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Northwest Atlantic
Fisheries Organization
(NAFO)



Annual Report
2001

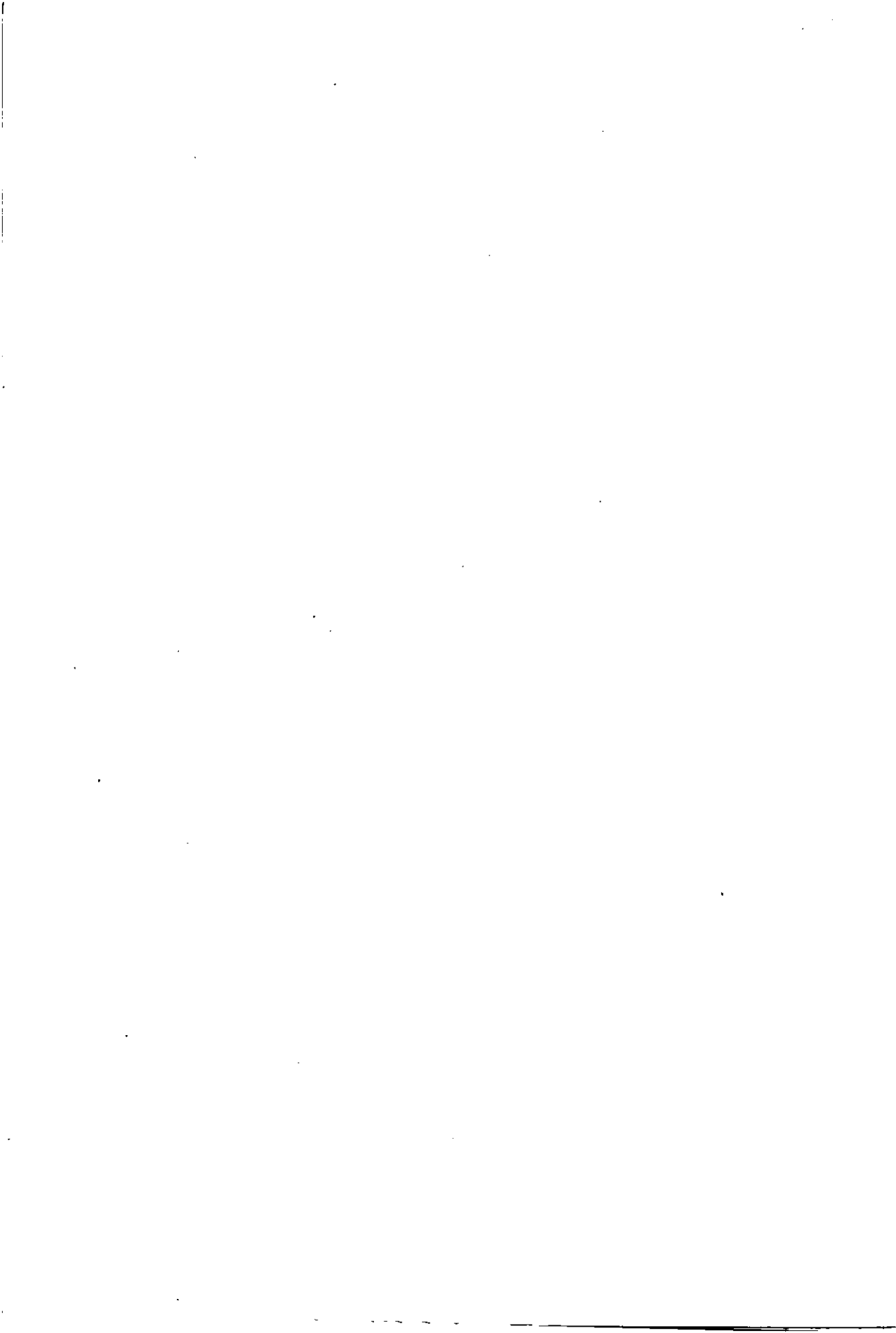
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Preface

This Annual Report for the year 2001 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 reflecting 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 2001. 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 2001", and the proceedings of the Scientific Council are published in the "Scientific Council Reports, 2001". 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 principle 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 2001: (1) STACTIC Technical Working Group on Communications (Brussels, Belgium, 18-19 January); (2) NAFO/NEAFC Working Group on Oceanic Redfish (Reykjavik, Iceland, 13-14 February); (3) Fisheries Commission Working Group on Statistics (Copenhagen, Denmark, 27 March); (4) Special Fisheries Commission Meeting (Copenhagen, Denmark, 28-30 March); (5) STACTIC Working Group to Overhaul the NAFO Conservation and Enforcement Measures (Ottawa, 1-3 May); (6) Working Group on Dispute Settlement Procedures (DSP) (Dartmouth, Canada, 12-14 June); (7) Scientific Council Meeting (Dartmouth, Canada, 31 May-14 June); (8) Standing Committee on International Control (STACTIC) (Halifax, Canada, 26-28 June); (9) Symposium on Deep-Sea Fisheries (Varadero, Cuba, 12-14 September); (10) Scientific Council Annual Meeting, 17-21 September, Varadero, Cuba; (11) Scientific Council Meeting (Dartmouth, Canada, 8-15 November).

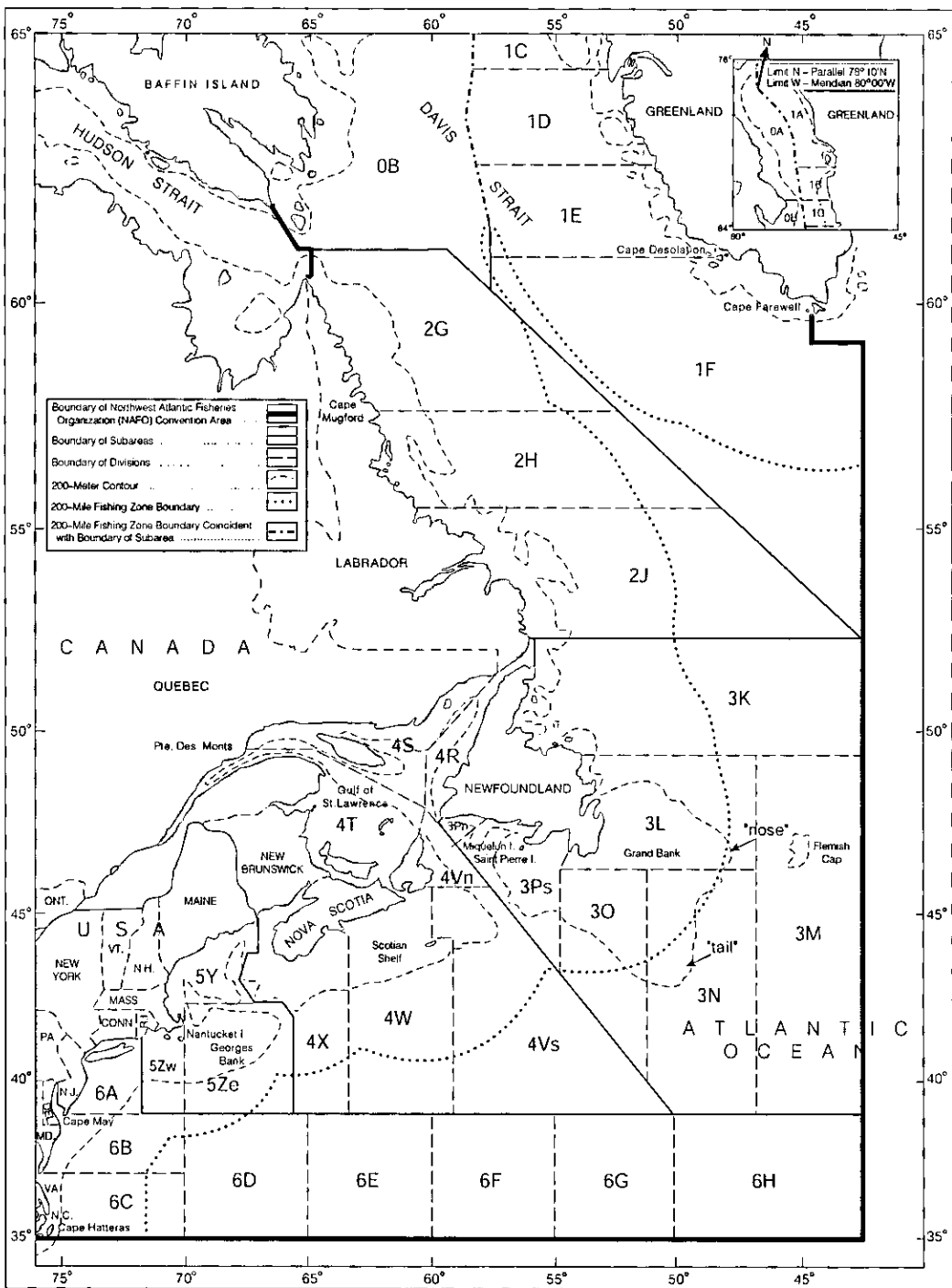
The 2001 NAFO Annual Meeting scheduled for Varadero, Cuba was cancelled due to the tragic events in the United States of America, September 11, 2001, related to the terrorists' attack in the city of New York. The group of scientists who arrived to Cuba for a Symposium before September 11 was able to accomplish the scientific task of the Annual Meeting. The General Council and Fisheries Commission convened their special meetings in Helsingør, Denmark next year, January 29 – February 01, 2002.

The Scientific Council reviewed and assessed the status of major fish stocks in the NAFO Regulatory and Convention Areas. The scientific advice and recommendations from the Scientific Council were presented to the Fisheries Commission at later stage (January 2002) with recommendation that major groundfish stocks are continuing to be at low abundance and there should not be a direct fishery for those stocks in 2002. The Scientific Council reported stable and increased abundance for Greenland halibut in Divisions 2J+3KLMNO and Yellowtail flounder in Div. 3LNO.

The Fisheries Commission agreed by a mail vote to roll-over all regulations and the Quota Table, 2001, to the year 2002 until new decisions would be applicable after the Special Meetings scheduled for January 2002.

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

The General Council met briefly for a formal cancellation of Annual Meeting 2001 in Varadero, Cuba. The NAFO President, Enrique Oltuski, expressed his, on behalf of NAFO, and the Government of Cuba, condolences to the United States of America regarding the tragic events in the city of New York on September 11, 2001. Mr. Oltuski declared the cancellation of the Annual Meeting 2001.





**Structure of the Northwest Atlantic Fisheries Organization (NAFO) in 2001
(as at September 2001)**

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, Ukraine and United States of America (USA).

President

E. Oltuski (Cuba)

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, Ukraine and USA.	<i>Chairman</i> – E. Oltuski (Cuba) <i>Vice-Chairman</i> – P. Chamut (Canada)
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, Ukraine and USA.	<i>Chairman</i> – W. B. Brodie (Canada) <i>Vice-Chairman</i> – R. Mayo (USA)
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, Ukraine and USA.	<i>Chairman</i> – P. Gullestad (Norway) <i>Vice-Chairman</i> – D. Swanson (USA)

Standing Committees

General Council	Standing Committee on Finance and Administration (STACFAD)	<i>Chairman</i> – G. F. Kingston (EU) <i>Vice-Chairman</i> – J.-P. Plé (USA)
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General Council (cont'd)	Standing Committee on Fishing Activity of Non-Contracting Parties in the Regulatory Area (STACFAC)	<i>Chairman – D. Silvestre</i> (France in respect of St. Pierre et Miquelon) <i>Vice-Chairman – N.</i> <i>Bouffard (Canada)</i>
Scientific Council	Standing Committee on Fishery Science (STACFIS) Standing Committee on Research and Coordination (STACREC) Standing Committee on Publications (STACPUB) Standing Committee on Fisheries Environment (STACFEN)	<i>Chairman – H.-J.</i> <i>Rätz (EU)</i> <i>Chairman – R.</i> <i>Mayo (USA)</i> <i>Chairman – O.A.</i> <i>Jørgensen (Denmark-</i> <i>Greenland)</i> <i>Chairman – M. Stein</i> <i>(EU)</i>
Fisheries Commission	Standing Committee on International Control (STACTIC)	<i>Chairman – D. Bevan</i> <i>(Canada)</i>

Secretariat

Executive Secretary	L. I. Chepel
Assistant Executive Secretary	T. Amaratunga
Administrative Assistant	F. D. Keating
Secretary to Executive 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
Graphic Arts/Printing Technician	B. T. Crawford
Secretary to Assistant Executive Secretary	D.C.A. Auby
Statistical Clerk	B. L. Marshall
Statistical Clerk	C. L. Kerr

Headquarters Location

2 Morris Drive, Dartmouth, Nova Scotia, Canada

PART I
(pages 15 to 39)

Activities of the General Council in 2001

List of Meetings

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

- Working Group on Dispute Settlement Procedures (DSP), 12-14 June 2001, Holiday Inn, Dartmouth, N.S., Canada.
- General Council Meeting, 17 September 2001, International Conference Centre "Plaza América", Varadero, Cuba.



Major Documents of the General Council in 2001

<u>Serial No.</u>	<u>GC Doc. No.</u>	<u>Title</u>
N4363	01/1	Report - 2000 -- On the Scheme to Promote Compliance by Non-Contracting Party Vessels with the Conservation and Enforcement Measures
N4465	01/2	Administrative Report and Financial Statements for the fiscal year ending 31 December 2001 (as of 31 July 2001)
N4466	01/3	NAFO Report on UN Resolution 54/32
N4585	01/4	Report of the Working Group on Dispute Settlement Procedures (DSP), 12-14 June 2001, Dartmouth, N.S., Canada
N4564	01/5	Report of the General Council Meeting, 17 September 2001, Varadero, Cuba



**Report of the Working Group on Dispute
Settlement Procedures (DSP)
12-14 June 2001, Dartmouth, N. S., Canada**

The Meeting was held in accordance with the decision taken by the General Council at the 22nd Annual Meeting, September 2000 (GC Doc. 00/7, Part I, item 4.7). Complete proceedings of the meeting are presented in GC Doc. 01/4 and in the NAFO Meeting Proceedings (General Council and Fisheries Commission), 2001.

Opening Procedures (items 1-4)

The Executive Secretary of NAFO opened the meeting at 11:00 June 12, 2001 by welcoming all delegations to Dartmouth, Nova Scotia. The following Contracting Parties were represented at the meeting: Canada, Denmark in respect of the Faroe Islands and Greenland, Estonia, the European Union, Iceland, Japan, Latvia, Lithuania, Norway and Russia (Annex 1).

The Executive Secretary of NAFO recalled that Mr. Stein Owe of Norway had resigned from his position as Chairman of the NAFO Working Group on Dispute Settlement Procedures at the 22nd Annual Meeting in September 2000, and submitted the matter of electing a new Chairman for discussion by the Working Group. Mr. Freidrich Wieland (EU) was elected Chairman.

Ms. Nadia Bouffard of Canada was appointed as Rapporteur.

The provisional Agenda was adopted (Annex 2).

Contracting Parties' ideas and presentations on NAFO DSP

The meeting discussed new ideas tabled by the European Union delegation (two working documents) regarding the work on DSP by NEAFC and SEAFO. The European Union presented the first paper by describing the successful outcome of discussions that took place in NEAFC in April 2001 to develop dispute settlement procedures for that organization, based in great part on the documents of NAFO Working Group on DSP.

**Examination of the desirability and, as appropriate, the development of procedures
for the settlement of disputes between NAFO Contracting Parties: (a) by
implementing in the NAFO context, the 1995 UN Agreement and UNCLOS dispute
settlement procedures, and (b) by including additional measures if needed**

The Working Group agreed to use as a basis for its discussions the Consolidated Text submitted to General Council during the 22nd Annual Meeting by the Working Group. There were extensive discussions on many legal and practical aspects of the future NAFO DSP. Working papers were tabled by Canada, European Union, and Latvia.

The ideas were centered around the motivation of objections, cooperation to prevent disputes, means of settling disputes, applicable law, binding dispute settlement procedures, *ad hoc* panel, provisional measures and other ideas.

The Working Group worked-out a final version of the "Consolidated Text 2001" for its transfer to the General Council decision.

Annex 1. List of Participants

CANADA

Head of Delegation

H. Strauss, Director, Oceans, Environmental and Economic Law Div., Dept. of Foreign Affairs and International Trade Canada, 125 Sussex Drive, Ottawa, Ontario K1A 0G2
Phone: +613 992 2104 - Fax: +613 992 6483 - E-mail: howard.strauss@dfait-maeci.gc.ca

Adviser

N. Bouffard, A/Director, Pacific Affairs Div., International Affairs Directorate, Dept. of Fisheries and Oceans, 200 Kent St., 13th Floor, Stn. 13159, Ottawa, Ontario K1A 0E6
Phone: +613 993 1860 - Fax: +613 993 5995 - E-mail: bouffardn@dfo-mpo.gc.ca

DENMARK (IN RESPECT OF FAROE ISLANDS & GREENLAND)

Head of Delegation

A. Kristiansen, Ministry of Fisheries and Maritime Affairs, Yviri við Strond 17, P. O. Box 347, FO-100 Torshavn, Faroe Islands
Phone: + 298 35 30 30 - Fax: +298 35 30 37 - E-mail: andrask@fisk.fo

Adviser

H. Weihe, Ministry of Fisheries, Yviri við Strond 17, FO-100 Torshavn, Faroe Islands
Phone: +298 353030 - Fax: +298 353035 - E-mail: hedinw@fisk.fo

ESTONIA

Head of Delegation

K. Mühlbaum, Director General, Fisheries Department, Ministry of the Environment, Marja 4d, 10617 Tallinn
Phone: +372 656 6720 - Fax: +372 6567599 - E-mail: kristiina@klab.envir.ee

Adviser

K. Märtin, Officer, Fisheries Department, Ministry of the Environment, Marja 4d, 10617 Tallinn
Phone: +372 656 7315 - Fax: +372 6567599 - E-mail: kairem@klab.envir.ee

EUROPEAN UNION

Head of Delegation

F. Wieland, Deputy Head of Unit, European Commission, Directorate General for Fisheries, External Policy and Markets, International and Regional Arrangements, Rue de la Loi 200, B-1049 Brussels, Belgium
Phone: +32 2 296 3205 - Fax: +32 2 299 4802 - E-mail: Friedrich.Wieland@cec.eu.int

Alternate

T. van Rijn, Conseiller juridique, European Commission, Legal Service, Avenue des Nerviens 85, B-1040 Brussels, Belgium
Phone: +32 2 295 1818 - Fax: +32 2 295 2485 - E-mail: Thomas.van-Rijn@cec.eu.int

Advisers

S. Ekwall, Administrator, European Commission, Directorate General for Fisheries, External Policy and Markets, International and Regional Arrangements, Rue de la Loi/Wetstraat 200, B-1049 Brussels, Belgium
Phone: +32 2 299 6907 - Fax: +32 2 299 4802 - E-mail: Staffan.Ekwall@cec.eu.int

R. Akesson, Ministry for Agriculture and Fisheries, 10333 Stockholm, Sweden
Phone: +46 08 405 1122 - Fax: +46 08 10 5061 - E-mail: rolf.akesson@agriculture.ministry.se

M. Sims, Council of the European Union, Legal Service, Rue de la Loi 175, B-1048 Brussels, Belgium
Phone: +32 2 285 7849 - Fax: +32 2 285 6910 - E-mail: moyra.sims@consilium.eu.int

G. F. Kingston, Senior Adviser, Economic and Commercial Affairs, Delegation of the European Commission in Canada, 45 O'Connor Street, Suite 1900, Ottawa, Ontario, Canada K1P 1A4
Phone: +613 238 6464 - Fax: +613 238 5191 - E-mail: fred.kingston@delcan.cec.eu.int

S. Feldthaus, Head of Section, Ministry of Food, Agriculture and Fisheries, Holbergsgade 2, 1057 Copenhagen, Denmark
Phone: +45 33 92 35 60 - Fax: +45 33 11 82 71 - E-mail: sfe@fvm.dk

M. Rimmer, Sea Fisheries Conservation Div., Ministry of Agriculture, Fisheries and Food, Nobel House, 17 Smith Square, London SW1P 3JR
Phone: 020 7238 6529 - Fax: 020 7238 5721 - E-mail: mike.rimmer@maff.gsi.gov.uk

ICELAND**Head of Delegation**

T. Skarphedinnsson, Legal Adviser, Ministry of Fisheries, Skulagata 4, 150 Reykjavik
Phone: +354 560 9670 - Fax: +354 562 1853 - E-mail: thorir@hafro.is

JAPAN**Head of Delegation**

Y. Ito, Director, Fishery Division, Economic Affairs Bureau, Ministry of Foreign Affairs, 2-2-1 Kasumigaseki, Chiyoda-ku, Tokyo, 100-8919
Phone: +81 3 3580 3311 ext. 2859 - Fax: 81 3 3503 3136 - E-mail: yoshiaki.ito@mofa.go.jp

