissioners as he deems necessary, in cases of doubt as to the interpretation and application of any of these Rules.

Applicability

Rule 12

12.1. These Rules shall become effective on the first day of the financial year following their approval by the Commission. All previous Financial Regulations shall become null and void at that time.

12.2. These Rules may be amended only by the Commission.

PART 3

Summaries of Research and Status of Fisheries by Subareas, 1967

The following summaries were prepared from the research reports and other pertinent documents submitted to the 1968 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 — J. Messtorff (Federal Republic of Germany);
 for Subarea 2 — A. S. Bogdanov (USSR);
 for Subarea 3 — H. A. Cole (UK);
 for Subarea 4 — R. Monteiro (Portugal);
 for Subarea 5 — G. F. M. Smith (Canada).

Subarea 1

Reports on research in 1967 were submitted by the following countries: Canada, Denmark, France, Federal Republic of Germany (FRG), Iceland, Norway, Poland, Portugal, Spain, USSR, UK, and USA.

1. Status of the Fisheries

Total catch of all species was 452,000 metric tons, a remarkable increase of 48,000 tons from 1966. Catches by countries in 1967, with the 1966 catch in brackets for comparison, were: Denmark (Faroes) 64,000 tons (65,000); Denmark (Greenland) 44,000 tons (43,000); France over 41,000 tons (41,000); FRG 156,000 tons (101,000); Iceland 300 tons (3,000); Norway over 53,000 tons (39,000); Poland 600 tons (800); Portugal 63,000 tons (75,000); Spain 11,000 tons (4,000); USSR 800 tons (200); UK 21,000) and non-member countries reported no catch (11,000).

Cod catches increased to 419,000 tons from over 366,000 tons in 1966 and amounted to over 90% of the total catch of all species. FRG caught over 57,000 tons (70%) more cod than in 1966 and in spite of an increased fishing effort the catch-per-day fished increased from 17.7 to 21.9 tons. Catches by France (41,000 tons), Norway (53,000 tons) and Spain (11,000 tons) showed small increases. Portuguese catches decreased by 12,000 tons to 63,000 tons. Iceland reported much smaller catches (100 tons).

Redfish catches continued to decline from 17,000 tons to 12,000 tons due primarily to a decrease of over 3,000 tons in the catch by FRG.

Salmon catches increased further from over 1,300 tons to over 1,500 tons. Tonnages reported were by Denmark (Faroes) 155 tons, by Denmark (Greenland) 1,278 tons and by Norway 81 tons.

2. Work Carried Out

a) **Canada:** Survey of Atlantic salmon by R/V *A. T. Cameron*, 17 September–5 October, in West Greenland offshore and inshore waters. Forty specimens were brought to Et. Andrews for parasitological studies. Salmon tagging in home waters for possible migrations to Greenland.

b) **Denmark:** Hydrographic work at a fixed station (entrance to Godthaab Fjord) from January to August and in December. Cod sampling for length and age composition and growth studies of the commercial stock. Tagging of cod (960) and redfish in coastal waters and fjords in Division 1C and 1D. Salmon studies in collaboration with Scottish, English, and Canadian experts. Salmon fishing experiments.

c) **FRG:** Hydrographic observations and a cod survey by R/V *Walther Herwig*, October and November in Davis Strait and off West Greenland between Holsteinsborg and Cape Farvel (Div.

1B-1F). Sampling of small redfish for ageing studies. Samples from commercial cod catches for length and age composition, maturity, gonad conditions throughout the year.

d) Norway: Five hydrographic sections occupied by R/V *G. O. Sars* in Div. 1C-1F. Distribution of cod by echo-sounder survey and by fishing with bottom longline. Hook selection studies. Abundance of cod eggs at all fishing stations.

e) Poland: Sampling for cod length and age composition in Div. 1B and redfish length and sex distribution in Div. 1C in June.

f) UK: Length and age sampling of commercial catches. Research on West Greenland salmon. Salmon tagging experiments. A continuous plankton recorder survey covered 2,900 miles in Subarea 1.

g) USA: Salmon tagging in home waters (Maine) for migration to West Greenland.

h) USSR: Hydrographic observations by R/V *Pobeda*, *Volgograd*, and *Novorossiisk*, March-September, in Div. 1B - 1E. Distribution, density, gonad and feeding conditions, and age composition of cod. March and April and July-September.

