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Northwest Atlantic Fisheries Organization (NAFO)

Annual Report 1996

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Preface

This Annual Report for the year 1996 is submitted to the Contracting Parties of NAFO in accordance with the provisions of Article V.4 of the Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries. The Report consists of four major Parts that reflect the annual activities of NAFO's constituent bodies -the General Council, the Fisheries Commission, the Scientific Council, and the Secretariat as the summary proceedings and decisions through 1996. Full reports of the General Council and Fisheries Commission meetings held during the year are published in a separate edition - "Meeting Proceedings of the General Council and Fisheries Commission for 1996", and the proceedings of the Scientific Council are published in the "Scientific Council Reports, 1996". The Annual Report includes a summary of meetings, scientific, statistical, financial and other appropriate information pertaining to the activities of the Organization and fisheries in the Regulatory Area.

L. I. Chepel
Executive Secretary

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Introduction

The Northwest Atlantic Fisheries Organization (NAFO)* operates under provisions of the Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries signed in Ottawa, Canada, on 24 October 1978 and entered into force on 1 January 1979. Canada is the country-depositary for the Convention.

The principal objectives of NAFO set forth by the Convention are to contribute through consultation and cooperation to the optimum utilization, rational management and conservation of the fishery resources of the Convention Area. To carry out its mission, NAFO was structured into the following four constituent bodies: the General Council, the Scientific Council, the Fisheries Commission, and the Secretariat. The first three constituent bodies meet at least once annually, while NAFO business between meetings would be coordinated through the Secretariat.

The following NAFO meetings were held during 1996: (1) Standing Committee on Fishing Activities of Non-Contracting Parties in the Regulatory Area (STACFAC) Meeting (Brussels, May 1996); (2) Regular Scientific Council Meeting (Keddy's Inn, Dartmouth, Canada, June 1996); (3) Scientific Council Workshop on "Assessment of Groundfish Stocks based on Bottom Trawl Survey Results" (St. Petersburg, Russia, September 1996); (4) Fisheries Commission Workshop on "Compatibility and Applicability of Discard/Retention Rules for Conservation and Utilization of Fishery Resources in the Northwest Atlantic" (St. Petersburg, Russia, September 1996); (5) 18th Annual Meeting of the Organization including meetings of all constituent bodies in September, Shuvalov Palace, St. Petersburg, Russia; (6) Scientific Council Meeting in November, NAFO Headquarters, Dartmouth, Canada.

The Scientific Council reviewed and assessed the state of twenty-five (25) fish stocks (including shrimp) in the Convention Area. The Scientific Council advice and recommendations for the management and conservation of fishery resources in the NAFO Convention Area were provided to the Fisheries Commission with the following highlights: all major cod stocks were at all time low or lowest on record, and all flatfish stocks (American plaice, witch flounder, yellowtail flounder) were at low levels. Moratoria were therefore advised for these stocks in 1997.

The Scientific Council continued its task towards an improvement of management advice and scientific methodology including broad application of environmental factors.

At the Annual Meeting in September, the Fisheries Commission considered the Scientific Council recommendations and agreed to maintain the ban on fishing (imposed in 1994) for six (6) fish stocks out of eleven (11) managed by NAFO: Cod in Div. 3NO, American plaice in Div. 3M and 3LNO, Yellowtail flounder in Div. 3LNO, Witch flounder in Div. 3NO and Capelin in Div. 3NO. 3LNO shrimp was again accepted for moratorium and 3M shrimp was agreed for 22 mm grates and 40 mm mesh size regulation with 10% of fishing effort reduction in 1997.

*Note: The predecessor of NAFO was ICNAF through the years 1950-1978 based on the International Convention for the Northwest Atlantic Fisheries.

New conservation and enforcement measures were discussed and agreed for the Regulatory Area regarding: discard/retention rules for conservation purposes; 90 mm mesh size for pelagic trawls in the 3LN redfish fishery on an experimental basis; reporting target species.

A precautionary approach to the conservation and management of fish stocks in the NAFO Regulatory Area was discussed by the Commission and the Scientific Council was requested to present a report on the implementation of the concept that all Contracting Parties fishing in the Regulatory Area should prevent illegal by-catch and catches of young fish.

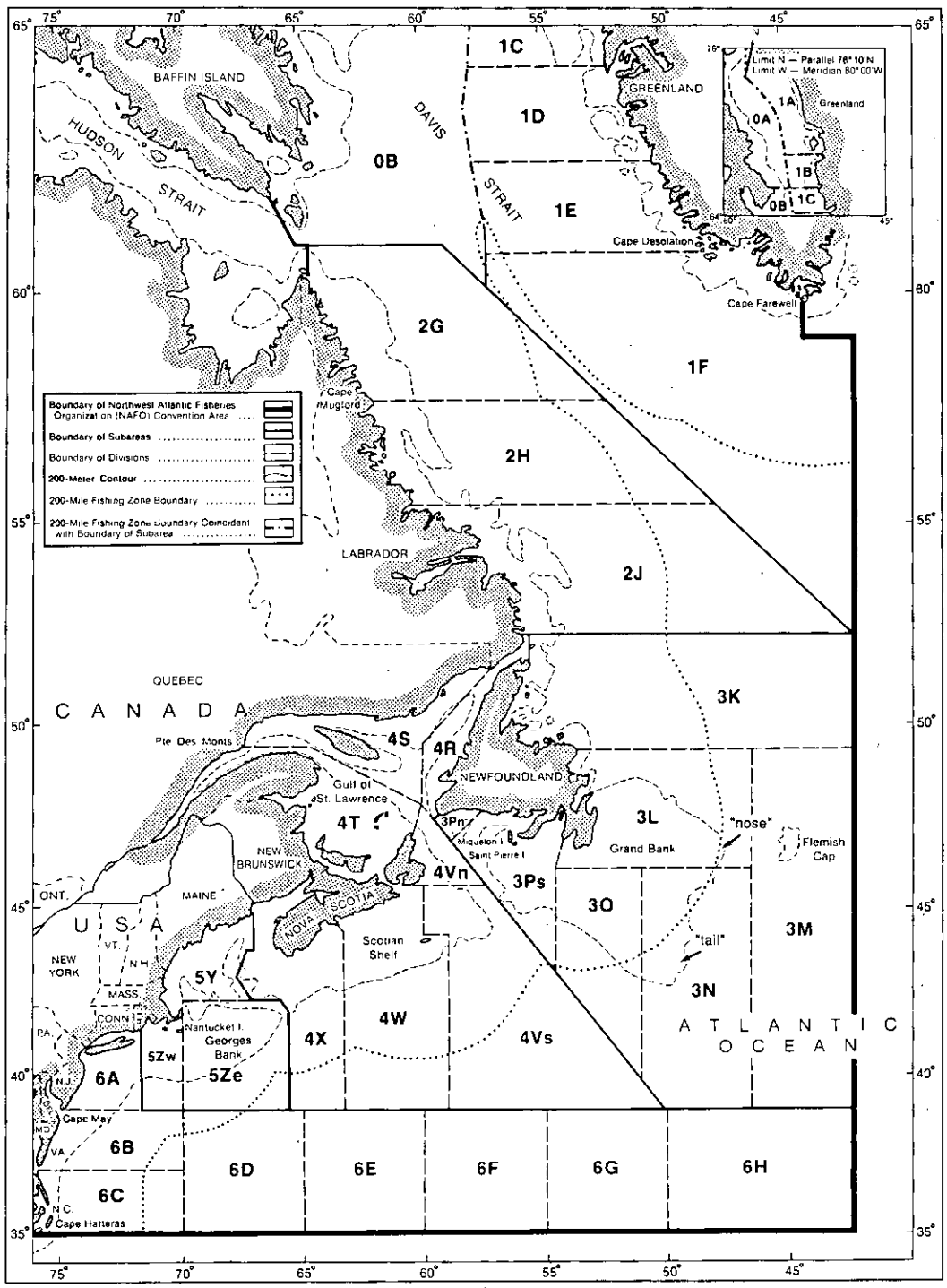
The General Council considered several issues regarding internal and external policy of NAFO:

A Working Group discussed a USA proposal for improving transparency in NAFO proceedings and decided to pursue this issue further by studying the relevant rules of other Organizations;

The Meeting discussed the necessity of a dispute settlement mechanism in NAFO. It was decided to continue consultations and meet in a Working Group in 1997;

With regards to non-Contracting Parties fishing activity in the NAFO Regulatory Area, the Council considered the harmful effect of unregulated fishing by non-members. Diplomatic demarches were issued to Belize, Honduras, Panama and Sierra Leone.

The Convention Area to which the Convention on Future Multilateral Cooperation in the Northwest Atlantic applies



Structure of the Northwest Atlantic Fisheries Organization (NAFO) in 1996 (as at 18th Annual Meeting, September 1996)

Contracting Parties

Bulgaria, Canada, Cuba, Denmark (in respect of the Faroe Islands and Greenland), Estonia, European Union (EU), France (in respect of St. Pierre et Miquelon), Iceland, Japan, Republic of Korea, Latvia, Lithuania, Norway, Poland, Romania, Russia and United States of America (USA).

President

A. Rodin (Russia)

Constituent Bodies

General Council	Bulgaria, Canada, Cuba, Denmark (in respect of the Faroe Islands and Greenland), Estonia, EU, France (in respect of St. Pierre et Miquelon), Iceland, Japan, Korea, Latvia, Lithuania, Norway, Poland, Romania, Russia and USA.	*Chairman* - A. Rodin (Russia) *Vice-Chairman* - R. Dominguez (Cuba)
Scientific Council	Bulgaria, Canada, Cuba, Denmark (in respect of the Faroe Islands and Greenland), Estonia, EU, France (in respect of St. Pierre et Miquelon), Iceland, Japan, Korea, Latvia, Lithuania, Norway, Poland, Romania, Russia and USA.	*Chairman* - W. R. Bowering (Canada) *Vice-Chairman* - H. P. Cornus (EU)
Fisheries Commission	Canada, Cuba, Denmark (in respect of the Faroe Islands and Greenland), Estonia, EU, France (in respect of St. Pierre et Miquelon), Iceland, Japan, Korea, Latvia, Lithuania, Norway, Poland, Russia and USA.	*Chairman* - H. Koster (EU) *Vice-Chairman* - P. Gullestad (Norway)

Standing Committees

General Council	Standing Committee on Finance and Administration (STACFAD)	*Chairperson* - J. Quintal-McGrath (Canada) *Vice-Chairman* - G. F. Kingston (EU)

General Council (cont'd)	Standing Committee on Fishing Activity of non-Contracting Parties in the Regulatory Area (STACFAC)	*Chairman* - J. P. Plé (USA) *Vice-Chairman* - B. Buch (Denmark in Respect of Faroe Islands and Greenland)
Scientific Council	Standing Committee on Fishery Science (STACFIS)	*Chairman* - W. B. Brodie (Canada)
	Standing Committee on Research Coordination (STACREC)	*Chairman* - D. Power (Canada)
	Standing Committee on Publications (STACPUB)	*Chairman* - H. P. Cornus (EU)
	Standing Committee on Fisheries Environment (STACFEN)	*Chairman* - M. Stein (EU)
	Executive Committee	*Chairman* - W. R. Bowering (Canada)
Fisheries Commission	Standing Committee on International Control (STACTIC)	*Chairman* - D. Bevan (Canada)

Secretariat

Executive Secretary	L. I. Chepel
Assistant Executive Secretary	T. Amaratunga
Administrative Assistant	F. D. Keating
Senior Secretary	B. J. Cruikshank
Accounting Officer	S. M. Goodick
Desktop Publishing/Documents Clerk	F. E. Perry
Statistical/Conservation Measures Officer	G. M. Moulton
Graphic Arts/Printing Technician	R. A. Myers
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Word Processing Secretary	D. C. A. Auby
Statistical/Library Documents Clerk	B. L. Marshall
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Headquarters Location

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PART I

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Activities of the General Council in 1996

List of Meetings

The following meetings were held under the authority of the General Council:

- The Standing Committee on Fishing Activity of non-Contracting Parties in the Regulatory Area (STACFAC); Brussels, Belgium, 22-24 May.

- The General Council and it subsidiary bodies (STACFAD and STACFAC); 18th Annual Meeting, St. Petersburg, Russia, 09-13 September.

Major Documents of the General Council in 1996

Serial No.	GC Doc. No.	Title
N2677	96/1	Data on Non-Contracting Parties Activities in the NAFO Regulatory Area (1994-1995)
N2761	96/2	Report by NAFO Observer (Norway) on the Sixth Meeting of the North Atlantic Marine Mammal Commission (NAMMCO)
N2764	96/3	Correspondence Between NAFO Secretariat and Non-Contracting Parties
N2769	96/4	Administrative Report and Financial Statements for the fiscal year ending 31 December 1996 (as of 31 July 1996)
N2789	96/5	Report of the Standing Committee on Fishing Activity of Non-Contracting Parties in the Regulatory Area (STACFAC), 22-24 May 1996, Brussels, Belgium
N2800	96/6	Data on Non-Contracting Parties Activities in the NAFO Regulatory Area (1995-1996)
N2801	96/7	Report of the Working Group on Participation of Intergovernmental and non-Governmental Organizations
N2802	96/8	Modification of the Boundaries of the Scientific and Statistical Division 3P (in 200-mile Canadian Zone)
N2819	96/9	Report of the General Council, 18th Annual Meeting, 09-13 September 1996, St. Petersburg, Russia

Meeting of STACFAC

This Meeting was held in accordance with the decision by the General Council (GC Doc. 95/5, Part I, item 4.2-4.3) to call the meeting in Spring 1996. Complete proceedings of this Meeting are presented in GC Doc. 96/5 and in a summary of Meeting Proceedings of the General Council and Fisheries Commission for 1996.

Opening Procedures (Agenda items 1-4)

The Chairman, C. C. Southgate (EU-United Kingdom), opened the Meeting on 22 May 1996 at 1015 hours. Representatives of the following Contracting Parties were present: Canada, Denmark (in respect of the Faroe Islands and Greenland), European Union, Iceland, Japan, Lithuania, Norway, Poland and the United States of America (Annex 1). Mr. Wieland (EU) was appointed Rapporteur. Observer from NASCO, Dr. M. Windsor, was admitted to the Meeting.

The Agenda was adopted as presented in Annex 2.

Activities of non-Contracting Parties and Diplomatic Contacts by the Contracting Parties (items 5-6)

The reports by delegates showed that the non-Contracting Parties' fishing in the NAFO Regulatory Area (NRA) was on a decline. There were 12 vessels (7-Belize, 2-Honduras, 1-Panama, 2-Sierra Leone) in 1995 against 27 in 1994 and 47 in 1989. Their catch was estimated up to 10 950 tons.

The Contracting Parties continued their diplomatic contacts with the non-Contracting Parties and achieved some positive results.

Measures to Discourage Activities by non-Contracting Parties in the NRA (items 7-9)

The Meeting discussed a number of ideas through a combination of several joint actions re diplomatic demarches, landing rights (of fish), access to ports and others. There was a general consensus that formal diplomatic approaches would not resolve the problem. In such a complex issue, some important questions would be, as well, around the interpretation of relevant provisions of international law and the provisions of GATT and WTO. In a more practical way, the basic language and emphasis was around such meanings as: "Cooperation/non-Cooperation of States", "Joining the Organization (NAFO)", "Openess of NAFO", "Courtesy Boardings", "Measures directed at State or vessel", "black list of vessels", etc. This report was referred to the General Council Meeting in September 1996.

Annex 1. List of Participants

Chairman: C. C. Southgate, Nobel House, Ministry of Agriculture, Fisheries and Food, Smith Square, London SW1P 3HX

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Head of Delegation

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SECRETARIAT

L. I. Chepel, Executive Secretary
B. J. Cruikshank, Senior Secretary

Annex 2. Agenda

1. Opening by the Chairman, C. C. Southgate (EU)

2. Appointment of Rapporteur

3. Adoption of Agenda

4. Admission of Observers

5. Review of available information on activities of non-Contracting Party vessels in the Regulatory Area in 1995-1996.

6. Reports by Contracting Parties on diplomatic contacts with non-Contracting Party governments concerning fishing activities by their vessels in the Regulatory Area.

7. Consideration of measures to discourage non-Contracting Party vessels from fishing activities which undermine NAFO's conservation and enforcement measures for the Regulatory Area.

8. Consideration of a scheme to prevent landings of fish caught in the Regulatory Area by identified non-Contracting Party vessels.

9. Discussion of the implications of a NAFO system of denial of port facilities to fishing vessels from non-Contracting Parties which fail to cooperate.

10. Other Matters

11. Adjournment

General Council Meeting

The General Council Meeting including meetings of its subsidiary bodies - Standing Committee on Finance and Administration (STACFAD) and Standing Committee on Fishing Activities of non-Contracting Parties in the Regulatory Area (STACFAC) - was held during the 18th Annual Meeting of NAFO in St. Petersburg, Russia, 09-13 September 1996. Complete proceedings of this Meeting can be found in GC Doc. 96/9 and in a separate edition of Meeting Proceedings of the General Council and Fisheries Commission for 1996.

Opening Procedures (Agenda items 1-5)

The meeting was opened by the Chairman of the General Council, A. V. Rodin (Russia) at 1020 hours on 10 September 1996.

Representatives of the following fifteen (15) Contracting Parties were present: Canada, Cuba, Denmark (in respect of the Faroe Islands and Greenland), Estonia, European Union (EU), France (in respect of St. Pierre et Miquelon), Iceland, Japan, Republic of Korea, Latvia, Lithuania, Norway, Poland, the Russian Federation and the United States of America (Annex 1).

The delegate of Russia presented an opening welcome speech to the Meeting.

The Representative of Denmark thanked the Russian delegation on behalf of all participants for the invitation to St. Petersburg.

The meeting appointed the Executive Secretary as Rapporteur.

The Provisional Agenda was adopted as presented in Annex 2.

Supervision and Coordination of the Organizational, Administrative and Other Internal Affairs (items 6-10)

The two new members of NAFO - France (in respect of St. Pierre et Miquelon) and the United States of America (USA) were welcomed by the General Council. The total number of NAFO members was increased to 17 Contracting Parties. The General Council admitted the two new members to the Fisheries Commission membership.

The Representative of France and the United States stated their support to NAFO policy and conservation measures.

The Meeting discussed the situation with non-participation and non-payment of NAFO contributions by two Contracting Parties - Bulgaria and Romania (Bulgaria for 5 years and Romania for 11 years). It was decided to continue dialogue with these members by the Chairman and NAFO Secretariat.

The subject of participation of intergovernmental and non-governmental organizations (in NAFO affairs) has been under consideration by the General Council and its Working Group. The major idea (by the USA delegate) was around transparency in decision-making process and other activities of NAFO according to Article 12 of the UN Fish Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks. The decision has been to proceed with further studies of the international practice for this purpose and to draft a paper of NAFO rules.

The Administrative Report was adopted by the Meeting.

The item of the provision on "Quorum" was not discussed as there has not been any initiative or interest by delegates.

The request from the Scientific Council for modification of the boundaries of the NAFO Area (Div. 3P) was adopted by the Meeting (Annex 3).

Coordination of External Relations (items 11-12)

The General Council agreed with a reply to the Government of Japan regarding the provisions established by the "Kyoto Declaration and Place of Action, 1995". A letter, GF/96-469 signed by the Executive Secretary was sent to Japan on 26 September 1996.

The UN Resolutions 50/24 and 50/25 of December 1995 re the UN Agreement on Straddling and Highly Migratory Fish Stocks, and on large-scale pelagic driftnet were endorsed by the Meeting (letter GF/96-470 to the UN).

To the NAFO observership at NAMMCO, the Meeting received the report from Norway, GC Doc. 96/2.

Fishing Activities in the Regulatory Area Adverse to the Objectives of the NAFO Convention (items 13-15)

The Chairman of STACFAC, Jean-Pierre Plé (USA), referred to the General Council the following findings and recommendations:

- The number of non-Contracting Parties (NCPs) vessels has decreased during 1996 from the same time in 1995 from 12 to 6 vessels. The flag nations fishing vessels were from Belize (1 vessel), Honduras (1), Panama (1) and Sierra Leone (3), total of six fishing vessels.

- The actions by Contracting Parties and NAFO diplomatic demarches have had some positive effect probably contributing to the decrease of non-Contracting Parties fishing.

- STACFAC recommended:

  to adopt the texts of diplomatic demarches signed by the Chairman of the General Council to Belize, Honduras, Panama and Sierra Leone (Note by Executive Secretary: The demarches were delivered through diplomatic channels by Canada, to Honduras and Panama and by the USA, to Belize and Sierra Leone); to call an intersessional STACFAC meeting in February 1997 at which the basic idea would be to consider the grounds, procedures and measures for a NAFO Scheme to further address and review NCP fishing problem in the NAFO Regulatory Area.

The General Council adopted the STACFAC Report and recommendations.

The item 15 re "Protocol to the NAFO Convention for a dispute settlement mechanism to deal with disputes arising from use of the objection procedure" (Article XII of the Convention) was introduced by Canada explaining that this proposal would be to minimize conflicts by providing an objective third party mechanism to resolve disagreements potential for overfishing and confrontation. The meeting discussed this idea in detail and through an open-minded exchange of ideas.

The final decision was to proceed with further discussions during the year 1997 and for this purpose to establish a Working Group on Dispute Settlement Procedures with a mandate of examining and developing concrete recommendations to the next Annual Meeting in September 1997.

Finance (items 16-17)

The financial business of the Organization was referred to the Standing Committee on Finance and Administration (STACFAD). The Vice-Chairman of STACFAD, G. F. Kingston (EU), addressed the following highlights and recommendations:

> Auditors Report transmitted to the Contracting Parties in March 1995 and Administrative Report at the current meeting were recommended for adoption;
>
> The activity and participation of the NAFO Secretariat in the Pension Society (Pension Plan for NAFO employees) were approved by STACFAD and this was recommended for approval by the General Council;
>
> The major budgetary items of the STACFAD Report were recommended as follows:
>
> - the budget for 1997 to be adopted in the amount of $1,006,500 Cdn dollars;
> - the Accumulated Surplus Account be maintained at a level of not less than $75,000 Cdn.;
> - the outstanding contributions owing from Bulgaria (1996) and Romania (1996) be deducted from the Accumulated Surplus Account in the amount of $32,063 Cdn.

The Representative of the European Union invited the Annual NAFO Meeting 1998 to be held in Lisbon, Portugal. This invitation was accepted by the General Council with acclamation.

The Chairman of the General Council stated that to his opinion, the situation with Bulgaria and Romania non-participation/non-payment to the NAFO budget should be again seriously addressed at the next Annual Meeting, and in the interim the Chairman and NAFO Secretariat will try to establish contacts with those countries' officials.

The STACFAD Report and the recommendations were adopted by the General Council.

Closing Procedures (items 18-21)

It was recommended and adopted that the 1997 Annual Meeting will be held in St. John's, Newfoundland, Canada, during 10-19 September 1996.

There were no matters to discuss under item 19 "Other Business".

The Press Release was prepared by the Executive Secretary and modified by the Contracting Parties (Annex 4).

The Chairman of the General Council addressed the Meeting with his closing remarks (Annex 5).

He especially emphasized on the need to upgrade and improve NAFO cooperation in the field of science and research in the framework of NAFO.

He thanked all NAFO delegates and the Secretariat for participation and meeting arrangements.

The 18th Annual Meeting of NAFO was adjourned at 1600 hrs on 13 September 1996.

The List of Actions and Decisions by the General Council at the 18th Annual Meeting is presented in Annex 6.

Annex 1. List of Participants

CANADA

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CUBA

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Annex 2. Agenda

I. Opening Procedure

1. Opening by Chairman, A. V. Rodin (Russia)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Admission of Observers
5. Publicity

II. Supervision and Coordination of the Organizational, Administrative and Other Internal Affairs

6. Review of Membership
   a) General Council
   b) Fisheries Commission
7. Participation of Intergovernmental and Non-governmental Organizations
8. Administrative Report
9. Review Decision at 1995 Annual Meeting regarding Interpretation of the Provisions for "Quorum" in the NAFO Convention and Rules of Procedure
10. Request by the Scientific Council for modification of the boundaries of the statistical divisions (Div. 3P)

III. Coordination of External Relations

11. Communication with other International Organizations and Events
    a) Kyoto Declaration and Plan of Action, 1995
    b) Second World Fisheries Congress in Brisbane, Australia, 1996
    c) United Nations Resolutions (50/24 and 50/25 of 5 Dec 1995) re straddling fish stocks and large-scale pelagic drift-net fishing
12. NAFO Observership at NAMMCO

IV. Fishing Activities in the Regulatory Area Adverse to the Objectives of the NAFO Convention

13. Consideration of Non-Contracting Parties activities in the NAFO Regulatory Area and agreement on the task of STACFAC at the current meeting

14. Report of STACFAC at the Annual Meeting and decisions on actions

15. Consideration of Protocol to the NAFO Convention for a dispute settlement mechanism to deal with disputes arising from use of the objection procedure

V. Finance

16. Report of STACFAD at the Annual Meeting

17. Adoption of the Budget and STACFAD recommendations for 1997

VI. Closing Procedure

18. Time and Place of Next Annual Meeting

19. Other Business

20. Press Release

21. Adjournment

Annex 3. Modification of Division 3P Boundaries
(NAFO/GC Doc. 96/8)

Modification of the boundaries of the scientific and statistical division 3P (in 200-mile Canadian Zone)

On the request of the Scientific Council (SCS Doc. 96/16, item IV.4c, page 6) and with concurrence of Canada, the General Council agreed to modify the Division 3P boundaries according to the provisions of Article XX.2 of the NAFO Convention as follows:

- define "Cape Ray" as 47°37.0' north 59°18.0' west
- define "Cape North" as 47°02.0' north 60°25.0' west
- replace "Burgeo Island" with 47°30.7' north 57°43.2' west
- replace 46°50' north 58°50' west with 46°50.7 north 58°49.0' west

Annex 4. Press Release

1. The Eighteenth Annual Meeting of the Northwest Atlantic Fisheries Organization (NAFO) was held in St. Petersburg, Russia during 09-13 September 1996, under the chairmanship of Alexander Rodin (Russia), President of NAFO. All sessions of the NAFO bodies - General Council, Fisheries Commission and Scientific Council convened at the Shuvalov Palace.