Advisers

Y. Iino, Chief, Legal Research Section, The Institute of Cetacean Research, Tokyo Suisan Bldg., 4-18, Toyomi-Cho, Chuo-Ku, Tokyo, 104-0055
Phone: +81 3 3536 8226 - Fax: +81 3 3536 6522 - E-mail: iino@icr-unet.ocn.ne.jp

Y. Kashio, Representative, Japan Fisheries Association, Suite 1209 Duke Tower, 5251 Duke St. Tower, Halifax, N.S., Canada B3J 1P3
Phone: +902 423 7975 - Fax: +902 425 0537 - E-mail: jfa-hfx@ns.sympatico.ca

LATVIA**Head of Delegation**

N. Riekstins, Director, National Board of Fisheries, Ministry of Agriculture, 2, Republikas laukums, LV-1010 Riga
Phone: +371 732 3877 - Fax: +371 733 4892 - E-mail: fish@com.latnet.lv

Alternate

R. Derkacs, Head of International Agreements and Legal Div., National Board of Fisheries, 2, Republikas laukums, LV-1010 Riga
Phone: +371 732 3877 - Fax: +371 733 4892 - E-mail: fish@com.latnet.lv

LITHUANIA

Head of Delegation

V. Vaitiekunas, Director, Fisheries Dept. under the Ministry of Agriculture, 19 Gedimino str., Vilnius 2600
Phone: +370 02 391174 – Fax: 37002 341176 – E-mail: vytautasv@zum.lt

Alternate

A. Rusakevicius, Chief Specialist, Fisheries Department under the Ministry of Agriculture, 19 Gedimino St.,
2600 Vilnius
Phone: +370 2 391183 - Fax: +370 2 391176 - E-mail: algirdasr@zum.lt

NORWAY

Head of Delegation

T. Lobach, Directorate of Fisheries, P. O. Box 185, N-5804 Bergen
Phone: +47 55 23 80 00 Fax: +47 55 23 80 90 E-mail: terje.lobach@fiskeridir.dep.telemax.no

RUSSIA

Head of Delegation

A. Okhanov, Russian Representative on Fisheries in Canada, 47 Oceanview Drive, Bedford, Nova Scotia,
Canada B4A 4C4
Phone: +902 832 9225 – Fax: +902 832 9608 – E-mail: rusfish@ns.sympatico.ca

NAFO SECRETARIAT

L. I. Chepel, Executive Secretary
F. D. Keating, Administrative Assistant
B. Cruikshank, Senior Secretary

Annex 2. Agenda

1. Opening of the Meeting (Executive Secretary)
2. Election of Chairman
3. Appointment of Rapporteur
4. Adoption of Agenda
5. Contracting Parties' ideas and presentations on NAFO DSP
6. Examination of the desirability and, as appropriate, the development of procedures for the settlement of disputes between NAFO Contracting Parties:
 - a) by implementing in a NAFO context, the 1995 UN Agreement and UNCLOS dispute settlement procedures, and
 - b) by including additional measures if needed.
7. Report to the General Council
8. Other Matters
9. Adjournment

Annex 3. Consolidated Text 2001
(based on DSP W.G. W.P. 01/7-Revision 2)

Motivation of objections

New Paragraph 4 of Article XII

[On request of any Contracting Party, a] [Any] Commission member which has presented an objection to a proposal under paragraph 1 or given notice of its intention not to be bound by a measure under paragraph 3, shall [within [...] days] give a statement of the reasons for its objection or notice and a declaration of its intentions following the objection or notice, including a description of any measures it intends to take or has already taken for the conservation and management, including control and enforcement measures, of the fish stock or stocks concerned. [The statement, declaration and post-objection behaviour may be challenged through dispute settlement procedures.]

Existing paragraph 4 will become paragraph 5 with the following insertion:

- d) the receipt of each statement and declaration under paragraph 4

Dispute Settlement Procedures

(New) Article...

1. Contracting Parties shall cooperate in order to prevent disputes.
2. If any dispute arises between two or more Contracting Parties concerning the interpretation or application of this Convention, those Contracting Parties have the obligation to settle their dispute by negotiation, inquiry, mediation, conciliation, *ad hoc* panel procedures, arbitration, judicial settlement or other peaceful means of their own choice.
3. Where a dispute concerns the interpretation or application of a proposal adopted by the Fisheries Commission pursuant to Article XI or matters related thereto, the parties to the dispute may submit the dispute to an *ad hoc* panel constituted in accordance with procedures adopted by the General Council.

Where a dispute has been submitted to *ad hoc* panel procedures, the panel shall at the earliest possible opportunity confer with the Contracting Parties concerned and shall endeavour to resolve the dispute expeditiously. The panel shall present a report to the Contracting Parties concerned and through the Executive Secretary to the other Contracting Parties. The report shall as far as possible include any recommendations which the panel considers appropriate to resolve the dispute.

Where a dispute has not been resolved through agreement between the Contracting Parties following the recommendations of the *ad hoc* panel it may be referred, on request of one of the Contracting Parties, to a binding dispute settlement procedure as provided in paragraph 5.

4. Where the parties to a dispute have agreed to submit the dispute to *ad hoc* panel procedures, they may agree at the same time to apply provisionally the relevant proposal adopted by the Commission until the recommendations of the panel are presented, unless the parties have settled

the dispute beforehand by other means.

[Pending the settlement of a dispute in accordance with paragraph 5, the parties to the dispute shall apply provisionally any recommendation made by the panel pursuant to paragraph 3.] *or* [The parties to a dispute may agree to apply provisionally any recommendation made by a panel pending the settlement of the dispute according to paragraph 5.] *or* [When submitting the dispute to an *ad hoc* panel, the parties to the dispute may agree at the same time to apply provisionally any recommendation made by the panel pending the settlement of the dispute according to paragraph 5.] That provisional application shall cease when the Contracting Parties agree on arrangements of equivalent effect, when a court or tribunal to which the dispute has been submitted in accordance with paragraph 5 has taken a provisional or definitive decision or, in any case, at the date of expiration, if applicable, of the proposal of the Fisheries Commission.

[5. If the Contracting Parties do not agree to any other peaceful means to resolve a dispute, or no settlement has been reached by recourse to these means, the dispute shall be referred, if one of the Contracting Parties concerned so requests, to binding dispute settlement procedures specified in the Annex ... to this Convention.]

[6. A court, tribunal or panel to which any dispute has been submitted under this Article shall apply the relevant provisions of this Convention, of United Nations Convention on the Law of the Sea of 10 December 1982 [or, where the dispute concerns one or more straddling stocks,] [and] of the United Nations 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 of 4 August 1995, as well as generally accepted standards for the conservation and management of living marine resources and other rules of international law not incompatible with the said instruments, with a view to ensuring the conservation [and optimum utilization] of the fish stocks concerned.]

or (instead of 5 and 6)

[A Contracting Party may refer any dispute concerning the interpretation or application of the Convention to DSP.

The Contracting Parties agree to apply the 1995 UN Agreement provisionally both to straddling stocks and discrete stocks that occur in the NAFO Regulatory Area, whether or not the Contracting Parties are party to the Agreement.]

Note: The question of the form, by way of which these texts can be introduced, e.g. by way of an amendment to the NAFO Convention or any other suitable instrument including a protocol, is still to be determined.



Report of the General Council (GC Doc. 01/5)

17 September 2001, Varadero, Cuba

- 1.1 In accordance with the announcements of the 23rd Annual Meeting and the Provisional Agenda circulated to Contracting Parties, the meeting was opened by the NAFO President and Chairman of the General Council, Enrique Oltuski (Cuba), at 1500 hr on 17 September 2001.
- 1.2 The Chairman welcomed everyone to Cuba.
- 1.3 The Representatives of nine (9) Contracting Parties were present: Cuba, Denmark (in respect of the Faroe Islands and Greenland-DFG), Estonia, Japan, Latvia, Lithuania, Poland, Russia, and Ukraine (Annex 1).
- Observers were present from FAO, Mr. D. J. Doulman and, from South East Atlantic Fisheries Organization (SEAFO), Mr. S. Kashindi. Mr. Doulman presented the statement by FAO to the Meeting (Annex 2).
- 1.4 The Chairman noted there was no quorum to hold a General Meeting of NAFO at this time. He announced the Secretariat (T. Amaratunga, Assistant Executive Secretary) will record the activities of this meeting and the outcome will be communicated to Contracting Parties at earliest practical time for considerations for future activities and decisions.
- 1.5 The Chairman noted the extra-ordinary situation with respect to conducting this meeting, and proposed that he would say a few words of introduction and ask the delegations present to give their views. Heads of delegations expressed their opinions. The delegation of Denmark (DFG) presented its written statement (Annex 3).
- 1.6 The Chairman mentioned that the Cuban Government had conveyed its condolences to the government of United States of America, and its solidarity with the USA in finding ways to oppose such terrorist violence.
- 1.7 The Chairman noted the violence has also affected NAFO in that there is no quorum to conduct its meeting.
- 1.8 It was noted that the Scientific Council members had arrived before these problems and was in a position to continue with their business during this week, but the rest of NAFO could not have meetings at this time.
- 1.9 The Chairman noted that the views of delegations around could be recorded, but decisions on how to proceed will require mail voting. The Chairman then called for the views from Heads of Delegation.
- 1.10 All Contracting Parties around the table expressed their views, and these were summarized for record on this report.

- 1.11 Collectively, Contracting Parties expressed appreciation to Cuba, and to the Chairman, Mr. Oltuski, for hosting this meeting, for the excellent modern facilities offered for the meeting, and the warm welcome extended to this beautiful country.
- 1.12 In general, Contracting Parties expressed deep regret for the tragedy in USA and extended condolences to USA.
- 1.13 Views were expressed by some Contracting Parties that it was regrettable that the USA incident affected NAFO business.
- 1.14 It was noted regrettably by some that the inability of certain Contracting Parties to participate in this meeting was not conveyed to all Contracting Parties well in advance of the meeting date, and many Contracting Parties were already in travel status when announcements were made.
- 1.15 Some Contracting Parties expressed concern that this late communication resulted in great expenses to the host country, Cuba, and also Contracting Parties who arrived for the meeting. It was regrettable that those that arrived could not carry back home firm decisions of NAFO.
- 1.16 The Chairman received two specific proposals made by Denmark (in respect of Faroe Islands and Greenland), and Japan, on how to proceed with NAFO decisions as a result of these delays.
- 1.17 It was noted that in accordance with the NAFO Statutes, the current elected Executive Officers will hold their positions until such time as the business of the 23rd Annual Meeting is completed.
- 1.18 One specific proposal offered by Denmark (in respect of Faroe Islands and Greenland), identified the need to work as soon as possible to address the requirements for 2002 on Conservation and Enforcement Measures including allocations as well as matters of NAFO Administration. In this regard, Denmark (in respect of Faroe Islands and Greenland) was ready to host a new meeting near Helsingor, Denmark, during the 5th week of 2002 (beginning 28 January 2002). However, this decision was needed this week.
- 1.19 Japan expressed the view that it cannot support a proposal to hold a full-scale meeting again for NAFO requirements for 2002. While such a meeting would represent commitments for large additional expenses, it would also be difficult to adjust many Government schedules. Japan proposed a mail vote to be held immediately to extend the current 2001 NAFO Conservation and Enforcement Measures and administration commitments for the year 2002. It was proposed that new decisions for 2003 as needed should be undertaken at the 24th Annual Meeting which will be held in Spain in September 2002.
- 1.20 Japan stated that this proposal was justified because the scientific advice from the Scientific Council in June 2001 had not proposed significant changes from the previous year. Also, Japan proposed that the present Executive Officers should continue to hold office till the end of the September 2002 Meeting in Spain.
- 1.21 With respect to these two proposals, each delegation commented on their preference.

- 1.22 Contracting Parties present around the table expressed their individual views, and in general support for the proposal by Japan was stated by Estonia, Latvia, Lithuania, Poland, Russia and Ukraine.
- 1.23 Contracting Party Cuba was in general support of the proposal by Denmark (in respect of Faroe Islands and Greenland) to hold another meeting in the place and time decided through mail vote.
- 1.24 The Chairman noted that the proposals from Denmark and Japan and the views of the rest of the Contracting Parties will be circulated to all the member countries of NAFO and comments and proposals requested.
- 1.25 Once all this information is received the Secretariat will circulate the proposals and a mail vote requested in order to take final decisions.
- 1.26 In conclusion, the Chairman expressed his sincere thanks to all Contracting Parties, and once again expressed in the name of all the Contracting Parties NAFO's condolences to the United States.

Note:

After the Meeting, the NAFO President, Chairman of the General Council, held consultations with all NAFO Contracting Parties and resolved to call a Special Meeting of the General Council in Denmark, January 29 – February 01, 2002. (Annex 4)

Annex 1. List of Participants

CUBA

Head of Delegation

E. Oltuski, Ministerio de la Industria Pesquera, 5^a Avenue y 246, Sta Fe, Barlovento
Phone: +537 297008 – Fax: +537 246297 – E-mail: oltuski@fishnavy.inf.cu

Alternate

L. L. Albelo, President, Pesport Association, Playa la Habana

Advisers

R. Cabrera, 5^a Ave y 246, Playa, Ciudad Habana

Phone: +537 298088 – Fax: +537 294168 – E-mail: rinter@fishnavy.inf.cu

V. E. Sarda Espinosa, Ministerio de la Industria Pesquera, 5^a Avenue y 246, Sta Fe, Barlovento

Phone: +537 297034 - Fax: +537 249168 - E-mail: abogados@fishnavy.inf.cu

R. Hurtado, San Indalecio # 707-A e/Coco y Encarnacion, Santos Suarez, C. Habana

Phone: +537 29 71 17/297008 – Fax: +537 29 71 17 – outuski@fishnavy.inf.cu

I. Ramos, Pesport Association, Cuban Fishing Fleet, Habana

E. Valdes, Centro de Investigaciones Presqueras, 5ta. Ave y 248, Barlovento, Sta Fe, Playa C. Habana 19100

Phone: +537 298055 – Fax: +537 339168 – E-mail: evaldes@cip.fishnavy.inf.cu

DENMARK (IN RESPECT OF FAROES AND GREENLAND)

Head of Delegation

A. Kristiansen, Ministry of Fisheries and Maritime Affairs, Yviri við Strond 17, P. O. Box 347, FO-100
Torshavn, Faroe Islands

Phone: + 298 35 30 30 - Fax: +298 35 30 37 - E-mail: andrask@fisk.fo

Representative

A. Kristiansen (see address above)

Advisers

O. A. Jørgensen, Danish Institute for Fisheries Research, Charlottenlund Slot, 2900 Charlottenlund, Copenhagen

Phone: +45 33 96 33 00 - Fax: +45 33 - E-mail: olj@dfu.min.dk

M. T. Nedergaard, Fiskerilicensinspektor, Head of Unit, Gronlands Fiskerilicenskontrol, Postbox 501, DK-3900 Nuuk, Greenland

Phone: +299 345000 - Fax: +299 323235 - E-mail: mads@gh.gl

A. Nicolajsen, Fiskirannsóknarstovan, Noatun, P. O. Box 3051, FR-110 Torshavn, Faroe Islands

Phone: +298 1 5092 - Fax: +298 1 8264 - E-mail: aminic@frs.fo

L. D. Madsen, Head of Section, Dept. of Industry, Greenland Home Rule, Box 269, 3900 Nuuk, Greenland

Phone: +299 34 53 29 Fax: +299 32 47 04 E-mail: ldm@gh.gl

A. Olafsson, Councillor on Faroe Islands Affairs, Royal Danish Ministry of Foreign Affairs, 2
Asiatisk Plads, DK-1448 Copenhagen K, Denmark

Phone: +45 33 92 03 41 – Fax: +45 33 92 01 77 – E-mail: amola@um.dk

E. Rosing, Head of Unit, Dept. of Industry, Greenland Home Rule, Box 269, 3900 Nuuk, Greenland

Phone: +299 34 53 32 – Fax: +299 32 47 04 – E-mail: emanuel@gh.gl

ESTONIA

Head of Delegation

K. Mühlbaum, Ministry of the Environment, Fisheries Department, Marja 4d, 10617 Tallinn
Phone: +372 6566720 - Fax: +372 6567599 - E-mail: kristiina@klab.envir.ee

Representative

K. Mühlbaum (see address above)

Advisers

K. Martin, Officer, Fisheries Department, Ministry of the Environment, Marja 4d, 10617 Tallinn
Phone: +372 656 7315 - Fax: +372 6567 599 - E-mail: kaire.martin@ekm.envir.ee

T. Roose, Deputy Director General, Estonian Environmental Inspectorate, Kopli 76, 10416 Tallinn
Phone: +3726962238 - Fax: +3726962237, E-mail: tarvo.roose@kki.ee

A. Sõna, Reyktal Ltd., Paljassaare Road 28-412, 10313 Tallinn

Phone: +372 6709460 - Fax: +372 6512055 - E-mail: arne@reyktal.ee

A. Soome, Senior Officer, Ministry of the Environment, Fisheries Department, Marja 4d, 10617 Tallinn

Phone: +372 6112 987 - Fax: +372 6567 599 - E-mail: ain.soome@ekm.envir.ee

T. Tamme, Reyktal Ltd., Paljassaare Road 28-426, 10313 Tallinn

Phone: +372 6512055 - Fax: +372 6512055 - E-mail: toomas@alvinab.ee

JAPAN

Head of Delegation

S. Yuge, Councillor, Resources Management Dept., Fishery Agency Government of Japan, 1-2-1 Kasumigaseki, Chiyoda-ku, Tokyo 100
Phone: +81 3 3591 2045 Fax: +81 3 3502 0571

Advisers

M. Ogawa, Japan Marine Fishery Resources Research Center., 3-27 Kioi-Cho, Chiyoda-ku, Tokyo 102-009X
Phone: +81 3 3265 8301 - Fax: +81 3 3262 2359 - E-mail: ogawa@jamarc.go.jp

K. Suzuki, Assistant Director, Fisheries Div., Ministry of Foreign Affairs, 2-2-1 Kasumigaseki, Chiyoda-ku, Tokyo

Phone: +81 3 3580 3311 - Fax: +81 3 3503 3136 - E-mail: keiko.suzuki@mofa.go.jp

K. Tanaka, Deputy Director, International Affairs Div., Fisheries Agency, Government of Japan, 1-2-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-8907

Phone: +81 3 3591 1086 - Fax: +81 3 3502 0571 - E-mail: kengo_tanaka@nm.maff.go.jp

LATVIA

Head of Delegation

N. Riekstins, Director, National Board of Fisheries, Ministry of Agriculture, 2, Republikas laukums, LV-1010 Riga

Phone: +371 732 3877 - Fax: +371 733 4892 - E-mail: fish@com.latnet.lv

Alternate

R. Derkaes, Head of International Agreements and Legal Div., National Board of Fisheries, 2, Republikas laukums, LV-1010 Riga

Phone: +371 702 7415 - Fax: +371 733 4892 - E-mail: ricards.vzp@latnet.lv

Representatives

N. Riekstins (see address above)
R. Derkacs (see address above)

Advisers

D. Kalinovs, President, "Mersrags" Ltd., Brivibas Gatve 215A-46, LV-1039 Riga
Phone: +371 754 2471 – Fax: +371 754 2471 – E-mail: skaga@latnet.lv

LITHUANIA

Head of Delegation

V. Vaitiekunas, Director, Fisheries Dept. under the Ministry of Agriculture, Gedimino 19, 2600 Vilnius
Phone: + 37 02 391174 – Fax: +3702 391176 – E-mail: vytautasv@zum.lt

Alternate

A. Rusakevicius, Fisheries Department under the Ministry of Agriculture, 19 Gedimino St., 2600 Vilnius
Phone: +370 2 391183 - Fax: +370 2 391176 - E-mail: algirdasr@zum.lt

Representatives

A. Rusakevicius (see address above)

Advisers

V. Petraitiene, Fisheries Department under the Ministry of Agriculture, Gedimino 19, Vilnius
Phone: +370 2 391174 – Fax: +370 2 391174 – E-mail: vyteutop@zum.lt
V. Ramanauskas, S Daukanto 9, Klaipeda, LT-5800
Phone: +370 8 742045 – Fax: +370 6 312393 – E-mail: vramanau@takas.lt
S. Ramanauskiene, Ukmerges 14, LT-5800, Klaipeda
Phone: +370 6 312216 – Fax: +370 6 312393 – E-mail: vramanau@takas.lt
L. Siksniete, Gedimino 19, Vilnius
Phone: +370 7 323365 – Fax: +370 7 226204 – E-mail: lina@lrf.lt
S. Staskus, M. Gimbutienes Str. 35, 3014 Kaunas
Phone: 370 7 370656 – Fax: +370 7 370664 – E-mail: zukme@ijo.net
J. Vilkiene, M. Gimbutienes Str. 35, 3014 Kaunas
Phone: 370 7 370656 – Fax: +370 7 370664 – E-mail: zukme@ijo.net