3. Hydrography

All observations carried out during 1967 by Denmark, FRG, Norway, and USSR show that the water temperatures on the banks and slopes were generally below normal whereas off the slopes temperatures were relatively warmer and of remarkably high salinity, exceeding 35‰. The stratification became even more stable in autumn and could possibly have hindered convection during winter. The consequence of such a hydrographic situation could be a poor cod year-class.

4. Cod

a) Eggs and larvae: Norwegian investigations showed that cod eggs were scarce although most cod had completed spawning.

b) Young cod (age-groups 1-3): Denmark reported poor catches of small young cod. FRG

research vessel catches with small meshed lines in October and November contained very few young cod. It was concluded that the 1964-66 year-classes might be poor.

c) Commercial stock: Investigations by Denmark, FRG and USSR showed that the rich 1961 year-class predominated in inshore and offshore catches throughout the year and in all divisions (50-60% in FRG catches) whereas the proportion of the good 1960 year-class had decreased markedly (20-30%) in the FRG winter and spring fisheries but held second place. Of some importance were 4-year-old cod (1963 year-class) in Danish pound net catches in Div. 1D-1F. This year-class was also well represented in USSR catches during the second half of the year as well as in FRG research vessel catches in October and November. Older cod are rare.

The FRG and USSR research reports forecast a decrease in nominal catch and also, a possible further small reduction in catch-per-unit effort. Possibly, the 1967 catch figures may not be reached in any one of the following, at least, 5 years.

5. Redfish

Redfish catches decreased further. Total yield and average catch per fishing day was the lowest experienced in the FRG fishery off Greenland.

Although redfish catches were sampled more or less regularly by some member countries, no conclusive results have been submitted. Further progress in international collaboration, which has recently been initiated by a special working group of redfish experts, will help to remove existing difficulties, especially in age determination.

6. Atlantic Salmon

Results of tagging experiments carried out since 1963 in Greenland waters and in the home-waters of Canada, Iceland, Ireland, Norway, Sweden, UK, and USA indicate migrations between Greenland and home-waters in both directions for all these countries except Norway. Recaptures at West Greenland of fish originating from Canadian river systems were higher than from any other country.

Blood and other biochemical studies to determine the origin of salmon exploited at West Greenland and the home-waters to which they return, are being carried out by UK workers. Parasitological studies are being carried out by Canada, Ireland, and Scotland in order to discover whether there is a parasite which could serve as a reliable biological tag.

An assessment of the effects of the West

Greenland fishery on total and homewater salmon catches was made. Available data suggest that the present predominantly inshore West Greenland fishery has resulted in an increase in total yields of salmon, but in relatively small losses in homewater catches in most, if not all, countries concerned. A further increase, however, of the developing offshore salmon fishery might alter the present picture.

Subarea 2

Reports on research were submitted by the following countries: Canada, France, Federal Republic of Germany (FRG), Iceland, Poland, Portugal, Spain, USSR, and UK.

1. Status of the Fisheries

Total catch of all species was 378,000 tons, including 116,000 tons caught by non-member countries in Subareas 2 and 3 combined. Total catch for Subarea 2 was 366,000 tons in 1966. Catches by countries in 1967 with the 1966 figure in brackets for comparison were: Canada 29,000 tons (24,000); France 25,000 tons (31,000); FRG 34,000 tons (69,000); Iceland 100 tons (400); Norway 1,000 tons (2,000); Poland 43,000 tons (31,000); Portugal 53,000 tons (46,000); Spain 37,000 tons (49,000); USSR 31,000 tons (37,000); UK 9,000 tons (11,000).

Cod, although still making up about 80% of the total catch, decreased by over 40,000 tons to 297,000 tons in 1967. The greatest decrease in catch was shown by FRG from 63,000 tons in 1966 to 32,000 tons in 1967. Smaller decreases were also shown for France (31,000 to 25,000 tons), Spain (49,000 to 37,000 tons), USSR (32,000 to 21,000 tons), and UK (11,000 to 9,000 tons). Increases in catch were shown for Canada (24,000 to 28,000 tons), Poland (31,000 to 43,000 tons), and Portugal (46,000 to 53,000 tons). Catches of cod by non-member countries totalled 52,000 tons for Subareas 2 and 3 combined.