2. There were 200 participants from fifteen (15) Contracting Parties - Canada, Cuba, Denmark (in respect of the Faroe Islands and Greenland), Estonia, European Union (EU), France (on behalf of St. Pierre & Miquelon), Iceland, Japan, Republic of Korea, Latvia, Lithuania, Norway, Poland, Russia and the United States of America. The Meeting extended its warm welcome to new members of NAFO - the United States of America deposited its instrument of accession on 29 November 1995 and France (in respect of St. Pierre and Miquelon) deposited its instrument of accession on 14 August 1996.

3. The following NAFO preparatory meetings were held prior to the Annual Meeting: Special Scientific Council Meeting (NAFO Headquarters, November 1995); Standing Committee on Fishing Activities of Non-Contracting Parties in the Regulatory Area (STACFAC) Meeting (Brussels, May 1996); Regular Scientific Council Meeting (Keddy's Inn, Dartmouth, Canada, June 1996); Scientific Council Workshop on "Assessment of Groundfish Stocks based on Bottom Trawl Survey Results" (St. Petersburg, Russia, September 1996); Fisheries Commission Workshop on "Compatibility and Applicability of Discard/Retention Rules for Conservation and Utilization of Fishery Resources in the Northwest Atlantic" (St. Petersburg, Russia, September 1996). The results and recommendations from these two (2) Workshops will be very helpful to the management of fish resources in the Convention Area.

4. The **Scientific Council**, under the chairmanship of W. R. Bowering (Canada), reviewed and assessed the state of 25 fish stocks in the NAFO Convention Area. The Scientific Council advice and recommendations for the management and conservation of fishery resources in the NAFO Convention Area were provided to the Fisheries Commission with the following highlights: all major cod stocks were at all time lows or lowest on record, and all flatfish stocks (American plaice, witch flounder, yellowtail flounder) were at low levels. Moratoria were therefore advised for these stocks in 1997.

   The trawlable biomass of the redfish stocks (Divisions 3M, 3L and 3N) in the Regulatory Area were considered uncertain. A conservative approach to management was thus recommended with catches not to exceed 14,000 tons in 3LN and 20,000 in 3M tons in 1997. The other two redfish stocks in Subarea 1 (completely inside Canada's 200-mile zone) were considered severely depleted. Accordingly, "no directed fishery" was recommended for these stocks.

   Greenland halibut Subarea 2 + Divisions 3KLMNO showed improved recruitment for all year-classes of 1990-94 and can be expected to recover.

5. The **Fisheries Commission**, under the chairmanship of H. Koster (European Union), considered the Scientific Council recommendations and made the decisions described below for the conservation and management of the fishery resources in the Regulatory Area.

There was unanimous agreement on continuation (from 1994) the moratoria for the following stocks: Cod in Divisions 3L and 3NO, American plaice in Divisions 3M and 3LNO, 3LNO Yellowtail, 3NO Witch and 3NO Capelin. As in 1995, the 3LMNO Greenland halibut quota was restricted to 20,000 tons (see Quota Table attached). 3LNO shrimp will remain under moratorium and the 3M shrimp fishery will be regulated by 22 mm size sorting grates and 40 mm mesh size as well as a 10% reduction in fishing effort from the level established for 1996.

New conservation and enforcement measures were discussed and agreed as follows:

- discard/retention rules for conservation purposes will be enforced inter alia, via expanded duties for observers, who would be authorized to strictly monitor and collect discard data
- 90 mm mesh size for pelagic trawls in the 3LN redfish fishery will be allowed on an experimental basis under strict supervision by observers and strict controls regarding bycatch levels.

A precautionary approach to the conservation and management of fish stocks in the NAFO Regulatory Area was discussed by the Commission and the Scientific Council was requested to present a report on the implementation of this concept, with consensus reached that all Contracting Parties fishing in the Regulatory Area should prevent illegal by-catch and catches of young fish. The Fisheries Commission reiterated the importance of Contracting Parties adhering to deadlines for the reporting on the disposition of apparent infringements of the NAFO Conservation Measures.

6. The **General Council**, under the Chairmanship of A. V. Rodin (Russia), considered several issues regarding internal and external policy of NAFO:

- A Working Group discussed a USA proposal for improving transparency in NAFO proceedings and decided to pursue this issue further by studying the relevant rules of other Organizations;

- The Meeting discussed the necessity of a dispute settlement mechanism in NAFO. It was decided that Contracting Parties will continue their consultations and a Working Group will meet as early as possible in 1997 with timing to be determined;

- With regards to non-Contracting Parties fishing activity in the NAFO Regulatory Area, the Council stressed the harmful effect of unregulated fishing by non-members. Diplomatic demarches were issued to the following countries: Belize, Honduras, Panama and Sierra Leone;

- It was agreed that STACFAC will meet in February 1997.

7. The election of the following NAFO officers took place for the two-year period 1997-1998:

Chairman of the Standing Committee on Fishing Activity of non-Contracting Parties in the Regulatory Area (STACFAC)	- J. P. Plé (USA)
Vice-Chairman of STACFAC	- B. Buch (Denmark -Greenland)

General Council
NAFO
13 September 1996

NAFO Secretariat
St. Petersburg, Russia

QUOTA TABLE. Total allowable catches (TACs) and quotas (metric tons) for 1997 of particular stocks in Subareas 3 and 4 of the NAFO Convention Area. The values listed include quantities to be taken both inside and outside the 200-mile fishing zone, where applicable.

	Cod		Redfish		American plaice		Yellowtail	Witch	Capelin	Greenland halibut	Squid (*Illex*)[2,3]
Contracting Party	Div. 3M	Div. 3NO*	Div. 3M	Div. 3LN	Div. 3M*	Div. 3LNO*	Div. 3LNO*	Div. 3NO*	Div. 3NO*	Div. 3LMNO	Subareas 3+4
1. Bulgaria	-	-	-[7]	-	-	-	-	-	-	-	500
2. Canada	47	0	650	4 686	0	0	0	0	0	3 000	N.S.[4]
3. Cuba	222	-	2 275	1 078	-	-	-	-	0	-	2 250
4. Denmark (Faroe Islands and Greenland)	1342	-	90	-	-	-	-	-	-	-	-
5. European Union	2992	0	4 030	374	0	0	0	-	0	11 070	N.S.[4]
6. France (St. Pierre and Miquelon)	-	-	90	-	-	-	-	-	-	-	2000
7. Iceland	-	-	-	-	-	-	-	-	-	-	-
8. Japan	-	-	520	-	-	-	-	-	0	2 050	2 250
9. Korea	-	-	90	-	-	-	-	-	-	-	2 000
10. Norway	555	-	-	-	-	-	-	-	0	-	-
11. Poland	231	-	-	-	-	-	-	-	0	-	1 000
12. Estonia 13. Latvia 14. Lithuania 15. Russia	588[1]	0	18 005[1]	4 796[1]	0	-	-	0	0	- 2 550	5 000[1]
16. United States of America	-	-	90	-	-	-	-	-	-	-	2000
17. Others	23	0	160	66	0	0	0	0	-	1 330[6]	3 000
Total Allowable Catch	6 000	*	26 000	11 000	*	*	*	*	*	20 000	150,000[5]

[1] Quotas to be fished by vessels from Estonia, Latvia, Lithuania and the Russian Federation. The provisions of Part I, Section A.3 of the NAFO Conservation and Enforcement Measures shall apply.

[2] The opening date for the Squid (*Illex*) fishery is 1 July.

[3] Any quota listed for squid may be increased by a transfer from any "coastal state" as defined in Article 1, paragraph 3 of the NAFO Convention, provided that the TAC for squid is not exceeded. Transfers made to Contracting Parties conducting fisheries for squid in the Regulatory Area shall be reported to the Executive Secretary, and the report shall be made as promptly as possible.

[4] Not specified because the allocation to these Contracting Parties are as yet undetermined, although their sum shall not exceed the difference between the total of allocations to other Contracting Parties and the TAC.

[5] The TAC would remain at 150 000 tonnes subject to adjustment where warranted by scientific advice.

[6] Of which no more than 40% (532 t) may be fished before 1 May 1997 and no more than 80% (1064 t) may be fished before 1 October 1997.

[7] Quota of Bulgaria to be distributed among Denmark (Faroe Islands & Greenland), France (St. Pierre & Miquelon), Korea, the USA and others for 1997.

* No directed fishing - The provisions of Part I, Section A.4b) of NAFO Conservation and Enforcement Measures shall apply.

Annex 5. Closing Address by the Chairman, A. Rodin

Distinguished Heads of Delegations, Ladies and Gentlemen:

Today we are concluding the work of the 18th Annual NAFO Meeting. The situation with the NAFO fish stocks as reported to us by the NAFO Scientific Council continues to be very serious, and many stocks are in depression. Therefore, efforts of all NAFO members, as before, shall be directed towards reasonable limitations and even in some cases, towards temporary moratoria.

At the same, I wish to note the positive trends which appeared in the environmental conditions of the NAFO Convention Area, and consequently we can expect with confidence that restoration of the stocks will take place.

This optimism in me has not only been caused by the natural process but also by the hard work of this Organization in the field of conservation and restoration of fish stocks.

I believe that everything which strengthens our Organization must be supported and encouraged. We have a rich history dated from ICNAF to the present NAFO, experience and traditions which should be preserved, and we must not change them abruptly or destroy them.

We have problems, and we should not be afraid of them. Our problems can be resolved through discussions, and every position should be based on clear and, as appropriate, scientific argumentation.

Confirming our adherence to the provisions of International Law of the Sea, Kyoto Declaration, UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks and so on - we shall understand that scientific basis becomes more and more necessary in our business.

I can frankly say that we still have much work to do to develop and coordinate activities in that field of NAFO science. The number of scientific cruises is still very limited, and not all NAFO members work actively in that direction. There were cases of duplication of scientific research and that was not very rational.

We, within NAFO, should know exactly what scientific cruises are planned annually, what priorities should be set for ourselves, what means are available to us and so on. The exchange of scientific information has to be improved and should be better than at present. To this background, I believe that NAFO requires consolidated impulse to expend and coordinate scientific research in the framework of this international panel of NAFO.

Considering this issue, I am asking the delegations for their advice: Would it be appropriate to call a special NAFO meeting, next winter, to discuss the improvements in organizing scientific research work? I would appreciate if delegations could submit proposals and ideas on this problem to the Secretariat.

In conclusion, I would like to thank all the participants of our meeting for their productive and fruitful work, which clearly demonstrated that the NAFO spirit is the spirit of cooperation.

As always, and deservedly so, special thanks should be extended to the NAFO Secretariat for its well organized work and professional services to this Meeting and during the year.

Thank-you.

Annex 6. List of Decisions and Actions by the General Council (18th Annual Meeting; 09-13 September 1996)

Substantive issue (propositions/motions)	Decision/Action (GC Doc. 96/9, Part I; item)
1. Membership of the Fisheries Commission	New members - France (in respect of St. Pierre et Miquelon) and the United States of America; items 2.1-2.4
2. Participation in NAFO by two Contracting Parties - Bulgaria and Romania	The President of NAFO and NAFO Secretariat will communicate with those countries; item 2.5
3. Transparency in the NAFO decision-making process (Participation of Inter-governmental and Non-Governmental Organizations)	Agreed to proceed through study of the international practice on this issue and develop a draft paper of relevant NAFO Rules in cooperation with the Chairman of the Working Group (USA) and NAFO Secretariat; item 2.10
4. Modification of the boundaries of the NAFO statistical division (Div. 3P); GC Doc. 96/8	Adopted; item 2.13 and Annex 7
5. Kyoto Declaration and Plan of Action, 1995	Agreed on the text proposed by Canada as reply to the Government of Japan; a letter GF/96-469 was sent by the Executive Secretary to Japan on 26 Sep 96
6. UN Resolutions 50/24 and 50/25 December 1995 re the UN Agreement on straddling and highly migratory fish stocks; and on large-scale pelagic driftnet fishing	Endorsed; the Executive Secretary informed the UN Secretary in GF/96-470 of 26 Sep 96
7. Report of STACFAC to the Meeting:	Adopted; item 4
- New diplomatic demarches to Belize, Honduras, Panama, Sierra Leone	Agreed; signed by the President; item 4.2c)
- Intersessional Meeting of STACFAC, NAFO Headquarters, Dartmouth, Canada, February 1997	Agreed; item 4.2c)
- New Chairman of STACFAC - Mr. Jean-Pierre Plé (USA)	For information
8. Protocol to the NAFO Convention for a dispute settlement mechanism to deal with disputes arising from use of the objection procedure	Decided to proceed with further discussions during the year and call a meeting of a Working Group in NAFO Headquarters, Dartmouth, N.S., Canada, early 1997; item 4.6 xxv)

Substantive issue (propositions/motions)	Decision/Action (GC Doc. 96/9, Part I; item)
9. Report of STACFAD to the Meeting:	Adopted; item 5
- Auditors Report	Adopted
- Accumulated Surplus Account	Agreed: to maintain on the level not less than $75,000 Cdn
- Bulgaria's and Romania's collectible debt for 1996	Agreed: $32,063 Cdn to write-off from the Accumulated Surplous Account
10. Budget for 1997	Adopted; $1,006,500 Cdn
11. Annual NAFO Meeting, 1998	Agreed (on invitation by the European Union and Government of Portugal): to call the 1998 NAFO Annual Meeting in Lisbon, Portugal, 09-18 September

PART II

(pages 43-72)

Activities of the Fisheries Commission in 1996

List of Meetings

The following meetings were held under the authority of the Fisheries Commission:

- Workshop on Compatibility and Applicability of Discard/Retention Rules; St. Petersburg, Russia, 7-8 September;

- The Fisheries Commission and its subsidiary body (STACTIC), 18th Annual Meeting; St. Petersburg, Russia, 09-13 September.

Major Documents of the Fisheries Commission in 1996

Serial No.	FC Doc. No.	Title
N2659	96/1	Conservation and Enforcement Measures
N2762	96/2	Summary of Status of Proposals and Resolutions of NAFO (as of July 1996)
N2763 (Rev.)	96/3	Summary of Undisposed Apparent Infringements for 1993-1994-1995
N2791	96/4	Compatibility and Applicability of Discard/Retention Rules for Conservation and Utilization of Fishery Resources in the Northwest Atlantic - Summary of the Workshop
N2792	96/5	3M Shrimp Management and Hail System Message Format
N2793	96/6	Observer Duties to Collect Data on Discards
N2794	96/7	3L Cod
N2795	96/8	3LNO Shrimp
N2796 (final rev.)	96/9	90 mm Minimum Mesh Size for Redfish Fishery
N2797	96/10	2J3KL Cod
N2798	96/11	Fisheries Commission's Request for Scientific Advice on Management in 1998 of Certain Stocks in Subareas 3 and 4
N2799	96/12	Summary of Inspection Information for 1995
N2820	96/13	Report of the Fisheries Commission, 18th Annual Meeting, 09-13 September 1996, St. Petersburg, Russia

Workshop on Compatibility and Applicability of Discard/Retention Rules for Conservation and Utilization of Fishery Resources in the Northwest Atlantic

The Workshop was held in conjunction with the Annual Meeting, in St. Petersburg, Russia, during 7-8 September 1996 (FC Doc. 96/13).

The Chairman and Convenor of the Workshop was Mr. H. Koster (EU). He introduced the following objectives and review:

a) Current by-catch/juvenile rules in the Northwest Atlantic.

b) Scope of the problem of by-catches of juveniles, high grading and non-targeted species

- by-catches of juvenile fish:
  - occurrence of unavoidable catches of undersized fish in different fisheries (target species, area, season);
  - evaluation of potential catches of undersized fish and the impact thereof under different management systems.
- by-catches of non-target fish:
  - existence of unregulated species justifying directed fisheries and impact thereof on regulated species (species, area, season);
  - evaluation of potential catches of non-targeted fish and impact thereof under different management systems.

c) Applicability and enforceability of discard/retention rules

- efficiency of different management and enforcement strategies used in the Northwest Atlantic in preventing the catch of juvenile fish and fish in excess of quota;
- cost/benefit analysis of these strategies.

d) Compatibility of different management systems and corresponding enforcement strategies in the Northwest Atlantic.

The basic presentations and conclusions could be summarized in the following terms:

- All Contracting Parties apply a variety of measures for the purpose of reducing juvenile catches as well as by-catches of species in excess to applicable catch restrictions: changing of fishing grounds; temporary and definitive closures of sensitive areas; improved selectivity of gear; minimum mesh sizes; the use of grids; minimum fish size; maximum by-catch limits.

- The main reason for compulsory landing of all catches (discard ban) is the necessity to record the total fishing mortality caused by fishing activities and to count all catches for quota management. The main reason for the obligation to discard is to avoid the commercialization of such catches. During inspections at sea and in dockside inspections, inspectors can ascertain that only legal catches are retained on board. In this way, fishermen have no incentive to target illegal catches.

- Contracting Parties fishing in the NAFO Area have a variety of discard rules: Canada, Iceland, Norway and Russia generally apply a discard ban which requires all catches to be landed (exception could be diseased fish and non-commercial species); Greenland and the Faroe Islands have recently introduced "partial discard" laws; the European Community, Japan and the USA do not apply a discard ban.

- A full assessment of the efficiency and costs/benefits of different management strategies requires much more information then was made available at the workshop and should take account of the specific situation of a particular region. It was considered that measures with a view to minimize discards such as gear selectivity and avoiding fishing in sensitive areas are much more effective then the no-discard rule as such. Furthermore, it was considered that the risk of marketing illegal caches would vary according to local market characteristics.

- Some discussion took place on possible ways in which the Fisheries Commission could manage fisheries according to alternative models. Measures concerning gear technology and changing fishing area (observers on board) fit in the current management strategy. Annual closures of fishing areas seem also feasible. However, temporary closures of areas on the basis of prefixed trigger levels should be examined carefully. In the first place the determination of the areas as well as the commencement and duration of temporary closures should be based on scientific advice (test fishing?) and decided by the Fisheries Commission. These measures should be non-discriminatory and not affect the capacity of Contracting Parties to exploit available fishing opportunities. Finally, the cost/benefit of such measures should be examined.

Fisheries Commission Annual Meeting

The Fisheries Commission Meeting including meetings of its subsidiary body - Standing Committee on International Control (STACTIC) - was held during the 18th Annual Meeting on 09-13 September 1996 in St. Petersburg, Russia. Full proceedings of the meeting are presented in FC Doc. 96/13 and in a separate edition of Meeting Proceedings of the General Council and Fisheries Commission. This Annual Report presents a brief summary of the most substantial discussions at the Fisheries Commission and STACTIC.

Opening Procedures (Agenda items 1-5)

The meeting was called to order by the Chairman, Mr. H. Koster (EU) on 10 September 1996 at 1540 hours. Representatives of the following Contracting Parties were present: Canada, Cuba, Denmark (in respect of the Faroe Islands and Greenland), Estonia, European Union (EU), France (in respect of St. Pierre et Miquelon), Iceland, Japan, Republic of Korea, Latvia, Lithuania, Norway, Poland, the Russian Federation and the United States of America (Annex 1).

Mr. P. Moran (USA) was appointed Rapporteur.

The provisional agenda was adopted (Annex 2).

Administrative (items 6-7)

The review of Commission membership was referred to the General Council authority (under provisions of Article XIII of the Convention), and the General Council admitted the two new NAFO Members - France and the USA to the Fisheries Commission. The Fisheries Commission membership was 15.

The Commission agreed the item of Participation of Intergovernmental and non-Governmental Organizations was covered by the General Council discussions.

Conservation and Enforcement Measures (items 8-9)

Item 8 of the Agenda, Consideration of Improved Planning and Control of Research Vessels in the Regulatory Area, was introduced by Canada and reviewed at the Meeting. The provision of 60 days of advance notice of the research vessel was questioned most. No consensus was reached and the proposal was referred to the 19th Annual Meeting, 1997.

Under item 9, STACTIC Report, a number of proposals were discussed on presentation by STACTIC Chairman, D. Bevan (Canada).

The Meeting adopted annual return of infringements and surveillance reports. The Fisheries Commission emphasized the deadlines for reporting on the disposition of apparent infringements should be adhered to. On the issue of NAFO Observer Scheme and Satellite Tracking Pilot Project, the Fisheries Commission noted the implementation of Observer Scheme and partial introduction of Satellite Tracking on some fishing vessels. However, there was no provision or agreement on how to implement the project at the NAFO Secretariat.

The representative of the Secretariat noted that extra funds and special equipment would be required in the NAFO Secretariat to communicate with vessels equipped with satellite tracking devices and process their information. Considering the recommendation by STACTIC Working Group (FC Doc. 95/24, item 10) on testing several systems of satellite tracking, there could be some technical difficulties and substantial cost implications at the Headquarters to communicate and accommodate such many diverse systems.

The Fisheries Commission decided to convene a meeting of technical experts to deal specifically with the development of appropriate infrastructure within the Secretariat.

Regarding the operation of the NAFO Hail System, NAFO Secretariat reported (at STACTIC) with full account of its work/expenses of the Pilot automated systems and recommended its implementation by the Contracting Parties. Considering an improvement of operation of the hail system, the Fisheries Commission advised that Contracting Parties should identify appropriate contact persons to deal with the NAFO Secretariat requests of clarification. (Note: The Executive Secretary's letter on this subject has been circulated to all Contracting Parties in GF/96-604 of 16 December 1996).

An amendment was adopted to Part III, Annex 1, Hail Message Format that "target species" be reported in hail reports.

In the ensuing discussions, the following amendments to the NAFO Conservation and Enforcement Measures were adopted by the Fisheries Commission:

- Part VI, Pilot Project for Observers and Satellite Tracking, paragraph 3(b) and 7; to collect the information on discards (FC Doc. 96/6).
- Part I.H. Redfish experimental fishery with 90 mm mesh size (Annex 3-FC Doc. 96/9 Rev.)

For other matters:

- Proposal by Iceland for consideration of amendment of Part V, Schedule II, "Type of Fishing Gear" was referred to the Scientific Council.
- The idea of sampling protocols was referred to the EU delegate (T. Curran), who will collect and summarize all presentations.
- An appropriate procedure shall be practiced to maintain the integrity of the adopted reports.

Conservation of Fish Stocks in the Regulatory Area (items 10-15)

The Chairman of the Scientific Council, Mr. W. R. Bowering (Canada) gave a summary of SCS Doc. 96/16, "Report of the Scientific Council, 5-19 June 1996" which provided scientific advice for the management of fish stocks in the NAFO Regulatory Area for 1997:

- Shrimp 3M	catches at the lowest possible level
- Cod 3M	no directed fishery + lowest possible bycatch
- Cod 3NO	no directed fishery + lowest possible bycatch
- Redfish 3LN	not to exceed 14 000 tons
- Redfish 3M	not to exceed 20 000 tons

- American plaice 3LNO	no directed fishery + lowest possible bycatch
- American plaice 3M	no directed fishery + lowest possible bycatch
- Witch flounder 3NO	no directed fishery + lowest possible bycatch
- Yellowtail flounder 3LNO	no directed fishery + lowest possible bycatch
- Greenland halibut 3LMNO	catch should not exceed current TAC of 20 000 tons
- Capelin 3NO	no advice possible
- Squid (SA 3 and 4)	no advice possible

The presentation was followed by detailed stock-by-stock discussions.

The following responses to the special requests for management advice by the Fisheries Commission were presented to the meeting:

Cod in Div. 2J3KL:

The Scientific Council recommended that it was appropriate to assess 3L cod as a unit of the 2J3KL stock complex. The proportion of the cod biomass in 3L in the RA was updated to include the 1995 research vessel survey data. Estimates from these surveys indicate that the recent biomass of the 2J3KL cod stock is only about 1% of what it was in the 1980s.

Interrelation between seals and commercial fish stocks:

Information was presented on this subject last year as a result of a special symposium and a workshop on seals. No new information has been made available to the Scientific Council regarding this issue.

Coordinated research on Greenland halibut:

A proposal was made last year concerning a synoptic survey throughout the range of its distribution from Davis Strait to the Flemish Cap. This survey was not carried out due to time, vessel support and funding considerations, but steps have been taken by the Scientific Council to deal with the currently limited survey coverage for Greenland halibut. As to the question of a split TAC for Greenland halibut in SA2 + 3K versus 3LMNO, no new data were available in advance of the June 1996 meeting (or tod ate), and until survey coverage is extended throughout the range of the management area, a precise estimate of proportional distribution will not be available.