POLAND

Head of Delegation

T. Wodzynski, Second Secretary for Economic Affairs, Embassy of the Republic of Poland, Calle C No. 452, esq. 19, Vedado, Ciudad de La Habana, Cuba
Phone: +53 7 662439/40 – Fax: +53 7 662442 – E-mail: ambrp@ceniai.inf.cu

Representative

T. Wodzynski (see address above)

Adviser

B. Szemioth, Parkowa 13/17/123, Warszawa
Phone: +48228408920 – Fax: 48228408920 – E-mail: szemioth@alpha.net.pl

RUSSIA

Head of Delegation

A. N. Makoedov, State Committee for Fisheries of the Russian Federation, 12 Rozhdestvensky Boul., Moscow 103031

Phone: +7 095 928 5527 - Fax: +7095 928 5527

Representative

A. N. Makoedov (see address above)

Advisers

V. K. Babayan, Head of Laboratory for System Analysis of Fishery Resources, VNIRO, 17, V. Krasnoselskaya, Moscow 107140

Phone: +70 95 264 6983 - E-mail: vbabayan@vniro.ru

A. Boltnev, PINRO, 6 Knipovich St., Murmansk

Phone: +7 815 2 47 2532 - Fax: +815 2 473331 - E-mail: boltnev@pinro.murmansk.ru

V. A. Rikhter, AtlantNIRO, 5 Dmitry Donskoy St., Kaliningrad, 236000

Phone: +70 112 22 5547 - Fax: +70 112 21 9997 - E-mail: atlant@baltnet.ru

A. Rodin, Hohlovsky St. 3-13, Moscow 9162881

Phone: +7095 9162381 - Fax: +7095 9162460

E. Samoylova, PINRO, 6 Knipovich St., Murmansk 183763

Phone: +7 8152473461 - Fax: +47 78910518 - E-mail: inter@pinro.murmansk.ru

V. N. Shibanov, PINRO, 6 Knipovich St., Murmansk 183763

Phone: +7 8152 47 26 14 - Fax: +7 8152 47 33 31 - E-mail: inter@pinro.murmansk.ru

UKRAINE

Head of Delegation

V. Litvinov, Senior Expert, State Department for Fisheries of Ukraine, 82A Turgenivska str., Kiev, 252053

Phone: +38044 246 8984 - Fax: +38044 246 8984 - E-mail: nauka@i.kiev.ua

Representative

V. Litvinov (see address above)

Advisers

L. Petsyk, Director, Chernomorskaya Rybolovnaya Kompania Ltd., 12, Safronova, Sevastopol

Phone: +38 0692451905 - Fax: +38 0692 577277 - E-mail: bsc@souz.sevastopol

V. Kulykov, Embajade de Ukraine, 5ta Ave. No. 4405 E/44 y 46 Miramar, La Habana, Cuba

Phone: +537 24 25 86 - Fax: +537 24 23 41 - cubukrem@cenjal.inf.cu

I. I. Scrobaba, Deputy Director for Scientific Work, Southern Scientific Research Institute of Marine Fisheries and Oceanography (YugNIRO), 2, Sverdlov St., 98300 Kerch, Crimea

Phone: +38 06561 2 35 30 - Fax: +38 06561 21572 - E-mail: postmaster@yugniro.crimea.com

OBSERVERS

D. J. Doulman, Senior Fishery Liaison Officer, International Institutions and Liaison Service, Fishery Policy & Planning Division, Fisheries Dept. (FAO), Viale delle Terme di Caracalla, Rm F-409, 00100 Rome, Italy

Phone: +39 0657 056752 - Fax: +39 0657 056500 - E-mail: david.doulman@fao.org

M. S. Kashindi, Republic of Namibia, Directorate of Policy, Planning and Economics, Ministry of Fisheries and Marine Resources, Private Bag 13355, Windhoek, Namibia

Phone: +264 61 2053029 – Fax: +264 61 2053041 – E-mail: mkashindi@mfmr.gov.na

H.-J. Rätz, ICES Observer, Institute of Sea Fisheries, Palmaille 9, D-22767 Hamburg, Federal Republic of Germany

Phone: +49 40 389 05169 – Fax: +49 40 389 05263 – E-mail: raetz.ish@bfa-fisch.de

SECRETARIAT

T. Amaratunga, Assistant Executive Secretary

F. D. Keating, Administrative Assistant

S. Goodick, Accounting Officer

D. C. A. Auby, Word Processing Secretary

Annex 2. Statement by FAO to the 23rd Annual Meeting of the Northwest Atlantic Fisheries Organization

**Varadero, Cuba
17-21 September 2001**

Mr. Chairman, distinguished delegates and observers:

FAO is very grateful for the invitation extended by NAFO's Secretariat to observe this annual meeting. Over the years there have been close and effective working relations between the two Organizations and it is FAO's earnest desire that this type of collaboration should continue.

FAO appreciates, in particular, the cooperativeness of the NAFO Secretariat in responding to FAO's periodic requests for information relating to NAFO's activities. These requests are made to NAFO and other regional fishery management organizations once or twice a year and FAO is well aware that such requests create an additional burden for the secretariats of these organizations. The NAFO Secretariat always responds fully and in a timely manner. This collaboration greatly assists FAO in meeting its global fisheries reporting responsibilities.

This NAFO Session is taking place when global fishery issues are more complex than ever before. The international community is requiring that both target and non-target fishery resources are managed and utilized in a long-term sustainability manner. Furthermore, there is a need to:

- proceed with precaution when information is lacking;
- deal responsively with new entrants;
- ensure that fisheries monitoring, control and surveillance is both cost- and operationally effective, and so on.

In short, innovative measures are needed to address the changing complexion of fisheries and the demands of management.

Regional fishery management organizations such as NAFO have a critical role to play in managing fishery resources. Where resources are shared there must be a coordinating mechanism to facilitate international cooperation. Such cooperation requires a high level of commitment on the part of all participants to ensure that stocks are not overfished nor their ecosystem degraded. However, management arrangements must be seen as fair and equitable if ongoing efforts are not to be undermined by disgruntled players.

Despite some tough periods, NAFO has come a long way since its Convention entered into force in 1979. The Organization has continued to focus sharply on its mandate of promoting the conservation and optimum utilization of the fishery resources of the Northwest Atlantic area within a framework appropriate to the regime of extended coastal States jurisdiction over fisheries, and accordingly to encourage international cooperation and consultation with respect to these resources.

In pursuing this goal, NAFO has been at the forefront of work undertaken by regional fishery management organizations to:

- implement the precautionary approach;
- enhance monitoring, control and surveillance;

- minimize by-catches, discards and post-harvest losses;
- promote compliance by non-contracting NAFO parties with conservation and management measures established by the Organization;
- strengthen dispute settlement procedures, and
- promote transparency.

These NAFO initiatives have been taken against a background that has involved States taking measures to implement recently concluded international fishery instruments, namely, the 1993 FAO Compliance Agreement, the 1995 FAO Code of Conduct for Responsible Fisheries and the four international plans of action concluded within its framework, and the 1995 UN Fish Stocks Agreement. The implementation of these instruments is critical if long-term sustainability in fisheries is to be achieved.

The 1993 Compliance Agreement is nearing the number of acceptances required to bring it into force. As of today the Agreement has 22 acceptances, and an additional three are required for it to enter into force. For those countries that have not accepted the Agreement, FAO urges that every effort be made to do so. The entry into force of this Agreement will enhance the manner in which high seas fisheries are managed.

Let me conclude Mr. Chairman, by saying that I bring to the meeting the very best wishes of FAO's Assistant Director-General for Fisheries, Mr. Ichiro Nomura. A friend and colleague to many of you, he wishes the meeting success in its deliberations on the important matters before this session.

Thank you very much.

**Annex 3. Statement by Delegation of Denmark (in respect of
the Faroe Islands and Greenland)**

**Delegation for
Denmark in respect of
The Faroe Islands and
Greenland (DFG).**

**NAFO Annual Meeting 2001
Informal Council Meeting
17 September 2001**

**Opening Statement
Talking Points**

Mr. Chairman,

The Delegation for DFG wants to thank you, Mr. President, for the invitation to the annual meeting of NAFO 2001 to be held here in Varadero, Cuba. Now we are here, and we can see that you have arranged everything necessary in order to make this meeting a successful one, just like you did last time we met in Cuba, in 1985.

Upon our arrival here, we have learnt that a considerable number of delegations have decided not to take part in this meeting. We have taken note of the fact, that you, Mr. Chairman, have declared that there are not enough Contracting Parties present here to constitute a quorum, and therefore this session is to be regarded as an informal gathering of a number of Contracting Parties.

We have understood that the absence of a number of delegations is due to the tragic events, which took place in New York Tuesday last week, 11 September.

In Denmark, including the Faroe Islands and Greenland, we deeply regret these tragic events. The head of the Danish Government as well as the heads of the two home governments have expressed their condolences to the U. S. Government. Furthermore, the Danish Kingdom authorities have in the relevant international fora expressed their solidarity with the United States in this situation where major cities and institutions of the U. S. have been subject to terrorist aggression.

Having said this, it has been the opinion of the relevant authorities of the DFG that we, as a Contracting Party to NAFO, have been called by the NAFO President and Secretariat for a regular NAFO annual meeting here, at the invitation of the Cuban Government. Therefore we have deemed it correct to come here, unless NAFO had decided to postpone the meeting.

If a decision to postpone the meeting, due to difficulties of the North American delegations to participate, had been put to a quick postal vote Thursday afternoon, or at the very latest, early Friday morning, European time, DFG would have voted in favour, and, if the proposal were carried, we would of course have stayed at home. We acknowledge that the absence of the coastal state, which has most straddling stocks in common with the Regulatory Area, would greatly reduce the value of an annual meeting, not least in the Fisheries Commission.

Mr. Chairman, DFG is both a coastal state in NAFO and taking active part in the fisheries in the Regulatory Area. We feel responsibility for the functioning of this organisation. We will in this meeting, recognising the legal constraints that limit the powers of this gathering, be ready to co-operate with you, Mr. President, and take active part in a discussion of how we best can perform the functions of this organisation under these unforeseen circumstances.

**Annex 4. Decision by the NAFO President/Chairman of the General Council
on the Special Meetings, 2002
(GF/01-684 dated October 02, 2001)**

TO: All Contracting Parties -- Heads of Delegation of the General Council/Fisheries Commission

Dear Sir/Madam,

Subject: NAFO GF/01-650, Sept 19, 2001 and actions

I have received instructions from the NAFO President, Chairman of the General Council, Mr. Enrique Oltuski, to transfer his comments and conclusions to all Contracting Parties regarding further actions on the subject.

Pursuant to the provisions of Articles III and IV of the NAFO Convention and Rule 3 of the Rules of Procedure, the Chairman of the General Council took this initiative to summarize the comments and proposals by Contracting Parties and rule on the procedures to carry out the efficient business of this Organization. The Chairman emphasized first of all that his conclusions and decisions would be the most convenient compromise in the current situation.

The Chairman further ruled-on:

"with reference to the Contracting Parties' comments received up to September 27, 2001 and in accordance with the provisions of Articles III and IV.5 of the NAFO Convention and Rule 3 of the Rules of Procedure, my conclusions are the following:

- a) there was a majority consensus that the full-size 23rd Annual Meeting should not be convened this year or before September 2002;
- b) the acting provisions of NAFO functions relevant to 2001 year decisions should be prolonged for 2002 through a mail vote drafted by the Executive Secretary, and those provisions shall be to the extent of possible and forthcoming modifications in accordance with the NAFO Convention and Rules of Procedure;
- c) the other NAFO bodies may convene their meetings during 2002 subject and according to the NAFO Convention and Rules of Procedure;
- d) as the Chairman of the General Council, I authorize in concurrence with Canada, Denmark (in respect of the Faroe Islands and Greenland) and the European Union (please see GFs/01-654, 662, 667) and other members to call an intersessional meeting of the General Council and STACFAD to discuss NAFO budget 2002 and other related issues; to convene this meeting in Denmark through 29 January – 01 February 2002.
- e) The Chairman of the Fisheries Commission may call a Special Fisheries Commission meeting, as required, under Article XIII.5 of the NAFO Convention.

Considering the great importance of the task to secure and facilitate normal functions of this Organization for the benefit of all NAFO members, I urge Contracting Parties to take active part in the proceedings of the proposed meetings."

On behalf of the Chairman of the General Council,
Mr. E. Oltuski,

Leonard I. Chepel
Executive Secretary



PART II
(pages 41 to 101)

Activities of the Fisheries Commission in 2001

List of Meetings

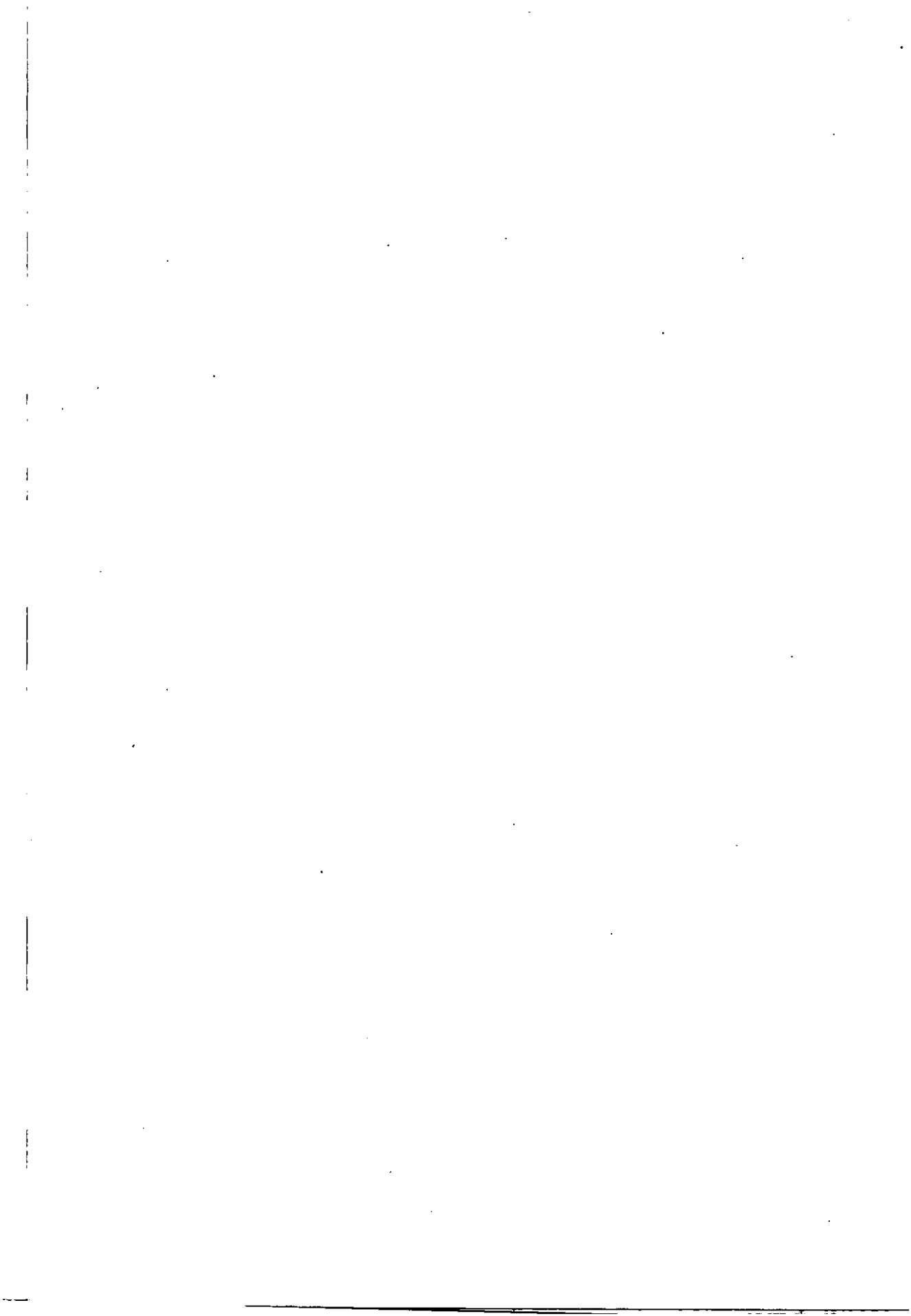
The following meetings were held under the authority of the Fisheries Commission:

- STACTIC Technical Working Group on Communications, 18-19 January 2001, Brussels, Belgium.
- NAFO/NEAFC Working Group on Oceanic Redfish, 13-14 February 2001, Reykjavik, Iceland.
- Fisheries Commission Working Group on Statistics, 27 March 2001, Copenhagen, Denmark.
- Special Fisheries Commission Meeting, 28-30 March 2001, Copenhagen, Denmark.
- STACTIC Working Group to Overhaul the NAFO Conservation and Enforcement Measures, 1-3 May 2001, Ottawa, Canada.
- Standing Committee on International Control (STACTIC), 26-28 June 2001, Halifax, N.S., Canada.



Major Documents of the Fisheries Commission in 2001

<u>Serial No.</u>	<u>FC Doc. No.</u>	<u>Title</u>
N4349	01/1	Conservation and Enforcement Measures (Supplement of FC Doc. 00/1)
N4352	01/2	Report of STACTIC Technical Working Group on Communications, 18-19 January 2001, Brussels, Belgium
N4354	01/3	Report of the NAFO/NEAFC Working Group on Oceanic Redfish, 13-14 February 2001, Reykjavik, Iceland
N4360	01/4	Proposal re management of Oceanic Redfish in 1F
N4361	01/5	Management Measures for Shrimp in Division 3M
N4393	01/6	Report of the Fisheries Commission Working Group on Statistics, 27 March 2001, Copenhagen, Denmark
N4394	01/7	Report of the Special Fisheries Commission Meeting, 28-30 March 2001, Copenhagen, Denmark
N4461	01/8	Report of the STACTIC Working Group to Overhaul the NAFO Conservation and Enforcement Measures, 1-3 May 2001, Ottawa, Canada
N4464	01/9	Summary of Status of Proposals and Resolutions of NAFO (as of July 2001)
N4467	01/10	Report of the Standing Committee on International Control (STACTIC), 26-28 June 2001, Halifax, N.S., Canada
N4468	01/11	Summary of inspection information for 2000
N4475	01/12	Decisions on Management Measures for 2002 in the NAFO Convention Area by the Coastal State, Canada, pursuant to the provisions of Article XI(3) of the NAFO Convention



**STACTIC Technical Working Group
on Communications
18-19 January 2001, Brussels, Belgium**

The Meeting was held in accordance with the decision taken by the Fisheries Commission through mail consultations (GF/00-632 dated Oct. 18/00 and GF-707 of Nov. 21/00). Complete proceedings of this Meeting are presented in FC Doc. 01/2 and in the NAFO Meeting Proceedings (General Council and Fisheries Commission), 2001.

Opening Procedures

Mr. Gordon Moulton (NAFO Secretariat) opened the first meeting of the STACTIC Technical Working Group on Communications at 1015 hrs on 18 January 2001. David Bevan (Canada) was elected Chairman of the meeting. The delegations: Canada, Estonia, European Union, Iceland, Norway, United States (Annex 1).

Mr. Kjell Bybacka (EU) was appointed Rapporteur.

Agenda was adopted (Annex 2).

**Tasks and requirements for the NAFO Secretariat in the context
of the reports and message to be sent and received**

The list of tasks was accepted but the Parties agreed that quality control and flexibility elements should be added to the list as per Technical W.G. Working Paper 01/3. The Contracting Parties highlighted that certain elements of the NAFO Conservation and Enforcement Measures are/or will become redundant. It was agreed that this issue should be dealt with by STACTIC, as appropriate.

**Resources available to the NAFO Secretariat
to complete the prescribed tasks**

It was agreed that a consultant is needed to assist the Secretariat in the preparation for a call for tender and other technical issues to prepare and implement a work plan to set up a running Automated Hail and Vessel Monitoring System. A provisional list of consultants was recommended.

It was noted that NAFO has allocated a budget of \$ 200,000 for the proposed Automated Hail and Satellite Tracking System. The Working Group noted that this budget did not calculate the costs of consultant. It was agreed that work should proceed and operate within the allocated budget. It was agreed that the costs for a consultant must not exceed 20% of the allocated budget.

**Treatment of electronic reports/Review of the mandate describing the
tasks to be completed by the consultant**

It was agreed that treatment of electronic reports should be considered as a confidentiality and policy-making issue. This matter will be discussed at future STACTIC Meetings.

In the context of electronic report requirements the Parties noted that the NAFO Conservation and Enforcement Measures contains a position requirement of 500 meters, while the North Atlantic Format, using the present means of degrees and minutes, does not allow for transmission of information with an error of less than 900 meters. This may result in vessels being reported in a NAFO zone other than that in which they were actually fishing.