Redfish catches totalled 44,000 tons, including 35,000 tons taken by non-member countries from Subareas 2 and 3 combined. Catches in 1966 totalled 14,000 tons. Catches increased for

Poland (1,000 to 3,000 tons) and USSR (2,000 to 5,000 tons) and decreased for FRG (3,000 to 1,000 tons). A non-member country took 35,000 tons from Subarea 2 and 3 in 1967 compared with 17,000 tons in the two subareas in 1966.

2. Work Carried Out

a) **Canada:** Hydrographical, geological and bathymetric work on the southern shelf of Labrador, 26 and 27 October 1967. Circulation studies in Div. 2J using surface and bottom drifters. Cod length, age, sex, and maturity in commercial catches near the coast of Labrador. Cod distribution of cod by R/V *A. T. Cameron* in October and November.

b) **FRG:** Four hydrographic sections by R/V *Walther Herwig* between Cape Chidley and Hamilton Inlet Bank in October. Cod and redfish distribution and abundance in October in Div. 2G-2J by R/V *Walther Herwig*. Comparative fishing trials by R/V *Walther Herwig* and *A. T. Cameron*. Cod and redfish sampling of commercial catches for age and size composition.

c) **Poland:** Cod, redfish, and American plaice age and size composition and cod maturities. Cod meristic data.

d) **Portugal:** Cod age and size composition, growth rate and stage of maturity.

e) **USSR:** Hydrographical surveys. Cod age and size composition. Abundance of young cod. Tagged 4,158 cod.

f) **UK:** Samples for the age and size composition of fish in commercial catches. Plankton samples by continuous plankton recorder.

3. Hydrography

USSR research showed that, while conditions were generally colder in 1967 than in 1966, they were warmer than in 1964. However, the general temperature conditions in 1967, as in the previous two years, remained above the long-term average. In the Labrador-northern Newfoundland area, two temperature maxima were recorded: one in February and the other in November 1967. USSR surveys have resulted in the formulation of a hypothesis for predicting the distribution and abundance of commercial-sizes of cod in Subarea 2 from the prevailing water temperatures several months before. German observations across the Labrador Current revealed temperatures at depths shallower than 200 m of less than 1°C from surface to bottom. At depths greater than 200 m, temperatures generally increased to about 4°C. USSR observations showed that, in the winter and spring near Labrador and Newfoundland, the waters were colder in 1967 than in 1966 but warmer than in 1964.

4. Plankton

Continuous plankton recorder survey sampled 4,400 miles of water.

5. Cod

Polish catches in Div. 2J in May were predominantly 42–62 cm fish of 5–9 years of age. In June, cod catches were mainly composed of 35–65 cm fish. The greatest catches by Polish trawlers in Div. 2J were taken in May (40.9 tons per day); the lowest were in November (18.8 tons per day). FRG trawlers showed a decrease in the catch per day for the last 3 years: 1965 — 31.4 tons; 1966 — 29.8 tons; 1967 — 24.5 tons. The 1966–67 decrease was an impressive decrease in effort from 2,132 days fishing in 1966 to 1,251 days in 1967. Cod in Portuguese catches were from 22 to 91 cm with those from 49 to 52 cm (mostly 6 years of age) predominant. Cod caught by USSR trawlers in Div. 2J from 1960 to 1963 have decreased in the size and age. Catches per trawl hour decreased from 3.7 tons in 1963 to 2.05 tons in 1967. Cod taken by Spanish vessels varied from 31 to 100 cm. The size-group, 50–53 cm, and fish 6–7 years old were predominant.

6. Redfish

In Polish commercial catches, the size of redfish was 21–50 cm (average 35.2 cm) for *Sebastes mentella* and 31 to 63 cm (average 48.2 cm) for *Sebastes marinus*. Catch-per-unit effort by FRG was the same as in 1966 (1.3 tons per day) while total catches were lower.

Subarea 3

Reports on research in 1967 were submitted by the following countries: Canada, France, Federal Republic of Germany (FRG), Iceland, Poland, Portugal, Spain, USSR, UK, and USA.

1. Status of the Fisheries

All member countries, except Italy and Romania, fished commercially. Total catch of all species increased substantially from 748,000 tons in 1966 to 1,065,000 tons in 1967 (1967 catches by a non-member country in Subareas 2 and 3 were reported together and are shown in Subarea 2 only). Catches by Canada increased by 46,000 tons to 325,000 tons, by France 15,000 to 78,000 tons, by Poland 12,000 to 35,000 tons, by Portugal 44,000 to 114,000 tons, by Spain 49,000 to 178,000

tons, by USSR 150,000 to 265,000 tons, and by UK 18,000 to 45,000 tons.