Measures to protect juvenile fish of regulated species:

It was stated that the Council is presently unable to quantify the effects of area closures, but effective area closures will require: precise definition of the species to be protected; careful definition of the boundaries with regard to species distribution; thorough understanding of the benefits to the fisheries to be effected; and the impacts of such closures on fishing fleets.

Optimum minimum fish (commercial) sizes for 3LNO American plaice:

The advice was it was not possible to identify the safe level of spawning stock size for this resource and an optimal minimum size for 3LNO American plaice cannot presently be determined.

More detailed information on the Scientific Council advice to the Fisheries Commission can be found in Part III of this Annual Report.

Under items 11 and 12 of the Agenda, Management and Technical Measures for Fish Stocks in the Regulatory Area and Straddling National Fishing Limits, a consensus had been reached in several meetings of Heads of Delegations regarding the TAC(s) and the measures as follows:

- Cod 3M	6 000 tons
- Redfish 3M	26 000 tons (1997 quota of Bulgaria is divided among Denmark, Korea, the United States and France each receiving 90 tons and remainder attributed to "others")
- American plaice 3M	no directed fishery
- Shrimp 3M	effort limitation (Annex 4-FC Doc. 96/5)
- Cod 3NO	no directed fishery
- Redfish 3LN	11 000 tons
- American plaice 3LNO	no directed fishery
- Yellowtail flounder 3LNO	no directed fishery
- Witch flounder 3NO	no directed fishery
- Capelin 3NO	no directed fishery
- Squid (*Illex*) (SA 3 & 4)	150 000 tons (with 2 000 tons each to France and the United States from part not assigned to Contracting Parties)
- Shrimp 3LNO	no directed fishery
- Greenland halibut 3LMNO	20 000 tons
- Cod 2J3KL in NRA	no directed fishery (with measures as outlined in NAFO FC Doc. 96/10, Annex 5 being applied when a decision is taken to allow the resumption of fishing for 2J3KL cod in the NRA)

The Fisheries Commission adopted the Quota Table for 1997 (Annex 6).

Regarding FC Agenda item 13(a), Request for Scientific Advice on Management in 1998 of Certain Stocks in Subareas 3 and 4, the Fisheries Commission adopted the request (Annex 7).

Regarding item 14, the Representative of Denmark reiterated his remarks of previous years dealing with the transfer of quotas between Contracting Parties (page 196, item 4.20 of the 1995 Meeting Proceedings) asking to keep this issue on the FC agenda for the next meeting, 1997.

Closing Procedures (items 16-18)

It was agreed that the Fisheries Commission Annual Meeting, 1997, would take place in St. John's, Newfoundland, Canada, 15-19 September.

There was no other business discussed at the Meeting.

The Annual Meeting of the Fisheries Commission was adjourned at 1430 on 13 September 1996.

The List of Decisions and Actions by the Fisheries Commission at the 18th Annual Meeting is attached in Annex 8.

Annex 1. List of Participants

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Annex 2. Agenda

I. Opening Procedure

1. Opening by the Chairman, H. Koster (EU)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Admission of Observers
5. Publicity

II. Administrative

6. Review of Commission Membership
7. Participation of Intergovernmental and Non-governmental Organizations

III. Conservation and Enforcement Measures

8. Consideration of Improved Planning and Control of Research Vessels in the Regulatory Area
9. Report of STACTIC at the Annual Meeting

IV. Conservation of Fish Stocks in the Regulatory Area

10. Summary of Scientific Advice by the Scientific Council
11. Management and Technical Measures for Fish Stocks in the Regulatory Area
    - 11.1 Cod in Div. 3M
    - 11.2 Redfish in Div. 3M
    - 11.3 American plaice in Div. 3M
    - 11.4 Shrimp in Div. 3M
12. Management and Technical Measures for Fish Stocks Straddling National Fishing Limits
    - 12.1 Cod in Div. 3NO
    - 12.2 Redfish in Div. 3LN
    - 12.3 American plaice in Div. 3LNO
    - 12.4 Yellowtail flounder in Div. 3LNO
    - 12.5 Witch flounder in Div. 3NO

12.6 Capelin in Div. 3NO
12.7 Squid (*Illex*) in Subareas 3 and 4
12.8 Shrimp in Div. 3LNO
12.9 Greenland halibut in Div. 3LMNO
12.10 If available in the Regulatory Area in 1997:
  i) Cod in Div. 2J3KL
  ii) Witch flounder in Div. 2J3KL

13. Formulation of Request to the Scientific Council for:

  a) Scientific advice on management of fish stocks in 1998
  b) Implementation of precautionary approach to NAFO-managed stocks

14. Transfer of Quotas Between Contracting Parties

15. Consideration of other measures:

  a) Review implementation of pilot project for observers and satellite tracking scheduled to expire on 31 December 1997
  b) Consideration of recommendations of the Workshop on discard/retention rules

V. Closing Procedure

16. Time and Place of the Next Meeting

17. Other Business

18. Adjournment

Annex 3. 90 mm Minimum Mesh Size for Redfish Fishery

(FC Doc. 96/9-Final Revision)

NAFO CONSERVATION AND ENFORCEMENT MEASURES

Amend Part I - to add new item H:

A 90 mm minimum mesh size for mid-water trawls only be permitted in the Redfish fishery in 1997 in Divisions 3LN on an experimental basis provided that the following additional Conservation and Enforcement Measures apply:

1. A by-catch protocol as follows:

   If the bycatch for each individual vessel of species under moratoria or species where there is no national allocation exceeds the prescribed levels in the Conservation and Enforcement Measures, determined in a period of a single day, then this particular vessel must immediately convert from 90 mm mesh to 130 mm. Vessel masters will be instructed in this regard by NAFO inspectors.

   This vessel will be required to maintain fishing operations with 130 mm mesh for 10 consecutive days before test fishing with 90 mm fishing gear is permitted. If test fishing indicates that the bycatch levels are within those prescribed this vessel will be permitted to immediately commence fishing with 90 mm gear. If test fishing results continue to indicate excessive bycatch levels the vessel must fish with 130 mm gear for an additional 10 days.

2. Contracting Parties must provide on a timely basis data on the entire project, including the bycatch statistics.

3. The project will not continue after 1997 unless all information collected during this project, as well as the bycatch protocol, is reviewed by both STACTIC and the Scientific Council at the 1997 annual meeting and the Fisheries Commission extends the project.

NOTE: The pilot project for 100% observer coverage currently in effect makes this type of project possible for 1997.

Annex 4. 3M Shrimp Management and Hail System Message Format
(NAFO/FC Doc. 96/5)

NAFO CONSERVATION AND ENFORCEMENT MEASURES

I. AMEND PART I.F - to read as follows:

F. Other Measures - Management Measures for Shrimp in Div. 3M

1. Vessels fishing for shrimps in Division 3M in 1997 shall use nets with a minimum mesh size of 40 mm.

2. Vessels fishing for shrimp in Division 3M in 1997 shall use sorting grids or grates maximum spacing between the bars of 22 mm.

3. In the event that total by-catches of all regulated groundfish species in any haul exceed 5 percent by weight, vessel shall immediately change fishing area (minimum of 5 nautical miles) in order to seek to avoid further by-catches of regulated groundfish.

4. Each Contracting Party shall limit in 1997 the number of vessels fishing for shrimp in Div. 3M to the number that have participated in this fishery in the period from 1 January 1993 to 31 August 1995.

   Each Contracting Party shall, in 1997, limit the number of fishing days by its vessels fishing for shrimp in Div. 3M to 90% of the maximum number of fishing days observed for their vessels in one of the years 1993, 1994 or 1995 (until 31 August 1995). However, for Contracting Parties with a track record, a minimum level of 400 fishing days is permitted.

   Contracting Parties with no track record in the shrimp fishery may, in 1997, fish for shrimp with one vessel in 100 fishing days, and Contracting Parties with a smaller track record may in 1997 fish an equal number of days.

   Each Contracting Party shall communicate the number of fishing days to the Executive Secretary before 1 November 1996 that are available to that Contracting Party for 1997. The number of days shall be counted from the hail reports of vessels fishing for shrimp in Div. 3M and shall include the days of entry and exit from the Regulatory Area. In the case where vessels fishing for shrimp and other species on the same trip the number of days shall be counted from the day the vessel entered the shrimp fishery to the day the vessel ceased that fishery.

   The Executive Secretary shall scrutinize the communications from the Contracting Parties, work with the relevant Contracting Parties if discrepancies are revealed, and by 1 December 1996 notify the number of vessels and fishing days applicable to all Contracting Parties.

II. AMEND PART III - ANNEX I - HAIL SYSTEM MESSAGE FORMAT

Insert the following new line in 1.1, 1.2 and 1.3:

"Target species"

Annex 5. 2J3KL Cod
(NAFO/FC Doc. 96/10)

NAFO CONSERVATION AND ENFORCEMENT MEASURES

Part I - Management - A. Quotas - to add new item 4, to read:

When a decision is taken to allow the resumption of fishing for 2J3KL Cod in the NAFO Regulatory Area:

(a) The Fisheries Commission shall obtain annually the decision of Canada on the limit it has established for catches by Canadian fishermen for this stock which takes into account the assessment of this stock by the NAFO Scientific Council; this limit shall be 95% of the TAC for this stock;

(b) The Fisheries Commission shall establish a catch limit for this stock in the NAFO Regulatory Area that shall apply to the other NAFO members; this limit shall be 5% of the TAC for this stock;

(c) The total of the catch limits set in accordance with paragraphs A and B above shall constitute the TAC for 2J3KL cod;

(d) The distribution key that shall apply for the 5% figure when the fishery in the NAFO Regulatory Area is resumed shall be as follows:

EU	65.4%
Other NAFO Contracting Parties	34.6%

(e) These measures shall apply until 31 December 2005.

(f) These measures shall not serve as a precedent in future years for the fixation of catch limits or the criteria for quota distribution of stocks of other species.

QUOTA TABLE. Total allowable catches (TACs) and quotas (metric tons) for 1997 of particular stocks in Subareas 3 and 4 of the NAFO Convention Area. The values listed include quantities to be taken both inside and outside the 200-mile fishing zone, where applicable.

	Cod		Redfish		American plaice		Yellowtail	Witch	Capelin	Greenland halibut	Squid (*Illex*)[2,3]
Contracting Party	Div. 3M	Div. 3NO*	Div. 3M	Div. 3LN	Div. 3M*	Div. 3LNO*	Div. 3LNO*	Div. 3NO*	Div. 3NO*	Div. 3LMNO	Subareas 3+4
1. Bulgaria	-	-	-[7]	-	-	-	-	-	-	-	500
2. Canada	47	0	650	4 686	0	0	0	0	0	3 000	N.S.[4]
3. Cuba	222	-	2 275	1 078	-	-	-	-	0	-	2 250
4. Denmark (Faroe Islands and Greenland)	1342	-	90	-	-	-	-	-	-	-	-
5. European Union	2992	0	4 030	374	0	0	0	-	0	11 070	N.S.[4]
6. France (St. Pierre and Miquelon)	-	-	90	-	-	-	-	-	-	-	2000
7. Iceland	-	-	-	-	-	-	-	-	-	-	-
8. Japan	-	-	520	-	-	-	-	-	0	2 050	2 250
9. Korea	-	-	90	-	-	-	-	-	-	-	2 000
10. Norway	555	-	-	-	-	-	-	-	0	-	-
11. Poland	231	-	-	-	-	-	-	-	0	-	1 000
12. Estonia 13. Latvia 14. Lithuania 15. Russia	588[1]	0	18 005[1]	4 796[1]	0	-	-	0	0	- 2 550	5 000[1]
16. United States of America	-	-	90	-	-	-	-	-	-	-	2000
17. Others	23	0	160	66	0	0	0	0	-	1 330[6]	3 000
Total Allowable Catch	6 000	*	26 000	11 000	*	*	*	*	*	20 000	150,000[5]

[1] Quotas to be fished by vessels from Estonia, Latvia, Lithuania and the Russian Federation. The provisions of Part I, Section A.3 of the NAFO Conservation and Enforcement Measures shall apply.

[2] The opening date for the Squid (*Illex*) fishery is 1 July.

[3] Any quota listed for squid may be increased by a transfer from any "coastal state" as defined in Article 1, paragraph 3 of the NAFO Convention, provided that the TAC for squid is not exceeded. Transfers made to Contracting Parties conducting fisheries for squid in the Regulatory Area shall be reported to the Executive Secretary, and the report shall be made as promptly as possible.

[4] Not specified because the allocation to these Contracting Parties are as yet undetermined, although their sum shall not exceed the difference between the total of allocations to other Contracting Parties and the TAC.

[5] The TAC would remain at 150 000 tonnes subject to adjustment where warranted by scientific advice.

[6] Of which no more than 40% (532 t) may be fished before 1 May 1997 and no more than 80% (1064 t) may be fished before 1 October 1997.

[7] Quota of Bulgaria to be distributed among Denmark (Faroe Islands & Greenland), France (St. Pierre & Miquelon), Korea, the USA and others for 1997.

* No directed fishing - The provisions of Part I, Section A.4b) of NAFO Conservation and Enforcement Measures shall apply.

Annex 7. Fisheries Commission's Request for Scientific Advice on Management in 1998 of Certain Stocks in Subareas 3 and 4

1. The Fisheries Commission with the concurrence of the Coastal State as regards the stocks below which occur within its jurisdiction, requests that the Scientific Council, at a meeting in advance of the 1997 Annual Meeting, provide advice on the scientific basis for the management of the following fish and invertebrate stocks or groups of stocks in 1998:

Cod (Div. 3NO; Div. 3M)
Redfish (Div. 3LN; Div. 3M)
American plaice (Div. 3LNO; Div. 3M)
Witch flounder (Div. 3NO)
Yellowtail flounder (Div. 3LNO)
Capelin (Div. 3NO)
Squid (Subareas 3 and 4)
Shrimp (Div. 3M)
Greenland halibut (Subareas 2 and 3)

2. The Commission and the Coastal State request the Scientific Council to consider the following options in assessing and projecting future stock levels for those stocks listed above:

a) For those stocks subject to analytical type assessments, the status of the stock should be reviewed and management options evaluated in terms of their implications for fishable stock size in both the short and long term. As general reference points the implications of fishing at $F_{0.1}$, F_{1996} and F_{max} in 1998 and subsequent years should be evaluated. The present stock size and spawning stock size should be described in relation to those observed historically and those expected in the longer term under this range of options.

Opinions of the Scientific Council should be expressed in regard to stock size, spawning stock sizes, recruitment prospects, catch rates and TACs implied by these management strategies for 1998 and the long term. Values of F corresponding to the reference points should be given. Uncertainty in the assessment should be evaluated.

b) For those stocks subject to general production-type assessments, the time series of data should be updated, the status of the stock should be reviewed and management options evaluated in the way described above to the extent possible. In this case, the general reference points should be the level of fishing effort or fishing mortality (F) which is calculated to be required to take the MSY catch in the long term and two-thirds of that effort level.

c) For those resources of which only general biological and/or catch data are available, no standard criteria on which to base advice can be established. The evidence on the stock should be evaluated in the context of management requirements for the long-term sustainability.

d) Spawning stock biomass levels that might be considered necessary for maintenance of sustained recruitment should be recommended for each stock. In those cases where present spawning stock size is a matter of scientific concern in relation to the continuing productive potential of the stock, management options should be offered that specifically respond to such concerns.

e) Presentation of the results should include the following:

i) for stocks for which analytical type assessments are possible:

- a graph of yield and fishing mortality for at least the past 10 years.
- a graph of spawning stock biomass and recruitment levels for at least the past 10 years.
- a graph of catch options for the year 1998 over a range of fishing mortality rates (F) at least from $F_{0.1}$ to F_{max}.
- a graph showing spawning stock biomass at 1/1/1999 corresponding to each catch option.
- graphs showing the yield-per-recruit and spawning stock per-recruit values for a range of fishing mortality.

ii) for stocks for which advice is based on general production models, the relevant graph of production on fishing mortality rate or fishing effort.

In all cases the three reference points, actual F, F_{max} and $F_{0.1}$ should be shown.

3. The Fisheries Commission with the concurrence of the Coastal State requests that the Scientific Council continue to provide information, if available, on the stock separation in Div. 2J+3KL and the proportion of the biomass of the cod stock in Div. 3L in the Regulatory Area. Information is also requested on the age composition of that portion of the stock occurring in the Regulatory Area.

4. The Fisheries Commission requests that the Scientific Council comment on Article 6 and Annex II of the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks; and provide the following information for the 1997 Annual Meeting of the Fisheries Commission, a report that includes for all stocks under the responsibility of the Fisheries Commission (i.e. cod in 3M and 3NO, American plaice in 3M and 3LNO, yellowtail flounder in 3LNO, witch flounder in 3NO, redfish in 3M and 3LN, Greenland halibut in SA 2+ 3, capelin in 3NO, shrimp in 3M and squid in SA 3+4):

a) recommendation for the limit and target precautionary reference points described in Annex II indicating areas of uncertainty;

b) information including medium term consideration and associated risk or probabilities which will assist the Commission to develop the management strategies described in paragraphs 4 and 5 of Annex II in the Agreement;

c) information on the research and monitoring required to evaluate and refine the reference points described in paragraphs 1 and 3 in the Agreement Annex II; these research requirements should be set out in order of priority considered appropriate by the Scientific Council; and,

d) any other aspect of Article 6 and Annex II of the Agreement which the Scientific Council considers useful for the implementation of the Agreement's provisions regarding the precautionary approach to capture fisheries.

5. The Fisheries Commission requests that the Scientific Council develop criteria to be evaluated during any consideration of possible fisheries reopenings.

6. The Fisheries Commission requests that, in 1997, the Scientific Council carry out a thorough analysis of the time series of juvenile abundance and other relevant biological data of American plaice in 3LNO and 3M, with a view to assessing the possibility to reopen the fishery.

7. The Fisheries Commission requests that, in 1997, the Scientific Council will carry out a thorough analysis of all the relevant biological data of cod in Div. 3M with a view to the possible closure of this fishery.

8. The Fisheries Commission requests that Scientific Council review available information, including any Canadian assessment documentation, and provide advice on the status of the 2J3KL witch flounder resource. Any information pertaining to the relative distribution of the resource within the stock area, as well as changes in this distribution over time should also be provided.

9. The Scientific Council is requested to assess possible changes in yield and spawning stock biomass of Greenland halibut in Subarea 2 and Div. 3KLMNO based on the assumption of a dome-shaped exploitation pattern and a different age of maturity and mortality rates for males and females, for the following scenarios:

a) the current situation, and
b) a minimum landing size of 60 cm.

Annex 8. List of Decisions and Actions by the Fisheries Commission (18th Annual Meeting; 09-13 September 1996)

Substantive issue (propositions/motions)	Decision/Action (FC Doc. 96/13, Part I; item)
1. New members of the Fisheries Commission - France (in respect of St. Pierre et Miquelon) and United States of America.	Noted the decision by the General Council; item 2.1
2. Transparency in the FC decision-making process. (Participation of Intergovernmental and Non-Governmental Organizations)	Noted: this issue was covered by the General Council discussion (items 2.2-2.10 of the GC Report); item 2.2
3. Amendments to the Conservation and Enforcement Measures (on presentation by STACTIC):	Discussed/Adopted; items 3 and 4
- Improved planning and control of research vessels in the Regulatory Area	No consensus was reached; the issue was referred to the 1997 Meeting; item 3.1
- Discard/retention rules; FC Doc. 96/6	Adopted; item 3.2(e)i)
- Type of fishing gear; W.P. 96/10 and 96/11	Agreed to refer this issue to the Scientific Council; item 3.2(e)ii)
- Sampling protocols	Agreed to forward information available to the EU delegate (T. Curran) for summary and the following review at the next STACTIC meeting; item 3.2(e)iv)
- Experimental redfish fishery for Russian vessels with 90 mm mesh size in 1997; FC Doc. 96/9 (Revised)	Adopted; item 3.3(a)
4. STACTIC Report at the Meeting (Part II)	Adopted; item 3.3
5. TACs and Regulatory Measures for major stocks in the Regulatory Area for 1997	Discussed/Adopted; item 4
- Cod 2J3KL in Reg. Area; FC Doc 96/7	Adopted: no directed fishery; item 4.29
- Cod in Div. 3M	6 000 tons
- Redfish in Div. 3M	26 000 tons
- A. plaice in Div. 3M	no directed fishery
- Cod in Div. 3NO	no directed fishery
- Redfish in Div. 3LN	11 000 tons
- A. plaice in Div. 3LNO	no directed fishery
- Yellowtail flounder in Div. 3LNO	no directed fishery

Substantive issue (propositions/motions)	Decision/Action (FC Doc. 96/13, Part I; item)
- Witch flounder in Div. 3LNO	no directed fishery
- Capelin in Div. 3NO	no directed fishery
- Squid (*Illex*) in SA 3 and 4	150 000 tons
- Greenland halibut in Div. 3LMNO	20 000 tons
6. Long-term management of the Cod stock in Div. 2J3KL: FC Doc. 96/10	Adopted; item 4.29
7. Schedule 1-Quota Table for 1997; NAFO Conservation and Enforcement Measures	Adopted; item 4.31 and Annex 9
8. Management of shrimp fishery	
- Shrimp in Div. 3LNO	No directed fishery in 1997; item 4.29
- Shrimp in Div. 3M; FC Doc. 96/5	Adopted: effort limitation; item 4.29
9. Other Conservation and Enforcement Measures	Discussed/Agreed; item 3
- Reporting deadlines on disposition of apparent infringements	Agreed: to reinforce by the Contracting Parties the deadlines (as required by Part IV.16 of the Conservation and Enforcement Measures) for reporting of their disposition of apparent infringements; item 3.2(a)
- Satellite Tracking Pilot Project	Agreed: to convene a technical experts Working Group at the NAFO Headquarters in 1997; item 3.2(c)
- Hail Reports Amendment; FC Doc. 96/5	Adopted: to include "target species" in Part III, Annex 1 of the Conservation and Enforcement Measures and establish authorized contacts between the Contracting Parties and NAFO Secretariat; item 3.2(d)
10. Request to the Scientific Council for scientific advice on management of fish stocks in 1998; FC Doc. 96/11	Adopted: item 4.35
11. Transfer of Quota between Contracting Parties; item 14	Referred to the Annual Meeting, 1997; item 4.36

Substantive issue (propositions/motions)	Decision/Action (FC Doc. 96/13, Part I; item)
12. Intersessional STACTIC Meeting, 1997	Agreed: to call the Meeting in June 1997 to discuss the general implementation of the NAFO Conservation and Enforcement Measures and, in particular, the observer satellite pilot project; the report from Contracting Parties re this issue(s) shall be done by May 1997; item 4.37
13. Workshop on Compatibility and Applicability of Discard/Retention Rules; FC Doc. 96/4	Received: further observations by Contracting Parties be presented to the Scientific Council and STACTIC; item 4.38

PART III

(pages 73-135)

Activities of the Scientific Council in 1996

List of Meetings

The following meetings were held under the authority of the Scientific Council:

- Scientific Council; Keddy's Dartmouth Inn, Dartmouth, Nova Scotia, Canada, 5-19 June.
- Workshop on Assessment of Groundfish Stocks Based on Bottom Trawl Survey Results; St. Petersburg, Russia, 4-6 September.
- Scientific Council Annual Meeting; St. Petersburg, Russia, 7-13 September.
- Scientific Council; NAFO Headquarters, Dartmouth, Nova Scotia, Canada, 5-18 November.

Scientific Council Meeting

The Scientific Council met at the Keddy's Dartmouth Inn, 9 Braemar Drive, Dartmouth, Nova Scotia, Canada during 5-19 June 1996, to consider the various matters listed in its Agenda (SCS Doc. 96/19).

Representatives attended from Canada, Denmark (in respect of the Faroe Islands and Greenland), European Union (France, Germany, Portugal, Spain and United Kingdom), Japan, Russian Federation and the United States of America. The Assistant Executive Secretary was in attendance. (Annex 1)

The Chairman of the Scientific Council was W. R. Bowering (Canada) and the Rapporteur, T. Amaratunga, Assistant Executive Secretary.

The Agenda was adopted as presented in Annex 2.

In introducing the plan of work, the Chairman described the approach being taken by the Council at this meeting, in accordance with the decision made in 1994 on the reorganization of the Scientific Council. He outlined that STACFIS will fulfil its role as the body which will conduct the assessments, while the Council will address the tasks of developing prognoses on those assessments, and providing advice and recommendations. Accordingly, the STACFIS report will contain the assessment results and that report will be presented for consideration by the Council.

FISHERIES AND ENVIRONMENT

The Chairman of the Standing Committee on Fisheries Environment (STACFEN), Dr. M. Stein (EU-Germany), presented a general review of environment conditions.

It was emphasized that, although 1995 showed relative warming, compared to recent years, this does not signify a change in the longer-term negative trend in air temperatures that has persisted over the last 30 years. Ice conditions were near normal off East Greenland and along the Labrador Sea during the first few months of 1995 although coverage was more extensive than normal in the northeastern Labrador Sea area in the early spring. During the autumn of 1995, ice extent off East Greenland and Baffin Island were near normal. Colder-than-normal ocean temperatures were observed in the upper 200 m off Southwest Greenland whereas in the Irminger layer (200-300 m) temperatures appeared to have declined slightly while salinities had increased.

Based on previous studies which showed a negative relation between cod recruitment off West Greenland and salinity of the Irminger water layer during the previous autumn, the high salinities would suggest the likelihood of poor cod recruitment.