Annex 1. List of Participants

CANADA

Head of Delegation

D. Bevan, Director General, Resource Management, Dept. of Fisheries and Oceans, 200 Kent St., Ottawa, Ontario K1A 0E6
Phone: +613 990 6794 - Fax: +613 954 1407 - E-mail: bevand@dfo-mpo.gc.ca

Advisers

C. Allen, Chief, Groundfish, Pelagics and Foreign Fisheries, Resource Management, Dept. of Fisheries and Oceans, Ottawa, Ontario K1A 0E6
Phone: +613 990 9864 – Fax: +613 990 7051 – E-mail: allenc@dfo-mpo.gc.ca
T. Blanchard, Chief, NAFO Unit, Fisheries Management, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1
Phone: +709 772 0928 - Fax: +709 772 5983 - E-mail: blanchardt@dfo-mpo.gc.ca
R. Cosh, Chief, Strategic Information Planning; Program Planning and Coordination, Fisheries Management, Dept. of Fisheries and Oceans, Stn. 13W099, 200 Kent St., Ottawa, Ontario K1A 0E6
Phone: +613 993 2055 - Fax +613 990-9691 ; E-mail: coshb@dfo-mpo.gc.ca

DENMARK (IN RESPECT OF THE FAROE ISLANDS & GREENLAND)

Head of Delegation

M. T. Nedergaard, Fiskerilicensinspektor, Head of Unit, Gronlands Fiskerilicenskontrol, Postbox 501, DK -3900 Nuuk, Greenland
Phone: +299 345377 - Fax +299 323235 - E-mail: mads@gh.gl

ESTONIA

Head of Delegation

K. Mühlbaum, Director-General, Ministry of the Environment, Fisheries Department, Marja Str. 4d, 10617 Tallinn
Phone: +372 6566720 – Fax: +372 6567599 – E-mail: kristijina@klab.envir.ee

Adviser

T. Roose, Deputy Director General, Environmental Inspectorate, Kopli 76, 10416 Tallinn
Phone: +372 6962238 Fax: +372 6962237 E-mail: tarvo.roose@kki.ee

EUROPEAN UNION

Head of Delegation

B. O'Shea, Senior Administrative Assistant, European Commission, Directorate General for Fisheries, Rue de la Loi/Wetstraat 200 (J99 1/27), B-1049 Brussels, Belgium
Phone: +32 2 296 6748 - Fax: +32 2 296 2338 – Email: brendan.o'shea@cec.eu.int

Advisers

K. Nybacka, Detached National Expert, International Fisheries Organisations and Fisheries Agreements, Baltic, North Atlantic and North Pacific, European Commission, Directorate General for Fisheries, Rue de la Loi/Wetstraat 200, B-1049 Brussels, Belgium

Phone: +32 2 295 7031 – Fax: +32 2 299 4802 – E-mail: kjell.nybacka@cec.eu.int

J. Verborgh, Deputy Head of Unit, Monitoring and Licences, European Commission, Directorate General for Fisheries, Rue de la Loi/Wetstraat 200 (J99 6/69), B-1049 Brussels, Belgium

Phone: +32 2 295 1352 – Fax: +32 2 296 2338 – E-mail: jacques.verborgh@cec.eu.int

A. Lemahieu, Senior Administrative Assistant, European Commission, Directorate General for Fisheries, Rue Joseph II, B-1049 Brussels, Belgium

Phone: +32 2 295 8637 – Fax: +32 2 296 2338

M. Börje, National Board of Fisheries, Dept. of Fisheries Control, Ekelundsgatan 1, Box 423, SE-401 26 Goteborg, Sweden

Phone: +46 31 7430312 – Fax: +46 31 7430444 – E-mail: mats.borje@fiskeriverket.se

J. Eliassen, Head of Section, Ministry of Food, Agriculture and Fisheries, Danish Directorate of Fisheries, Stormgade 2, 1470 Copenhagen K, Denmark

Phone: +45 33 963000 – Fax: +45 33 963903 – E-mail: pje@fd.dk

Y. Auffret, Ministère de l'Agriculture et de la Pêche, Direction des Pêches Maritimes, 3 Place de Fontenoy, 75007 Paris, France

Phone: +33 1 49558245 Fax: +33 1 49558200: yves.auffret@agriculture.gouv.fr

U. Link, Bundesanstalt für Landwirtschaft und Ernährung, Verwaltungsdirektor, Referatsleiter Züchtung, Quotemanagement, Fischereiaufsicht, Palmallee 9, 22767 Hamburg, Germany

Phone: +49 40 38905173 - Fax: +49 40 38905128

J. Antunes, Inspeccao Geral Das Pescas, Av. Brasilia, 1400 Lisboa, Portugal

Phone: +351 21 3025174 – Fax: +351 21 3025188

J. Navarro Garcia, Subdireccion General de Inspeccion Pesquera, Inspector Jefe de Servicios de Inspeccion y Vigilancia Pesqueras, Secretaria General de Pesca Maritima, de la Castellana 112, Madrid 28046, Spain

Phone: +34 91 3471769 - Fax: +34 91 3471512

R. Crooks, Head of Fisheries IV C, IT & Business Management, Ministry of Agriculture, Fisheries and Food, Nobel House, 17 Smith Square, London SW1P 3JR United Kingdom

Phone: +020 7238 5692 – Fax: +020 7238 6474 – Email: r.crooks@fish.maff.gsi.gov.uk

ICELAND**Head of Delegation**

G. Geirsson, Icelandic Coast Guard, P. O. Box 7120, 127 Reykjavik

Phone: +354 545 2000 - Fax: +354 545 2001 - E-mail: gylfi@lhg.is

Adviser

H. Steinarrsson, Icelandic Directorate of Fisheries, Ingolfsstraeti 1, 150 Reykjavik

Phone: +354 569 7900 - Fax: +354 569 7991 - E-mail: hostein@fiskistofa.is

NORWAY**Head of Delegation**

S.-A. Johnsen, Directorate of Fisheries, P. O. Box 185, 5804 Bergen

Phone: +47 55 238131 - Fax: +47 55 238090 - E-mail: postmottak@fiskeridir.dep.telemex.no

Adviser

O. A. Davidsen, Directorate of Fisheries, P. O. Box 185, 5804 Bergen

Phone: +47 55 238024 - Fax: +47 55 238090 - E-mail: ove.davidsen@fiskeridir.dep.telemex.no

UNITED STATES OF AMERICA

Head of Delegation

D.T. Mathers, Lieutenant Commander, Coast Guard Liaison Officer, Office of Marine Conservation (Rm 5806), U.S. Department of State, 2201 C Street NW, Washington, D.C. 20520
Phone: +202 647 3177 – Fax: +202 736 7350 – E-mail: dmathers@comdt.uscg.mil

Adviser

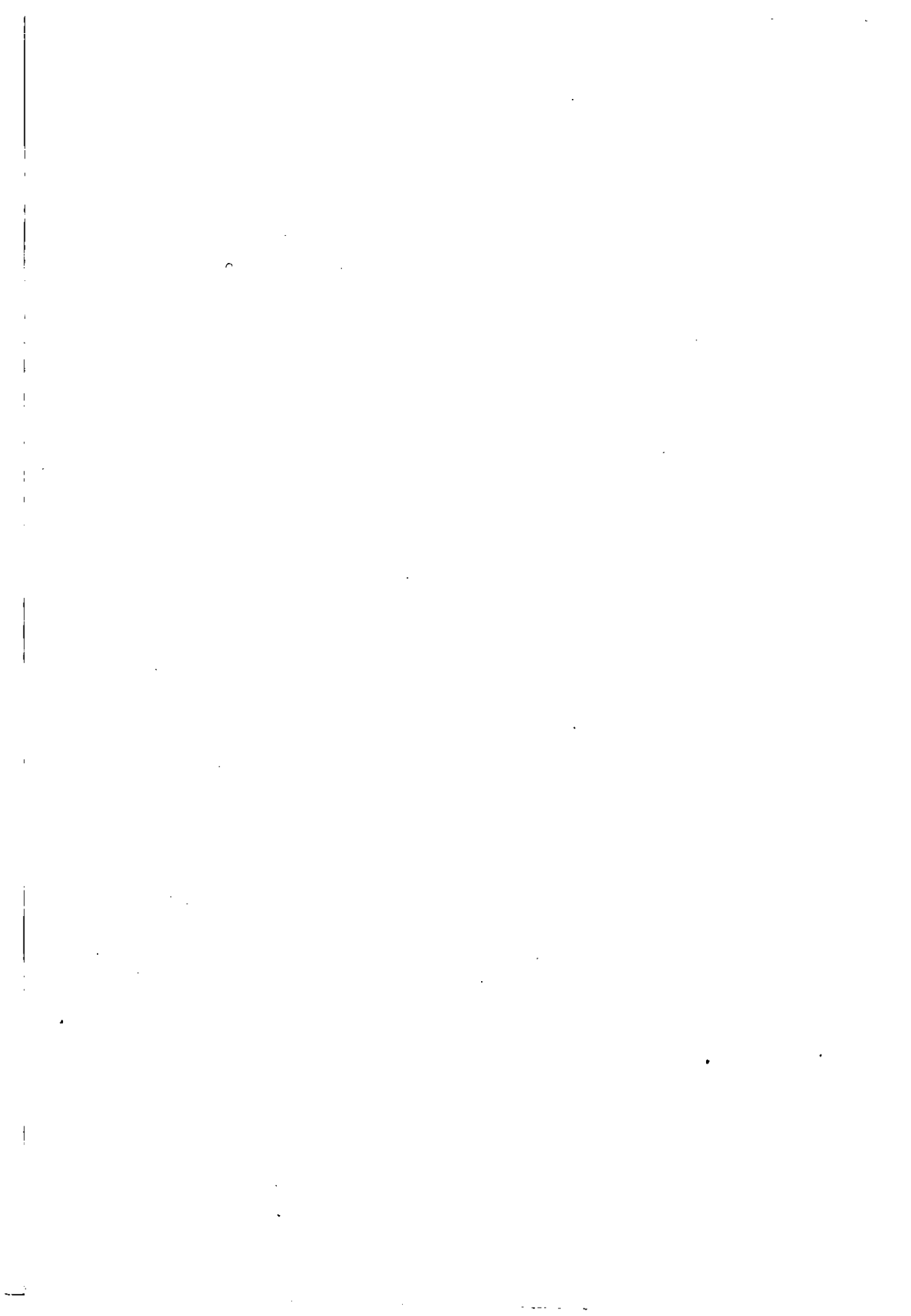
O. Easley, U.S. Dept. of Commerce, NOAA, Office for Law Enforcement, 8484 Georgia Ave. Silver Spring, MD 20910
Phone: +301 427 2300 – Fax: +301 427 2055 – E-mail: otha.easley@noaa.gov

NAFO SECRETARIAT

G. M. Moulton, Statistical /Conservation Measures Officer
B. Cruikshank, Senior Secretary

Annex 2. Agenda

1. Opening of Meeting
2. Election of Chairman
3. Appointment of Rapporteur
4. Adoption of Agenda
5. Review of the Draft Terms of Reference
6. Evaluation of tasks and requirements for the NAFO Secretariat in the context of the reports and message to be sent and received
7. Evaluation of the resources available to the NAFO Secretariat to complete the prescribed tasks
8. Evaluation of the draft provisions on secure and confidential treatment of electronic reports and messages transmitted pursuant to Part III E, Part VI and Part VII of the Conservation and Enforcement Measures
9. Review of the mandate describing the tasks to be completed by the consultant
10. Date and place of next meeting
11. Other matters
12. Adjournment



**NAFO/NEAFC Working Group on Oceanic Redfish
13-14 February 2001, Reykjavik, Iceland**

The Meeting was held in accordance with the decision taken by the Fisheries Commission at the 22nd Annual Meeting, September 2000 (FC Doc. 00/21, Part I, item 4.27). Complete proceedings of this meeting are presented in FC Doc. 01/3 and in the NAFO Meeting Proceedings (General Council and Fisheries Commission), 2001.

Opening Procedures

Mr. Kolbeinn Árnason, Ministry of Fisheries, Iceland, called the meeting to order at 10:20 hours. He welcomed the delegates to Iceland and hoped they would enjoy their stay. He expressed the hope that the appropriate setting in the middle of the ocean of concern would further co-operation on the issues at hand.

Ambassador Eiður S. Guðnason, Iceland, was elected Chairman. The delegations: Canada, Denmark (in respect of the Faroe Islands and Greenland), Estonia, EU, Iceland, Norway, Russia (Annex 1).

Mr. Sigmund Engesaeter, NEAFC Secretary, was appointed Rapporteur.

Agenda was adopted (Annex 1).

**Review of distribution of "oceanic" Redfish in the Northwest
and Northeast Atlantic Ocean**

Working papers and presentations were tabled by several delegations – Iceland, European Union, Norway, Russia, and NAFO Secretariat its paper on reviewing possible connection between redfishes of the Northwest and Northeast Atlantic considering the general ocean dynamic in those areas.

Iceland demonstrated that in all surveys in the 1980's and up to 1997 distribution was concluded to be mostly in the NEAFC area. In general, decreases in abundance were observed going into NAFO Div. 1F to the south and west. There was a general feeling that the majority of the stock range was covered in the surveys up to 1997.

In 1999 the survey was expanded to the south and west. In this survey there was a clear shift in abundance from the east to the south and west. In this survey there were high abundances at the western border of the survey. There was for the first time in the surveys signs of recruiting redfish below 28-30 cm.

(1999 International Survey. Proportion of Redfish Abundance by Area and Depth)

Depth	NAFO		NEAFC		
	Convention Area	Greenland EEZ	Convention Area	Greenland EEZ	Iceland EEZ
<500 m	25 %	21 %	20 %	34 %	0 %
>500 m	5 %	7 %	58 %	18 %	12 %
Sum	18 %	16 %	42 %	19 %	4 %

One theory has linked the shift with a general increase in sea temperatures in the area.

Based on charting of extrusion and 0-group abundance it is clear that the extrusion and larval areas are mainly off East Greenland. The feeding area stretches into NAFO Division 1F. German fishery data show that feeding "oceanic" redfish in 2000 stayed in the NAFO Div. 1F until October. (2nd and 3rd quarters). The fisheries data show an almost clean fishery for mostly mature redfish in both NAFO and NEAFC area.

In the 2001 the International acoustic survey is planned to cover areas further west of 53° W.

In summer, June-July, acoustic signals down to about 400-500 m depth mostly consist of redfish, but in other seasons small size mesopelagic fish are an important part of the acoustic signal, mixed with the redfish.

Canada introduced a Power Point presentation (WG WP01/6) on oceanic redfish in the NAFO Convention area. In the old literature there were several references to oceanic redfish in the area. (Templeman 1967)

One problem was that the present survey design did not make it possible locate the western border of the stock (no zero values in the survey to the west).

The suggestion of the presentation was that the redfish from the oceanic areas continued across the ocean into Canadian waters (Sandeman hand line survey data 1969). In a salmon survey from Newfoundland to Cape Farewell echo soundings recorded redfish over the entire length of the track.

Canadian survey data have shown the occurrence of large immature redfish in the Canadian zone that Troyanovsky (NAFO SCR Doc. 89/83) had hypothesized were part of the Irminger Sea population. ICES 1990 stated that "oceanic" mentella were similar to fish found in the Hamilton Inlet. This report also states that currents may take larvae from the main area in the Irminger Sea into shallow areas off Baffinland and Labrador.

This area may be nursery grounds for oceanic mentella. Parasite data, incidence of *Sphyrion lumpii* – suggest a connection between the Irminger Sea and Hamilton Bank.

Alekseev (1999) concludes that "oceanic" redfish probably extend into the waters of Canada.

There have been plans to extend the coverage of the acoustic survey to the Canadian 200 mile limit.

Conclusion: Oceanic redfish extend westward through the Iceland EEZ, Irminger Sea, Greenland EEZ, NAFO Regulatory Area and Canadian EEZ.

Russia warned against the danger of confusing occurrences of pelagic redfish with the "oceanic" mentella of the Irminger Sea and adjacent areas. Large redfish have been observed in many areas to move into the pelagic waters outside its usual area of distribution. The only quantitative assessments we have on oceanic redfish are from the surveys in the Irminger Sea and westwards (Russia, Germany, Iceland, Norway).

Management measures for the "oceanic" mentella in the Northeast and Northwest Atlantic Ocean and compatible regulations

The meeting discussed comparable regulations developed by NAFO and NEAFC. Representative of Denmark (E.Lemche, NEAFC President) informed that NEAFC took as a basis a TAC of

95.000 tonnes for "oceanic" mentella and pelagic deep-sea mentella and allocated it to 5 Contracting Parties and a co-operation quota, set aside for co-operating Non-contracting Parties. Iceland has objected to the measures introduced, but a part of the TAC had been set aside for Iceland.

He then compared NAFO regulations to NEAFC's:

NAFO Redfish regulations and general	NEAFC Redfish regulations and general
100 % observer coverage on all vessels +	-
100 % satellite tracking of all vessels	+
130 mm mesh size and authorised top chafers	100 mm mesh size
Recording of catch (incl. discards) logbooks and production logbooks	+
Incidental catch limits (5 or 10 %)	Not applicable, clean fishery for redfish
Entry and Exit hails	+
Up to date Storage Capacity Plans onboard	+
Inspector for CPs with more than 15 vessels	+
Port inspection of offloading	-
No directed fishery in 3 LN	Not applicable
Bi weekly reporting in 3M. Seasonal restrictions	Not applicable

The EU delegate presented the following summary:

EU: With a view to drawing some operational consequences, the current factual situation was recapitulated as follows: The oceanic redfish stock initially occurred exclusively in the Convention Area of NEAFC and has been regulated there as a single stock unit through an allocated TAC since 1996. Irrespective of some remaining uncertainties concerning the exact structure of this stock, the main area of distribution of the stock was known. In any event, under the Precautionary Approach, absence of adequate scientific information should not be a motive for desisting from taking appropriate conservation measures. As seen in 2000, part of the stock was now moving in a westward direction into the adjacent Convention Area of NAFO and fisheries have been following the stock in its new geographical distribution. This movement of the stock was unusual given that redfish was not a highly migratory fish stock in the technical sense. Furthermore, such an unusual configuration was not envisaged at the time of the conclusion of the conventions establishing NAFO and NEAFC respectively. The question was, therefore, how to deal with this phenomenon in the most appropriate way.

It was recalled that no precedents existed for a situation such as the present one where a stock was moving into the Convention Area of another regional fisheries organisation. It was also stressed that a "jurisdictional" solution was not at hand. The line delimiting the two Convention Areas in question was no jurisdictional boundary given that regional fisheries organisations were no entities with original exclusive rights similar to the ones enjoyed by sovereign States in sea areas under national fisheries jurisdiction. Rather the *raison d'être* of these organisations was to provide a forum which allowed their members to effectively discharge their co-operation and conservation obligations. It was also clear that the waters on both sides of the line in question fell under the international regime of the high seas. Under these circumstances, a "jurisdictional" solution would only lead to an artificial and, therefore, inappropriate "salami slicing" of one single stock. This would clearly fall short of the requirement of sound conservation of fisheries resources.

It was emphasized that, in line with contemporary ideas for sustainable fisheries, one should strive for a solution which would be the most attractive from a conservation perspective. Such a solution could be brought about on the basis of the co-operation and conservation obligations, which were incumbent upon the members of both NAFO and NEAFC under the relevant provisions of UNCLOS. In this context, it was re-emphasised that there was no alternative but for parties to co-operate. Furthermore, reference was made to Article 119 of UNCLOS which made it a requirement to *inter alia* take into account “fishing patterns”, i.e. – in the present instance – the fact that established fisheries were following the stock in its new geographical distribution. Furthermore, the “due regard principle” as a general principle of international law was relevant in the present context. This principle would make it a requirement for NAFO to act with due regard to both the comprehensive regulatory measures established by NEAFC for the entire stock as well as the established fisheries carried out under these measures. Finally, one could draw inspiration from the “compatibility” requirements of the 1995 UN Agreement on Straddling Fish Stocks inasmuch as the principles of biological unity of the stock and the pre-eminence of previously established and applied conservation measures for the stock were concerned.

On such a basis, it was seen possible to contemplate a solution, which would account for the fact that the main bulk of the stock occurred within the Convention Area of NEAFC and which, therefore, would (a) leave it for NEAFC to establish the TAC for the entire stock and (b) carry with it permission for NEAFC quotas to be taken also in that part of the NAFO Regulatory Area where a small part of the stock now occurred. The latter would also be in recognition of the established nature of the traditional redfish fisheries in the Convention Area of NEAFC.