Cod catches made up about 70% of the total catch of all species and increased from 499,000 tons in 1966 to 713,000 tons in 1967. Catches by France increased 15,000 tons to 72,000 tons, by Poland 13,000 to 19,000 tons, by Portugal 44,000 to 114,000 tons, by Spain 49,000 to 173,000 tons, by USSR 93,000 to 142,000 tons, and by UK 18,000 to 43,000 tons. Catches by Canada decreased 13,000 tons to 128,000 tons in 1967.

Catches of haddock remained rather poor at 12,000 tons.

Redfish catches declined from 79,000 tons to 61,000 tons. The major part of the catch was

taken by Canada 15,000 tons, Poland 9,000 tons, and USSR 33,000 tons.

Herring catches, which rose sharply from 23,000 tons in 1966 to 78,000 tons in 1967, were made entirely by Canada in a developing industrial purse seine fishery.

Atlantic and Greenland halibut catches made by Canada, USSR, and Poland totalled over 25,000 tons in 1967 compared to 18,000 tons in 1966; catches of American plaice, about 60,000 tons; witch 8,000 tons; and non-specified flounders 62,000 tons show a total increase of about 40,000 tons.

The doubling of the catch of other groundfish species from 11,000 tons to 22,000 tons was due to a new fishery for roundnose grenadier, *Macrourus rupestris*, by the USSR.

A total of 130,000 harp and hood seals (young and adult) were taken in the "Front" area (Div. 2J, 3K, and 3L) by Canadian and Norwegian vessels in 1968, a considerable decrease from the 247,000 taken in 1967.

2. Work Carried Out

a) **Canada:** R/V *A. T. Cameron* and other research vessels. Oceanographic section St. John's-Flemish Cap, 25-27 July. Station 27 off Cape Spear occupied once or twice per month over the year. Hydrographic charting surveys of Hamilton Sound and Grand Bank. Surface and bottom drifter experiments in Div. 3K, L, O and Ps. Surveys and sampling of inshore and offshore cod and offshore haddock, redfish, American plaice. Investigations of herring, transplanted pink salmon, *Oncorhynchus gorbusha* (Walbaum), capelin, swordfish, and short-finned squid.

b) **France:** R/V *Thalassa*. Hydrographic sections from southeast Grand Banks to Cape Spear, from St. Pierre to the tail of the Grand Bank and across St. Pierre Bank. Studies of gear and commercial species including cod, redfish, American plaice, and herring.

c) **Poland:** R/V *Wieczno*. Biology of cod, redfish, American plaice, and Greenland halibut. Selectivity experiments.

d) **Portugal:** Biology of cod.

e) **USSR:** Research and scouting vessels. Observations over seven standard hydrographic sections. Biology of cod, redfish, and roundnose grenadier. Young fish surveys of cod.

f) **UK:** Sampling commercial catches. Continuous plankton recorder studies.

g) **USA:** Oceanographic observations at ocean stations, standard sections 1-6.

3. Hydrography

In the Newfoundland area, the temperature of the main (cold) branch of the Labrador Current was below the averages of recent years, but in the mixed waters offshore it was higher than average during the spring and summer and nearer average in autumn. Although, on the whole, the temperature conditions in 1967 were above the long-term average, a tendency toward cooling has been observed during the most recent years. USSR presented evidence of a relationship between sea temperature and the availability of cod to capture at the northern edge of Subarea 3 and in Subarea 2. France reported a general survey of sea temperature distribution in March and April in the southern part of the subarea.

4. Plankton

The UK survey by the Continuous Plankton Recorder showed that the spring outburst of plankton was earlier than usual. Adult *Calanus* were present in below average numbers on the Grand Banks.

5. Cod

Research reports showed the fishery to be benefiting from the good 1961 - 63 year-classes. The 1964 year-class entering the fishery was also reported to be very strong, especially on the southern part of the Grand Bank and on St. Pierre Bank. USSR tagging results confirm that the limits of distribution of the two main cod stocks (Labrador and southern Newfoundland) lie approximately along 46°N lat. Blood studies by UK confirmed that Flemish Cap cod are a separate stock.