Moderate air temperatures during the late autumn of 1995 and the winter of 1995/96 resulted in below normal ice cover extent and concentration off the east coast of Labrador and Newfoundland. The warming trend that began during the autumn of 1995 at Station 27 east off Newfoundland, continued into the winter and spring of 1996. This represents the first time in almost a decade that the near bottom temperatures were above their long-term mean. Temperatures throughout much of the water column over the Grand Bank and along eastern Newfoundland were also above normal.

Monthly monitoring of surface and bottom temperatures on a transects across the Middle Atlantic Bight and the Gulf of Maine showed generally warmer-than-normal conditions during 1995, with an annual anomaly of upwards of 1.6K near-bottom over the shelf portion of the Middle Atlantic Bight. Surface salinities were above average for the year in the Middle Atlantic Bight.

A study of the relationship between atmospheric, sea ice and oceanic variability in the Labrador Sea area with those in the Barents Sea showed high negative correlations between two widely separated regions for several variables including air temperature, ice coverage, and water temperature. It was noted that while recent cooling has occurred in the Labrador Sea region, conditions in the Barents Sea have been very mild. The cause of the negative relationship was suggested to be related to the large-scale atmospheric wind patterns, i.e. the North Atlantic Oscillation (NAO). When the NAO is high, the Icelandic Low strengthens and the northwest winds over the Labrador Sea intensify, carrying cold air farther south. This produces more ice and colder ocean temperatures. At the same time over northern Europe the southwest winds intensify carrying warm air masses farther north causing warm conditions to develop in the Barents Sea. This leads to less ice and warmer ocean temperatures. The contrast between the high cod abundance in the warm Barents Sea with the low abundance in the cold Labrador Sea during recent years was highlighted.

Environmental Conditions in 1995

The overview presentation reported that cold winter air temperatures were again observed in the Labrador Sea region but they were generally not as low as in previous years. For the remainder of the year they were generally warmer than or near normal. At the southern boundary of NAFO Convention Area, air temperatures were generally warmer than normal throughout the year, except for November and December when temperatures dropped below normal.

The NAO index was strongly positive but a strong eastward shift in the Icelandic Low and Bermuda-Azores High resulted in their exerting less influence in the Northwest Atlantic than in other high NAO index years.

The volume extent of the CIL water off Newfoundland during the summer decreased in 1995 to below the long-term mean and was at its lowest value since the early-1980s. This was due to a decline in the amount of CIL water off southern Labrador and northern Newfoundland, in contrast to the Grand Bank, where the amount of CIL water increased slightly relative to 1994.

Deep water temperatures on the Scotian Shelf (Emerald Basin) and in the Gulf of Maine remained high during 1995, while in Cabot Strait they decreased to near normal values. The high temperatures on the Scotian Shelf and in the Gulf of Maine are believed to be due to the influence of warm slope waters penetrating into the deep basins.

Cold waters were observed near-bottom and at intermediate depths over the northeastern Scotian Shelf and off southwestern Nova Scotia continuing a trend that began in the mid- to late-1980s. In the latter region, temperatures appeared to be warming although they remained below normal. No evidence of warming was observed in the northeastern Scotian Shelf.

FISHERY SCIENCE

General Review of Catches and Fishery Trends

The Council expressed its serious concerns that STATLANT 21A data were once again not available from many Contracting Parties for the assessment work of STACFIS. As stated also by STACREC, the Council recognized the need to bring this matter to the attention of the General Council and to the Contracting Parties. The Council regretted again that the general review of fishery trends could not be undertaken at this meeting and that this section would be omitted again in this report.

Note (by the NAFO Secretariat): The general fishery trend in 1995-1996 has been a drastic decrease of the number of fishing vessels and their catches in the NAFO Regulatory Area. As the result, all TAC(s) and stocks in the NAFO Area have been underutilized. This is clearly demonstrated in the table below:

(from NAFO monthly reports)

Contracting Party	Cod 3M		Redfish 3M		Redfish 3LN		G. halibut 3LMNO	
	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
1. Bulgaria	-	-	390	0	-	-	-	-
2. Canada	85	0	650	0	5 964	3	3 000	1 372
3. Cuba	407	0	2 275	0	1 372	0	-	-
4. Denmark (Faroe Islands and Greenland)	2 461	1 528	-	-	-	-	-	-
5. European Union	5 485	2 070	4 030	1 376	476	505	11 070	10 258
6. Iceland	-	-	-	-	-	-	-	-
7. Japan	-	-	520	554	-	-	2 050	1 774
8. Korea	-	-	-	-	-	-	-	-
9. Norway	1 018	0	-	-	-	-	-	-
10. Poland	424	0	-	-	-	-	-	-
11. Estonia		0		863		0	-	-
12. Latvia	1 078[1]	0	18 005[1]	0	6 104[1]	0	-	-
13. Lithuania		0		0		0	-	-
14. Russia		0		3 914		1 063	2 550	60
15. Others	42	0	130	0	84	47	1 330	0
TAC and Catch	11 000	3 598	26 000	6 707	14 000	1 618	20 000	13 464
% of utilization of TAC	33		26		12		67	

[1]"Block quota"

These provisional data show that all stocks have not been overfished in 1995. The stocks assessed for "no directed fishing in 1995" (A. plaice, Yellowtail, Witch, Capelin) have not been fished and their estimated catches were in the range of 100-200 tons annually. The same trend of fishing/catches was characteristic for 1996.

Assessment of Finfish and Invertebrate Stocks

The Council agreed on the assessments of 18 major stocks in Subareas 0-4 as requested by the Fisheries Commission, and the Coastal States Canada and Denmark (in respect of the Faroe Islands and Greenland), and had advised on catch levels corresponding to reference levels according to the different requests. Management advice, based on the reference levels, could not be provided for several stocks due to insufficient data. Detailed assessments are given in the summary sheets on pages 78-90.

Cod in Divisions 2J, 3K and 3L

In the 1995 assessment of the stock, STACFIS was unable to determine the absolute stock level from an analytical assessment, but based on available data it was considered to be at an all time low. For the current assessment, additional biological data and abundance indices relative to the status of the stock were considered and the results are summarized in this report under various headings.

Prior to the 1960s the Div. 2J+3KL cod stock supported fisheries catching from 200 000 to 300 000 tons annually. During the 1960s good recruitment along with high exploitation rates saw catches averaging about 580 000 tons. However, the stock was in a period of decline from the 1960s until the mid-1970s. Reduced exploitation and some improved recruitment after that time allowed the stock to increase until the mid-1980s, when catches were about 230 000 tons. With the subsequent stock decline, catches decreased and in 1992 only 44 000 tons were landed as a result of closure of the fishery in mid-1992. A Canadian food and subsistence fishery was permitted in 1993 and part of 1994 but not in 1995. This fishery was generally considered a failure with catch rates being low and cod generally small. In 1995 a limited fishery was conducted for scientific purposes (Sentinel Survey) yielding approximately 163 tons. The Sentinel Survey catch together with by-catch gave a total catch of 331 tons in 1995. No catch was reported in the Regulatory Area in Div. 3L in 1995.

Recent catches and TACs ('000 tons) are as follows:

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Fixed gear catch	72	79	101	103	113	60	12	9[1]	1.3[1]	0.3[1,2]	
Offshore catch	179	156	168	151	106	90[2]	32[2,3]	2[1,2]	0.5[1,2]	0[1]	
Total Catch	252	235	269	253	219	150	44	11[1]	1.8[1]	0.3[1]	
TAC	266	256	266	235	199	190	120[4]	[4]	[4]	[4]	[4]

[1] Provisional.
[2] Includes reported landings and Canadian surveillance estimates.
[3] Fishery closed by EU in June 1992.
[4] Moratorium on Canadian fishing became effective in July 1992.

Summary: The Div. 2J and Div. 3KL cod stock remains at a very low level, probably in the order of 1% of that in the early-1980s. The stock consists mainly of young fish. Stock reduction since the moratorium has occurred although catches have been much reduced. The strength of the 1986 and 1987 year-classes at young ages remains uncertain. There is no indication in survey data of any strong year-classes after 1987. Analyses of cod population growth rates across several stocks indicated that the annual growth rate of the Div. 2J and Div. 3KL cod population at low abundance should average 18%. However, absence of any strong year-classes precludes recovery in the near future.

The reasons for the drastic decline in this stock remain unresolved. Hypotheses suggest a variety of potential causes, such as, adverse environmental conditions, high fishing mortality, and increased predation. Although water temperatures were anomalously low during the early-1990s, there were indications of a return to more normal conditions in 1995 with a concomitant slight improvement in weights-at-age and fish condition.

Cod in Division 3M

Fishery and Catches: Catches exceeded the TACs from 1988 to 1994, however were below the TAC in 1995. Large catches of small fish were caught by the trawl fishery in the most recent years. By-catches were estimated to be low in the shrimp fishery during 1993 to 1995.

	Catch[1] ('000 tons)	TAC ('000 tons)	
		Recommended	Agreed
1993	16	0	13
1994	30	0	11
1995	10	0	11
1996		11	11

[1] Provisional.

State of the Stock: The total stock biomass in 1995 is the lowest on record. Recruitment at age 3 is expected to be poor in both 1996 and 1997. The decrease in the age-at-maturity of the stock is interpreted as a reaction of the population to the decline of the stock.

Recommendations: No directed fishery for cod in Div. 3M in 1997. Also, by-catch of cod in fisheries directed to other species on Flemish Cap must be kept at the lowest possible level.

Special Comments: The opportunistic recruitment based fishery for cod in Div. 3M has been the main cause of the present stock status. To rebuild the stock it will require several years with no directed fishery for cod. Scientific Council could not determine if the low level of by-catch in the shrimp fishery only reflects the low stock size of cod.

Cod in Divisions 3N and 3O

Background: This stock occupies the southern part of the Grand Bank of Newfoundland. Cod are found over the shallower parts of the Bank in summer, particularly in the Southeast Shoal area (Div. 3N) and on the slopes of the Bank in winter as cooling occurs.

Fishery and Catches: There has been no directed fishery since mid-1994.

	Catch[1] ('000 tons)	TAC ('000 tons)	
		Recommended	Agreed
1993	9.7	10.2	10.2
1994[2]	2.7	6.0	6.0
1995	0.2	0.0	0.0
1996		0.0	0.0

[1] Provisional.

[2] No directed fishery after mid-year.

State of the Stock: The stock was at an all time low in 1995 and was represented mainly by 2 year-classes (1989 and 1990).

Recommendation: There should be no directed fishing for cod in Div. 3N and 3O in 1997. By-catches in fisheries targeting other species should be kept at the lowest possible level.

Redfish in Subarea 1

Recent and historical catch figures do not include the weight of substantial numbers of small redfish discarded by the trawl fisheries directed to shrimp and cod.

Recent catches ('000 tons) are as follows:

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Catch	5	1	1	1	0.4	0.3	0.3	0.8[1]	1[1]	1[1]

[1] Provisional.

Assessment Results: In view of dramatic declines in survey abundance and biomass indices of golden and beaked redfish (≥17 cm) to an extremely low level along with significant reduction in fish sizes, STACFIS concluded that the stocks of golden and beaked redfish in Subarea 1 remain severely depleted. Pre-recruits (<17 cm) were found to be very abundant, especially in 1986 and 1991 as indicated by the surveys. Their origin and recruitment potential to the stocks under consideration is unclear. Considering the unknown impact of the catches taken by the shrimp fishery, concern must be expressed about the continuous recruitment failure.

Redfish in Divisions 3L and 3N

Background: There are two species of redfish, *Sebastes mentella* and *Sebastes fasciatus* which occur in Div. 3LN and are managed together. These are very similar in appearance and are reported collectively as redfish in statistics. The relationship to adjacent NAFO Divisions, in particular Div. 3O, is unclear and further investigations are necessary to clarify the integrity of the Div. 3LN management unit.

Fishery and Catches: The 1995 catch was about 2 000 tons, the lowest historically. This was only the second year since 1985 that the TAC was not exceeded. The reduction is primarily due to reduced effort. Substantial catches, as much as 24 000 tons have been taken by non-Contracting Parties since 1987. These countries did not fish in Div. 3LN in 1995.

	Catch[1] ('000 tons)	TAC ('000 tons)	
		Recommended	Agreed
1993	23	14	14
1994	6	14	14
1995	2	14	14
1996		14	11

[1] Provisional.

State of the Stock: Continues to be very low in Div. 3L with no sign of good recruitment. Has declined in Div. 3N from 1984 to 1991 but the status since then is uncertain.

Recommendation: Although there is concern for the future given the general lack of good recruitment, the Council has no basis to change its advice from 1995. Total catches of redfish in Div. 3LN should not exceed 14 000 tons in 1997.

Redfish in Division 3M

Background: There are three species of redfish which are commercially fished on Flemish Cap: deepsea redfish (*Sebastes mentella*), golden redfish (*Sebastes marinus*) and Acadian redfish (*Sebastes fasciatus*). The term beaked redfish is used for S. *mentella* and S. *fasciatus* combined. They are reported combined in the commercial fishery.

Fishery and Catches: Directed fishing on redfish in Div. 3M in 1995 was mainly conducted by non-Contracting Parties, EU-Portugal and Russia. As was the case in 1994, catches by the Baltic states were low due to decreased effort. The Spanish redfish catches were mainly by-catch in the cod fishery. The Portuguese fleets also aimed at cod and Greenland halibut. Total catches dropped from 29 000 tons in 1993 to 11 000 tons in 1994 and increased only slightly to 13 500 tons in 1995.

	Catch[1] ('000 tons)	TAC ('000 tons)	
		Recommended	Agreed
1993	29	20	30
1994	11	20	26
1995	13	20	26
1996		20	26

[1] Provisional.

State of the Stock: The overall trawlable biomass appears to have stabilized at a low level since 1991.

Recommendation: Catches higher than 40 000 tons for most of the period 1986 to 1992 were observed to coincide with a decline in trawlable biomass. The level of catches in the period 1975 to 1985, when stable conditions were observed, was about 20 000 tons. Scientific Council recommends that total catches of redfish in Div. 3M not be allowed to exceed 20 000 tons in 1997 and by-catch of juvenile redfish in the shrimp fishery should be kept at the lowest possible level.

Silver Hake in Divisions 4V, 4W and 4X

Recent catches and TACs ('000) are as follows:

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
TAC	100	100	120	135	135	100	105	86[1]	30	60	60
Catch	83	62	74	91	69	68	32	29[2]	8[2]	18[2]	

[1] Projected catch at $F_{0.1}$ was 75 000 tons; 11 000 additional tons were allocated by Canada in the knowledge that not all allocations would be fully harvested.
[2] Provisional.

The fishery historically was conducted primarily by large Cuban and Russian Federation otter trawlers using small-meshed bottom trawls. Before 1977 the fishery was not restricted by season or area, however, since 1977 the fishery has been subjected to various seasonal, area, and gear restrictions. Since 1990, allocations have been made to Canadian companies which have entered into developmental arrangements with Cuban and Russian Federation fishing companies to harvest silver hake. Despite these realignments, the resultant composition of the fleet actively fishing silver hake has not changed with regard to vessel size and type, although Russian vessels have not participated since 1993. Nominal catches since 1970 ranged from a maximum of 300 000 tons in 1973 to a minimum of 8 000 tons in 1994. Catches generally increased from 1977 to 1989, with the exception of 1983, from 37 000 tons in 1977 to 91 000 tons in 1989. Since 1989, catches have shown a decline. Since 1977 catches for this stock have been below the TAC through allocations being made to parties which did not participate in the fishery, and allocations which were made late in the season when commercially viable catch rates could not be achieved. These trends continued in 1995 and resulted in only 18 000 tons being harvested from a TAC of 50 000 tons.

Based on preliminary catch rates, level of participation, and historical trends in resource availability, the final catch for 1996 was predicted to be 18 000 tons. A catch of this size will result in a mean F at ages 3-5 (the main age groups in the fishery), similar to the level of 1995. The catch at a target fishing level of $F_{0.1}$ in 1997 is estimated to be 49 000 tons.

American Plaice in Divisions 3L, 3N and 3O

Background: Historically, American plaice in Div. 3LNO has comprised the largest flatfish fishery in the Northwest Atlantic.

Fishery and Catches: In most years the majority of the catch has been taken by offshore otter trawlers. There was no directed fishing in 1994 and a moratorium in 1995 and 1996.

	Catch[1] ('000 tons)	TAC ('000 tons) Recommended	Agreed
1993	17	10.5	10.5
1994	7	4.8	4.8[2]
1995	0.6	0	0
1996		0	0

[1] Provisional.
[2] No directed fishery.

State of the Stock: Canadian spring and autumn surveys showed a large decline in biomass since the mid-1980s, agreeing with the decline observed in CPUE in the fishery. Although it is believed that the stock remains at a low level, recent stability or increases in some other, shorter indices are not consistent with the longer time series. These inconsistencies in survey trends could not be resolved at this time.

Recommendation: An approach, consistent with that taken in 1995, should be adopted until the various indices can be better evaluated. No fishing on American plaice in Div. 3LNO in 1997.

American Plaice in Division 3M

Background: The stock on Flemish Cap occurs mainly at depths shallower than 400 m.

Fishery and Catches: Catches are taken mainly by otter trawl. Primarily a by-catch fishery for Contracting Parties since 1992. More than 75% of the catch was taken by non-Contracting Parties in 1995.

	Catch[1] ('000 tons)	TAC ('000 tons) Recommended	Agreed
1993	0.3	2	2
1994	0.7	1	1
1995	1.3	1	1
1996		0	0

[1] Provisional.

State of the Stock: The stock appears to be in a very poor condition.

Recommendation: There should be no directed fishery on this stock in 1997. By-catch should be kept at the lowest possible level.

Witch Flounder in Divisions 3N and 3O

Background: The stock mainly occurs in Div. 3O along the deeper slopes of the Grand Bank. It has been fished mainly in winter- and spring-time on spawning concentrations.

Fishery and Catches: Catches exceeded the TAC by large margins during the mid-1980s, but since then have been near the level of the TAC. The catches in 1994 and 1995 were 1 100 tons and 400 tons, respectively, including unreported catches.

	Catch[1] ('000 tons)	TAC ('000 tons)	
		Recommended	Agreed
1993	4.4	5	5
1994	1.1	3	3[2]
1995	0.4	0	0
1996		0	0

[1] Provisional.
[2] No directed fishing allowed.

State of the Stock: Stock appears to remain at a very low level.

Recommendation: No fishing on witch flounder in 1997 in Div. 3N and 3O to allow for stock rebuilding. By-catches be kept at the lowest possible level.

Yellowtail Flounder in Divisions 3L, 3N, and 3O

Background: The stock is mainly concentrated on the southern Grand Bank and is recruited from the Southeast Shoal area nursery ground, where the juvenile and adult components overlap in their distribution.

Fishery and Catches: There was a moratorium on directed fishing in 1995 and catches were taken as by-catch in other fisheries. The TAC has been exceeded each year from 1984 to 1993.

	Catch[1] ('000 tons)	TAC ('000 tons)	
		Recommended	Agreed
1993	14	7	7
1994	2	7	7[2]
1995	0.1	0	0
1996		0	0

[1] Provisional.
[2] No directed fishing allowed.

State of the Stock: The stock has been relatively stable since the late-1980s at a level lower than the early- to mid-1980s.

Recommendation: There should be no directed fishing of yellowtail flounder in 1997. By-catches should be kept at the lowest possible level to allow the stock to rebuild.

Greenland Halibut in Subarea 0 + Divisions 1B-1F

The annual catches in Subarea 0 + Div. 1B-1F, were in the period 1984-88 below 2 600 tons. From 1989 to 1990 catches increased from 2 200 tons to 15 500 tons. In 1991 catches dropped to 10 000 tons and then increased to 18 100 tons in 1992. Since then catches have gradually decreased to 10 598 tons in 1994, but increased to 11 054 tons in 1995. In Subarea 0 catches peaked in 1990 with 14 513 tons, declined from 12 358 tons in 1992 to 4 722 tons in 1994 and increased to 5 880 tons in 1995. Catches in Div. 1B-1F have fluctuated between 900 and 1 600 tons during the period 1987-91. After then catches increased to about 5 550 tons where they have remained since.

Recent TACs and catches ('000 tons) are as follows:

Year	1986	1987	1988	1989	1990	1991	1992	1993[1]	1994[1]	1995[1]	1996
Recommended TAC[2]	25	25	25	25	25	25	25	25	25	11	11
SA 0	+	+	1	1	15	8	12	7	5	6	
Div. 1BCDEF	+	1	2	1	1	2	5	5	6	5	
Total	+	1	3	2	16	10	18	13	11	11[3]	

[1] Provisional.
[2] In the period 1986-1994 the TAC included Div. 1A.
[3] Including 3308 tons non-reported.

Assessment: Catches peaked at 18 000 tons in 1992 but have been stable around 11 000 tons since then. Survey trawlable biomass in Div. 1B-1D showed an increased from 31 000 tons in 1994 to 40 000 tons in 1995 and seems to have stabilized, however, at a lower level compared to the late-1980s and early-1990s. Population estimates at age 1 of the 1992-94 year-classes have declined in recent years compared to the presumably good 1991 year-class, but are still considered to be at or above average for the last decade. The 1991 year-class is still considered to be good at age 4 and will gradually contribute to the trawl catches in 1996 and 1997. Although incomplete, three out of four available CPUE indices showed an increase in 1995 compared to 1994.

Research Recommendations: Neither catch numbers-at-age, weights-at-age data nor CPUE data were available for Div. 0B offshore for 1995, and STACFIS recommended that these data should be presented at the Scientific Council Meeting in June 1997, in order to continue the time series already established. The question of whether the Cumberland Sound Greenland halibut stock contributes to the Subareas 0+1 stock needs to be resolved. STACFIS recommended that the tagging program initiated in Cumberland Sound in 1995 to ascertain whether adult Greenland halibut fish move into Davis Strait should be continued. The degree of spawning activity should be examined at the same time.

Greenland Halibut in Division 1A

The main fishing grounds for Greenland halibut in Div. 1A are located inshore. The annual inshore catches in Div. 1A were around 7 000 tons in the period 1984 to 1989, but have been steadily increasing to 17 911 tons in 1995. In recent years the inshore catches have been rather evenly distributed throughout the year.

Catches ('000 tons) in Div. 1A are as follows:

Year	1987	1988	1989	1990	1991	1992	1993[1]	1994[1]	1995[1]
Illulissat	2.3	2.7	2.8	3.8	5.4	6.6	5.4	5.2	7.4
Uummannaq	2.8	2.9	2.9	2.8	3.0	3.1	3.9	4.0	7.2
Upernavik	1.6	0.8	1.3	1.2	1.5	2.2	3.8	4.8	3.3
Offshore	-	-	-	-	-	-	+	+	+
Unknown[2]	0.4	0.6	0.6	0.5	+	0.1	-	-	-
Total	7.2	7.0	7.5	8.3	9.9	11.9	13.1	14.0	17.9
Officially reported	8.4	7.0	7.5	7.5	9.2	11.9	-	-	-

[1] Provisional.
[2] Catches from unknown areas with Div. 1A.

Assessment Results: The recent level of fishing mortality could not be estimated. The stock in all three areas consist of a large number of age groups, and the age structure of the stock does not show signs of collapse. The level of recruits at age 1 has decreased since the large 1991 year-class, but is still above the level of year-classes 1987, 1989 and 1990. The inshore stock is exclusively dependent on recruitment from the offshore nursery grounds and the spawning stock in Davis Strait. Only sporadic spawning occurs in the fjords, hence the stock is not self-sustainable. The fish remain in the fjords, and do not contribute back to the spawning stock.

Greenland Halibut in Subarea 2 and Divisions 3KLMNO

Background: The Greenland halibut stock in Subarea 2 and Div. 3KLMNO is considered to be part of a biological stock complex which includes Subareas 0 and 1.

Fishery and Catches: Catches increased sharply in 1990 due to a developing fishery in the Regulatory Area in Div. 3LMN and continued at high levels during 1991-94. The catch was only 15 000 tons in 1995 as a result of new management measures introduced by the Fisheries Commission. This catch is 75% lower than the average of the previous 5 years. Canadian catches were relatively stable during 1988-91 but declined considerably in 1992-95 to their lowest levels observed since the fishery began in the 1960s.

Catches show best estimates, and range of possible estimates in brackets.

	Catch[1] ('000 tons)	TAC ('000 tons)	
		Recommended	Agreed[2]
1993	(42-62)	50	50
1994	(48-53)	-	25
1995	15	<40	27
1996	-	-	27

[1] Provisional.

[2] Established autonomously by Canada in 1993-94 and NAFO Fisheries Commission in 1995-1996.

State of the Stock: In its 1994 and 1995 assessments, the Scientific Council concluded that the fishery has been, in recent years, exploiting this stock well above levels which may be considered sustainable. Available stock indicators in the current assessment (survey results and catch rates in commercial fisheries) also suggested a significant decline in stock size since the late-1980s up to 1995, particularly among the older age groups (10+). Improved recruitment is indicated for all year-classes from 1990 to 1994.

Recommendation: The Council is unable to advise on a specific level of TAC for 1997. However, this TAC should not exceed the current level until it is clear that the fishable stock is increasing at that catch level. With the substantial reduction in F experienced in 1995 and anticipated in 1996 combined with improved recruitment prospects, this stock should show signs of recovery over the next couple of years. The Council reiterates its concern that the catches taken from this stock consist mainly of young, immature fish of ages several years less than that at which sexual maturity is achieved, thereby increasing the risk of over exploitation. It is noted also that such exploitation results in foregoing much potential yield. The Council again recommends that measures be considered to reduce, as much as possible, the exploitation of juvenile Greenland halibut.