For such a solution, some support could be found in the practice followed in connection with highly migratory fish stock. Most of the Tuna Conventions (e.g. the most recent MHLC, which is not yet in force) do embody both special co-operation and consistency requirements as well as requirements which aim at avoiding a duplication of measures for cases of overlaps with areas under regulation by other fisheries management organisations. These requirements have not yet resulted in formal agreements or arrangements. In some cases, however, there has been acquiescence of a regulatory priority for the organisation, within which the bulk of a tuna stock occurred (e.g. the position of the IOTC in respect of the measures established by the CCSBT for southern bluefin tuna). This practice was considered as being of some relevance also in the present instance.

Finally, it was stressed that “due regard” and “compatibility” were no one-way-street and that, therefore, some considered weighing must be made inasmuch as collateral conservation and control measures were concerned. In this vein, one should have a closer look at the appropriateness of NAFO measures which have been established on a spatial basis (e.g. the requirement of observer coverage, which might be viewed as being too onerous a requirement for ‘isolated’ redfish fisheries in NAFO Division 1F, on the one hand, but which, if seen from a NAFO perspective, might need to be maintained in order to avoid creating undue loopholes in the application of NAFO measures, on the other).

The delegations present in general concurred with the EU presentation adding other valuable points.

Russia took note of the points made by the EU on the boundary between NAFO and NEAFC, There should be an arrangement for the entire stock. Could in general associate it self with the EU remarks.

Canada noted that we have now heard very clearly heard voices in favour of NEAFC's interest. It is unfortunate more NAFO members were not present so we could have heard more NAFO points of view.

Canada would also like to secure effective conservation and management of the stock. If we are concerned about due regard and the precautionary approach, attention should be drawn to the NEAFC approach to the management of oceanic redfish in relation to the scientific advice of ICES and the stronger conservation measures on the NAFO side. The NEAFC rule on discards is one example of a laxer attitude of the NEAFC side.

The present fishing pattern had only been established one year. If the 2000 situation was an anomaly should we then go through major exercises modifying NAFO arrangements? If this was a permanent feature, the NAFO countries certainly should have a right to fish the stock.

Estonia associated itself with Canadian remarks.

The meeting decided to include an item "Consideration of TAC and quotas for oceanic redfish in NAFO Div. 1F in 2001" into the Agenda of the Fisheries Commission meeting scheduled for Copenhagen, Denmark, March 2001.

Annex 1. List of Participants

CANADA

Head of Delegation

E. Wiseman, Director-General, International Affairs Directorate, Dept. of Fisheries and Oceans, 200 Kent Street, 13th Floor N, Stn 13-159, Ottawa, Ontario K1A 0E6
Phone: +613 993 1873 - Fax: +613 993 5995 - E-mail: wisemane@dfo-mpo.gc.ca

Advisers

C. J. Allen, Chief, Groundfish, Pelagics and Foreign Fisheries, Resource Management, Dept. of Fisheries and Oceans, Ottawa, Ontario K1A 0E6

Phone: +613 990 0105 - Fax: +613 990 7051 - E-mail: allenc@dfo-mpo.gc.ca

D. B. Atkinson, Regional Director, Science, Oceans and Environment, DFO Newfoundland Region, P. O. Box 5667, St. John's, Newfoundland A1C 5X1

Phone: +709 772 2027 - Fax: +709 772 6100 - E-mail: atkinsonb@dfo-mpo.gc.ca

J. W. Baird, Regional Director, Fisheries Management, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1

Phone: +709 772 4497 - Fax: +709 772 3628 - E-mail: bairdj@dfo-mpo.gc.ca

D. R. Bollivar, Director of Fleet Operations and Procurement, Barry Group, 32 Beckfoot Drive, Dartmouth, Nova Scotia B2Y 4C8

Phone: +902 469 5004 - Fax: +902 461 9689 - E-mail: bollivar@seafreez.com

T. Dooley, Dept. of Fisheries and Oceans, P. O. Box 8700, St. John's, Newfoundland A1L 5H4

Phone: +709 729 0335 - Fax: +709 729 6082 - E-mail: tdooley@matl.gov.nf.ca

W. Evans, Supervisor, Offshore Surveillance, Conservation and Protection, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1

Phone: +709 772 4412 - Fax: +709 772 5983 - E-mail: evansw@dfo-mpo.gc.ca

A. Saunders, Oceans, Environment and Economic Law Division (JLO), Dept. of Foreign Affairs and International Trade, 125 Sussex Drive, Ottawa, Ontario K1A 0G2

Phone: +613 996 2643 - Fax: +613 992 6483 - E-mail: allison.saunders@dfait-maeci.gc.ca

R. Steinbock, Senior Advisor, Atlantic Affairs Div., International Affairs Directorate, Dept. of Fisheries and Oceans, 200 Kent St., Ottawa, Ontario K1A 0E6

Phone: +613 993 1836 - Fax: +613 993 5995 - E-mail: steinbob@dfo-mpo.gc.ca

B. Whelan, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1

Phone: +709 772 5482 - Fax: +709 772 5983 - E-mail: whelanb@dfo-mpo.gc.ca

DENMARK (IN RESPECT OF FAROES AND GREENLAND)

Head of Delegation

E. Lemche, Head of Representation, Gronlands Hjemmestyre, Pilestraede 52, Box 2151, DK-1016 Copenhagen K, Denmark

Phone: +45 33 69 34 35 Fax: +45 33 69 34 01 E-mail: el@ghsdk.dk

Alternate

A. Kristiansen, Ministry of Fisheries and Maritime Affairs, Yviri við Strond 17, P. O. Box 347, FO-100 Torshavn, Faroe Islands

Phone: + 298 35 30 30 - Fax: +298 35 30 35 - E-mail: andrask@fisk.fl.fo

Advisers

L. D. Madsen, Head of Section, Dept. of Industry, Greenland Home Rule, Box 269, 3900 Nuuk, Greenland

Phone: +299 34 53 29 Fax: +299 32 47 04 E-mail: ldm@gh.gl

M. T. Nedergaard, Fiskerilicensinspektør, Head of Unit, Gronlands Fiskerilicenskontrol, Postbox 501, DK-3900 Nuuk, Greenland

Phone: +299 345377 - Fax: +299 323235 - E-mail: mads@gh.gl

A. Olsen, Framherji, 650 Toftir, Faroe Islands

A. Olafsson, Councillor on Faroe Islands Affairs, Royal Danish Ministry of Foreign Affairs, 2 Asiatisk Plads, DK-1448, Copenhagen K, Denmark

Phone: +45 33 92 03 41 - Fax: +45 33 92 01 77 - E-mail: arnola@um.dk

J. Reinert, Faroese Fisheries Laboratory, Noatun 1, P. O. Box 1064, FO 110, Torshavn, Faroe Islands

Phone: +298 315092 - Fax: +298 318264 - E-mail: jakupr@frs.fo

E. Rosing, Head of Unit, Dept. of Industry, Greenland Home Rule, Box 269, 3900 Nuuk, Greenland

Phone: +299 34 53 32 - Fax: +299 32 47 04 - E-mail: emanuel@gh.gl

ESTONIA

Head of Delegation

A. Soome, Senior Officer, Fisheries Department, Ministry of the Environment, Marja 4d, 10617 Tallinn

Phone: +372 6112 987 - Fax: +372 6567 599 - E-mail: ains@klab.envir.ee

Adviser

K. Märtin, Officer, Fisheries Department, Ministry of the Environment, Marja 4d, 10617 Tallinn

Phone: +372 656 7315 - Fax: +372 6567 599 - E-mail: kairem@klab.envir.ee

EUROPEAN UNION (EU)

Head of Delegation

O. Tougaard, European Commission, Directorate General for Fisheries, 200 Rue de la Loi, B-1049 Brussels, Belgium

Phone: +32 2 295 2209 - Fax: +32 2 299 4802

Advisers

F. Wieland, Deputy Head of Unit, International Fisheries Organizations and Fisheries Agreements; Baltic, North Atlantic and North Pacific, European Commission, Directorate General for Fisheries, Rue de la Loi 200, B-1049 Brussels, Belgium

Phone: +32 2 296 3205 Fax: +32 2 299 4802 E-mail: Friedrich.Wieland@cec.eu.int

M. Bergström, Senior Officer, Dept. of Resources and Environment, National Board of Fisheries, Box 423, SE-401 26 Goteborg, Sweden

Phone +46 31743 03 99 - Fax: +46 31 743 04 44 - E-mail: magnus.bergstrom@fiskeriverket.se

C. Collste, Ministry of Agriculture, Food and Fisheries, 10333 Stockholm, Sweden

Phone: +46 8 405 10 00 - Fax: +46 8 1050 61

L. Svensson, Council of the European Union, DG-BII 4040GH26, Rue de la Loi 175, B-1048 Brussels, Belgium

Phone: +32 2 285 7853 - Fax: +32 2 285 6910 - E-mail: lars-evik.svensson@consilium.eu.int

B. Prince, Policy Officer in charge of International Affairs, Ministère de l'Agriculture et de la Pêche, Direction des Pêches Maritimes, 3 Place de Fontenoy, 75007 Paris, France

Phone: +45 33 1 49 55 82 38 - Fax: +45 33 1 49 55 82 00 - E-mail: berengere.prince@agriculture.gouv.fr

M. Reimann, Regierungsdirektorin, Referentin, Bundesministerium für Ernährung, Landwirtschaft und Forsten, Rochustrabe 1, 53125 Bonn, Germany

Phone: +49 228 529 4349 - Fax: +49 228 529 4410 - Email: marlies.reimann@bml.bund.de

H. J. Ratz, Institut für Seefischerei, Palmaille 9, D-22767, Hamburg, Germany

Phone: +49 40 389 05169 - Fax: +49 40 389 05263 - E-mail: raetz.ish@bfa-fisch.de

C. Stransky, Institut für Seefischerei, Palmaille 9, D-22767, Hamburg, Germany

Phone: +49 40 389 05228 - Fax: +49 40 38905 263 E-mail: chris@redfish.de

S. Salvador, Chefe da Divisao de Relacoes Internacionais, Direccao Geral das Pescas e Aquicultura, Edificio Vasco da Gama, Cais de Alcantara Mar, 1399-006 Lisbon, Portugal

Phone: +351 21 3913520 Fax: +351 21 3979790/1 E-mail: susanas@dg-pescas.pt

M. I. Aragon, Jefa Seccion de la Subdireccion General de Organismos Multilaterales de Pesca, Secretaria General de Pesca Maritima, Jose Ortega y Gasset, 57, 28006 Madrid, Spain

Phone: +34 91 4025000 - Fax: +34 91 3093967 - E-mail: jaragonc@mapya.es

S. Junquera, Instituto Espanol de Oceanografia, Cabo Estay-Canido, Apto. 1552, E-36280 Vigo (Pontevedra), Spain

Phone: +34 9 86 49 2111 - Fax: +34 9 86 49 2351 - E-mail: susana.junquera@vi.ieo.es

M. Rimmer, Sea Fisheries Conservation Div., Ministry of Agriculture, Fisheries and Food, Nobel House, 17 Smith Square, London SW1P 3JR

Phone: 020 7238 6529 - Fax: 020 7238 5721 - E-mail: mike.rimmer@maff.gsi.gov.uk

C. Szot, Sea Fisheries Conservation Div., Ministry of Agriculture, Fisheries and Food, Nobel House, 17 Smith Square, London SW1P 3JR

Phone: 020 7238 5925 - Fax: 020 7238 5721 - E-mail: c.szot@maff.gsi.gov.uk

ICELAND

Head of Delegation

K. Arnason, Head of Division, Ministry of Fisheries, Skulagata 4, 150 Reykjavik

Phone: +354 560 9670 - Fax: +354 562 1853 - E-mail: kolbeinn.arnason@sjr.stjr.is

Advisers

S. Asmundsson, Legal Advisor, Ministry of Fisheries, Skulagata 4, 150 Reykjavik

Phone: +354 560 9670 - Fax: +354 562 1853 - E-mail: stefas@hafro.is / stefan.asmundsson@sjr.stjr.is

E. Gudnason, Ambassador, Ministry for Foreign Affairs, Raudararstigur 25, 150 Reykjavik

Phone: +354 560 9900 - Fax: +354 560 9979 - E-mail: eidur.gudnason@utn.stjr.is

K. Ragnarsson, Chairman, Federation of Icelandic Fishing Vessel Owners, P. O. Box 893, 121 Reykjavik

Phone: +354 550 9500 - Fax: +354 550 9501 - E-mail: kristjan@liu.is

H. Steinarsson, The Icelandic Directorate of Fisheries, Ingilfsstraeti, 150 Reykjavik

Phone: +354 5097938 - Fax: +354 5697991 - E-mail: hostein@hafro.is

T. Sigurdsson, Marine Research Institute, Skulagata 4, 101 Reykjavik

Phone: +354 552024 - Fax: +354 5623790 - E-mail: steini@hafro.is

NORWAY

Head of Delegation

T. Lobach, Directorate of Fisheries, P. O. Box 185, N-5002 Bergen

Phone: +47 55 23 80 00 Fax: +47 55 23 80 90 E-mail: terje.lobach@fiskeridir.dep.telemas.no

Advisers

A. Birkeland, Higher Executive Officer, Norwegian Ministry of Fisheries, P. O. Box 8118 Dep, N-0032 Oslo

Phone: +47 22 24 64 86 - Fax: +47 22 24 95 85 - E-mail: arild.birkeland@fid.dep.no

K. Dorum, Ministry of Foreign Affairs, P. O. Box 8118, Oslo

Phone: +47 22 24 36 11 - Fax: +47 22 24 27 82 - E-mail: kjell-kristian.dorum@mfa.no

J. Hansen, Union Officer, Norwegian Seamen's Union, Grev Wedels plass 7, N-0151 Oslo

Phone: +47 22 82 58 08 - Fax: +47 22 33 66 18 - E-mail: jhan@sjomannsunion.no

H. P. Johansen, Fisheries Counsellor, Royal Norwegian Embassy, 2720 34th St. N.W., Washington, D.C. 20008

Phone: +202 944 8981 - Fax: +202 337 0870 - E-mail: counsellor.fish@norway.org

J. Jorgensen, Head of Division, Resource Dept., The Norwegian Fishermen's Association, Pir-Senteret, 7005 Trondheim

Phone: +47 73 54 58 50 - Fax: +47 73 54 58 90

T. Monstad, Institute of Marine Research, Postbox 1870, Nordnes, N-5817 Bergen

Phone: +47 55 23 86 98 - Fax: +47 55 23 86 87 - E-mail: terje@imr.no

H. Odland, First Secretary, Royal Norwegian Embassy, Fjolugata 17, P. O. Box 250, 121 Reykjavik, Iceland

Phone: +354 520 0700 - Fax: +354 552 9553 - E-mail: emb.reykjavik@mfa.no

T. Thorvik, Directorate of Fisheries, P. O. Box 185, 5002 Bergen

Phone: +47 55 238051 - Fax: +47 55 238090

RUSSIA

Head of Delegation

V. N. Shibanov, PINRO, 6 Knipovich St., Murmansk 183763

Phone: +7 8152 47 34 61 - Fax: +47 789 10 518 - E-mail: inter@pinro.murmansk.ru

Advisers

E. Samoilova, PINRO, 6 Knipovich St., Murmansk 183763

Phone: +7 8152473461 - Fax: +47 78910518 - E-mail: inter@pinro.murmansk.ru

S. V. Belikov, Head of Laboratory, PINRO, 6 Knipovich St., Murmansk 183763

Phone: +7 8152 47 34 24 - Fax: +47 789 10 518 - E-mail: belikov@pinro.murmansk.ru

P. Latyshev, Chief Inspector, Murmanrybvod, Komsomolskya Nr. 2, Murmansk 183672

Phone: +7 8152 45 35 62 - Fax: +47 78 910217

NAFO SECRETARIAT

T. Amaratunga, Assistant Executive Secretary

B. J. Cruikshank, Senior Secretary

NEAFC SECRETARIAT

S. Engesaeter, Secretary

K. Høydal, Incoming Secretary

Annex 2. Agenda

1. Opening of the Meeting
2. Election of Chairman
3. Appointment of Rapporteur
4. Adoption of Agenda
5. Review of distribution of "oceanic" Redfish in the Northwest-Northeast Atlantic Ocean
6. Management measures for the "oceanic" Redfish in the Northwest and Northeast Atlantic Ocean
7. Recommendations on the development of compatible regulatory measures for the "oceanic" Redfish
8. Other business
9. Adjournment

Fisheries Commission Working Group on 3M Shrimp Statistics
27 March 2001, Copenhagen, Denmark

The Fisheries Commission Working Group on Statistics met in accordance with the decision taken by the Fisheries Commission at the 22nd Annual Meeting, September 2000 (FC Doc. 00/21, Part I, item 3.18). Complete proceedings of this meeting are presented in FC Doc. 01/6 and in the NAFO Meeting Proceedings (General Council and Fisheries Commission), 2001.

Opening Procedures

The Chairman, Mr. H. Koster (EU), welcomed all delegates to Copenhagen. A list of participants is attached (Annex 1).

Mr. W. Evans (Canada) was appointed as Rapporteur.

The agenda, as presented, was adopted (Annex 2).

Review and validation of catch and effort data for 3M shrimp

The Chairman opened discussions by defining possible objectives for this meeting as follows:

1. To produce a single table of catch statistics for 3M shrimp as reported by Contracting Parties in accordance with NAFO requirements.
2. To include footnotes in the table on reference catch and/or effort levels to be used by the Fisheries Commission.

The Chairman noted that it would be desirable to remove as much uncertainty as possible in advance of the Fisheries Commission meeting which could then focus on whether NAFO should adopt an allocation key based on effort and/or catch statistics.

The Chairman proposed to work on the basis of the assumption that Contracting Parties are responsible for their statistics. NAFO can therefore not amend official statistics. It would, however, be within the competence of the Fisheries Commission to base itself on adjusted reference catches.

There was further extensive discussion on this matter by and all delegations would be offered the opportunity to provide input for the explanatory footnotes.

The table of shrimp fishery statistics by Contracting Parties was agreed as attached in Annex 3.