6. Haddock

Reports showed spawning stock at a very low level. Canadian surveys of 1-year-old haddock on St. Pierre Bank gave good results but not equal to that of 1955 year-class at the same age. It was doubted that the 1966 year-class would become of much commercial importance.

7. Redfish

Canada reported good catches of juvenile (mean length 11.5 cm) redfish on the southern slope of the Grand Bank.

8. Greenland Halibut

Poland reported good fishing in Div. 3K in August at 400–500 m (1,100 kg per hour trawling).

Most of the fish were in the 55 – 65 cm length classes. All fish were in the resting stage of sexual maturity.

9. Grenadier

USSR reported dense concentrations of the grenadier, *Macrurus rupestris*, were fished in Div. 3K at 600–800 m from October to December. Lengths varied from 35 to 95 cm.

10. Pink Salmon

Canada reported 8,440 returns of adult pink salmon from a planting in 1965 of 3 million eggs in North Harbour River, St. Mary's Bay, Newfoundland. It was concluded that conditions for survival in the sea were unusually favourable in 1967.

Subarea 4

Reports on research were submitted by the following member countries: Canada, France, USSR, UK, and USA.

1. Status of the Fisheries

Total catch decreased by over 70,000 tons from 802,000 tons in 1966 to 731,000 tons in 1967. Eight member countries fished in the Subarea: Canada, 606,000 tons (586,000 in 1966); France 13,000 tons (16,000); Poland 200 tons (200); Portugal 7,000 (11,000); Spain 48,000 tons (53,000); USSR 11,000 tons (101,000); UK 5,000 tons (400); USA 30,000 tons (34,000); and non-member countries 10,000 tons (150). Nominal catches of groundfish declined 84,000 tons from 502,000 in 1966 to 418,000 in 1967, while catches of pelagic species increased 24,000 tons, mainly herring, from 249,000 tons in 1966 to 273,000 tons in 1967.

Cod catches decreased by 11,000 tons to 204,000 tons with only UK and USA showing increased landings. Decline in catches was the result of reduced effort in Div. 4X.

Haddock catches decreased from 66,000 tons to 49,000 tons due primarily to the small 1967 USSR catch (800 tons) which in 1966 was about 21,000 tons.

Redfish catches decreased from 106,000 tons to 86,000 tons due to the lack of USSR catch which in 1966 was about 14,000 tons.

Silver hake catches continued to decline sharply to over 2,000 tons from about 10,000 tons taken by USSR only in 1966. This is due to reduction of the USSR fishing effort.

Catches of flounder species decreased from 55,000 tons to 41,000 tons, again mainly due to small USSR catches (from 300 tons to 14,000 tons). Fisheries by Canada and USA showed no significant change.

Pollock catches decreased from 25,000 tons to 15,000 tons again due mainly to reduced USSR effort.

Argentine catches by USSR declined from 15,000 tons to 4,000 tons.

Herring catches increased to 260,000 tons, from 233,000 tons in 1966, due to increased Canadian catches in Div. 4T and 4X.

Over 61,000 harp seals (young and adult) were taken by Canada in the Gulf of St. Lawrence hunt in 1968

2. Work Carried Out

a) **Canada:** R/V *A. T. Cameron* and other research vessels. Monitoring surface temperatures Bay of Fundy to Gulf of St. Lawrence. Circulation studies in all areas. Productivity studies in Div. 4T and 4W. Moored buoy program on Scotian Shelf. Sedimentological and geochemical studies in Gulf of St. Lawrence. Cod survey and ecology studies in Div. 4T. Haddock survey in 4W. Tagging hake. Studies on silver hake, sand lance, argentines, herring, redfish, scallops, mackerel, swordfish, tuna, and Atlantic salmon.

b) **France:** R/V *Thalassa*. Temperatures and salinities over eastern end of Scotian Shelf. Studies on commercial species, cod, redfish, American plaice, haddock, and witch.

c) **USSR:** Four hydrographic surveys and bathythermograph surveys. Age composition and food of silver hake, morphology, and growth rate of argentine.

d) **UK:** Continuous plankton recorder surveys sampled 2,900 miles in Subarea 4.

e) **USA:** Cooperative studies by USA and Canada on age composition of haddock in Div. 4X. Groundfish survey in Div. 4X.