Roundnose Grenadier in Subareas 0 and 1

A total catch of 154 tons has been reported for 1995 compared to 33 tons for 1994.

Recent catches and TACs ('000) are as follows:

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
TAC	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	0
Catch	0.1	0.4	0.5	0.08	0.29	0.19	0.12	0.20[1]	0.03[1]	0.28[1,2]	

[1] Provisional.
[2] Inc. 128 tons non-reported and 24 tons roughhead grenadier from Div. 1A misreported as roundnose grenadier.

Assessment Results: The trawlable biomass for Subarea 1 is an underestimate of the total, but the biomass has decreased drastically compared to earlier years. Although there has been an increase in the estimated biomass in 1995 the biomass is still at a very low level.

Roundnose Grenadier in Subareas 2 and 3

Catches of roundnose grenadier averaged about 26 000 tons prior to 1979, but since then have averaged slightly less than 4 000 tons. Reported catches from the Regulatory Area by EU-Spain and EU-Portugal taken as by-catch in the Greenland halibut fishery represent a mix of both roundnose and roughhead grenadiers. From 1987 to 1994 catches of roughhead grenadiers exceeded those of roundnose in the Regulatory Area.

Nominal catches, revised catches, and TACs ('000) for roundnose grenadier in the recent period are as follows:

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
TAC	11	11	11	11	11	11	11	11	3[5]	3[5]	1[5]
Catch[4]	7	7	5	5	1	1-10[2]	3				
Catch[3]	7	8	6	5	4	8-14[2]	4	4[1]	3[1]	+[1]	

[1] Provisional data.
[2] Includes estimates of misreported catches which could not be determined precisely.
[3] Original as reported to NAFO.
[4] Includes adjustments reported in SCS Doc. 94/13, and SCR Doc. 94/29.
[5] Inside Canadian zone only.

Commercial fishery data: There were no new commercial catch or effort data available for examination. Length frequency data for the by-catch fisheries in the Regulatory Area were available for roughhead grenadiers only.

Research survey data: There are no new research survey data available for roundnose grenadiers. Information is available for roughhead grenadiers, but detailed examination of the various data for this species remains to be done.

Capelin in Divisions 3N and 3O

Background: Spawning occurs in the area of the southeast shoal in Div. 3N.

Fishery and Catches: The fishery was closed during 1979-86 and again since 1993.

	Catch[1] ('000 tons)	TAC ('000 tons)	
		Recommended	Agreed
1993	+	0	0
1994	+	0	0
1995	-	0	0
1996	-	0	0

[1] Provisional.

Data: No recent data available.

Assessment: No assessment was possible without up-to-date information particularly on recruitment.

Recommendation: No advice possible.

Squid in Subareas 3 and 4

Background: The major portion of the stock resides in Subarea 6 and further south.

Fishery and Catches: The only catch in 1995 was as by-catch.

	Catch[1] ('000 tons)	TAC ('000 tons)	
		Recommended	Agreed
1993	2.8	-	150
1994	6.0	-	150
1995	1.0	-	150

[1] Provisional.

Data: No recent data available.

Assessment: No assessment was possible without up-to-date information particularly on recruitment.

Recommendation: No advice possible.

Other Finfish in Subarea 1

Catches of Greenland cod, American plaice, Atlantic and spotted wolffishes, starry skate, lumpsucker, Atlantic halibut and sharks are taken by offshore trawl fisheries directed to shrimp, cod, redfish and Greenland halibut, by longliners operating both inshore and offshore and by pound net and gillnet fisheries in inshore areas only. In 1995, reported catches of other finfishes amounted to 3 711 tons representing an increase of 9%, compared to the 1994 catch (3 373 tons). Most recent catches of other finfishes were dominated by Greenland cod (68%) and the category of non-specified finfish (17%).

Catch figures do not include catches discarded by the trawl fisheries directed to shrimp.

Nominal reported catches (tons) are as follows:

Species	1993	1994	1995
Greenland cod	1 896	1 854	2 526
Wolffishes	157	100	51
Atlantic halibut	43	38	23
Lumpsucker	246	607	447
Sharks	10	34	46
Non-specified finfish	411	643	618

Assessment Results: In view of dramatic declines in survey abundance and biomass indices to extremely low levels, together with significant reduction in fish sizes, STACFIS concluded that the demersal stocks of American plaice, Atlantic and spotted wolffish and starry skates are severely depleted. The status of the demersal fish assemblage has remained at that low level since 1990 and there are no signs of any recovery. STACFIS expressed concern about the continuing recruitment failure. Although data from 1994 indicated that the by-catches from the shrimp fishery are low, the possible impacts of the by-catches in this fishery are still unknown.

Responses to Special Requests for Management Advice by the Fisheries Commission

Stock separation of Cod in Div. 2J+3KL and proportion of biomass of the Cod in the Regulatory Area

The Scientific Council confirmed its conclusion from last year (see SCR Doc. 95/46 and Annual Report 1995, page 145) that this is a single stock complex. To date it has been able to define distinct north-south differences within the Div. 2J+3KL complex. Work continues with goals of identifying inshore or bay stocks and other distinct populations in the offshore if they exist. The ability to identify distinct elements of the stock complex may have implications on how this stock is managed in future.

Season RV survey conducted	Years RV survey conducted	Range of proportions of Div. 3L biomass occurring in the Regulatory Area (1995 value in brackets)	Average proportion (%)
Winter	1985-86	23.8-26.8	25.3
Spring	1977-95	0.4-63.1 (26.2)	11.2
Autumn	1981-95	0.5-9.7 (1.6)	3.4

Division	Mean relative proportion of Div. 2J and 3KL biomass (%) 1981-1995	1995 Autumn (%)
2J	30	23
3K	34	38
3L	36	38

Interrelation between seals and commercial fish stocks

A review of consumption of fish by seals, interactions between seals and commercial fish stocks, and assessment of effects on the seal stock of recent environmental changes or changes in food supply was presented to the Scientific Council for consideration. The results were presented to the Fisheries Commission in response to its request. No new data were available for review at the current meeting.

Coordinated research on Greenland halibut

The Scientific Council developed a comprehensive proposal for a synoptic survey for Greenland halibut from Davis Strait to the Flemish Cap. It was recognized that to carry out such a program would require considerable commitment in time, vessel support and funding. While the concept of a synoptic survey has not been advanced since September 1995 there have been several steps taken to deal with certain shortcomings regarding the limited survey coverage for Greenland halibut.

TAC for Greenland halibut in Subarea 2 + Div. 3K and Div. 3LMNO

During its meeting in September 1995, the Council reviewed all available information on distribution and abundance of Greenland halibut (NAFO Sci. Coun. Rep., 1995, page 147) in order to address this same request. It was then concluded that due to very limited survey coverage throughout the stock management area, a comprehensive abundance distribution map could not be constructed and as a result, the Scientific Council could not determine proportional stock composition among the areas in question. No new data were available in advance of this June 1996 Meeting to provide an adequate response to this question. The Council reiterated that until survey coverage is extended throughout the range of the management area a precise estimate of proportional distribution will not be available.

Further measures to protect juvenile fish of regulated species, e.g. area/seasonal closures

The Council discussed the idea of a closed area to protect juvenile fish. More traditional measures such as effort (catch) restrictions, mesh size regulations, and improved selectivity of fishing gear can also contribute to the protection of juveniles of regulated species. However, the Council noted that these measures have not been fully successful in the past in controlling fisheries in this area, due to the lack of enforcement.

Scientific Council recognized that at present it is unable to quantify the effects of closing an area to fishing. However, some of the benefits of a closed area would be to act as a natural refuge and to increase juvenile survival by ensuring that more of these fish survive the harvesting process. A closed area would require a precise definition of the species to be protected, careful definition of the boundaries with regard to species distribution, and a thorough understanding of the fisheries which would be affected.

Optimum minimum fish sizes

The Council examined information on yield and spawning stock biomass per-recruit for the stock of American plaice (*Hippoglossoides platessoides*) in Div. 3LNO with a view to specifying an optimal size at first capture. The analysis presented, indicated that significant gains, in terms of maximum yield-per-recruit, cannot be realized by restricting the size of first entry into the fishery due to the flat-topped nature of the yield-per-recruit curve.

The time-series of data on spawning stock size and recruitment currently available, is insufficient to define a stock recruitment relationship. The Council concluded that at present, it was not possible to identify a safe level of spawning stock size.

The analysis also compared exploitation levels in the most recent period of the fishery (1989-91) with those observed between 1975-1984. The results indicated that at the exploitation level observed in the 1989-91 period, codend mesh size for trawls, would have to be significantly increased to achieve a level of spawning stock biomass-per-recruit equivalent to that achievable at the exploitation level observed before the expansion of the fishery into the Regulatory Area in 1985. However, these results may exaggerate the differences between the two time periods since no account of discarded catch was considered in deriving the exploitation patterns used, especially that for the earlier time period. The analysis also assumed 100% survival of fish that escape through the meshes. The Council therefore concluded that at present, it was unable to specify an optimal minimum size for American plaice in Div. 3LNO.

Responses to Requests by Coastal States for Management Advice on Fish and Invertebrate Stocks

The requests were received from Canada and Denmark (in respect of Greenland) individually and jointly where appropriate.

Status of the Cod Stock in Div. 2J+3KL

Fishery and Catches: The rapid decline in the resource in the 1990s led to reduced TACs and eventually to a moratorium on commercial fishing in 1992. Some non-commercial fishing was permitted in 1993 and 1994, but not in 1995.

State of the Stock: The stock remains at a very low level, probably in the order of 1% of that in the early-1980s. The stock also consists mainly of young fish.

Recommendation: Stock rebuilding will only be possible if the moratorium is maintained.

Special Comments: Some factors relative to the biology and ecology of cod from this stock are notable: - the declining trend in weight and condition of cod which began in the late-1980s appears to have been reversed in the most recent years; since about 1990, the average age at first maturity has declined, possible a response to population declines; ocean conditions are moderating relative to the cold early 1990s. This may be beneficial to abiotic factors such as growth rates.

Roundnose Grenadier in Subareas 2 and 3

Biomass: Cannot be determined.

State of the Stock: Not possible to evaluate.

Recommendation: There are no new data available, and therefore Scientific Council is unable to provide any advice for this stock.

Silver Hake in Div. 4V, 4W and 4X

State of the Stock: Estimates of fishing mortality in 1994 and 1995 were well below the $F_{0.1}$ level. Survey estimates of numbers and biomass have shown an increase, while the reductions in weights-at-age noted since 1992 have stabilized. Strengths of the incoming 1994 and 1995 year-classes are estimated to be above average, and fishable biomass has increased since 1992. Based on these factors, the stock appears to be rebuilding.

Recommendation: For silver hake in Div. 4VWX, the catch at a target fishing level of $F_{0.1}$ in 1997 is projected to be about 50 000 tons.

Greenland halibut in Subarea 0 + Divisions 1B-1F

Fishery and Catches: Due to increase in offshore effort, catches increased abruptly from 2 000 tons in 1989 to 16 000 tons in 1990 and have remained above 10 000 tons since.

State of the Stock: The decline in the stock observed in the previous years has stopped and the stock seems to have stabilized at a lower level compared to the late-1980s and early-1990s.

Recommendation: TAC in 1997 should not exceed 11 000 tons for Subarea 0 + Division 1BCDEF.

Special Comments: The possibility of the existence of an isolated inshore population in Cumberland Sound (Div. 0B) is under investigation.

Roundnose grenadier in Subareas 0 + 1

Fishery and Catches: Recommended TACs have been at 8 000 tons in the period 1977-1996. The advice for 1996 was that the catches should be restricted to by-catches in fisheries targeting other species. There has been no directed fishery for this stock since 1978.

State of the Stock: There are no recent estimates of biomass for the entire stock area. The stock seems to be at a very low level. The reason for the changes in the stock is not known.

Recommendation: There should be no directed fishing for roundnose grenadier in 1997. Catches should be restricted to by-catches in fisheries targeting other species.

Redfish in Subarea 1

Fishery and Catches: During the last decade, redfish were taken mainly as by-catch in the trawl fisheries for cod and shrimp. No data to estimate the contributions of golden and deepsea redfish to the total catches are available. Catch figures do not include the weight of substantial numbers of small redfish discarded by the trawl fisheries directed to shrimp and cod. The 1994 by-catch in the shrimp fishery was estimated to be 4 200 tons representing about 180 million redfish.

State of the Stock: Both stocks are considered severely depleted. Short term recovery is very unlikely.

Recommendation: No directed fishery should occur until the stocks have recovered substantially.

Greenland halibut in Division 1A

Background: The population occurs inshore in Div. 1A, and is considered to be recruited from the nursery grounds south-southwest of Disko Island and in the Disko Bay. Mature individuals do not contribute back to the spawning grounds. No TACs have been established for this population.

Fishery and Catches: The fishery is mainly conducted with longlines and to a varying degree gillnets. Effort has increased in Ilulissat and Uummannaq, and decreased in Upernavik.

State of the Stock: There were no signs of collapse of age-structure. However the stock at Ilulissat and Uummannaq appeared to be growth overfished.

Recommendation: Separate TACs should be considered for each of the three inshore areas.

Other Finfish in Subarea 1

Background: The resource of other finfish in Subarea 1 are mainly Greenland cod, American plaice, Atlantic and spotted wolffishes, starry skate, lumpsucker, Atlantic halibut and sharks.

State of the Stock: The demersal stocks of American plaice, Atlantic and spotted wolffish and starry skates are severely depleted. Short-term recovery of these stocks is very unlikely.

Recommendation: No fishery should be directed towards the stocks of American plaice, Atlantic and spotted wolffishes and starry skate in Subarea 1 until these stocks have recovered substantially. No information can be provided for Greenland cod, lumpsucker, Atlantic halibut and sharks.

Denmark (on behalf of Greenland) made a special request with respect to Greenland halibut as follows:

a) Allocation of TACs to appropriate Subareas (within Subareas 0 and 1).
b) Allocation of TAC for Subarea 1 inshore areas.
c) Exchange program on Greenland halibut otoliths in order to calibrate the age reading methods between readers from the different countries involved in the fishery.
d) The impact on the stock composition of different exploitation patterns in terms of yield-per-recruit, long-term sustainable yield and spawning stock biomass.

Concerning a), no new data were available since Div. 0B was not surveyed in 1995 (see Scientific Council Report 1994, page 110). The possibility of the existence of an isolated inshore population in Cumberland Sound (Div. 0B) is under investigation.

Concerning b), 99% of the inshore catches in Subarea 1 are taken in Div 1A inshore areas. The Council recommended that separate TACs be established for each inshore area (Ilulissat, Uummannaq and Upernavik) but could not calculate appropriate levels. The stocks in Ilulissat and Uummannaq appear growth overfished.

Concerning c), no new data were presented during the meeting, but at present there is an ongoing otolith exchange program involving most countries fishing Greenland halibut. The results of the exchange program will be evaluated at a meeting on Greenland halibut ageing in Iceland, November 1996.

Concerning d), no new data were presented during the meeting. An evaluation of different exploitation patterns is strongly dependent on precise ageing. At the present there is no consensus on the age reading method among laboratories involved in ageing of Greenland halibut, but progress on this problem is expected at the meeting in Iceland (see response to c above).

Canada, acknowledging that such requests would normally come from the Fisheries Commission, requested the Scientific Council to provide information on research program design and procedures for advance notification of planned research in the NAFO Regulatory Area

Scientific Council recognized that after completion of a survey, the amount of time required to process the collected data and prepare final reports will vary among surveys and Contracting Parties depending on the various priorities of the researchers involved. Nonetheless, Scientific Council encourages Contracting Parties to continue the past practice of reporting details of the research activities to the Scientific Council as soon as possible, preferably during the next June meeting.

AGEING TECHNIQUES AND VALIDATION STUDIES

It was noted that the long awaited Silver Hake Ageing Methodology Report will not be produced.

The Report of the ICES Redfish Ageing Workshop was presented by the co-convener, D. B. Atkinson (Canada), on the meeting held during 4-8 December 1995. The Council welcomed the comments on the goals of the Workshop, and concurred with STACFIS on the importance of the recommendations presented at the Workshop.

An ICES/NAFO Workshop on Ageing of Greenland Halibut will be held during 26-29 November 1996, with W. R. Bowering (Canada) as a co-convener. The participation will be from a wide background.

Organizers of the "Second International Symposium on Fish Otolith Research and Application", Bergen, Norway, 20-25 June 1998, had invited the Scientific Council to co-sponsor the event.

GEAR AND SELECTIVITY STUDIES

The Council noted the discussions on the Canadian trawl surveys, and the details presented on the subject.

The Council was informed of the comparative trials conducted between two research vessels and the different fishing gear, as conducted by the Canadian Department of Fisheries and Oceans in Newfoundland. The Council noted the work conducted on Greenland halibut, and looked forward to information on the ongoing work on American plaice, Witch flounder and Redfish. The Council endorsed the STACFIS recommendation that comparative fishing trials take place in May 1997 while EU-Spain and Canada re conducting their surveys in the Regulatory Area in Div. 3NO.

RESEARCH COORDINATION

Fisheries Statistics

The Council agreed with STACREC that the current situation of delays of two to three years in delivery of data from some Contracting Parties was undesirable. It was noted that the submission deadlines of May 15 (STATLANT 21A) and June 30 (STATLANT 21B) were adopted into the

Rules of Procedure for the Scientific Council. The Council endorsed the recommendation of STACREC that the Scientific Council inform the General Council that submission of data has not improved but in fact the situation had deteriorated, and emphasized that the Scientific Council work is seriously stifled by the lack of fishing data in time for the June Meeting.

Catches not specified by species

The Council acknowledged that the Canadian Maritime Region and the Canadian Newfoundland Region had responded to the request to clarify the reporting of catches of non-specified flounder but that South Korea have not responded to date.

The Council also noted that in the Regulatory Area, roughhead grenadier had been reported as roundnose grenadier by EU-Spain and EU-Portugal and agreed with STACREC that catches should be reported by species as outlined in the guidelines for the STATLANT forms.

Reporting of catches for *Pandalus borealis*

The Council noted the potential errors resulting from *Pandalus borealis* being reported as both northern deepwater prawn and pink (=pandalid) shrimp particularly in Div. 3M, and that significant catches of *P. montagui* have been taken in Div. 0B. The Council agreed with STACREC that the Designated Experts and shrimp scientists should address this matter at the Annual September 1996 Meeting.

Statistics for Seals

The Council acknowledged that the statistics have been clarified as far as possible, and endorsed the decision of STACREC that footnotes be attached to seal statistics published in the Statistical Bulletin, to inform the users of the inconsistencies.

Biological Sampling and Surveys

The Council noted that the Provisional List of Biological Sampling for 1995 was prepared by the Secretariat. Data from commercial fisheries pertinent to stock assessments were also tabulated, and National Representatives reported their sampling programs for the 1995 commercial fisheries to STACREC.
The Council noted an inventory of biological surveys conducted, and a more detailed account of the survey data available for 1995 relative to their stocks, was tabled by National Representatives and Designated Experts. An inventory of biological surveys planned for 1996 and early-1997, as submitted by National Representatives and Designated Experts, was compiled by the Secretariat.

The Council recommended to the General Council that the NAFO Convention text in Annex III relative to Div. 3P be revised as follows:

- define "Cape Ray" as 47°37.0' north 59°18.0' west
- define "Cape North" as 47°02.0' north 60°25.0' west
- replace "Burgeo Island" with 47°30.7' north 57°43.2' west
- replace 46°50' north 58°50' west with 46°50.7' north 58°49.0' west

Note by the Secretariat: This request was adopted by the General Council at the 18th Annual Meeting, September 1996 (please see Part I of this Report).

Non-traditional Fishery Resources in the NAFO Area

The Council agreed with STACREC the importance of maintaining adequate statistical records and sampling, where possible, for non-traditional species such as skate and wolffish.

The Council noted no documentation was available to address a recommendation that distribution and abundance of non-traditional species based on extensive survey databases be conducted and presented at this meeting, but data should be available for the June 1997 Meeting.

Scientific Data Collection by New Observer Program

The Council noted that the new pilot observer program adopted by the Fisheries Commission for 01 January 1996 to 31 December 1997 required 100% coverage of vessels fishing in the Regulatory Area. It was also noted that these observers shall carry out such scientific work based on the advice of Scientific Council. The Council welcomed the concept that more extensive sampling were possible under the new observer scheme but regretted that existing national sampling programs were being reduced because of the new program. The Council concurred with STACREC and endorsed the following suggestions as it relates to the new program: (i) current national sampling programs should be maintained at least at a minimum level of sampling until the observers under the new scheme are adequately trained in biological sampling (ii) training of the observers should be in concurrence with national sampling or national observer programs, and (iii) sampling by observers be under the direction of the national laboratories where scientific information is processed.

PUBLICATIONS

The Council agreed with STACPUB views that although 5 new Contracting Parties have joined NAFO in recent years and more publications for review are foreseen, that it was not necessary to expand the number of members at this time, particularly noting that any changes would require a change in the Rules of Procedure. Apart from the change of Chairman, no other changes had been made since June 1995.

The Council noted that NAFO Statistical Bulletin, Vol. 42 for 1992 was published without EU-France (Metropolitan) and France (St. Pierre and Miquelon) data, in October 1995.

The Council expressed concern that although the deadline for submission of STATLANT 21B reports for 1993 was 30 June 1994, data were still outstanding from Faroe Islands, Norway, France (St. Pierre and Miquelon) and USA, and the reports from Russia are also awaiting clarification.

Similarly, concern was expressed with the delays with Statistical Bulletin for 1994 data.

With respect to the List of Fishing Vessels, the Council agreed that the publication is of little practical value, and considering the costs of production involved endorsed STACPUB recommendation that the publication of the List of Fishing Vessels be discontinued.

FUTURE SCIENTIFIC COUNCIL SESSIONS AND MEETINGS

a) The following Sessions were scheduled to be held in 1996-1997:

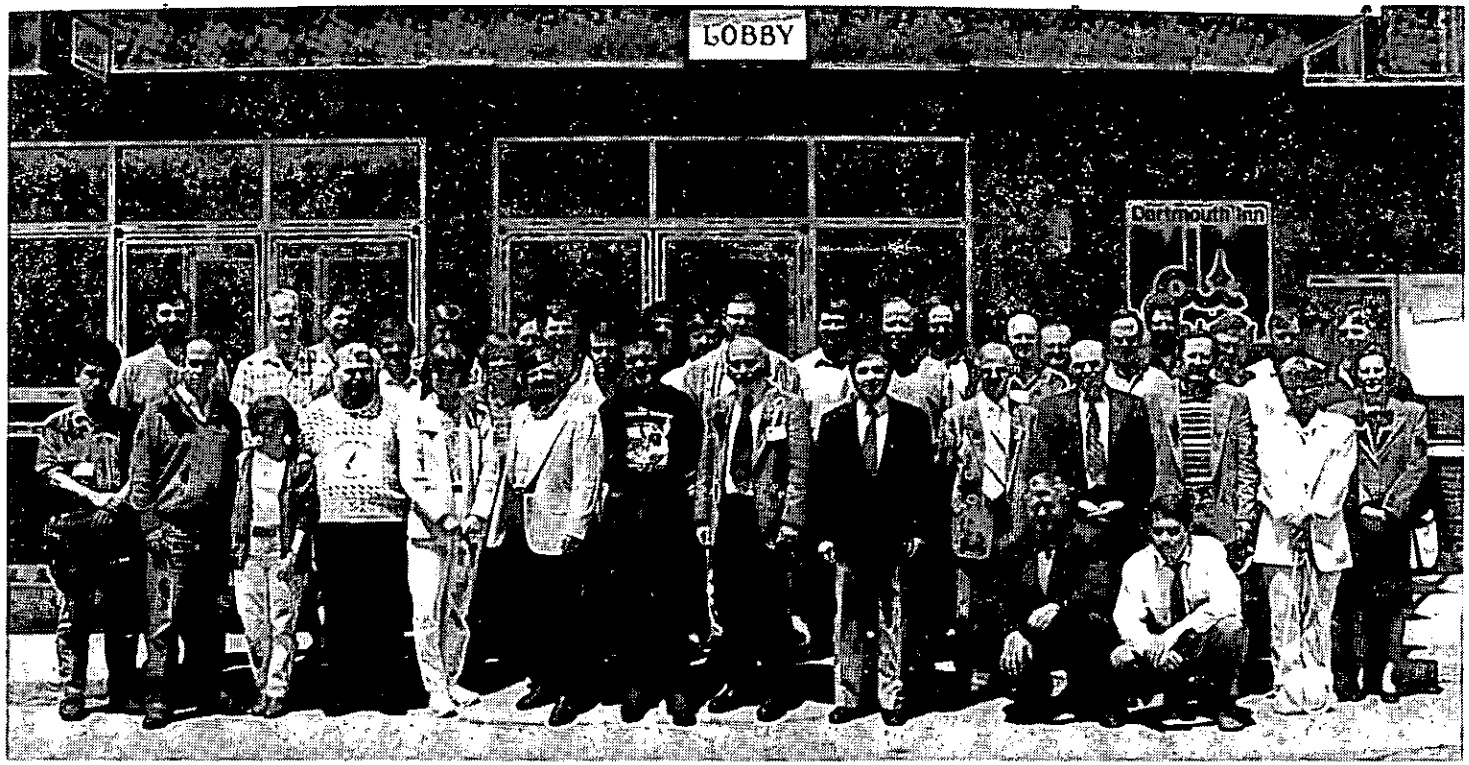
- Workshop on "Assessment of Groundfish Stocks Based on Bottom Trawl Survey Results", St. Petersburg, Russia, September 1996.