Annex 1. List of Participants

CANADA

Head of Delegation

E. Wiseman, Director-General, International Affairs Directorate, Dept. of Fisheries and Oceans, 200 Kent Street, 13th Floor N, Stn 13-159, Ottawa, Ontario K1A 0E6
Phone: +613 993 1873 - Fax: +613 993 5995 - E-mail: wisemane@dfo-mpo.gc.ca

Advisers

J. Angel, Canadian Association of Prawn Producers, P. O. Box 1C1, Head of St. Margarets Bay, N.S. B0J 1R0
Phone: +902 826 7765 - Fax: +902 826 7065 - E-mail: jangel@navnet.net

W. Evans, Supervisor, Offshore Surveillance, Conservation and Protection, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1

Phone: +709 772 4412 - Fax: +709 772 5983 - E-mail: evansw@dfo-mpo.gc.ca

R. Steinbock, Senior Advisor, Atlantic Affairs Div., International Affairs Directorate, Dept. of Fisheries and Oceans, 200 Kent St., Ottawa, Ontario K1A 0E6

Phone: +613 993 1836 - Fax: +613 993 5995 - E-mail: steinbob@dfo-mpo.gc.ca

L. Strowbridge, Director, Newfoundland Region, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1

Phone: +709 772 8021 - Fax: +709 772 2046 - E-mail: strowbridgel@dfo-mpo.gc.ca

DENMARK (IN RESPECT OF FAROES AND GREENLAND)

Head of Delegation

E. Lenche, Head of Representation, Gronlands Hjemmestyre, Pilestraede 52, Box 2151, DK-1016 Copenhagen K, Denmark

Phone: +45 33 69 34 35 - Fax: +45 33 69 34 01 - E-mail: el@ghs.dk

Alternate

A. Kristiansen, Ministry of Fisheries and Maritime Affairs, Yviri við Strond 17, P. O. Box 347, FO-110 Torshavn, Faroe Islands

Phone: +298 35 30 30 - Fax: +298 35 30 37 - E-mail: andrask@fisk.fo

Advisers

J. E. Hansen, Bondaheygur 9, FO-100 Torshavn, Faroe Islands

Phone: +298 312990/210810 - Fax: +298 33 35 95 - E-mail: hogi@post.olivant.fo

L. D. Madsen, Head of Section, Dept. of Industry, Greenland Home Rule, Box 269, 3900 Nuuk, Greenland

Phone: +299 34 53 29 - Fax: +299 32 47 04 - E-mail: ldm@gh.gl

P. M. Pedersen, Greenland Sea Fishery and Export Association, (APK), P. O. Box 310, 3900 Nuuk, Greenland

Phone: +299 322 404 - Fax: +299 325689 - E-mail: peder@apk.gl

E. Rosing, Head of Unit, Dept. of Industry, Greenland Home Rule, Box 269, 3900 Nuuk, Greenland

Phone: +299 34 53 32 - Fax: +299 32 47 04 - E-mail: emanuel@gh.gl

J. Sólstein, Chairman, Faroe Shipowners Association, Gongin 10, P. O. Box 361, FO-110 Torshavn, Faroe Islands

Phone: +298 311 800 - Fax: +298 320 380 - E-mail: shipown@post.olivant.fo

J. H. Toftum, Ministry of Fisheries, P. O. Box 64, FO-100 Torshavn, Faroe Islands

Phone: +298 353030 - Fax: +298 353035 - E-mail: jenst@fisk.fl.fo

ESTONIA

Head of Delegation

A. Soome, Senior Officer, Fisheries Department, Ministry of the Environment, Marja 4d, 10617 Tallinn
Phone: +372 6112 987 - Fax: +372 6567 599 - E-mail: ains@klab.envir.ee

Advisers

R. Aps, Deputy Director, Estonian Marine Institute, University of Tartu, 18b Viljandi Road, 11216, Tallinn
Phone: +372 6281 574 - Fax: +372 6281 563 - E-mail: robert.aps@ness.sea.ee

K. Märtin, Officer, Fisheries Department, Ministry of the Environment, Marja 4d, 10617 Tallinn
Phone: +372 656 7315 - Fax: +372 6567 599 - E-mail: kairem@klab.envir.ee

T. Roose, Deputy Director General, Estonian Environmental, Inspectorate, Kopli 76, 10416 Tallinn
Phone: +372 696 2238 - Fax: +372 696 2237, E-mail: tarvo.roose@kki.ee

T. Saat, Director, Estonian Marine Institute, University of Tartu, 18b Viljandi Road, 11216 Tallinn
Phone: +372 6281 570 - Fax: +372 6281 563 - E-mail: tsaat@sea.ee

EUROPEAN UNION (EU)

Head of Delegation

F. Wieland, Deputy Head of Unit, International Fisheries Organizations and Fisheries Agreements; Baltic, North Atlantic and North Pacific, European Commission, Directorate General for Fisheries, Rue de la Loi 200, B-1049 Brussels, Belgium

Phone: +32 2 296 3205 Fax: +32 2 299 4802 E-mail: Friedrich.Wieland@cec.eu.int

Advisers

H. Koster, Chief of Unit (Inspection), European Commission, Directorate General for Fisheries, Rue de la Loi 200, B-1049 Brussels, Belgium

Phone: +32 2 295 0235 - Fax: +32 2 296 2338 - E-mail: Harm.Koster@cec.eu.int

S. Ekwall, Administrator, Baltic, North Atlantic and North Pacific, European Commission, Directorate General for Fisheries, Rue de la Loi/Wetstraat 200, B-1049 Brussels, Belgium

Phone: +32 2 299 6907 - Fax: +32 2 299 4802 - E-mail: Staffan.Ekwall@cec.eu.int

R. Akesson, Ministry for Agriculture and Fisheries, 10333 Stockholm, Sweden

Phone: +46 08 405 1122 - Fax: +46 08 10 5061 - E-mail: rolf.akesson@agriculture.ministry.se

S. Feldthaus, Head of Section, Ministry of Food, Agriculture and Fisheries, Holbergsgade 2, 1057 Copenhagen, Denmark

Phone: +45 33 92 35 60 - Fax: +45 33 11 82 71 - E-mail: sfe@fvm.dk

S. Salvador, Chefe da Divisao de Relacoes Internacionais, Direccao Geral das Pescas e Aquicultura, Edificio Vasco da Gama, Cais de Alcantara Mar, 1399-006 Lisbon, Portugal

Phone: +351 21 3913520 Fax: +351 21 3979790/1 E-mail: susanas@dg-pescas.pt

M. I. Aragon, Jefa Seccion de la Subdireccion General de Organismos Multilaterales de Pesca, Secretaria General de Pesca Maritima, Jose Ortega y Gasset, 57, 28006 Madrid, Spain

Phone: +34 91 4025000 - Fax: +34 91 3093967 - E-mail: iaragonc@mapya.es

FRANCE (in respect of St. Pierre et Miquelon)

Head of Delegation

J. C. Hirondele, Landbrugsattaché, Embassy of France, Hammerensgade 6, DK-1267 Copenhagen K, Denmark

Phone: +45 33 93 27 66 - Fax: +45 33 93 48 66 - E-mail: jean-charles.hirondele@dree.org

ICELAND**Head of Delegation**

K. Arnason, Head of Division, Ministry of Fisheries, Skulagata 4, 150 Reykjavik
 Phone: +354 560 9670 - Fax: +354 562 1853 - E-mail: kolbeinn.arnason@sjr.stjr.is

Adviser

H. Steinarrson, The Icelandic Directorate of Fisheries, Ingilfsstraeti, 150 Reykjavik
 Phone: +354 5097938 - Fax: +354 5697991 - E-mail: hostein@hafro.is

JAPAN**Head of Delegation**

K. Iino, Minister Counsellor, Embassy of Japan, Pilestraede 61, 1112 Copenhagen K, Denmark
 Phone: +45 33 11 33 44 – Fax: +45 33 11 33 77

Advisers

D. Nagahata, Director, International Negotiations, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries, 1-2-1 Kasumigaseki, Chiyoda -ku, Tokyo

Phone: +81 3 3591 1086 - Fax: +81 3 3502 0571 - E-mail: daishiro-nagahata@nm.maff.go.jp

N. Takagi, Director, Executive Secretary, Japan Deep Sea Trawlers Association, Ogawacho-Yasuda Bldg., 6 Kanda-Ogawacho, 3-Chome, Chiyoda-ku, Tokyo 101-0052

Phone: +81 33 291 8508 - Fax: + 81 33 233 3267 - E-mail: nittoro@mx3.mesh.ne.jp

LATVIA**Head of Delegation**

N. Riekstins, Director, National Board of Fisheries, Ministry of Agriculture, 2, Republikas laukums, LV-1010 Riga

Phone: +371 732 3877 - Fax: +371 733 4892 - E-mail: fish@com.latnet.lv

Alternate

U. Rinkis, Senior Officer, National Board of Fisheries, Ministry of Agriculture, 2, Republikas laukums, LV -1010 Riga

Phone: +371 733 4478 - Fax: +371 733 4892 - E-mail: fish@com.latnet.lv

Advisers

D. Kalinovs, President, "Mersrags" Ltd., Brivibas Gatve 215A-46, LV-1039 Riga

Phone: +371 754 2471 – Fax: +371 754 2471 – E-mail: skaga@latnet.lv

A.Ukis, Chairman, Latvian Fishermen Federation, Dzervjuela 1, Jurmala, LV-2011

Phone: +371 923 5907 - Fax: +371 7730140

LITHUANIA**Head of Delegation**

V. Vaitiekunas, Director, Fisheries Dept. under the Ministry of Agriculture, 19 Gedimino str., Vilnius 2600

Phone: +370 02 391174 – Fax: 37002 341176 – E-mail: vytautasv@zum.lt

Alternate

A. Rusakevicius, Fisheries Department under the Ministry of Agriculture, 19 Gedimino St., 2600 Vilnius
 Phone: +370 2 391183 - Fax: +370 2 391176 - E-mail: algirdasr@zum.lt

NORWAY**Head of Delegation**

T. Lobach, Directorate of Fisheries, P. O. Box 185, N-5804 Bergen
 Phone: +47 55 23 80 00 Fax: +47 55 23 80 90 E-mail: terje.lobach@fiskeridir.dep.telemax.no

Advisers

W. Barstad, Norwegian Fishing Vessel Owners Association, P.O. Box 67 Sentrum, 6001 Aalesund
 Phone: +47 70 10 14 60 - Fax: +47 70 10 14 80 - E-mail: webjorn@fiskebatreder.no
 P. Oma, Directorate of Fisheries, P. O. Box 185, 5804 Bergen
 Phone: +47 55 238000 - Fax: +47 55 238090 - E-mail: paul.oma@fiskeridir.dep.telemax.no

RUSSIA**Head of Delegation**

V. Izmailov, State Committee for Fisheries of the Russian Federation, 12 Rozhdestvensky Boul., Moscow 103031
 Phone: +7095 - Fax: +7095 9213463

Advisers

G. V. Gusev, State Committee for Fisheries of the Russian Federation, Fisheries Dept., 12 Rozhdestvensky Boul., Moscow 103031
 Phone: +7095 921 9880 - Fax: +7095 921 3463
 V. M. Kolesnikov, Chief, "ZAPBALTRYBVOD", Kirova, 15, 23600 Kaliningrad
 Phone: +7 0112 555 281 - Fax: +07 112 555 513
 A. Okhanov, Russian Representative on Fisheries in Canada, 47 Oceanview Drive, Bedford, Nova Scotia, Canada B4A 4C4
 Phone: +902 832 9225 - Fax: +902 832 9608 - E-mail: rusfish@ns.sympatico.ca
 B. F. Prischepa, Head, "MURMANYRYBVOD", Komintern 5 str., 183038 Murmansk
 Phone: +7 8152 458679 - Fax: +47 789 10676 - E-mail: mrv@an.ru
 E. Samoilova, PINRO, 6 Knipovich St., Murmansk 183763
 Phone: +7 8152473461 - Fax: +47 78910518 - E-mail: inter@pinro.murmansk.ru
 V. I. Sokolov, VNIRO, 17, V. Krasnoselskaya, Moscow 107140
 Phone: +7095 264 7010 - E-mail: shellfish@vniro.ru
 F. M. Troyanovsky, PINRO, 6 Knipovich St., Murmansk
 Phone: +7 8152 47 34 61 - Fax: +47 789 10 518 - E-mail: inter@pinro.murmansk.ru

UKRAINE**Head of Delegation**

V. B. Chernik, Deputy Chairman, State Department for Fisheries of Ukraine, 82A Turgenivska str., Kiev, 04050
 Phone: +38044 226 2405 - Fax: +380 44 226 2405 - E-mail: nauka@i.kiev.ua

Advisers

V. Litvinov, Senior Expert, Div. for International Fishing Policy, State Department for Fisheries of Ukraine, 82A Turgenivska str., Kiev, 252053

Phone: +38044 216 6883 - Fax: +38044 216 6883 - E-mail: nauka@i.kiev.ua

Y. Pavlov, Embassy of Ukraine, Toldbodgade 37A, 1 Sal, DK-1253 K, Copenhagen

Phone: +45 33 161635 - Fax: +

UNITED STATES OF AMERICA**Head of Delegation**

P. Kurkul, Regional Administrator, Northeast Region, National Marine Fisheries, 1 Blackburn Drive, Gloucester, MA 01930

Phone: +978 281 9250 - Fax: +978 281 9371 - E-mail: pat.kurkul@noaa.gov

Alternate

J. D. O'Malley, Executive Director, East Coast Fisheries Federation. Inc., P. O. Box 649, Narragansett, RI 02879

Phone: +401 782 3440 - Fax: +401 782 4840

Advisers

G. S. Martin, Attorney, Office of the General Counsel, Northeast Region, National Oceanic and Atmospheric Administration, U.S. Dept. of Commerce, 1 Blackburn Dr., Gloucester, MA 01930

Phone: +1 978 281 9242 - Fax: +1 978 281 9389 E-mail: gene.s.martin@noaa.gov

D. E. Swanson, Chief, International Fisheries Div., F/SF4, National Marine Fisheries Service, U.S. Dept. of Commerce, 1315 East-West Highway, Silver Spring, MD 20910

Phone: +301 713 2276 - Fax: +301 713 2313 - E-mail: dean.swanson@noaa.gov

SECRETARIAT

L. I. Chepel, Executive Secretary

F. D. Keating, Administrative Assistant

B. J. Cruikshank, Senior Secretary

G. Moulton, Statistical/Conservation Measures Officer

SECRETARIAT ASSISTANCE

M. Hansen, Greenland Home Rule Office, Copenhagen

Annex 2. Agenda

1. Opening by the Chair, H. Koster (EU)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Review and validation of catch and effort data for 3M shrimp
5. Adjournment

Annex 3. Revised Shrimp 3M Catches and Allocated/Used Days 1993-2000

(FC W.G. W.P. 01/6 – Revision 4 – prepared by NAFO Secretariat)

Table 1. Revised Shrimp 3M catches and allocated/used days 1993-2000 (as received up to March 27 2001)

(Data for 2000 were taken from provisional monthly catch reports and hauls)

Contracting Party	1993		1994		1995		1996		1997		1998		1999		2000						
	Used	Catch	Used	Catch	Used	Catch	Alloc.	Used	Alloc.	Used	Alloc.	Used	Catch	Alloc.	Used	Catch					
Canada	507	3191	333	1042	319	968	492	311	908	443	156	784	443	82	435	365	618				
Cuba	-	-	-	-	-	-	100	-	-	100	-	-	100	33	119	100	22	46			
Den.-Faroes	1198	7333	1778	6791	1141	5993	1785	1869	8688	1606	1274	7410	1606	1317	9368	1606	963	7745			
Den.-Greenland	572	3780	482	2272	265	2316	572	202	1098	515	31	106	515	113	862	515	201	1706			
Estonia	149	268	744	1050	2228	2379	1852	1086	1899	1667	1237	3240	1667	1454	5533	1667	1663	12196			
European Union 1)	139	754	97	432	44	487	508	128	198	457	158	593	457	331	1553	457	315	1663			
France (SP)	-	-	-	-	-	-	100	-	-	100	22	-	100	-	-	100	-	-			
Iceland 3)	279	2195	638	2355	1842	7481	N/A	5256	20682	N/A	1327	6473	N/A	980	6590	N/A	1094	8912			
Japan	-	-	-	-	-	-	100	-	-	100	-	-	100	-	-	100	-	-			
Korea	-	-	-	-	-	-	100	-	-	100	-	-	100	-	-	100	-	-			
Latvia 2)	-	-	190	324	649	679	544	504	1253	490	344	997	490	334	1191	490	498	3080			
Lithuania 2)	-	-	453	863	638	980	638	918	1585	579	611	1785	579	866	3107	579	620	3371			
Norway	1403	7074	2206	8625	2162	9391	2206	1549	5648	1985	329	1886	1985	211	1339	1985	394	2975			
Poland 2)	-	-	-	-	-	-	100	-	-	100	100	817	100	40	148	100	104	859			
Russia 2)	76	54	167	350	1533	3327	N/A	2541	4445	2600	448	1090	2600	-	-	2100	441	1142			
Ukraine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-			
USA	-	-	-	-	-	-	100	-	-	100	-	-	100	-	-	100	-	-			
Total	4323	24849	7088	24104	10821	34001	9197	14364	46404	10942	6037	25180	10942	5728	30116	10555	6504	43268	10555	7624	50330

* The number of days used in 1995 up to the end of August is 1140 days.

NOTE: See explanation of footnotes on next page.

Footnotes:

- 1) The EU stated that the data for the years 1993-1995 reflect uncertainties due to the absence of regulatory measures for shrimp in those years and due to catches having been taken in mixed fisheries (i.e. vessels engaging in both shrimp fisheries as well as demersal fisheries such as redfish, cod and Greenland halibut in NAFO Division 3M). The allocation of 508 shrimp fishing days is based according to the EU on the examination of all relevant sources such as logbooks and hail reports. Certain other Contracting Parties were of the opinion that the appropriate reference for the EU would be 400 days as from 1997. As the EU did not exceed levels considered appropriate no adjusted reference is calculated.
- 2) Certain Contracting Parties exceeded the levels of fishing days allocated. Adjusted reference catches are calculated as follows:

Lithuania	1996	$1585 * 453 / 918 = 782$ tonnes
	1997	$1.785 * 408 / 611 = 1.192$ tonnes
	1998	$3.107 * 408 / 866 = 1.464$ tonnes
	1999	$3.371 * 408 / 620 = 2.218$ tonnes
Poland	1999	$859 * 100 / 104 = 826$ tonnes
Latvia	1999	$3.080 * 490 / 498 = 3.031$ tonnes
Russia	1996	$4444 * 1140 / 2541 = 1994$ tonnes

Lithuania stated that it is not in agreement with the calculation of the reference catches.

Russia could understand the calculation but was opposed to any adjustment to its reference level.

- 3) Iceland lodged objections to the NAFO regulatory measures concerning 3M shrimp and applied catch restrictions instead. Iceland stated that it is not in agreement with any adjustments to its reference level.

It was suggested by certain other Contracting Parties that on the basis of the NAFO regulatory measures the reference catches could be calculated as follows:

Iceland	1996	$20.682 * 1323 / 5256 = 5206$ tonnes
	1997	$6.473 * 1191 / 1327 = 5810$ tonnes
	1999	$9286 * 1191 / 1222 = 9050$ tonnes

NOTE: Latvia expressed general reservation to the Table 1, in particular, on fishing days used and allocated for years 1995 and 1996 by using uncertain and not reliable statistical data.



Special Fisheries Commission Meeting 28-30 March 2001, Copenhagen, Denmark

The Meeting was held in accordance with the decision taken by the Fisheries Commission at the 22nd Annual Meeting, September 2000 (FC Doc. 00/21, Part I, item 3.18). Complete proceedings of this Meeting are presented in FC Doc. 01/7 and in NAFO Meeting Proceedings (General Council and Fisheries Commission), 2001.

Opening Procedures

The Chairman, Mr. P. Gullestad (Norway), welcomed delegates to Copenhagen. A list of participants is attached (Annex 1).

Mr. R. Steinbock (Canada) was appointed Rapporteur.

The agenda, as presented, was adopted (Annex 2).

Evaluation of existing effort management system for shrimp in Division 3M

The Chairman opened discussions by reviewing the background of the existing effort management system. Since the adoption of the current effort system in September 1995 for 1996, there have been on-going discussions regarding the effectiveness of the system and possible changes to a TAC and quota management system.

Some delegations expressed the view that the effort management system for shrimp in Division 3M is appropriate and could be improved if it were properly implemented. Most delegations took the view that there were serious shortcomings in the effort system including:

- the lack of adherence by Contracting Parties to the NAFO allocation decision,
- the voluntary declaration of effort days by Contracting Parties,
- the continuing increase of catches to unsustainable levels despite the Scientific Council advice to reduce catches to a level less than 30,000t,
- the large potential for increased effort and catches based on the large latent capacity. Only about 60 per cent of the effort days were used during 2000 and catches could be about 73,000t if the allocated effort days were fully utilized, and
- The absence of a mechanism to reduce the effort days allocated commensurate with increases in fishing efficiency.

The Chairman noted that most delegations wanted to discuss changes towards a TAC and quota management regime but their willingness to endorse change depended on the expected allocation outcome for that Contracting Party. He concluded that there was a choice between moving to a TAC and quota regime or implementing improvements to the current effort system.

Possible establishment of a TAC for shrimp in Division 3M and National Allocations

Mr. Bill Brodie, (Canada), Chairman of the Scientific Council, provided a summary of the advice for shrimp in Division 3M from the November 2000 Scientific Council meeting. He advised that there has been relative stability in the catch rates over the last three years based on the standardized CPUE. The stock sustained an average catch of more than 40,000t in 1999-2000. The biomass and the spawning stock biomass (SSB) were higher in 1998-2000 than 1994-97. The Scientific Council expressed concerns regarding recruitment. The 1997 year-class appeared to be

below average in 1999 and the 1998 year-class is the lowest observed. It recommended a reduction in catch for 2001 to the previously advised TAC level of 30,000t. Scientific Council was not able to advise on catch for 2002 at this time but based on reduced recruitment from the 1997 and 1998 year-classes, a further reduction of catches in 2002 will be warranted - particularly if catches in 2001 exceed 30,000t.

The Fisheries Commission Chairman concluded that the Scientific Council advice provides a biological basis for a TAC of 30,000t and that area closures are effective in protecting juvenile shrimp.

Delegations expressed their opinions on important elements to be considered in determining allocations including historical catch during a representative period, the need to develop some procedure to amend catch figures due to anomalous catches (general agreement to adjust for overages except by one Party), providing some minimum threshold or guaranteed fishing opportunity to those Contracting Parties with no or little track record ("newcomers") through an "Others" quota or a distributed quota to these Parties, recognition for research and data collection efforts, and recognition for contribution to control efforts, . While some delegates saw merit in using catches including for 2000, other delegates recalled that there was agreement at the March 2000 shrimp meeting to exclude 2000 catches to avoid creating an additional incentive to increase catches. Delegations proposed a number of different reference periods for consideration including the following:

- Catches during 1993-1999
- Catches during 1993-1999 excluding anomalies in 1996 and 1999
- Catches during 1995-2000
- Catches during 1997-98
- Catches during the original reference period 1993-Aug 31, 1995
- Effort days and vessels during 1996 (on the basis of the original reference period)
- Catches during 1997-2000

The Representative of Canada submitted a working paper (FC Working Paper 01/2) which consolidated for easy reference the six noted reference levels including a further adjustment for an annual "Others" quota of 5 per cent. It also supplemented the analysis with a seventh column showing the average of the six other options. The Representative of Canada stated that this column could be considered a representative and fair proposal as it has the benefit of dampening the variability of the other options, however it was not intended as a proposal but as a working document to facilitate further analysis. While the Representatives of the European Union and the USA supported this working paper as a useful tool, the Representative of Latvia noted the absence of fishing days as an option in the working paper and did not believe that the paper could lead to any consensus.