3. Hydrography

Canada reported coastal surface temperatures from Bay of Fundy to the Gulf of St. Lawrence were generally lower than in 1966 in Div. 4W and 4X. Bottom temperatures at the mouth of the Bay of Fundy as well as at Cabot Strait were the lowest since 1930. Observations by France seemed to show an early warming in the southern Grand Bank region while a characteristic wintry situation exists in the Nova Scotian section. Observations by USSR show that the processes of winter cooling in the Nova Scotia area were less intensive than in 1966. Surface temperatures were 2° to 2.5° C higher than in 1965 and 1966. In the winter of 1967, bottom temperatures were 1°C higher in the Sambro deep than in 1966, while surface-to-bottom temperatures averaged 3° to 5° C higher. Winter temperatures at the surface and

bottom in Cabot Strait were 2° C higher than in 1966. In summer, surface temperatures on the Scotian Shelf were 2° to 3° C higher than in 1966 except in the Browns, Roseway, Lahave Banks, and the Sable Island shallows. In August, surface temperatures were 5° C higher in Cabot Strait than in August 1965.

4. Plankton

UK investigations showed that the numbers of diatoms were low over the Grand Banks and in coastal waters of Subareas 4 and 5. *Calanus finmarchicus* is the dominant copepod. Adult *Calanus* were below average in number in the coastal waters of Subarea 4. Euphausiacea were close to or slightly below the average in 1967.

5. Cod

A study of Div. 4T cod since mesh regulation was introduced indicated that density-dependent changes, particularly in recruitment, had occurred. The survey also showed an above-average 1964 year-class to enter the commercial fishery in 1968.

6. Haddock

Previous estimates made on the weakness of the 1964 and 1965 year-classes (Div. 4V and 4W) were confirmed. The 1966 year-class is also poor. Canada-USA studies continued to get estimates of mortality rates and effects of fishing.

7. Redfish

Good year-classes (1965 and following) were observed in Div. 4R, 4S and 4T. These follow a period of 8 years of poor year-classes. A good 1966 year-class was detected in Div. 4T with a modal length of 8 cm.

8. Herring

Canadian studies show that in Div. 4X and 4T no major changes occurred in the stocks due to exploitation. In Div. 4X the 1965 year-class was dominant to September when the 1966 year-class entered the fishery. Length composition of New Brunswick and Nova Scotia stocks in Div. 4X shows that the former are recruited at the end of

their first year while the latter are recruited at the end of their fourth year. The 1963 year-class was dominant in 1966 and 1967. Fecundity studies give a mean of 55,000 eggs for herring of 32.4 cm mean length from spring spawners in Div. 4T. Fat content was lowest in 10–15 cm herring in Div. 4X in the spring and highest in 30–35 cm herring in Div. 4T in late summer and early autumn.

9. Silver Hake

Morphometric and meristic characters were studied in Georges Bank and Scotian Shelf stocks.

No significant differences were apparent. Age compositions of silver hake catches in the Sable Island area from 1963 to 1967 did not differ significantly. Mean age varied from 3.37 in 1963 to 4.12 in 1967.

10. Large Pelagic Species

In summer, 201 giant bluefin (182–273 kg) were tagged and released in inshore waters of Div. 4X. Swordfish, tunas, and sharks (totalling 309) were tagged and released in offshore waters between Cape Hatteras and Flemish Cap.

Subarea 5

Reports on research were submitted by the following member countries: Canada, Federal Republic of Germany (FRG), Poland, Romania, USSR, and USA.

1. Status of the Fisheries

The total nominal catch continued to fall from a high in 1965 of 890,000 tons to 867,000 tons in 1966 and 710,000 tons in 1967. Canada took 81,000 tons (84,000 tons in 1966), FRG 28,000 tons (no catch in 1966), Poland 41,000 tons (16,000 in 1966), Romania 2,000 tons, Spain 16,000 tons (10,000 in 1966), USSR 268,000 tons (456,000 in 1966), and USA 249,000 tons (294,000 in 1966) and some non-member countries for the first time.

Cod catches declined from 57,000 tons in 1966 to 42,000 tons in 1967. This accompanied the much larger decrease in haddock from 127,000 tons (1966) to 57,000 tons (1967). The decrease was largely due to the much smaller USSR groundfish effort but also to a reduced abundance of haddock.

Silver hake catches declined from 162,000 tons (1966) to 101,000 tons (1967). This decrease was also largely due to the much smaller USSR effort as well as decreased abundance.

Red hake catches decreased from 89,000 tons (1966) to 44,000 tons (1967).