- Symposium on "What Future for Capture Fisheries", St. John's, Nlfd., Canada, 10-12 September 1997.

b) The Scientific Council regular meetings will be held in June, September and November through 1996-1997.

NOMINATION AND ELECTION OF OFFICERS

J. Casey (EU-United Kingdom) for STACFIS and M. Stein (EU-Germany) for another term for STACFEN were elected by unanimous consent for two-year terms beginning at the end of the September 1996 Annual Meeting.



Front Row (kneeling): S. Lisovski, A. Vaskov

Front Row (standing): K. Yokawa, A. Avila de Melo, S. Junquera, E. de Cárdenas, S.E. Wigley, M. Sissenwine, J. Casey, R.K. Mayo, L.I. Chepel, V.A. Rikhter, E.M. Gontchar, V.N. Shibanov, K.A. Bruce, M.L. Godinho

Back Row: L. Motos, G. Bech, D. Cross, A. Vazquez, H.P. Cornus, M.J. Morgan, K. Drinkwater, B. Davis, J.-C. Mahé, E.F. Murphy, E.B. Colbourne, O.A. Jørgenson, W.J. Overholtz, K.H. Nygaard, P. Shelton, D. Power, D.B. Atkinson, W.R. Bowering, H.-J. Rätz, M. Stein, W.B. Brodie, G.F. Glenn

Annex 1. List of Participants

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Campbell, J.S.	" " " " " " "
Colbourne, E.B.	" " " " " " "
Davis, B.	" " " " " " "
Lilly, G.R.	" " " " " " "
Morgan, M.J.	" " " " " " "
Murphy, E.F.	" " " " " " "
Power, D.	" " " " " " "
Shelton, P.A.	" " " " " " "
Stansbury, D.E.	" " " " " " "
Walsh, S.J.	" " " " " " "
Warren, W.G.	" " " " " " "
Winters, G.H.	" " " " " " "
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DENMARK

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Vaskov, A.A.	" " " "

UNITED STATES OF AMERICA

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Annex 2. Agenda

I. Opening (Chairman: W. R. Bowering)

1. Appointment of rapporteur
2. Adoption of agenda
3. Attendance of observers
4. Plan of work
5. Report of proxy votes (by Executive Secretary)

II. Fisheries and Environment (STACFEN Chairman: M. Stein)

1. Chairman's introduction; report of activities
2. Invited lecture (Dr. Mojib Latif, Max-Planck-Institut für Meteorologie, Hamburg, title: "A mechanism for decadal climate variability".)
3. Review of Environmental Conditions:

    a) Marine Environmental Data Service (MEDS) Report for 1995
    b) Review of environmental studies in 1995
    c) Overview of environmental conditions in 1995

4. Formulation of recommendations based on environmental conditions in 1995
5. National representatives
6. Russian/German data evaluation (ICNAF/NAFO data, status report)
7. Other matters

III. Fishery Science (STACFIS Chairman: W. B. Brodie)

1. Opening

2. General review

    a) General review of catches and fishery activity

3. Stock assessments

    a) Stocks within or partly within the Regulatory Area, as requested by the Fisheries Commission with the concurrence of the Coastal State (Attachment 1)(Shrimp in Div. 3M will be undertaken later in the year):

        - Cod (Div. 3NO; Div. 3M)
        - Redfish (Div. 3LN; Div. 3M)
        - American plaice (Div. 3LNO; Div. 3M)
        - Witch flounder (Div. 3NO)
        - Yellowtail flounder (Div. 3LNO)
        - Capelin (Div. 3NO)
        - Squid (Subareas 3 and 4)
        - Greenland halibut (Subareas 2 and 3)

    b) Stocks within the 200-mile fishery zone in Subareas 2, 3 and 4, as requested by Canada (Attachment 2):

        - Roundnose grenadier (Subareas 2 and 3)

- Silver hake (Div. 4VWX)
- [Note also Attachment 2, Item 3 concerning cod in Div. 2J+3KL]

c) Stocks within the 200-mile fishery zone in Subarea 1 and at East Greenland as requested by Denmark on behalf of Greenland (Attachment 3)(Northern shrimp in Denmark Strait and off East Greenland will be undertaken during a special meeting in November 1996):

- Redfish (Subarea 1) (by species, if possible)
- Other finfish and invertebrates (Subarea 1)

d) Stocks overlapping the fishery zones in Subareas 0 and 1, as requested by Canada and by Denmark on behalf of Greenland (Attachments 2 and 3) (Northern shrimp in Subareas 0 and 1 will be undertaken during a special meeting in November 1996):

- Greenland halibut (Subareas 0 and 1)
- Roundnose grenadier (Subareas 0 and 1)

4. Ageing techniques and validation studies

a) Silver hake ageing methodology report
b) Report on the ICES redfish ageing workshop, held in December 1995
c) Update on joint NAFO/ICES workshop on ageing of Greenland halibut, to be held in Reykjavik, Iceland, 26-29 November 1996 (see also Annex 3)

5. Other matters

a) Report on Comparative Trawl Surveys

IV. Research Coordination (STACREC Chairman: D. Power)

1. Opening

2. Fishery statistics

a) Progress report on Secretariat activities in 1995/96

i) Acquisition of STATLANT 21A and 21B reports for recent years
ii) Acquisition of statistical information from other NAFO Standing Committees
iii) Publication of statistical information
iv) Considerations on non-availability of data
v) Considerations on documentation of catches used in the assessment process

b) Gear codes

c) Catches not specified by species (e.g. flounder and grenadier)

d) Recording of catch statistics for *Pandalus borealis*

e) Catch statistics for seals

f) Preparation for the CWP 17th Session, March 1997

3. Biological sampling

   a) Report on activities in 1995/96
   b) Report by National Representatives on commercial sampling conducted
   c) Report on data availability for stock assessments (by Designated Experts)

4. Biological surveys

   a) Review of survey activities in 1995 (by National Representatives and Designated Experts)
   b) Surveys planned for 1996 and early-1997
   c) Review of stratification schemes
   d) Update on coordination of surveys

5. Non-traditional fishery resources in the NAFO Area

   a) Statistics and sampling
   b) Distribution data from surveys

6. Review of SCR and SCS Documents

7. Other matters

   a) Tagging activities
   b) Scientific data collection by the new Observer Program
   c) Other business

      i) List of fishing vessels
      ii) Conversion factors

V. Publications (STACPUB Chairman: H. P. Cornus)

1. Opening

2. Review of STACPUB membership

3. Review of scientific publications since June 1995

4 Production costs and revenues for Scientific Council publications

   a) Publication costs and revenues

5. Promotion and distribution of scientific publications

   a) Invitational papers
   b) Distribution of Abstracts from Research Documents

6. Editorial matters regarding scientific publications

   a) Review of Editorial Board
   b) Progress report of publication on Shrimp in Div. 3M
   c) Progress report of publication on West Greenland cod
   d) Progress review of Journal issue of 1993 Symposium
   e) Considerations for publishing Symposium proceedings

f) Progress review of publication of 1994 Special Session
g) Progress review of publication of 1995 Symposium

7. Papers for possible publication

a) Procedures for STACPUB review
b) Review of proposals resulting from the 1995 meetings
c) Review of contributions to the 1996 meeting

8. Other matters

VI. Arrangements for Special Sessions

1. Progress report on Workshop in 1996 (Convenor: H. Lassen)
2. Progress report on the Special Session in 1997 (Convenor: H. Lassen)
3. Proposals for Special Session in 1998.

VII. Future Scientific Council Meetings, 1996 and 1997

1. Annual Meeting in September 1996 (including assessment of Div. 3M shrimp)
2. Special Meeting in November 1996 (assessment of Northern Shrimp in Subareas 0+1 and off East Greenland)
3. Scientific Council Meeting, June 1997

VIII. Nomination and Election of Officers

1. Chairmen of STACFIS and STACFEN

IX. Management Advice and Responses to Special Requests

1. Fisheries Commission (Annex 1)

a) Advice for TACs for 1997, and other management measures
b) Ongoing requests for management advice on fish and invertebrate stocks as information becomes available

i) Stock separation of cod in Div. 2J+3KL and proportion of biomass of the cod stock in Regulatory Area
ii) Interrelation between seals and commercial fish stocks
iii) Coordinated research on Greenland halibut
iv) TAC for Greenland halibut in Subarea 2 + Div. 3K and Div. 3LMNO
v) Further measures to protect juvenile fish of regulated species, e.g. area/seasonal closures
vi) Optimum minimum fish sizes

2. Coastal States (Attachments 2 and 3)

a) Advice for TACs for 1997, and other management measures
b) Special requests for management advice on fish and invertebrate stocks (note Attachment 3, item 3)

X. Other Matters

a) Proposal for planning and control of research vessels

b) Symposium on Fish Otolith Research
c) Review of STACPUB membership

XI. Adoption of Reports and Recommendations

1. STACFIS
2. STACFEN
3. STACREC
4. STACPUB

XII. Adoption of Scientific Council Report

XIII. Adjournment

ATTACHMENT 1. FISHERIES COMMISSION'S REQUEST FOR SCIENTIFIC ADVICE ON MANAGEMENT IN 1997 OF CERTAIN STOCKS IN SUBAREAS 3 AND 4

1. The Fisheries Commission with the concurrence of the Coastal State as regards the stocks below which occur within its jurisdiction, requests that the Scientific Council, at a meeting in advance of the 1996 Annual Meeting, provide advice on the scientific basis for the management of the following fish and invertebrate stocks or groups of stocks in 1997:

Cod (Div. 3NO; Div. 3M)
Redfish (Div. 3LN; Div. 3M)
American plaice (Div. 3LNO; Div. 3M)
Witch flounder (Div. 3NO)
Yellowtail flounder (Div. 3LNO)
Capelin (Div. 3NO)
Squid (Subareas 3 and 4)
Shrimp (Div. 3M)
Greenland halibut (Subareas 2 and 3)

2. The Commission and the Coastal State request the Scientific Council to consider the following options in assessing and projecting future stock levels for those stocks listed above:

a) For those stocks subject to analytical dynamic-pool type assessments, the status of the stock should be reviewed and management options evaluated in terms of their implications for fishable stock size in both the short and long term. As general reference points the implications of fishing at $F_{0.1}$, F_{1995} and F_{max} in 1997 and subsequent years should be evaluated. The present stock size and spawning stock size should be described in relation to those observed historically and those expected in the longer term under this range of options.

Opinions of the Scientific Council should be expressed in regard to stock size, spawning stock sizes, recruitment prospects, catch rates and TACs implied by these management strategies for 1997 and the long term. Values of F corresponding to the reference points should be given and their accuracy assessed.

b) For those stocks subject to general production-type assessments, the time series of data should be updated, the status of the stock should be reviewed and management options evaluated in the way described above to the extent possible. In this case, the general reference points should be the level of fishing effort or fishing mortality (F) which is calculated to be required to take the MSY catch in the long term and two-thirds of that effort level.

c) For those resources of which only general biological and/or catch data are available, no standard criteria on which to base advice can be established. The evidence of stock status should, however, be weighed against a strategy of optimum yield management and maintenance of stock biomass at levels of about two-thirds of the virgin stock.

d) Spawning stock biomass levels that might be considered necessary for maintenance of sustained recruitment should be recommended for each stock. In those cases where present spawning stock size is a matter of scientific concern in relation to the continuing productive potential of the stock, management options should be offered that specifically respond to such concerns.

e) Presentation of the result should include the following:

i) for stocks for which analytical dynamic-pool type assessments are possible:

- a graph of yield and fishing mortality for at least the past 10 years.
- a graph of spawning stock biomass and recruitment levels for at least the past 10 years.
- a graph of catch options for the year 1997 over a range of fishing mortality rates (F) at least from $F_{0.1}$ to F_{max}.
- a graph showing spawning stock biomass at 1.1.1998 corresponding to each catch option.
- graphs showing the yield-per-recruit and spawning stock per-recruit values for a range of fishing mortality.

ii) for stocks for which advice is based on general production models, the relevant graph of production on fishing mortality rate or fishing effort.

In all cases the three reference points, actual F, F_{max} and $F_{0.1}$ should be shown.

3. The Fisheries Commission with the concurrence of the Coastal State requests that the Scientific Council continue to provide information, if available, on the stock separation in Div. 2J+3KL and the proportion of the biomass of the cod stock in Div. 3L in the Regulatory Area and a projection if possible of the proportion likely to be available in the Regulatory Area in future years. Information is also requested on the age composition of that portion of the stock occurring in the Regulatory Area.

4. Noting that the Scientific Council held a Symposium on Seals in the Ecosystem, the Fisheries Commission requests that studies are continued on the impact of marine mammals on fish populations, together with recommendations on research needed to quantify further interactions.

5. Noting the Scientific Council's recommendations for coordinated research on Greenland halibut in particular the implementation of a large-scale research survey, the Fisheries Commission and the two Coastal States emphasize the urgency of acquiring basic information to study on the distribution and stock status. The Scientific Council is requested to pursue its coordinated efforts and member countries are urged to commit the necessary resources to the research.

6. It is noted that the Scientific Council has provided some advice on the 3 following questions but the Council is requested to keep these questions under review:

a) TAC's for Greenland halibut in SA 2+ Div. 3K and Div. 3LMNO

The Fisheries Commission has subdivided the 1995 TAC for Greenland halibut in SA 2+3 into two TAC's for SA 2 + Div. 3K and Div. 3LMNO. In responding to the Commission's request for advice for the management of Greenland halibut in SA 2+3 for 1996, the Scientific Council should recommend an overall TAC for SA 2+3 and provide advice on dividing the overall TAC into two TAC's for SA 2 + Div. 3K and for Div. 3LMNO.

b) Further measures to protect juvenile fish of regulated species, e.g. area/seasonal closures

Taking into account available information on the geographical and seasonal distribution of regulated species of various sizes, identify, where practical and sufficient information is available, seasonal and area fishery closures which would reduce the proportion of juveniles of regulated species in commercial catches.

c) Optimal minimum fish sizes

Taking into account the implications on conservation of the stocks and long-term harvest of alternative sizes at first entry into the fishery, recommend optimal (in terms of maximum yield per recruit) minimum fish sizes for regulated species in the NRA, and advise on the corresponding minimum mesh sizes for trawls and other gear.

ATTACHMENT 2. CANADIAN REQUEST FOR SCIENTIFIC ADVICE ON MANAGEMENT IN 1997 OF CERTAIN STOCKS IN SUBAREAS 0 TO 4

1. Canada requests that the Scientific Council, at its meeting in advance of the 1996 Annual Meeting, provide advice on the scientific basis for the management of the following fish stocks in 1997:

Roundnose grenadier (Subareas 2 and 3)
Silver hake (Div. 4V, 4W and 4X)

It is also suggested that, subject to the concurrence of Denmark (Greenland), the Scientific Council, prior to the 1996 Annual Meeting of NAFO, provide advice on the scientific basis for management of the following fish or invertebrate stocks or groups of stocks in 1997:

Greenland halibut (Subareas 0 and 1)
Roundnose grenadier (Subareas 0 and 1)
Shrimp (Subareas 0 and 1)

The Scientific Council has noted previously there was no biological basis for making two separate assessments for the Greenland halibut throughout Subareas 0-3, but has advised that separate TACs be maintained for different areas of the distribution of Greenland halibut. The Council is asked therefore, subject to the concurrence of Denmark (Greenland) as regards Subarea 1, to provide an overall assessment of status and trends in the total stock throughout its range and comment on its management in Subareas 0+1 for 1997. In particular, the Council is asked to advise on appropriate TAC levels separately for SA 0+1, for SA 2 + Division 3K and for Divisions 3LMNO, and to make recommendations on the distribution of fishing effort within each of these three geographic areas. The Council is asked also to provide information on present harvest patterns in terms of yield per recruit and on distributional variation of the resource in recent years.

With respect to shrimp, it is recognized that the Council may, at its discretion, delay providing advice until later in the year, taking into account data availability, predictive capability, and the logistics of additional meetings.

2. Canada requests the Scientific Council to consider the following options in assessing and projecting future stock levels for those stocks listed above:

a) For those stocks subject to analytical dynamic-pool type assessments, the status of the stock should be reviewed and implications of fishing at $F_{0.1}$ in 1997 and subsequent years should be evaluated. The present stock size should be described in relation to those observed historically and those to be expected at the $F_{0.1}$ level in both the short and long term. In those cases where present spawning stock size is a matter of scientific concern in relation to the continuing productive potential of the stock, management options should be considered to rebuild the spawning stock. All results should be expressed in terms of stock sizes, catch rates and TACs implied for 1997 and the long term.

b) For those stocks subject to general production-type assessments, the status of the stock should be reviewed and management options evaluated in the way described above to the extent possible. In this case, the general reference point should be the level of fishing effort (F) which is two-thirds that calculated to be required to take the MSY catch in the long term.

c) For those resources on which only general biological and/or catch data are available, no standard criteria on which to base advice can be established. The evidence on stock status should, however, be weighed against a strategy of optimum yield management and maintenance of stock biomass at levels of about two-thirds that of the virgin stock.

3. The Scientific Council is requested to review the status of the cod stock in Divisions 2J+3KL and to provide estimates of the current size of the total and spawning biomass, together with a description of recent trends. The Council is asked further to provide estimates of the immediate and long-term outlook for the abundance of this stock, including both total and spawning biomass.

William A. Rowat
Deputy Minister
Department of Fisheries and Oceans
Ottawa, Canada

ATTACHMENT 3. DENMARK (GREENLAND) REQUEST FOR SCIENTIFIC ADVICE ON MANAGEMENT OF CERTAIN STOCKS IN 1997

1. Denmark, on behalf of Greenland, requests the Scientific Council of NAFO in advance of the 1996 Annual Meeting, provide advice on the scientific basis for management of the following stocks in Subarea 1 in 1997 and as many years forward as data allow:

   i) Redfish (by species, if possible)
   ii) Any other stock of invertebrates and finfish of commercial interest, for which data allow a status report

   It is also suggested that, subject to the concurrence of Canada, advice be given for the following stocks overlapping Subareas 0 and 1:

   i) Greenland halibut
   ii) Roundnose grenadier

2. In the analyses on which management advice will be based, the following should be included:

   In its 1993 report, the Scientific Council has noted that the offshore component of Greenland halibut, in Subareas 0 and 1, was distributed equally between these Subareas. Further in its 1995 report, the Scientific Council noted that the biomass of the inshore component in Subarea 1 was unknown. The Council is therefore asked to provide further information on following topics.

   a) Allocation of TACs to appropriate Subareas (Subareas 0 and 1).
   b) Allocation of TAC for Subarea 1 inshore areas.

3. Following bilateral consultations Canada and Denmark on behalf of Greenland, requests the Scientific Council of NAFO to provide advice on Greenland halibut in Subareas 0 and 1. Given that the assessment of the stock has been impeded by inconsistencies in age readings both within institutes and among institutes involved in the fishery, the Council is asked to:

establish an exchange program on Greenland halibut otoliths in order to calibrate the age reading methods between readers from the different countries involved in the fishery.

The Greenland halibut stock in Subareas 0 and 1 is at present being exploited by a number of different gears (trawl, long-line and gill net). The Council is asked to provide any new information on:

the impact on the stock composition of different exploitation patterns in terms of yield per recruit, long term sustainable yield and spawning stock biomass.

4. Denmark, on behalf of Greenland, further requests that the Scientific Council of NAFO before December 1996, provide advice on the scientific basis for management of the Northern shrimp (*Pandalus borealis*) in Subareas 0 and 1 in 1997 and as many year forward as data allow.

Further, in cooperation with ICES, the Scientific Council is requested to advise on the scientific basis for management of the Northern shrimp (*Pandalus borealis*) stock in the Denmark Strait.

Brent Buch, Director
On behalf of
Ministry for Fisheries, Hunting & Agriculture
Aslisarnermut, Piniarnermut, Nunalerinermullu Pisortaqarfik
Direktoratet for Fangst, Fiskeri og Landbrug

REPORT OF WORKSHOP ON ASSESSMENT OF GROUNDFISH STOCKS BASED ON BOTTOM TRAWL SURVEY RESULTS

The Workshop on "Assessment of Groundfish Stocks Based on Bottom Trawl Survey Results" with H. Lassen (EU-Denmark) as convener was held during 4-6 September 1996, at Shuvalov Palace, St. Petersburg, Russia.There were 39 participants in total from Canada, Denmark, Germany, Greenland, Faroe Islands, Japan, Norway, Portugal, Russia, Spain, United Kingdom and the United States of America.

Introduction

The importance of abundance survey data for fish stock assessment has been increasing. There are serious problems with the quality of the catch statistics, and several important stocks assessed by the Scientific Council are under moratoria. In these cases, abundance survey data are the only available reliable source of information on stock status. The Scientific Council is fortunate that there are extensive survey data available for most of the important fish stocks in the Regulatory Area.

The standard approach used by the Scientific Council in assessing fish stocks has been based on VPA tuning techniques, mainly ADAPT. This and similar techniques, however, are based on the catch data to establish the absolute stock level, while the survey and commercial CPUE results are used to establish the relative level of abundance between years and age groups. Therefore when catch data are either unreliable or when there are no catches taken from the stocks, the estimation procedure must be changed to allow direct derivation of absolute estimates from survey results. This requires that surveys should produce absolute estimates instead of the indices presently derived and this requires progress in sampling gear research.

Analysis of Bottom Trawl Surveys

New methods for analyzing survey results have appeared in the fisheries scientific literature in recent years. These methods are built on the statistical resampling theory (bootstrapping) which has been developed in the theoretical statistical literature after Efron (1979). These methods are very demanding in computer power and have therefore only become of practical use in recent years with the easy access to powerful computers. Even the machines available to fisheries scientists today are often stretched to their limit when such methods are applied.

Modern statistical techniques are often linked closely to a particular software. These software are commercial products and a presentation of the techniques almost unavoidably have to make explicit references to the software; for example in the Workbook for this Workshop, reference is made to S-PLUS and to the SURFER software. S-PLUS is a general purpose statistical analysis software while SURFER is designed for spatial interpolation.

At this Workshop the S-PLUS software was used for the bootstrap hands-on session and for the Generalized Additive Models (GAM) analysis, while the SURFER software was used for the spatial interpolation of environmental observations. The Scientific Council was grateful for the support given by the firm behind S-PLUS (StatSci, a Division of Mathsoft, Inc., Seattle, WA, USA). They allowed the use of their software free of charge for the duration of the Workshop and also made available five manuals of the S-PLUS program.

The Workshop was restricted to bottom trawl survey data and had the following objectives:

a) To further the Council's assessments by improving on analyses of fish distributions observed during abundance surveys. The relation between distribution of fish and the environmental condition during the survey be given special attention.

b) To further the work on how to assess stocks under moratoria, i.e. assessment of fish stocks based on survey data only.

c) To present an overview of techniques available for these types of analyses. The lecturing material be considered for publication in NAFO Studies/Journal.

The Workshop was built around three hands-on sessions and four keynote presentations. Stephen Walsh (Canada) set the stage for the Workshop with a review on estimating efficiency of sampling trawls to derive survey abundance indices. The topics of the Workshop were introduced by two overview lectures by Stephen Smith (Canada) who dealt with fish abundance estimation, and Manfred Stein (EU-Germany) who dealt with estimation of the geographical distribution of environmental parameters. Finally, Loretta O'Brien (USA) introduced the GAM concept.

Three hands-on sessions were presented; 1) by Stephen Smith, on estimation of over-all abundance and its variance using bootstrapping techniques supplemented by H. J. Rätz (EU-Germany) investigating the power of temperature and salinity for predicting catch results, 2) by Manfred Stein, estimation of the geographical distribution of environmental parameters which may be used for abundance estimation, and 3) by Loretta O'Brien and Paul Rago (USA), integrating CPUE results with observations of environmental parameters to obtain a better estimate of abundance and its variance using GAM.

After the theme presentations and accompanying hands-on sessions, a number of study groups were established on the last day to carry out case studies. These were based on data brought to the Workshop and included data ranging from shrimp surveys in West Greenland to groupers and grunters in the East China Sea. Problems with highly influential observations were seen in many of these examples and the methods presented in the Workbook appeared useful in identifying these observations and elucidating their influence on the final abundance estimates.