The Representative of Denmark (in respect of the Faroe Islands and Greenland) submitted a proposal based on the following principles: historical catches during 1993-1995, scaled down by 93/100, 3 per cent in recognition of the contribution to research surveys directed for 3M shrimp, and 4 per cent for an "Others" quota. While the Representative of Norway expressed support for the 1993-1995 reference period, the Representatives of Latvia and Iceland did not agree that the 1993-95 period was an appropriate reference as it did not reflect the way that the 3M shrimp fishery had evolved, stabilized and become a commercial fishery. The Representatives of Iceland and the EU questioned the basis for the 3 per cent proposed for research surveys. The Representative of the EU asked why contributions to control and enforcement had not been

considered as envisaged under the NAFO Convention Article XI.4. In this regard, it was noted that Canada and the European Union provide inspections in the NAFO Regulatory Area.

The Representative of Japan submitted a proposal to benefit the Contracting Parties with a minimal or no track record in the 3M shrimp fishery (Cuba, France (on behalf of SPM), Japan, Korea, Poland and Ukraine), based on criteria in Article 11 of the UN Fish Agreement. The proposal would allocated 10% of the TAC to these seven Contracting Parties, to be divided equally ($10:7 = 1.43$ per cent) and to be reflected separately for each in the Quota Table. The Representative of Ukraine explained that this figure was based on an assumption of a TAC of 30,000t ($30,000 \times 1.43 = 429t$) to ensure a minimum guarantee of 400t each. Some of these Parties stated that they had refrained from fishing out of concern for conservation of the shrimp resource and their restraint should not result in any disadvantage in any future allocation. Other Parties expressed awareness of the concerns of newcomers but felt that it was unfair for newcomers to obtain a share equal to those with a fishing record.

The Representative of Russia submitted a proposal for an allocation scheme for 3M shrimp (FC Working Paper 01/5) which takes into consideration historical data before the introduction of the current regulations, the existing mechanism of the regulation, and the 2000 catches as a reflection of the current level of fishing. The Representative of Estonia expressed support in developing this proposal further. The Representative of Canada saw merit in combining consideration of catch and effort days but could not support the use of 2000 catches in any proposal. The Representative of Denmark echoed Canada's remarks on the need to exclude 2000 catch data.

The Representative of Latvia presented a proposal (FC Working Paper 01/12) for an adjustment of the fishing effort to the fishing pattern that has developed after the 1997 amendment to the effort limitation scheme. It envisaged a 30 per cent reduction of the fishing days used during the period 1997-2000. The Representatives of Norway and Denmark expressed opposition to this proposal as it disregarded the catches prior to 1996 and in their view, would not result in any substantive reduction.

Given the disparate and conflicting views on the proposals for an allocation key, the Representative of Canada suggested that the Fisheries Commission needed to take steps to reduce fishing pressure in order to ensure the conservation and sustainability of the shrimp resource in Division 3M. He proposed a 40 per cent reduction in the current effort day system in 2001 (FC Working Paper 01/10) which would provide a more significant, meaningful and realistic option than that previously proposed. He explained that while a TAC and quota regime remains Canada's objective for the long term, this approach for effort reduction is a stop-gap measure to achieve an immediate reduction in fishing pressure as well as provide a basis for further reductions in 2002. The Representative of Latvia stated that they were prepared to discuss reductions only for 2002. The Representative of Ukraine did not support any reduction for Parties with only 100 days effort allocated.

After some discussion, the Chairman proposed as a compromise to modify the proposal to reduce the number of fishing days in 2001 by 15 per cent. It was proposed that those currently with allocations of 400 days and 100 days would not be affected. It was noted that this measure would be without prejudice to any future sharing arrangements. It was proposed that discussions on a TAC/quota regime would continue at the September 2001 annual meeting and if Parties are unable to agree on a TAC/quota regime, Parties should prepare for further reductions in effort days which could also affect those with 100 days allocated. The Fisheries Commission **adopted** an amendment to the NAFO Conservation and Enforcement Measures as follows:

"Each Contracting Party shall, in 2001, limit the number of fishing days by its vessels fishing for shrimp in Division 3M to *(delete 90%)* 75% 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 in the period from 1 January 1993 to 31 August 1995, a minimum level of 400 fishing days is permitted."

Given the advice from Scientific Council with respect to the current measures for closure of the Flemish Cap Bank for 3M shrimp, the Representative of Canada proposed amending this measure by extending the current area from the 140 fathom depth to the 200 fathom depth and the time of the closure from June 1 to September 30 to the end of the year to ensure effective protection of juvenile shrimp. While delegates appreciated the objective of the proposal, they expressed the need for additional time to consult on the impacts on their fishery. The Representative of Canada urged Parties to review the proposal in preparation for further consideration thereof at the September 2001 annual meeting.

With respect to 3L shrimp, the Representative of Denmark (on behalf of the Faroe Islands and Greenland) proposed an alternative allocation of the TAC for 3L shrimp in the NAFO Regulatory Area for 2002 (FC Working Paper 01/11). He noted the proposal was not intended for consideration at this meeting but for decision at the September 2001 annual meeting. He explained that the starting point is that the TAC for 2002 will be shared between Canada (to be fished within the Canadian zone) and other Contracting Parties. He proposed that the allocation of the portion not allocated to Canada should be based on the following principles: historical catches - 93%, contribution to research surveys directed at 3L shrimp - 3%, and an "Others" quota of 4%. He advised that a formal proposal would be made in September 2001.

TAC and quotas for Oceanic Redfish in NAFO Division 1F in 2001

The Chairman noted that due to changes in stock distribution, fishable portions of the oceanic redfish stock are moving westward into the NAFO Convention Area into Division 1F. While it was clear that a considerable portion of the stock was in the NAFO Convention Area during 1999 and 2000, it is unclear whether this movement indicates a longer term trend. The extent of the occurrence in Canadian waters had not yet been substantiated. He summarized the possible options for management of this resource as follows: NAFO-NEAFC developing a joint TAC and quota regime, NAFO adopting the NEAFC management regime, NAFO developing a separate management regime in Division 1F in addition to the NEAFC regime, or a moratorium for fishing oceanic redfish in Division 1F for 2001. He concluded that an unregulated fishery was not a responsible management option for 2001.

Delegates expressed differing views on a preferred solution. The Chairman recognized that this was a complex issue that required additional time to develop a longer term, more definitive solution between NAFO and NEAFC. After extensive discussions, the Chairman concluded that some provisional, ad hoc solution was necessary for 2001 that does not prejudice either the interests of NAFO or NEAFC members, is consistent with the cooperation obligations of customary international law, and that recognizes due regard for the existing NEAFC management measures for this stock.

The Representative of Denmark (in respect of the Faroe Islands and Greenland) presented a draft proposal on behalf of Denmark, European Union, Iceland, Norway, and Russia on oceanic redfish for NAFO to adopt the same TAC and quotas as set by NEAFC for 2001 only. It was agreed that when the NAFO Conservation and Enforcement Measures will apply when vessels are fishing in Division 1F. The quota for Cooperating Non-Contracting Parties of 1,175t is available to Canada, Estonia, Latvia, Lithuania and Japan. It was also agreed that catches of oceanic redfish in the

NAFO Convention Area are not to exceed 30,000t and will be deducted from the NEAFC quotas for 2001. Finally, it was agreed that vessels fishing in Division 1F would provide bi-weekly reports of catches taken by their vessels of this stock to the NAFO Executive Secretary and he shall notify without delay all Contracting Parties of the date on which, for this stock, accumulated reported catch taken by vessels of the Contracting Parties is estimated to equal 50 and then 100 per cent of the TAC for that stock.

The discussion revealed that nine (9) Contracting Parties supported the proposal and four (4) had concerns. The Representative of Estonia clarified that while he is not in favour of a TAC between two organizations, he supported the proposal in the interests of avoiding an overfishing situation in 2001. The Representative of Latvia stated that he could not support the proposal and proposed a moratorium until such time as scientific advice is available on the distribution of the stock. He also expressed reservations against the quota for Cooperating Non-Contracting Parties as Latvia is against any type of bloc quota allocations. The Representative of Lithuania had left the meeting prior to a decision on this proposal and stated that he would abstain if it were brought to a vote. The Representative of Ukraine expressed no strong objection to the proposal but proposed that other NAFO Parties should also have access to the 1,175t quota for Cooperating Non-Contracting Parties. The Representative of France (on behalf of Saint Pierre et Miquelon) associated itself with the proposal made by the Representative of Ukraine. The Fisheries Commission **adopted** the proposal (Annex 3).

The Representative of Iceland stated that he supported the proposal despite having objecting to the NEAFC management measures for this stock for 2001. He explained that Iceland's objection to the NEAFC measures is based on the position that the measures should take into account that the ICES scientific advice recommended that the stock components, upper and lower layers, are managed separately. Iceland however will support this ad hoc measure for 2001 as they believe that it does not raise the same concern regarding this issue and as they believe that the fisheries in Division 1F would only be conducted from one of the two stock components.

Annex 1. List of Participants

CANADA

Head of Delegation

P. S. Chamut, Assistant Deputy Minister, Dept. of Fisheries and Oceans, Fisheries Management, 200 Kent Street, Ottawa, Ontario K1A 0E6
Phone: +613 990 9864 – Fax: +613 990 9557

Advisers

- J. Angel, Canadian Association of Prawn Producers, P. O. Box 1C1, Head of St. Margarets Bay, N.S. B0J 1R0
Phone: +902 826 7765 - Fax: +902 826 7065 - E-mail: jangel@navnet.net
- D. B. Atkinson, Regional Director, Science, Oceans and Environment, DFO Newfoundland Region, P. O. Box 5667, St. John's, Newfoundland A1C 5X1
Phone: +709 772 2027 - Fax: +709 772 6100 - E-mail: atkinsonb@dfo-mpo-gc.ca
- J. W. Baird, Regional Director, Fisheries Management, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1
Phone: +709 772 4497 - Fax: +709 772 3628 - E-mail: bairdj@dfo-mpo.gc.ca
- B. Brodie, Section Head, Flatfish and Deepwater Species, Science, Oceans and Environment, DFO Newfoundland Region, P. O. Box 5667, St. John's, Newfoundland A1C 5X1
Phone: +709 772 2027 - Fax: +709 772 6100 - E-mail: brodieb@dfo-mpo-gc.ca
- T. Dooley, Director, Resource Policy, Dept. of Fisheries and Oceans, P. O. Box 8700, St. John's, Newfoundland A1B 4J6
Phone: +709 729 0335 – Fax: +709 729 6082 - E-mail: tdooley@matl.gov.nf.ca
- W. Evans, Supervisor, Offshore Surveillance, Conservation and Protection, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1
Phone: +709 772 4412 - Fax: +709 772 5983 - E-mail: evansw@dfo-mpo.gc.ca
- N. Greig, Makivik Corporation, P. O. Box 179, Kuujuaq, Quebec J0M 1C0
Phone: +819 964 2925 - Fax: +819 964 2613 - E-mail: n.greig@makivik.org
- E. McCurdy, President, Fishermen, Food and Allied Workers Union/CAW, P. O. Box 10, St. John's, Newfoundland A1C 5H5
Phone: +709 576 7276 - Fax: +709 576 1962
- B. J. McNamara, President, Newfoundland Resources Ltd., 90 O'Leary Avenue, St. John's, Nfld. A1B 4G1
Phone: +709 579 7676 - Fax: +709 579 7668 - E-mail: nrl@nfld.com
- A. O'Rielly, President, Fisheries Association of Nfld. and Labrador Ltd., P. O. Box 8900, St. John's, Newfoundland A1B 3R9
Phone: +709 726 7223 - Fax: +709 754 3339 - E-mail: aorielly@nfld.com
- R. Steinbock, Senior Advisor, Atlantic Affairs Div., International Affairs Directorate, Dept. of Fisheries and Oceans, 200 Kent St., Ottawa, Ontario K1A 0E6
Phone: +613 993 1836 - Fax: +613 993 5995 - E-mail: steinbob@dfo-mpo.gc.ca
- L. Strowbridge, Director, Newfoundland Region, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1
Phone: +709 772 8021 - Fax: +709 772 2046 - E-mail: strowbridgel@dfo-mpo.gc.ca
- B. Luscombe-Thomsen, Business Development Officer, Canadian Embassy, Kr Bemikowsgade 1, DK-1105, Copenhagen K, Denmark
Phone: +45 33 48 32 56 – Fax: +45 33 48 32 21 – E-mail: bernadette.luscombe-thomsen@dfait-maeci.gc.ca
- E. Wiseman, Director-General, International Affairs Directorate, Dept. of Fisheries and Oceans, 200 Kent Street, 13th Floor N, Stn 13-159, Ottawa, Ontario K1A 0E6
Phone: +613 993 1873 - Fax: +613 993 5995 - E-mail: wisemane@dfo-mpo.gc.ca

DENMARK (IN RESPECT OF FAROES AND GREENLAND)**Head of Delegation**

E. Lemche, Head of Representation, Gronlands Hjemmestyre, Pilestraede 52, Box 2151, DK-1016
Copenhagen K, Denmark
Phone: +45 33 69 34 35 - Fax: +45 33 69 34 01 - E-mail: el@ghs.dk

Alternate

A. Kristiansen, Ministry of Fisheries and Maritime Affairs, Yviri við Strond 17, P. O. Box 347, FO-110
Torshavn, Faroe Islands
Phone: +298 35 30 30 - Fax: +298 35 30 37 - E-mail: andrask@fisk.fo

Advisers

J. E. Hansen, Bondahegyur 9, FO-100 Torshavn, Faroe Islands
Phone: +298 312990/210810 - Fax: +298 33 35 95 - E-mail: hogi@post.olivant.fo
L. D. Madsen, Head of Section, Dept. of Industry, Greenland Home Rule, Box 269, 3900 Nuuk, Greenland
Phone: +299 34 53 29 - Fax: +299 32 47 04 - E-mail: ldm@gh.gl
A. Olafsson, Councillor on Faroe Islands Affairs, 2 Asiatic Plads, DK-1448 Copenhagen K, Denmark
Phone: +45 33 92 03 41 - Fax: +45 33 92 01 77 - E-mail: arnola@um.dk
P. M. Pedersen, Greenland Sea Fishery and Export Association, (APK), P. O. Box 310, 3900 Nuuk, Greenland
Phone: +299 322 404 - Fax: +299 325689 - E-mail: peder@apk.gl
E. Rosing, Head of Unit, Dept. of Industry, Greenland Home Rule, Box 269, 3900 Nuuk, Greenland
Phone: +299 34 53 32 - Fax: +299 32 47 04 - E-mail: emanuel@gh.gl
J. Sólstein, Chairman, Faroe Shipowners Association, Gongin 10, P. O. Box 361, FO-110 Torshavn, Faroe
Islands
Phone: +298 311 800 - Fax: +298 320 380 - E-mail: shipown@post.olivant.fo
J. H. Toftum, Ministry of Fisheries, P. O. Box 64, FO-100 Torshavn, Faroe Islands
Phone: +298 353030 - Fax: +298 353035 - E-mail: jenst@fisk.fl.fo

ESTONIA**Head of Delegation**

A. Soome, Senior Officer, Fisheries Department, Ministry of the Environment, Marja 4d, 10617 Tallinn
Phone: +372 6112 987 - Fax: +372 6567 599 - E-mail: ains@klab.envir.ee

Advisers

R. Aps, Deputy Director, Estonian Marine Institute, University of Tartu, 18b Viljandi Road, 11216, Tallinn
Phone: +372 6281 574 - Fax: +372 6281 563 - E-mail: robert.aps@ness.sea.ee
K. Märtin, Officer, Fisheries Department, Ministry of the Environment, Marja 4d, 10617 Tallinn
Phone: +372 656 7315 - Fax: +372 6567 599 - E-mail: kairem@klab.envir.ee
T. Roose, Deputy Director General, Estonian Environmental, Inspectorate, Kopli 76, 10416 Tallinn
Phone: +372 696 2238 - Fax: +372 696 2237, E-mail: tarvo.roose@kki.ee
T. Saat, Director, Estonian Marine Institute, University of Tartu, 18b Viljandi Road, 11216, Tallinn
Phone: +372 6281 570 - Fax: +372 6281 563 - E-mail: tsaat@sea.ee

EUROPEAN UNION (EU)**Head of Delegation**

O. Tougaard, European Commission, Directorate General for Fisheries, 200 Rue de la Loi, B-1049 Brussels,
Belgium
Phone: +32 2 295 2209 - Fax: +32 2 299 4802

Alternate

F. Wieland, Deputy Head of Unit, International Fisheries Organizations and Fisheries Agreements; Baltic, North Atlantic and North Pacific, European Commission, Directorate General for Fisheries, Rue de la Loi 200, B-1049 Brussels, Belgium
 Phone: +32 2 296 3205 Fax: +32 2 299 4802 E-mail: Friedrich.Wieland@cec.eu.int

Advisers

H. Koster, Chief of Unit (Inspection), European Commission, Directorate General for Fisheries, Rue de la Loi 200, B-1049 Brussels, Belgium
 Phone: +32 2 295 0235 – Fax: +32 2 296 2338 – E-mail: Harm.Koster@cec.eu.int

S. Ekwall, Administrator, Baltic, North Atlantic and North Pacific, European Commission, Directorate General for Fisheries, Rue de la Loi/Wetstraat 200, B-1049 Brussels, Belgium
 Phone: +32 2 299 6907 - Fax: +32 2 299 4802 - E-mail: Staffan.Ekwall@cec.eu.int

R. Akesson, Ministry for Agriculture and Fisheries, 10333 Stockholm, Sweden
 Phone +46 08 405 1122 - Fax: +46 08 10 5061 - E-mail: rolf.akesson@agriculture.ministry.se

L. Svensson, Council of the European Union, DG-BII 4040GH26, Rue de la Loi 175, B-1048 Brussels, Belgium
 Phone: +32 2 285 7853 - Fax: +32 2 285 6910 - E-mail: lars-evik.svensson@consilium.eu.int

S. Feldthaus, Head of Section, Ministry of Food, Agriculture and Fisheries, Holbergsgade 2, 1057 Copenhagen, Denmark
 Phone: +45 33 92 35 60 – Fax: +45 33 11 82 71 – E-mail: sfe@fvm.dk

M. Reimann, Regierungsdirektorin, Referentin, Bundesministerium für Ernährung, Landwirtschaft und Forsten, Rochustrabe 1, 53125 Bonn, Germany
 Phone: +49 228 529 4349 - Fax: +49 228 529 4410

H.-J. Rätz, Institut für Seefischerei, Palmaille 9, D-22767, Hamburg, Germany
 Phone: +49 40 389 05169 – Fax: +49 40 389 05263 – E-mail: raetz.ish@bfa-fisch.de

K. Hartmann, Managing Director, Ocean Food GMBH & Co. KG, Hochseefischerei, Westkai 34, D-27572 Bremerhaven, Germany
 Phone: +49 471 972 52 - 0 - Fax: +49 471 972 52 – 22 – E-mail: klaus@oceanfood.de

S. Salvador, Chefe da Divisao de Relacoes Internacionais, Direccao Geral das Pescas e Aquicultura, Edificio Vasco da Gama, Cais de Alcantara Mar, 1399-006 Lisbon, Portugal
 Phone: +351 21 3913520 Fax: +351 21 3979790/1 E-mail: susanas@dg-pescas.pt

M. I. Aragon, Jefa Seccion de la Subdireccion General de Organismos Multilaterales de Pesca, Secretaria General de Pesca Maritima, Jose Ortega y Gasset, 57, 28006 Madrid, Spain
 Phone: +34 91 4025000 - Fax: +34 91 3093967 - E-mail: iaragonc@mapya.es

M. Rimmer, Sea Fisheries Conservation Div., Ministry of Agriculture, Fisheries and Food, Nobel House, 17 Smith Square, London SW1P 3JR
 Phone: 020 7238 6529 - Fax: 020 7238 5721 - E-mail: mike.rimmer@maff.gsi.gov.uk

FRANCE (in respect of St. Pierre et Miquelon)**Head of Delegation**

J. C. Hirondel, Landbrugsattaché, Embassy of France, Hammerensgade 6, DK-1267 Copenhagen K, Denmark
 Phone: +45 33 93 27 66 – Fax: +45 33 93 48 66 – E-mail: jean-charles.hirondel@dree.org

ICELAND**Head of Delegation**

K. Arnason, Head of Division, Ministry of Fisheries, Skulagata 4, 150 Reykjavik
 Phone: +354 560 9670 - Fax: +354 562 1853 - E-mail: kolbeinn.arnason@sjr.stjr.is

Adviser

E. Gudnason, Ambassador, Ministry for Foreign Affairs, Raudararstigur 25, 150 Reykjavik
 Phone: +354 560 9941 - Fax: +354 560 9979 - E-mail: eidur.gudnason@utn.stjr.is