Yellowtail catches decreased slightly from 31,000 tons (1966) to 26,000 tons (1967) and red-

fish increased minimumly from 10,000 tons (1966) to 11,000 tons (1967).

Herring catches increased greatly from 166,000 tons (1966) to 244,000 (1967). All countries shared in the increase which was due to greater effort and the FRG (26,000 tons) and non-member countries (15,000 tons) who were new to this Subarea fishery.

Sea scallop catches increased slightly from 49,000 tons (1966) to 53,000 (1967).

2. Work Carried Out

a) **Canada:** Collaborative catch statistics collection on Georges Bank scallops was carried out with USA. Swordfish research showed an expansion of the fishery offshore within the Gulf Stream boundaries. Two samples of herring from northern Georges Bank were examined.

b) **FRG:** Four samples of herring from different localities and months were examined. The predominant year-class was 1960. Meristic characters showed all samples probably belonged to the same stock.

c) **Poland:** Nine hydrographic sections were made on Georges Bank and plankton samples taken on 49 stations. Herring otolith samples showed the 1960 year-class to be predominant. The most abundant year-class in the haddock samples was 1962.

d) **Romania:** Samples of herring (dominant 1960 year-class) and blueback herring (dominant 1963 year-class) were examined for age. Hydrographic and meteorological observations were made.

e) **USSR:** Four seasonal oceanographic surveys were carried out and plankton research continued at standard stations on Georges Bank. Collaborative plankton sampling studies with USA were begun. Studies on silver hake showed 4-year-olds to be dominant. Biochemical blood studies indicate different stocks of silver hake on Georges Bank and areas further south. The greatest part of the reduced haddock catches was made up of the formerly abundant 1962 and 1963 year-classes and no strong year-class has appeared since. The most abundant year-classes of herring were 1960 and 1961 with no indication of a strong year-class since that time.

f) **UK:** Continuous plankton recorder studies extended into Subarea 5.

g) **USA:** Extensive hydrographic studies were carried out in the Subarea. Plankton productivity investigations indicate that the phytoplankton could only be maintained by a rapid recycling of nutrient materials. Studies of coastal zooplankton were continued. Collaborative plankton sampling work with the USSR was begun. Quantitative study of macrobenthos was continued. Studies of the population structure of haddock have advanced. The total mortality rate increased greatly from 1964 to 1965 and the fishing rate appears to be above that for maximum sustained yield. The effects of fishing on silver hake continue to be studied and were part of a joint USA-USSR groundfish survey. Growth and meristic studies indicate that Georges Bank herring are a separate stock from those in Nova Scotia and Maine. Tuna tagging was continued. Atlantic salmon smolt tagging was continued.

3. Haddock

The decrease in haddock landings from 149,000 tons in 1965 to 57,000 tons in 1967 is mostly the result of less fishing which in turn was caused by decreased abundance. The formerly abundant 1962 and 1963 year-classes have been

greatly reduced by heavy fishing and no strong year-classes have appeared since. It appears unlikely that good new recruitment to the fishery will take place before 1971 at the earliest.

4. Silver Hake

The decrease in silver hake landings is from decreased fishing pressure and reduced stocks. It is expected that the stocks will increase if the fishing pressure remains at a moderate level.

5. Herring

The high 1967 catch of 244,000 tons is entirely the result of increased fishing pressure. There appears to be two stocks of herring in the Subarea, one on Georges Bank and south of Georges Bank and one in the Gulf of Maine. The dominant year-classes are 1960 and 1961. If new strong year-classes are not recruited soon, the high level of catches will not be maintained.

6. Yellowtail

The yellowtail fishery has not fluctuated very widely and it is believed that catches of the present order of magnitude can be continued if unfavourable environmental conditions do not interfere. The 1967 catch was 26,000 tons.

7. Scallops

The scallop landings in 1967 of 53,000 tons was largely Canadian (42,000 tons) and concentrated on the northeastern edge of Georges Bank.

8. USA-USSR Joint Survey

The USA and USSR made comparative and simultaneous joint surveys in Subarea 5 for both plankton and groundfish comparing vessels and gear. The USA vessel was *Albatross IV* of 1,000 gross tons and the USSR vessel, the *Albatros*, of 500 gross tons. The data from the statistically designed experiments have been only partly analyzed but already have shown the value of such collaborative and joint field experiments. This exercise has been regarded by both parties as highly informative, useful, and successful.