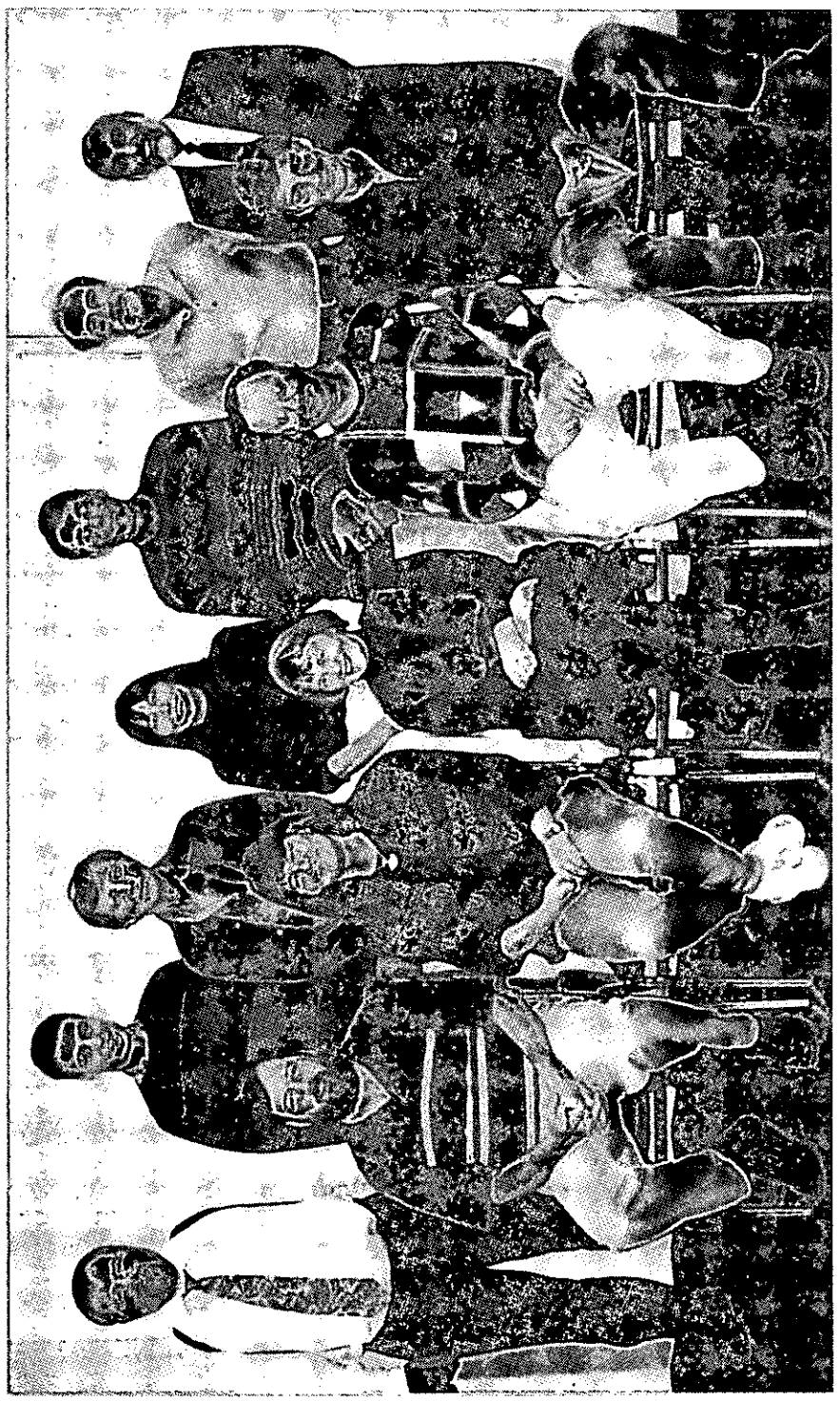
The potential usefulness of environmental data to improve the abundance estimate, i.e. providing estimates with less variance, was stressed on several occasions during the Workshop.

The Workshop was concluded with a general discussion on the last afternoon, attempting to identify common features in data from fish surveys. Some of these features, e.g. the rare but significant occurrence of very high catches, have major impact on the estimates and their variance. Recognizing that no firm recommendation on the best use of these techniques could be made at this time, it was suggested that discussions should continue within the Standing Committees of Scientific Council, particularly STACFIS and STACREC. It seemed, however, that the estimation of confidence limits (CI) could better be approached using resampling techniques rather than calculating the traditional CI based of normal theory (mean $\pm$ t $\times$ standard error).

The Workbook that was available in draft form was considered useful and it was recommended that the Workbook from the Workshop, after the contributions had been revised by the authors, should be published in the NAFO Scientific Council Studies series.

The Workshop also proposed that the NAFO Scientific Council should take an active role in distributing computer programs representing new analytical approaches to fish stock assessment. For this purpose, it was furthermore suggested that establishing a website at the NAFO Secretariat with either the programs or at least information of how to obtain such programs, would be a valuable extension of the services available through the NAFO Secretariat.

Workshop on Assessment of Groundfish Stocks Based on Bottom Trawl Survey Results



Standing: A. Nicolajsen, O. Folmer, D. M. Carlsson, L. Savard, H. Powles, D. G. Parsons, T. Amaratunga

Seated: W. B. Brodie, H. Siegstad, W. R. Bowering, C. Hvingel

Scientific Council Annual Meeting

The Scientific Council met at the Shuvalov Palace, St. Petersburg, Russia during 7-13 September 1996. Representatives attended from Canada, Denmark (in respect of Faroe Islands and Greenland), European Union (Denmark, France, Germany, Portugal, Spain and United Kingdom), Iceland Japan, Russian Federation and the United States of America. (Annex 1)

Full proceedings of the Meeting can be found in SCS Doc. 96/17.

The Chairman was W. R. Bowering (Canada) and the Rapporteur, T. Amaratunga.

The provisional agenda was adopted noting the assessment of shrimp stock in Div. 3M will be completed before the Fisheries Commission Meeting of 10 September 1996, and any other requests which could be forthcoming from the concurrent Fisheries Commission Meeting could be undertaken as needed. (Annex 2)

Brief summaries of the Standing Committees' Reports and other matters considered by the Scientific Council are given below.

FISHERIES ENVIRONMENT

A short paper comparing geostrophic currents with the distribution of cod off west Greenland reported on observations which indicated that there may be a relationship between physical and topographical oceanographic features and the occurrence of cod, and that if such a relationship was persistent, it may be important to take this into account in the design of future trawl surveys off west Greenland.

The Joint Russian/German Data Evaluation of ICNAF/NAFO Oceanographic data revealed that temperatures in the Strait/Labrador Sea area declined markedly in the early-1970s. The magnitude of the change in temperature varied with depth and the decline occurred earlier off West Greenland than in the waters off Labrador. The data showed the influence of North Atlantic water in the northern area off West Greenland, and data from the ocean weather ship BRAVO indicated a constant increase in temperature at 2 000 m depth up to 1974 when the data series ended. The data further showed the thermal influence on the density stratification and a strong salinity anomaly in these years. The data are to be investigated further to determine whether any salinity anomalies prior to the 1970s can be detected. Preliminary indications are that a strong signal occurred in the late-1950s.

FISHERY SCIENCE

Stock Assessments

Shrimp in Division 3M

Background: The fishery for shrimp on Flemish Cap only began in April, 1993, although its occurrence in the area has been known for many years.

Fishery and Catches: This multi-national fishery produced catches as follows:

Year	Catch
1993	28 000
1994	24 000
1995	33 000
1996 (to August)	33 000

The estimate of catch to the end of 1996 is about 50 000 tons.

Since 1993, the proportion of males in the catches increased such that they dominated the catches of 1995 and 1996.

The fishery was unregulated in 1993. Sorting grates and a related by-catch regulation were introduced in 1994. Effort regulations were implemented in 1996.

State of the Stock: The 1988 year-class no longer contributes to the fishery which, in 1996, was largely dependent on the 1993 year-class. The continuation of a fishery which targets male shrimp as young as age 2 is undesirable because the harvest of males reduces future spawning potential. Data from both the fishery and research survey in 1996 showed that the 1993 year-class was much stronger than was evident in the 1995 assessment and that the 1994 year-class appears weak. The decline in catch rates of large, female shrimp from 1993 to 1996 is considered to be a reasonable reflection of the trend in the spawning stock biomass.

Recommendations: Despite the strength of the 1993 year-class, concerns expressed in 1995 for the continued decline of the spawning stock are still warranted, given the high level of exploitation on the 1993 year-class in 1995 and 1996 and evidence to suggest that the 1994 year-class is weak. Therefore, any fishing permitted in 1997 will be directed at what remains of the 1993 year-class, which is expected to change sex between 1996 and 1997. No projection of the residual biomass for this year-class in 1997 is available. A significant reduction in fishing intensity is necessary to arrest the apparent continued decline in the female component of the stock and to conserve males. Therefore, if a fishery is permitted in 1997, catches should be kept at the lowest possible level.

Fisheries Commission Requests

Status of the Witch Flounder Stock in Div. 2J and 3KL

Data from Canadian surveys indicate a decline in biomass of about 95% from the early-1980s to the present. These data also showed a shift in distribution to deeper water and toward the NAFO Regulatory Area in Div. 3L since the late-1980s. Trends in biomass in the Regulatory Area are not known at present, although Canadian deepwater surveys indicate an increase in catch per set from 1994 to 1995.

The Canadian surveys, which generally did not fish at depths beyond 1 000 m, did not cover the full distribution of the stock. More detailed information from the fisheries by EU-Spain in the deep water areas of the Regulatory Area, and by Canada inside the 200 mile line, was not available at this meeting.

Evaluation of a Catch Reduction for Shrimp in Division 3M

The request was whether a reduction of the total catch to 33 000 tons could lead to a continuation of the present over-exploitation situation.

The Scientific Council advised that a catch of 33 000 tons in 1997 will lead to a continuation of the present over-exploitation situation.

The Council considered the relative size of the important year-classes (1988 and 1993) as well as their realized and potential yield to the fishery. The approach required several assumptions which need further investigation and it was recommended that, regarding shrimp in Div. 3M, research be conducted on methods of comparative year-class analysis as a basis for evaluating alternative catch levels.

Workshop on "Compatibility and Applicability of Discard/Retention Rules for Conservation and Utilization of Fishery Resources in the Northwest Atlantic"

The Scientific Council was requested to comment on the last paragraph of the Workshop report which stated:

Some discussion took place on possible ways in which the Fisheries Commission could manage fisheries according to alternative models. Measures concerning gear technology and changing fishing area (observers on board) fit in the current management strategy. Annual closures of fishing areas seem also feasible. However, temporary closures of areas on the basis of prefixed trigger levels should be examined carefully. In the first place the determination of the areas as well as the commencement and duration of temporary closures should be based on scientific advice (test fishing?) and decided by the Fisheries Commission. These measures should be non-discriminatory and not affect the capacity of Contracting Parties to exploit the allocated quotas. Finally, the cost/benefit of such measures should be examined.

The Scientific Council recognized that at present it is unable to quantify the effects of closing an area to fishing. However some of the benefits of a closed area would be that it could act as a natural refuge and help to increase juvenile survival. A closed area would require a precise definition of the species to be protected, careful definition of the boundaries with regard to species distribution (adults and juveniles) and a thorough understanding of the fisheries which would be affected.

More traditional measures like improved selectivity of fishing gear and rules for changing fishing area can also contribute to the protection of juveniles of regulated species. However the Council noted that these measures have not been fully successful in the past in controlling fisheries in the NAFO Regulatory Area due to lack of enforcement. A closed area if implemented would not replace other management measures for affected fisheries, but it could be considered in conjunction with these measures.

How NAFO observers could play a more efficient role in collecting more complete information on discards

The Scientific Council noted that in order to collect appropriate data, the following sampling scheme should be followed whenever circumstances permit:

For every haul, estimates of the total catch by species in terms of weight, and in addition estimates of discards by species in terms of weight, should be recorded; the first and every subsequent 10th haul should be sampled in detail by species, providing in addition to weights of the sample measured also numbers at length representing the part of the catch to be landed and the part of the catch discarded; whenever the fishing site is changed by a distance of more than 5 naut. mile, the cycle described in 1. and 2. start again; the relevant data must be made available to the Scientific Council in time, before the annual June assessment meeting, in order to be incorporated into the assessments.

RESEARCH COORDINATION

Acquisition of STATLANT 21 Data

Outstanding submissions for both STATLANT 21A and 21B data are given in the table below:

STATLANT 21A		STATLANT 21B		
1994	1995	1993	1994	1995
Cuba	Cuba	Faroe Islands	Cuba	
Korea	Estonia	France (SP)	Denmark	
Lithuania	Faroe Islands	USA	Great Britain	
USA	Lithuania		Faroe Islands	
	USA		France (SP)	N/A
			Greenland	
			Korea	
			Lithuania	
			Norway	
			USA	

NAFO Database

The Secretariat reported that conversion of the NAFO database to Microsoft Access format was complete. This new format will provide increased flexibility in responding to short-notice requests for information, as well as facilitate processing of new information.

The Council noted that access to STATLANT data on the Internet via the World Wide Web (WWW) was an important topic which will be discussed at the 17th Session of CWP. In relation to this, the Council endorsed the view that STATLANT data were public domain, but when data are released to the public a *proviso* would have to be clearly stated to denote those data that were considered preliminary in nature.

The Council agreed with STACREC that it would be preferable for the NAFO Secretariat to create and maintain an independent WWW site rather than participate in a collaborative effort with other agencies, and, recommended that the Secretariat prepare a report on technical and financial considerations in creating and maintaining a web site for statistical data, for consideration at the June 1997 Meeting of the Scientific Council.

Age Structure of Roughhead Grenadier (*Macrourus berglax*) on Flemish Cap, 1995

Ageing results were provided for roughhead grenadier from EU surveys in 1995 and 1996 which indicate a similar growth rate for both males and females. However, females were found to attain older ages.

Technique of Russian Trawl-acoustic Survey of the Barents Sea Bottom Fish and Mechanisms to Improve it

Trawl surveys of Barents Sea bottom fish have been conducted since 1982, while trawl-acoustic surveys in October-December have been since 1986, by a minimum of two research vessels equipped with the latest hydroacoustic instruments, computer, trawl and hydrographic facilities. Abundance estimates of the main commercial species, flatfish and catfish are assessed during trawl survey; and the abundance and biomass of cod, haddock and redfish are estimated during trawl-acoustic survey. The surveys are conducted by hydroacoustic tracks taking into account long-term mean distribution of commercial fish, and stations positioned in random for complete and uniform coverage of the area. Density of fish distribution was estimated by local areas. For sampling and processing of primary information, special software packages were developed and used. Special attention was given to calibration and intercalibration of EK-500 echo-sounders during the survey.

Trawl-Acoustic survey data in 1995 were used for separation of echo-intensities by species of cod, haddock, *S. mentella* and *S. marinus*. Calculations of abundance and biomass of cod and haddock were done taking into account length-weight relationship derived by analysis of regression.

On Methods of Estimation of Acoustic Shadow Zone When Assessing Groundfish Stocks

There are several factors preventing the estimation of the fish concentrations density near the seabed with sufficient range of accuracy, the main of which are the influence of acoustic shadow zone of echo-sounder to the possibility of fish detection and the response of fishes themselves to the noise of the moving vessel. The way of estimation of geometrical parameters of such shadow zone and corresponding coefficients K_{shad} for the bottom channel of echo-integration system are described, irrespective of its type. Four equations are given to estimate effective values of acoustic shadow zone in dependence of fish distribution near the seabed, water parameters and specifications of equipment used. An experimental approach to algorithms developed was made during trawl-acoustic survey for cod and haddock in the Barents Sea in October-December 1995. Estimated values of correction coefficients of shadow zone varied in average from K_{shad}=1.5 to K_{shad}=20 relative to shadow area values in the bottom channel of 2m width.

Descriptions of Fishing Effort

In preparation for the CWP 17th Session, STACREC at its June 1996 meeting, circulated definitions of fishing effort as they apply to STATLANT 21B and requested feedback as to current applicability. One response was received, pertaining to fixed gillnet. It was noted that the current definition of fishing effort for this gear given as "length of net expressed in 100 meter units multiplied by the number of times cleared" does not include a reflection of soak time. A proposal suggested that this be changed to "length of net in 100 meter units multiplied by the number of soak days per haul". It was noted that a change of the definition of fishing effort for this type of gear was most applicable to fisheries in the NAFO Regulatory Area. STACREC recommended that the definition of the fishing effort measure for gillnets (fixed) be changed to read "length of net expressed in 100 meter units multiplied by the number of soak days per haul". The Secretariat will inform appropriate statistical agencies of this change, as modifications to data aggregation procedures may be required.

STACREC noted that the definition of fishing effort for several other passive gear types, did not appear to be current, and agreed that further comments on suitability be solicited.

Annex 1. List of Participants

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Annex 2. Agenda

I. Opening (Chairman: W. R. Bowering)

1. Appointment of rapporteur
2. Adoption of agenda
3. Plan of work

II. Fisheries Environment (STACFEN Chairman: M. Stein)

1. Chairman's introduction: report of activities
2. Review of Oceanographic information from Workshop of 4-6 September 1996
3. Review of research documents
4. National representatives
5. Other matters

III. Fishery Science (STACFIS Chairman: W. B. Brodie)

1. Opening
2. Matters related to Stock assessments
   a) Assessment of Shrimp in Division 3M
3. Arrangements for conducting stock assessments in 1997
   a) Update list of Designated Experts
4. Other matters
   a) Review of SCR Document 96/71, Greenland halibut fishery in Cumberland Sound
   b) Other business

IV. Research Coordination (STACREC Chairman: D. Power)

1. Opening
2. Fisheries statistics
   a) Progress report on Secretariat activities in 1996
      i) Acquisition of STATLANT 21 data
      ii) Publication of statistical information
   b) Report of the Inter-Agency Consultation relative to the CWP 17th Session
   c) Report of catches for *Pandalus borealis*
3. Review of research documents
4. Other matters

V. Publications (STACPUB Chairman: H.-P. Cornus)

1. Review of scientific publications
   a) Status of papers from September 1993 Symposium
   b) Status of publication on Div. 3M shrimp
   c) Status of papers from September 1995 Symposium
   d) Other publications
2. Promotion and distribution of scientific publications
   a) Invitational papers
3. Editorial matters
   a) Future changes in the Editorial Board
   b) Other considerations
4. Review of papers for possible publication
   a) Consideration of material from the Workshop, 4-6 September 1996
   b) Others papers presented at the September 1996 Meeting
   c) Papers on Div. 2J+3KL cod deferred from the June 1996 Meeting
   d) Papers not considered at the June 1996 Meeting
   e) Papers on environmental data on Germany/Russia project
5. Other matters

VI. Management Advice and Responses to Special Requests

1. Shrimp in Division 3M
2. Special requests from current Fisheries Commission Meeting

VII. Review of Future Meeting Arrangements

1. Scientific Council Meeting on northern shrimp 15-18 November 1996
2. June 1997 Meeting of Scientific Council
3. Special Session and Annual Meeting, September 1997
4. June 1998 Meeting of Scientific Council

VIII. Future Special Sessions

1. Progress report on Symposium of September 1997
2. Review of proposal(s) for Special Session in 1998

IX. Other Business

X. Adoption of Reports

1. Consideration of report from the Workshop of 4-6 September 1996
2. Committee Reports of present meeting (STACFEN, STACFIS, STACREC, STACPUB)
3. Report of Scientific Council, September 1996

XI. Adjournment

Scientific Council Meeting

The Scientific Council met at NAFO Headquarters, Dartmouth, Nova Scotia, Canada, during 15-18 November 1996. Representatives attended from Canada, Denmark (in respect of Faroe Islands and Greenland) and Iceland. (Annex 1)

T. Amaratunga was appointed Rapporteur.

The Chairman, W. R. Bowering (Canada), welcomed representatives to this Special Meeting of the Scientific Council to conduct assessments on shrimp in Subareas 0 and 1, and Denmark Strait.

The provisional agenda was adopted. (Annex 2)

FISHERY SCIENCE

The Council noted that matters referred to STACFIS relating to assessments of Shrimp in Subareas 0 and 1 and Shrimp in Denmark Strait were addressed. The summary reports are given below.

Shrimp in Subareas 0 and 1

Background: A small scale inshore fishery began in SA 1 during the 1930s. Since 1969 an offshore fishery has developed and the shrimp fishery is now the largest in Davis Strait.

Fishery and Catches: The fishery is conducted mainly by Greenland and Canada. Recent nominal catches and TAC (tons) for Shrimp in Div. 0A and Subarea 1 are as follows:

	1986	1987	1988	1989	1990	1991	1992	1993[1]	1994[1]	1995[1]	1996[1,2]
Div. 0A Total	2 995	6 095	5 881	7 235	6 177	6 788	7 493	5 491	4 766	2 361	2 100
SA 1 Offshore	52 634	50 720	44 159	45 198	49 478	52 834	58 664	52 280	53 693	51 900	42 466
SA 1 Inshore	7 500	6 921	10 233	13 224	13 630	16 258	20 594	17 843	18 118	16 429	10 533
SA 1 Total	60 134	57 641	54 392	58 422	63 184	69 092	79 258	70 123	71 811	68 329	52 999
SA 0+1 Total	63 129	63 736	60 273	60 657	69 361	75 880	86 751	75 614	76 577	70 690	55 099
0+1 offshore catch	55 629	56 815	50 040	52 433	55 731	59 662	66 157	57 771	58 459	54 261	44 566
0+1 advised TAC[3]	36 000	36 000	36 000	44 000	50 000	50 000	50 000	50 000	50 000	60 000	60 000

[1] Provisional data.
[2] January-October.
[3] Until 1994 the advised TAC was only for offshore south of 71°N. After 1994, the advised TAC includes offshore north of 71°N and inshore.

Assessment: No analytical assessment is available and fishing mortality is unknown. Evaluation of the status of the stock is based on interpretation of commercial fishery data (catch, effort, and standardized catch rates), time series of research biomass indices and stock composition data.

Recruitment: Survey length distributions indicate a relatively strong 1990 year-class and the presence of several year-classes of smaller shrimp. The 1993 year-class seems very abundant. The 1990 year-class will likely maintain the catch rates in 1997, as it recruits to the female component of the stock. If the 1993 year-class is as strong as indicated, the catches will contain high proportions of small shrimp in 1997.

State of the Stock: Stock seems to be relatively stable, but at a lower level than in the 1970s to late 1980s. The presence of several year-classes recruiting to the fishable stock further suggests that there is no concern for recruitment in the short or medium term.

Recommendations: TACs advised for both 1995 and 1996 were 60 000 tons. The current assessment does not show any significant change in the status of the stock, which could justify modifying the advice.

Special Comments: The Scientific Council noted in its November 1995 report that an increase in TAC (to 67 000 tons) based on an upward revision of the average inshore catch was not warranted. The previously advised TAC of 60 000 tons is lower than the recent catches and may allow the stock size to increase to the higher level observed in the 1980s. However, a catch of 67 000 tons is also lower than recent catches and may be sustainable given the relative stability of the stock for the 1990s. An increase in the TAC to 67 000 tons would likely decrease the probability that the stock will increase from the current lower level, but Scientific Council is unable to quantify this probability.

Shrimp in Denmark Strait

Background: The fishery for shrimp in limited areas of the Denmark Strait began in 1978. The fishery started exploiting new areas after 1992.

Fishery and Catches: This soon became a multi-national fishery with recent catches and TACs as follows:

	1986	1987	1988	1989	1990	1991	1992	1993[1]	1994[1]	1995[1]	1996[1,2]
Catch north of 65°N											
eastern side	1 150	1 330	1 424	1 326	281	465	1 750	2 553	1 514	1 151	566
western side	9 814	10 848	11 125	9 416	9 994	8 192	5 764	3 950	3 358	4 052	1 582
Catch south of 65°N	-	-	-	-	-	-	-	2 995	6 641	5 461	4 380
Total	10 964	12 178	12 549	10 742	10 275	8 657	7 514	7 638	9 778	9 512	6 528
Advised TAC	-	-	-	10 000	10 000	10 000	8 000	5 000	5 000	5 000	5 000
Effective TAC western side	7 525[3]	7 725[3]	8 725[3]	9 025[3]	14 100	14 500	13 000	9 563	9 563	9 563	9 563

[1] Provisional catches.
[2] January-October.
[3] Not including Greenland fishery north of 66°30'N.

Assessment: No analytical assessment is available and fishing mortality is unknown. Evaluation of the status of the stock is based on interpretation of commercial fishery data, the time series of survey biomass indices and biological data from both sources.

Recruitment: There are no immediate concerns for recruitment since the number of males in the surveys has increased substantially in recent years.

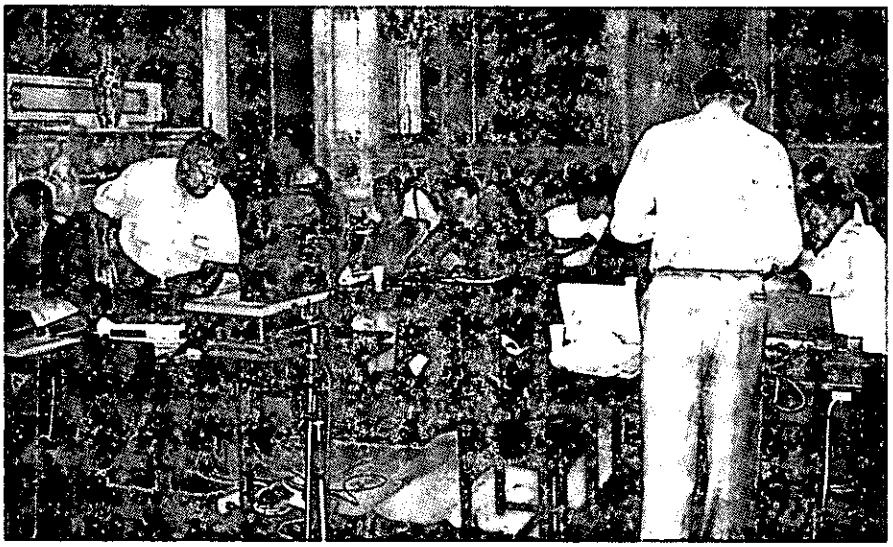
Abundance: The abundance index from the Greenlandic survey from the northern area declined from 1989 to 1992, and increased thereafter. The 1996 value is the highest in the series but is based on incomplete coverage.

State of the Stock: Although changes in fishing patterns made assessing stock status difficult, it seems that the stock has recently improved, but remains below the level of the early- to mid-1980s.

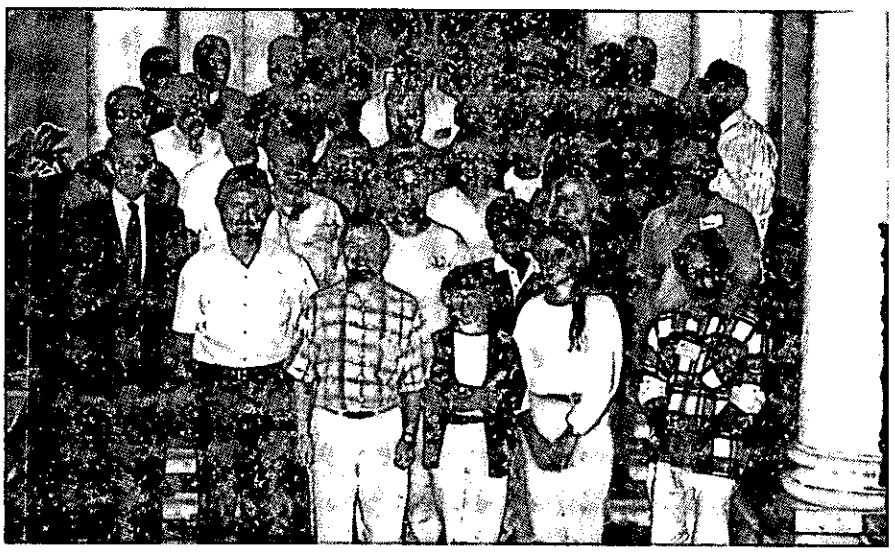
Recommendations: For 1997, there is no biological basis for advising any change to the TAC from the 1996 value of 5 000 tons.

Special Comment: Scientific Council noted that catch levels have substantially exceeded advised TACs in recent years. Although these recent catch levels have not resulted in stock decline, reducing catches to the advised TAC level would improve chances of stock rebuilding.

Scientific Council Meeting, November 1996



Workshop on "Assessment of Groundfish Stocks Based on Bottom Trawl Survey Results" in progress during 4-6 September 1996



Participants of Special Session of the Scientific Council, 4-6 September 1996 (from left to right)

J.J. Hunt, H. Hovgard, H. Lassen, H.P. Cornus, D.B. Atkinson, E. deCárdenas, S.J. Walsh, M.A. Showell, F. Serchuk, H.-J. Rätz, L. Motos, A. Avila de Melo, A. Vazquez, S.J. Smith, P.S. Gasjukov, W.B. Brodie, W.R. Bowering, S. Junquera, D.G. Parsons, M.L. Godinho, M. Stein, K. Bruce, V.A. Rikhter, H. Okamura, V. Volkova, L. O'Brien, A.A. Vaskov, K. Yokawa, O. Folmer, J. Casey, O.R. Godø, I.K. Sigaev, C.M. Jones, P. Rago, H. Yamada

Annex 1. List of Participants

CANADA

Representatives:

Bowering, W.R.	Northwest Atlantic Fisheries Centre, P. O. Box 5667, St. John's, Newfoundland
Powles, H.	Sr. Policy Advisor, Invertebrates and Pacific Marine Fish, 200 Kent St., Ottawa, Ontario

Advisers/Experts:

Brodie, W.B.	Northwest Atlantic Fisheries Centre, P. O. Box 5667, St. John's, Newfoundland
Parsons, D.G.	" " " " " " "
Savard, L.	Inst. Maurice Lamontagne, DFO, C.P. 1000, Mont-Joli, Quebec

DENMARK (in respect of Faroe Islands and Greenland)

GREENLAND

Representative:

Siegstad, H.	Greenland Institute of Natural Resources, P. O. Box 570, DK-3900 Nuuk, Greenland

Advisers/Experts:

Carlsson, D.M.	Greenland Inst. of Natural Resources, P. O. Box 2151, Pilestraede 52, DK-1016 Copenhagen, Denmark
Folmer, O.	Greenland Inst. of Natural Resources, P. O. Box 570, DK-3900 Nuuk, Greenland
Hvingel, C.	" " " " " " "

FAROE ISLANDS

Adviser/Expert:

Nicolajsen, A.	Fiskorannsoknarstovan, Noatun, Postboks 3051, FR-110 Torshavn

ICELAND

Representative:

Skúladóttir, U.	Marine Research Institute, Skulagata 4, P. O. Box 1390, Reykjavik

Annex 2. Agenda

I. Opening (Chairman: W. R. Bowering)

1. Appointment of rapporteur
2. Adoption of agenda
3. Plan of work

II. Fishery Science (STACFIS Chairman: W. B. Brodie)

1. Stock assessments (see Attachments 1 and 2)

   - Northern shrimp (Subareas 0 and 1)
   - Northern shrimp (in Denmark Strait and off East Greenland)
   - [Note: For Northern shrimp in Subareas 0 and 1, the assessment and TAC advice should include, if possible, the areas north of 71°N in Subarea 1 as well as the inshore region of Subarea 1.]

2. Other business

III. Formulation of Advice

1. Northern shrimp (Subareas 0 and 1)
2. Northern shrimp (Denmark Strait and off East Greenland)

IV. Other Matters

V. Adoption of Reports

VI. Adjournment

Attachment 1. Canadian Request for Scientific Advice on Management in 1997 of Certain Stocks in Subareas 0 to 4

1. Canada requests that the Scientific Council, at its meeting in advance of the 1996 Annual Meeting, provide advice on the scientific basis for the management of the following fish stocks in 1997:

Roundnose grenadier (Subareas 2 and 3)
Silver hake (Div. 4V, 4W and 4X)

It is also suggested that, subject to the concurrence of Denmark (Greenland), the Scientific Council, prior to the 1996 Annual Meeting of NAFO, provide advice on the scientific basis for management of the following fish or invertebrate stocks or groups of stocks in 1997:

Greenland halibut (Subareas 0 and 1)
Roundnose grenadier (Subareas 0 and 1)
Shrimp (Subareas 0 and 1)

The Scientific Council has noted previously there was no biological basis for making two separate assessments for the Greenland halibut throughout Subareas 0-3, but has advised that separate TACs be maintained for different areas of the distribution of Greenland halibut. The Council is asked therefore, subject to the concurrence of Denmark (Greenland) as regards Subarea 1, to provide an overall assessment of status and trends in the total stock throughout its range and comment on its management in Subareas 0+1 for 1997. In particular, the Council is asked to advise on appropriate TAC levels separately for SA 0+1, for SA 2 + Division 3K and for Divisions 3LMNO, and to make recommendations on the distribution of fishing effort within each of these three geographic areas. The Council is asked also to provide information on present harvest patterns in terms of yield per recruit and on distributional variation of the resource in recent years.

With respect to shrimp, it is recognized that the Council may, at its discretion, delay providing advice until later in the year, taking into account data availability, predictive capability, and the logistics of additional meetings.

2. Canada requests the Scientific Council to consider the following options in assessing and projecting future stock levels for those stocks listed above:

a) For those stocks subject to analytical dynamic-pool type assessments, the status of the stock should be reviewed and implications of fishing at $F_{0.1}$ in 1997 and subsequent years should be evaluated. The present stock size should be described in relation to those observed historically and those to be expected at the $F_{0.1}$ level in both the short and long term. In those cases where present spawning stock size is a matter of scientific concern in relation to the continuing productive potential of the stock, management options should be considered to rebuild the spawning stock. All results should be expressed in terms of stock sizes, catch rates and TACs implied for 1997 and the long term.

b) For those stocks subject to general production-type assessments, the status of the stock should be reviewed and management options evaluated in the way described above to the extent possible. In this case, the general reference point should be the level of fishing effort (F) which is two-thirds that calculated to be required to take the MSY catch in the long term.

c) For those resources on which only general biological and/or catch data are available, no standard criteria on which to base advice can be established. The evidence on stock status should, however, be weighed against a strategy of optimum yield management and maintenance of stock biomass at levels of about two-thirds that of the virgin stock.

3. The Scientific Council is requested to review the status of the cod stock in Divisions 2J+3KL and to provide estimates of the current size of the total and spawning biomass, together with a description of recent trends. The Council is asked further to provide estimates of the immediate and long-term outlook for the abundance of this stock, including both total and spawning biomass.

William A. Rowat
Deputy Minister
Department of Fisheries and Oceans
Ottawa, Canada

Attachment 2. Denmark (Greenland) Request for Scientific Advice on Management of Certain Stocks in 1997

1. Denmark, on behalf of Greenland, requests the Scientific Council of NAFO in advance of the 1996 Annual Meeting, provide advice on the scientific basis for management of the following stocks in Subarea 1 in 1997 and as many years forward as data allow:

i) Redfish (by species, if possible)
ii) Any other stock of invertebrates and finfish of commercial interest, for which data allow a status report

It is also suggested that, subject to concurrence of Canada, advice be given for the following stocks overlapping Subareas 0 and 1:

i) Greenland halibut
ii) Roundnose grenadier

2. In the analyses on which management advice will be based, the following should be included:

In its 1993 report, the Scientific Council has noted that the offshore component of Greenland halibut, in Subareas 0 and 1, was distributed equally between these Subareas. Further in its 1995 report, the Scientific Council noted that the biomass of the inshore component in Subarea 1 was unknown. The Council is therefore asked to provide further information on following topics:

a) Allocation of TACs to appropriate Subareas (Subareas 0 and 1)
b) Allocation of TAC for Subarea 1 inshore areas

3. Following bilateral consultations Canada and Denmark on behalf of Greenland, requests the Scientific Council of NAFO to provide advice on Greenland halibut in Subareas 0 and 1. Given that the assessment of the stock has been impeded by inconsistencies in age readings both within institutes and among institutes involved in the fishery, the Council is asked to:

> establish an exchange program on Greenland halibut otoliths in order to calibrate the age reading methods between readers from the different countries involved in the fishery.

The Greenland halibut stock in Subareas 0 and 1 is at present being exploited by a number of different gears (trawl, long-line and gill net). The Council is asked to provide any new information on:

> the impact on the stock composition of different exploitation patterns in terms of yield per recruit, long term sustainable yield and spawning stock biomass.

4. Denmark, on behalf of Greenland, further requests that the Scientific Council of NAFO before December 1996, provide advice on the scientific basis for management of the Northern shrimp (*Pandalus borealis*) in Subareas 0 and 1 in 1997 and as many year forward as data allow.

Further, in cooperation with ICES, the Scientific Council is requested to advise on the scientific basis for management of the Northern shrimp (*Pandalus borealis*) stock in the Denmark Strait.

Brent Buch, Director
On behalf of
Ministry for Fisheries, Hunting & Agriculture
Aslisarnermut, Piniarnermut, Nunalerinermullu Pisortaqarfik
Direktoratet for Fangst, Fiskeri og Landbrug

PART IV

(pages 137-152)

Administrative and Financial Report for the Year Ended 31 December 1996

Administrative Report for the Year Ended 31 December 1996

Meetings and NAFO Secretariat Activities

1. The Standing Committee on Fishing Activities of Non-Contracting Parties in the Regulatory Area (STACFAC), Brussels, Belgium, 22-24 May 1996.

2. The International Fisheries Commission Pension Society Annual Meeting, Washington, D.C., USA, 14-15 May 1996. The NAFO Secretariat was represented by Mr. F. D. Keating and Mr. S. M. Goodick.

3. The Scientific Council and its Standing Committees, Keddy's Dartmouth Inn, 5-19 June 1996.

4. The Annual Meeting of the Organization including all constituent bodies - the General Council, the Fisheries Commission, the Scientific Council, St. Petersburg, Russia, 09-13 September 1996.

5. The Scientific Council, NAFO Headquarters, Dartmouth, N.S., Canada, 15-18 November 1996.

The NAFO Secretariat made all necessary arrangements for the above-mentioned meetings and prepared all documents in accordance with the provisions of the NAFO Convention and Rules of Procedure.

Publications

The publications listed below are prepared and printed in the NAFO Secretariat. It is estimated that 900,000 pages of printed material will be distributed in publications and an additional 600,000 pages of printed material distributed in documents/circular letters before the end of 1996.

a) *NAFO Annual Report* for the year 1995 (219 pages) was distributed in April 1996.

b) *NAFO Meeting Proceedings* for the year 1995 (263 pages) was distributed in February 1996.

c) *NAFO Scientific Council Reports* for 1995 (244 pages) was distributed in January 1996.

d) *NAFO Journal of Northwest Atlantic Fishery Science* Volume 18 (115 pages) was distributed in April 1996.

e) *NAFO Journal of Northwest Atlantic Fishery Science* Volume 19 (145 pages) was distributed in September 1996.

f) *NAFO Journal of Northwest Atlantic Fishery Science* Volume 20 (143 pages) was distributed in September 1996.

g) *NAFO Scientific Council Studies* Number 24 (155 pages) was distributed in January 1996.

h) *NAFO Scientific Council Studies* Number 25 (91 pages) was distributed in July 1996.

i) *NAFO Newsletter "NAFO News"* No. 3 for June-December 1995 issued in December 1995 and No. 4 for January-June 1996 was issued in July 1996.

Fishery Statistics

The NAFO statistical database is at the NAFO Secretariat and available in computer diskette form or hard copies to the Contracting Parties.

The data reports for the preceding year of fishing, STATLANT 21A reports (preliminary annual catches in the NAFO Convention Area by species and divisions), due 15 May have not been received from: for 1994 - Cuba, Korea, Lithuania and USA; for 1995 - Cuba, Denmark (Faroes), EU-France (M), Estonia, Lithuania, and USA.

The data reports for the preceding year of fishing, STATLANT 21B reports (final annual catches in the NAFO Convention Area by species, month, effort), due 30 June have not been received from: for 1989 EU-France (M); for 1990 - EU-France (M) and France-SP; for 1991 -1992 - France-SP; for 1993 - Denmark (Faroes), France-SP, Norway and USA; for 1994 - Cuba, Denmark (Faroes), EU-United Kingdom, Korea, Lithuania, Norway and USA; for 1995 - Cuba, Denmark (Faroes), Estonia, EU-France (M), Iceland, Lithuania and USA.

Financial Report for the Year Ended 31 December 1996

An audit of the NAFO accounts for the fiscal year 1996 was completed by the firm of Deloitte and Touche, Chartered Accountants.

The auditor's report is as follows:

To the Chairman and Members of the General Council of Northwest Atlantic Fisheries Organization

We have audited the balance sheet of the Northwest Atlantic Fisheries Organization as at December 31, 1996 and the statements of revenue and expenditures, accumulated surplus and changes in financial position for the year then ended. These financial statements are the responsibility of the Organization's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. These standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

As outlined in Note 4 to the financial statements, the Organization has not recorded a liability for enhanced employee termination benefits, as approved as part of the Staff Rules by General Council at its annual meeting in September, 1991. At December 31, 1996, these enhanced benefits amounted to approximately $90,300. Failure to record this amount as a liability in 1996 is not in accordance with the Organization's stated accounting principles. Had the liability been recorded $90,300 would have been reflected as a prior period adjustment. The accumulated surplus at the end of the year would have been reduced by $90,300.

In our opinion, except for the effects of the Organization's failure to record the liability referred to in the preceding paragraph, these financial statements present fairly, in all material respects, the financial position of the Organization as at December 31, 1996 and the results of its operations and the changes in its financial position for the year then ended in accordance with the accounting principles disclosed in the notes to the financial statements.

We further report as required by Rule 7.1 of the Financial Regulations of the Organization, that in our opinion, the financial statements are in accordance with the books and records of the Organization; the financial transactions reflected in the statements have, in all significant respects, been in accordance with the Financial Regulations and the budgetary provisions of the Northwest Atlantic Fisheries Organization; and the monies on deposit and on hand have been verified by certificate received directly from the Organization's depositories or by actual count.

Deloitte & Touche
Chartered Accountants

February , 1997

Statement of Revenue and Expenditures
(Year Ended 31 December 1996)

(Expressed in Canadian Dollars)

	Budget 1996	Actual 1996	Actual 1995
Revenue			
Contributions assessed Contracting Parties (Note 5)	$ 855,011	$ 855,011	$ 830,714
Allocation from surplus for operations	140,989	140,989	133,286
Personal income taxes			
Federal	-	101,819	97,634
Provincial	-	43,234	44,725
Interest	-	19,917	28,577
Sales of publications	-	6,716	6,966
	996,000	1,167,686	1,141,902
Expenditures			
Salaries	596,500	591,827	572,400
Vacation pay increase (decrease)	1,000	(5,648)	6,853
Superannuation (Note 6)	85,000	83,367	80,800
Additional help	500	697	200
Group medical and insurance plan	41,000	40,027	38,784
Termination benefits (Note 4)	36,000	29,799	24,105
Travel	18,000	23,366	3,087
Transportation	1,000	669	939
Communications	62,000	55,906	57,963
Publications	22,000	23,779	21,751
Contractual services	48,000	44,271	45,994
Materials and supplies	30,000	27,447	27,714
Equipment	5,000	2,063	3,267
Meetings	35,000	68,059	69,189
Computer services	15,000	12,091	14,811
	996,000	997,720	967,857
Excess of revenue over expenditures before provision for uncollectible accounts	-	169,966	174,045
Provision for uncollectible accounts and write-off of contributions	31,434	31,434	33,056
Excess of revenue over expenditures	$ 31,434	$ 138,532	$ 140,989

Statement of Accumulated Surplus
(Year Ended 31 December 1996)

(Expressed in Canadian Dollars)

	1996	1995
Balance, beginning of year	$ 215,989	$ 208,286
Allocations		
To operations	140,989	133,286
	75,000	75,000
Excess of revenue over expenditures	138,532	140,989
Balance, end of year	$ 213,532	$ 215,989

Balance Sheet as at 31 December 1996

(Expressed in Canadian Dollars)

	1996	1995
ASSETS		
Current		
Cash and short-term deposits	$ 373,051	$ 373,243
Contributions receivable (Note 3)	21,948	45,877
Accounts receivable	3,045	3,944
Accrued interest receivable	567	1,120
Grant receivable-Province of Nova Scotia	43,234	-
Prepaid expenses	22,112	25,159
	$ 463,957	$ 449,343
LIABILITIES		
Current		
Accounts payable and accrued liabilities	$ 6,233	$ 8,900
Accrued vacation pay payable	9,741	15,388
Overpayment of contributions by Contracting Parties	4,110	8,524
	20,084	32,812
Provision for employee termination benefits (Note 4)	230,341	200,542
	250,425	233,354
EQUITY		
Accumulated Surplus	213,532	215,989
	$ 463,957	$ 449,343

Statement of Changes in Financial Position
(Year Ended 31 December 1996)

(Expressed in Canadian Dollars)

	1996	1995
Net inflow (outflow) of cash related to the following activities:		
Operating		
Excess of revenue over expenditures	$ 138,532	$ 140,989
Item not affecting cash		
Allocation from surplus	(140,989)	(133,286)
	(2,457)	7,703
Changes in non-cash operating working capital items (Note 9)	(27,534)	7,160
	(29,991)	14,863
Financing		
Increase (decrease) in provision for employee termination benefits	29,799	24,108
Net cash inflow (outflow)	(192)	38,971
Cash position, beginning of year	373,243	334,272
Cash position, end of year	$ 373,051	$ 373,243

Notes to the Financial Statements

(Year Ended 31 December 1996)

(Expressed in Canadian Dollars)

1. Authority and Objective

The Northwest Atlantic Fisheries Organization was established by the Convention on Future Cooperation in the Northwest Atlantic Fisheries which came into force on January 1, 1979.

The objective of the Organization is to contribute through cooperation and consultation to the conservation, rational management and efficient utilization of the fishery resources in the Convention. For that purpose, it compiles statistics, maintains research programs, establishes management goals, and promotes and co-ordinates international surveillance.

2. Accounting Policies

These financial statements have been prepared in accordance with Canadian generally accepted accounting principles and reflect the following significant accounting policies:

a) **Contributions Assessed Contracting Parties**

Contributions are assessed annually and are recorded as revenue in the year for which billings apply.

b) **Allowance for Uncollectible Accounts**

As approved by the General Council, an allowance for uncollectible accounts is recorded for contributions that are one payment in arrears.

c) **Accumulated Surplus**

The Chairman of the General Council, after consultations with representatives of all members of the General Council, may authorize expenditures from accumulated surplus for unforeseen and extraordinary expenses necessary to the good conduct of the business of the Organization. Such funds may not be in excess of 20% of the annual budget for the current financial year.

d) **Publications**

Costs of publications are charged to expense as incurred.

e) **Office Furniture and Equipment**

Costs of office furniture and equipment are charged to expense when purchased. Leases for equipment, which transfer substantially all of the benefits and risks of ownership to the Organization, are not treated as asset purchases (capital leases). Lease payments are charged in the year paid to the contractual services expenditure categories.

f) **Personal Income Taxes**

Federal

According to an Order in Council (P.C. 1980-132) issued by the Government of Canada, the Organization comes under the jurisdiction of the Convention on the Privileges and Immunities of the United Nations. Article V, Section 18(b) of this Convention exempts officials of the United Nations organizations from taxation on the salaries and emoluments paid to them. However, the Order in Council (Section 3.(3)) does not exempt a Canadian citizen, residing or ordinarily resident in Canada, from liability for any taxes or duties imposed by any law in Canada.

Accordingly, as is customary for international organizations, the Organization credits revenue with an amount equal to the Canadian federal income taxes that would be otherwise assessed on its employees.

Provincial

The Organization deducts provincial income taxes from the salaries of Canadian employees and remits amounts deducted on a regular basis to the Province of Nova Scotia. At the end of each year, the Organization applies to the provincial government for an *ex gratia* grant equal to the amount of provincial personal income taxes paid. Such grants are accrued when ultimate receipt is assured.

g) **Pension Plan**

The Organization has a defined benefit pension plan and current contributions plus the payments for the unfunded portion of the plan are expensed annually.

3. Contributions Receivable

This account reflects assessments due (Canadian Dollars) from Contracting Parties as follows:

	1996	1995
Bulgaria	$ 15,717	$ 16,528
Cuba	16,896	29,415
France (in respect of St. Pierre et Miquelon)	5,052	-
Lithuania	-	7,421
Romania	15,717	16,528
United States of America	-	9,041
	53,382	78,933
Less: Allowance for uncollectible assessments	31,434	33,056
	$ 21,948	$ 45,877

4. Provision for Employee Termination Benefits

The Organization provides its staff members with certain entitlements on termination of service based on the employee's position and years of service with the Organization.

At its annual meeting in September, 1991, the General Council approved in the Staff Rules an enhanced employee termination benefit package to be effective January 1, 1992. At December 31, 1996, the additional liability resulting from this enhancement amounted to approximately $90,300, which amount has not been recorded in the accounts of the Organization.

The Organization is funding this liability at the rate of $10,000 per annum as approved by the General Council (17th Annual Meeting, September, 1995).

5. Contributions Assessed Contracting Parties

(Expressed in Canadian Dollars)

	1996	1995
Bulgaria	$ 15,717	$ 16,528
Canada	380,301	459,033
Cuba	17,154	29,415
Denmark (in respect of the Faroe Islands and Greenland)	79,819	77,042
Estonia	19,313	16,528
European Union	52,555	60,307
France (in respect of St. Pierre et Miquelon)	5,052	-
Iceland	16,850	16,528
Japan	18,891	21,792
Republic of Korea	15,717	16,528
Latvia	20,181	17,903
Lithuania	17,762	16,528
Norway	22,699	17,758
Poland	15,717	16,528
Romania	15,717	16,528
Russian Federation	24,394	22,727
United States of America	117,172	9,041
	$ 855,011	$ 830,714

6. Superannuation

The Organization has a defined benefit pension plan which covers all employees. The last actuarial valuation was performed as at January 1, 1996. At that time, the accrued pension obligation was $1,570,000 while the assets were valued at $1,487,000, resulting in an unfunded pension liability of $83,000. This unfunded pension liability is being funded at the rate of $28,500 per year.

7. Operating Lease Obligations

The Organization is committed to lease payments for certain equipment, as follows:

1997	1998	1999	2000	2001
$18,200	$14,400	$14,400	$5,320	$2,450

8. Services Provided Without Charge

Accommodation for the Organization's secretariat in Dartmouth, Nova Scotia is provided without charge by the Canadian Department of Fisheries and Oceans. Accordingly, the related costs, which include, rent, grants-in-lieu of property taxes, heat, electricity and cleaning services, are not reflected in these financial statements.

9. Changes in Non-Cash Operating Working Capital Items

(Expressed in Canadian Dollars)

	1996	1995
Contributions receivable	$ 23,929	$ 9,944
Accounts receivable	899	172
Accrued interest receivable	553	266
Accrued *ex gratia* grant receivable	(43,234)	-
Prepaid expenses	3,047	(4,433)
Accounts payable and accrued liabilities	(2,667)	(14,156)
Accrued vacation pay	(5,647)	6,853
Overpayment of contributions by Contracting Parties	(4,414)	8,514
	$ (27,534)	$ 7,160

Index of Major Substantive Issues Discussed at the Meetings, 1996