K. Ragnarsson, Chairman, Federation of Icelandic Fishing Vessel Owners, P. O. Box 893, 121 Reykjavik
 Phone: +354 550 9500 - Fax: +354 550 9501 - E-mail: kristjan@liu.is
 T. Skarphedinsson, Directorate of Fisheries, Skulagata 4, 150 Reykjavik
 Phone: +354 896 2452
 H. Steinarsson, The Icelandic Directorate of Fisheries, Ingilfsstraeti, 150 Reykjavik
 Phone: +354 5097938 - Fax: +354 5697991 - E-mail: hostein@hafro.is
 T. Sigurdsson, Marine Research Institute, Skulagata 4, 101 Reykjavik
 Phone: +354 5520240 - Fax: +354 5623790 - E-mail: steini@hafro.is

JAPAN

Head of Delegation

K. Iino, Minister Counsellor, Embassy of Japan, Pilestraede 61, 1112 Copenhagen K, Denmark
 Phone: +45 33 11 33 44 - Fax: +45 33 11 33 77

Advisers

D. Nagahata, Director, International Negotiations, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries, 1-2-1 Kasumigaseki, Chiyoda -ku, Tokyo
 Phone: +81 3 3591 1086 - Fax: +81 3 3502 0571 - E-mail: daishiro-nagahata@nm.maff.go.jp
 N. Takagi, Director, Executive Secretary, Japan Deep Sea Trawlers Association, Ogawacho-Yasuda Bldg., 6 Kanda-Ogawacho, 3-Chome, Chiyoda-ku, Tokyo 101-0052
 Phone: +81 33 291 8508 - Fax: + 81 33 233 3267 - E-mail: nittoro@mx3.mesh.ne.jp

LATVIA

Head of Delegation

N. Riekstins, Director, National Board of Fisheries, Ministry of Agriculture, 2, Republikas laukums, LV-1010 Riga
 Phone: +371 732 3877 - Fax: +371 733 4892 - E-mail: fish@com.latnet.lv

Alternate

U. Rinkis, Senior Officer, National Board of Fisheries, Ministry of Agriculture, 2, Republikas laukums, LV-1010 Riga
 Phone: +371 733 4478 - Fax: +371 733 4892 - E-mail: fish@com.latnet.lv

Advisers

D. Kalinovs, President, "Mersrags" Ltd., Brivibas Gatve 215A-46, LV-1039 Riga
 Phone: +371 754 2471 - Fax: +371 754 2471 - E-mail: skaga@latnet.lv
 A. Ukis, Chairman, Latvian Fishermen Federation, Dzervju iela 1, Jurmala, LV-2011
 Phone: +371 923 5907 - Fax: +371 7730140
 I. Voits, President, Latvian Fisheries Association, Ganibu Dambis 24a-502, Riga, LV-1005
 Phone: +371 7383197 - Fax: +371 7383197 - Mobile Phone 371 9363094

LITHUANIA

Head of Delegation

V. Vaitiekunas, Director, Fisheries Dept. under the Ministry of Agriculture, 19 Gedimino str., Vilnius 2600
 Phone: +370 02 391174 - Fax: 37002 341176 - E-mail: vytautasv@zum.lt

Alternate

A. Rusakevicius, Fisheries Department under the Ministry of Agriculture, 19 Gedimino St., 2600 Vilnius
Phone: +370 2 391183 - Fax: +370 2 391176 - E-mail: algirdasr@zum.lt

NORWAY**Head of Delegation**

P. Gullestad, Directorate of Fisheries, P. O. Box 185, N-5804 Bergen
Phone: +47 55 23 80 00 Fax: +47 55 23 80 90 E-mail: peter.gullestad@fiskeridir.dep.telemax.no

Alternate

T. Lobach, Directorate of Fisheries, P. O. Box 185, N-5804 Bergen
Phone: +47 55 23 80 00 Fax: +47 55 23 80 90 E-mail: terje.lobach@fiskeridir.dep.telemax.no

Advisers

W. Barstad, Norwegian Fishing Vessel Owners Association, P.O. Box 67 Sentrum, 6001 Aalesund
Phone: +47 70 10 14 60 - Fax: +47 70 10 14 80 - E-mail: webjorn@fiskebatreder.no
K. Dørum, Ministry of Foreign Affairs, P. O. Box 8114 Dep., 0032 Oslo
Phone: +47 22 24 36 11 - Fax: +47 22 24 27 82 - E-mail: kjell-kristian.dorum@mfa.no
P. Oma, Directorate of Fisheries, P. O. Box 185, 5804 Bergen
Phone: +47 55 238000 - Fax: +47 55 238090 - E-mail: paul.oma@fiskeridir.dep.telemax.no
E. K. Viken, Ministry of Fisheries, P. O. Box 8118 Dep., 0032 Oslo
Phone: +47 22 24 6482 - Fax: +47 22 24 9585 - E-mail: ellen.viken@fid.dep.no

RUSSIA**Head of Delegation**

V. Izmailov, State Committee for Fisheries of the Russian Federation, 12 Rozhdestvensky Boul., Moscow 103031
Phone: +7095 - Fax: +7095 9213463

Advisers

V. Dvoryankov, Association of Joint Ventures and Entrepreneurs in Fisheries of Russia, 6/3 Kuznetsky Most Str., Moscow 103009
Phone: +7095 923 7986 - Fax: +7095 923 6983 - E-mail: harbour2000@mail.ru
G. V. Gusev, State Committee for Fisheries of the Russian Federation, Fisheries Dept., 12 Rozhdestvensky Boul., Moscow 103031
Phone: +7095 921 9880 - Fax: +7095 921 3463
V. M. Kolesnikov, Chief, "ZAPBALTRYBVOD", Kirova, 15, 23600 Kaliningrad
Phone: +7 0112 555 281 - Fax: +07 112 555 513
A. Okhanov, Russian Representative on Fisheries in Canada, 47 Oceanview Drive, Bedford, Nova Scotia, Canada B4A 4C4
Phone: +902 832 9225 - Fax: +902 832 9608 - E-mail: rusfish@ns.sympatico.ca
Y. Piskarev, Russian Fisheries Representative, Embassy of the Russian Federation, Kristianiagade 5, 2100 Copenhagen, Denmark
Phone: +45 35 43 85 10 - Fax: +45 35 43 85 10 - E-mail: Fis.Comm@mail.tele.dk
B. F. Prischepa, Head, "MURMANRYBVOD", Kominterna 5 str., 183038 Murmansk
Phone: +7 8152 458679 - Fax: +47 789 10676 - E-mail: mrv@an.ru
E. Samoilova, PINRO, 6 Knipovich St., Murmansk 183763
Phone: +7 8152473461 - Fax: +47 78910518 - E-mail: inter@pinro.murmansk.ru

V. I. Sokolov, VNIRO, 17, V. Krasnoselskaya, Moscow 107140
 Phone: +7095 264 7010 – E-mail: shellfish@vniro.ru
 F. M. Troyanovsky, PINRO, 6 Knipovich St., Murmansk
 Phone: +7 8152 47 34 61 – Fax: +47 789 10 518 – E-mail: inter@pinro.murmansk.ru

UKRAINE

Head of Delegation

V. B. Chernik, Deputy Chairman, State Department for Fisheries of Ukraine, 82A Turgenivska str., Kiev, 04050
 Phone: +38044 226 2405 - Fax: +380 44 226 2405 – E-mail: nauka@i.kiev.ua

Advisers

V. Litvinov, Senior Expert, Div. for International Fishing Policy, State Department for Fisheries of Ukraine, 82A Turgenivska str., Kiev, 252053
 Phone: +38044 216 6883 - Fax: +38044 216 6883 – E-mail: nauka@i.kiev.ua
 Y. Pavlov, Embassy of Ukraine, Toldbodgade 37A, 1 Sal, DK-1253 K, Copenhagen
 Phone: +45 33 161635

UNITED STATES OF AMERICA

Head of Delegation

P. Kurkul, Regional Administrator, Northeast Region, National Marine Fisheries, 1 Blackburn Drive, Gloucester, MA 01930
 Phone: +978 281 9250 - Fax: +978 281 9371 - E-mail: pat.kurkul@noaa.gov

Alternate

J. D. O'Malley, Executive Director, East Coast Fisheries Federation. Inc., P. O. Box 649, Narragansett, RI 02879
 Phone: +401 782 3440 - Fax: +401 782 4840

Advisers

G. S. Martin, Attorney, Office of the General Counsel, Northeast Region, National Oceanic and Atmospheric Administration, U.S. Dept. of Commerce, 1 Blackburn Dr., Gloucester, MA 01930
 Phone: +1 978 281 9242 - Fax: +1 978 281 9389 E-mail: gene.s.martin@noaa.gov
 D. E. Swanson, Chief, International Fisheries Div., F/SF4, National Marine Fisheries Service, U.S. Dept. of Commerce, 1315 East-West Highway, Silver Spring, MD 20910
 Phone: +301 713 2276 - Fax: +301 713 2313 - E-mail: dean.swanson@noaa.gov

SECRETARIAT

L. I. Chepel, Executive Secretary
 F. D. Keating, Administrative Assistant
 B. J. Cruikshank, Senior Secretary
 G. Moulton, Statistical/Conservation Measures Officer

SECRETARIAT ASSISTANCE

M. Hansen, Greenland Home Rule Office, Copenhagen

Annex 2. Agenda

1. Opening by the Chairman, P. Gullestad (Norway)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Evaluation of existing effort management system for shrimp in Division 3M
5. Possible establishment of a TAC for shrimp in Division 3M
6. Allocation of shrimp fishing opportunities among Contracting Parties in the NAFO Regulatory Area
7. Consideration of TAC and quotas for Oceanic Redfish in NAFO division 1F in 2001
8. Other business
9. Adjournment

Annex 3. Proposal re Oceanic Redfish in Div. 1F

The management of Oceanic Redfish in 1F entails issues involving the reconciliation of conservation and enforcement measures for the stock in two adjacent convention areas (NAFO and NEAFC). In order to permit Contracting Parties adequate time to consider these issues, to ensure conservation of the stock and to facilitate fishing opportunities in 2001 without prejudice to the right of Contracting Parties to advance allocation arguments at future meetings of the NAFO Fisheries Commission, the Fisheries Commission adopts the following proposal:

1. Add the following column to the 2001 NAFO Quota Table:

	Oceanic Redfish ⁹
	Div. 1F
Denmark (in respect of Faroe Islands & Greenland)	24,169
European Union	13,883
Iceland ¹⁰	27,008
Norway	3,596
Poland	1,000
Russia	24,169
Canada	
Estonia	
Japan	
Latvia	
Lithuania	
	1,175
	95,000 ¹¹

Footnote 9: These quotas are set on the basis of the TAC of 95,000 tons established by NEAFC for 2001. Quantities taken in the NEAFC Convention Area shall be deducted from the quotas mentioned.

Footnote 10: Iceland has objected to the NEAFC management measures for oceanic redfish for 2001. Iceland will however limit its fisheries in the NAFO Regulatory Area to 27,008 tons in 2001.

Footnote 11: Each Contracting Party shall notify the Executive Secretary bi-weekly of catches taken by its vessels from this stock in Div. 1F. The Executive Secretary shall notify without delay all Contracting Parties of the date on which, for this stock, accumulated reported catch taken by vessels of the Contracting Parties is estimated to equal 15,000 tons and then 30,000 tons.

2. This measure will not enter into force before NEAFC has established measures to the effect that catches of oceanic redfish in the NAFO Convention Area will be deducted from the NEAFC quotas for 2001.
3. It is understood that when fishing in Division 1F, NAFO Conservation and Enforcement Measures will apply.

4. Catches in Division 1F not to exceed 30,000 tons in 2001.
5. This arrangement applies to 2001 only and is without prejudice to sharing arrangements for this stock in future years.

**STACTIC Working Group to Overhaul the NAFO
Conservation and Enforcement Measures
1-3 May 2001, Ottawa, Canada**

The Working Group met in accordance with the decision taken by the Fisheries Commission at the 22nd Annual Meeting, September 2000 (FC Doc. 00/21, Part I, item 3.27). Complete proceedings of this Meeting are presented in FC Doc. 01/8 and in the NAFO Meeting Proceedings (General Council and Fisheries Commission), 2001.

Opening Procedures

The Chairman, Mr. David Bevan (Canada), welcomed delegates to Ottawa. A list of participants is attached (Annex 1).

Mr. R. Steinbock (Canada) was appointed as Rapporteur.

The agenda was adopted (Annex 2).

Discussions and Decisions

The Chairman reviewed the mandate of the STACTIC Working Group as one of identifying the redundancies and inconsistencies in the current NAFO Conservation and Enforcement Measures (NCEM) and to provide a report to the Fisheries Commission by June 30, 2001. Delegates agreed that the purpose of the exercise was to identify these ambiguities to improve the coherence and overall comprehensibility of the text of the NCEM and not to develop or introduce new provisions.

After discussions on the substance of redundancies and inconsistencies under agenda item 5, the meeting revisited the process for conducting the review. It was agreed to take sufficient time for this exercise and that it was important not to mix this exercise with the usual STACTIC activity.

The meeting considered the appropriate assignment of the provisions of the current NCEM and agreed on a notional reorganization of the NCEM according to the table of contents. This discussion resulted in a consensus text in STACTIC WG WP 01/01 Revised - "Inconsistencies/Redundancies in the NAFO Conservation and Enforcement Measures". It was agreed that this document would also be headed with "Discussion Document Only". It was noted that some annexes may be redundant and no longer necessary but it was agreed to maintain the present text for further reflection. It was agreed that the assignment remains notional and may require further reflection by Contracting Parties.

The meeting document and instructions were submitted to the NAFO Secretariat for final compilation.

Note: The final draft was circulated to the Fisheries Commission for consideration.

Annex 1. List of Participants

CANADA

Head of Delegation

L. Stowbridge, Director, Special Programs, Fisheries Management, Newfoundland Region, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1
Phone: +709 772 8021 - Fax: +709 772 2046 - E-mail: stowbridgel@dfo-mpo.gc.ca

Advisers

D. Bevan, Director General, Resource Management, Dept. of Fisheries and Oceans, 200 Kent Street, Ottawa, Ontario K1A 0E6

Phone: +613 990 6794 - Fax +613 954 1407 - E-mail: bevand@dfo-mpo.gc.ca

W. Evans, Supervisor, Offshore Surveillance, Conservation and Protection, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1

Phone: +709 772 4412 - Fax: +709 772 5983 - E-mail: evansw@dfo-mpo.gc.ca

A. Saunders, Oceans, Environment and Economic Law Division (JLO), Dept. of Foreign Affairs and International Trade, 125 Sussex Drive, Ottawa, Ontario K1A 0G2

Phone: +613 996 2643 - Fax: +613 992 6483 - E-mail: allison.saunders@dfait-maeci.gc.ca

P. Steele, Director, Enforcement Br., Conservation and Protection, Fisheries Management, Dept. of Fisheries and Oceans, 200 Kent Street, Ottawa, Ontario K1A 0E6

Phone: +613 990 0109 - Fax +613 941 2718 - E-mail: steelep@dfo-mpo.gc.ca

R. Steinbock, A/Director, Atlantic Affairs Div., International Affairs Directorate, Dept. of Fisheries and Oceans, 200 Kent St., Ottawa, Ontario K1A 0E6

Phone: +613 993 1836 - Fax: +613 993 5995 - E-mail: steinbob@dfo-mpo.gc.ca

DENMARK (IN RESPECT OF FAROES AND GREENLAND)

Head of Delegation

M. T. Nedergaard, Fiskerilicensinspektør, Head of Unit, Gronlands Fiskerilicenskontrol, Postbox 501, DK- 3900 Nuuk, Greenland

Phone: +299 345377 - Fax: +299 323235 - E-mail: maads@gh.gl

Adviser

J. H. Toftum, Adviser, Ministry of Fisheries and Maritime Affairs, Yviri vid Strond 17, P. O. Box 347, FO-110 Torshavn, Faroe Islands

Phone: +298 353030 - Fax: +298 353037 - E-mail: jenst@fisk.fo

EUROPEAN UNION (EU)

Head of Delegation

F. Wieland, Deputy Head of Unit, International Fisheries Organizations and Fisheries Agreements; Baltic, North Atlantic and North Pacific, European Commission, Directorate General for Fisheries, Rue de la Loi 200, B-1049 Brussels, Belgium

Phone: +32 2 296 3205 Fax: +32 2 299 4802 E-mail: Friedrich.Wieland@cec.eu.int

Advisers

H. Koster, Head of Unit, "Inspection", European Commission, Directorate General for Fisheries, Rue de la Loi/Wetstraat 200, B-1049 Brussels, Belgium

Phone: +32 2 295 0235 - Fax: + 32 2 296 2338 - E-mail: harm.koster@cec.eu.int

S. Ekwall, Administrator, Baltic, North Atlantic and North Pacific, European Commission, Directorate General for Fisheries, Rue de la Loi/Wetstraat 200, B-1049 Brussels, Belgium

Phone: +32 2 299 6907 - Fax: +32 2 299 4802 - E-mail: Staffan.Ekwall@cec.eu.int

G. F. Kingston, Senior Adviser, Economic and Commercial Affairs, Delegation of the European Commission, 45 O'Connor Street, Suite 1900, Ottawa, Ontario, Canada K1P 1A4

Phone: +613 238 6464 - Fax: +613 238 5191 - E-mail: fred.kingston@delcan.cec.eu.int

ICELAND

Head of Delegation

T. Skarphedinsson, Legal Adviser, Ministry of Fisheries, Skulagata 4, 150 Reykjavik

Phone: +354 560 9670 - Fax: +354 562 1853 - E-mail: thorir@hafro.is

Adviser

G. Hannesson, Directorate of Fisheries, Ingilfsstraeti 1, 101 Reykjavik

Phone: +354 569 7900 - Fax: +354 569 7991 - E-mail: greta@hafro.is

RUSSIA

Head of Delegation

A. Okhanov, Russian Representative on Fisheries in Canada, 47 Oceanview Drive, Bedford, Nova Scotia, Canada B4A 4C4

Phone: +902 832 9225 - Fax: +902 832 9608 - E-mail: rusfish@ns.sympatico.ca

UNITED STATES OF AMERICA

Head of Delegation

J. Anderson, Fisheries Management Specialist, Northeast Region, National Marine Fisheries Service, U.S. Department of Commerce, 1 Blackburn Dr., Gloucester, MA 01930

Phone: +978 281 9383 - Fax: +978 281 9135 - E-mail: Jennifer.Anderson@noaa.gov

Adviser

L. Ragone, Lieutenant, U.S. Coast Guard, Fisheries Enforcement, Current Operations & Planning, Commander (OLE), First Coast Guard District, 406 Atlantic Ave., Rm 741, Boston, MA 02110-3350

Phone: +617 223 8423 - Fax: +617 223 8074 - E-mail: lragone@d1.uscg.mil

SECRETARIAT

T. Amaratunga, Assistant Executive Secretary

B. Cruikshank, Senior Secretary

SECRETARIAT ASSISTANCE

S. Firko, International Directorate, DFO, Ottawa

Annex 2. Agenda

1. Opening by the Chairman, D. Bevan (Canada)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Process for Conducting Review
5. Identification of redundancies and inconsistencies in the NAFO Conservation and Enforcement Measures
6. Review to be submitted to the NAFO Secretariat
7. Other business

Standing Committee on International Control (STACTIC)
26-28 June 2001, Halifax, N.S., Canada

STACTIC met in accordance with the decision taken by the Fisheries Commission at the 22nd Annual Meeting, September 2000 (FC Doc. 00/21, Part I, item 3.28). Complete proceedings of this Meeting are presented in FC Doc. 01/10 and in the NAFO Meeting Proceedings (General Council and Fisheries Commission), 2001.

Opening Procedures

The Chairman, Mr. David Bevan (Canada), opened the meeting at 10.10 on 26 June 2001. Representatives from the following Contracting Parties were present: Canada, Denmark (in respect of the Faroe Islands and Greenland), Estonia, the European Union, Iceland, Japan, Norway, Russian Federation and the United States (Annex 1).

Mr. Wayne Evans (Canada) was appointed rapporteur.

The agenda was adopted (Annex 2).

Report by NAFO Consultant on the NAFO Secretariat Automated System/VMS update

Mr. Engesaeter gave a brief update on the steps being taken by the selected Provider, Trackwell of Iceland, and the Secretariat to implement, as per Fisheries Commissions instructions, a VMS data system by July 1, 2001. The contract with the provider was signed June 22, 2001 and after a delay of one week due to the new version of Unix and shipping difficulties, installation will go ahead during the first week of July, 2001. No further delays are anticipated. The Chairman thanked Mr. Engesaeter for his work to date on this project.

Possible measures for protection of juvenile fish

The representative of Canada reviewed the recommendations made by the Scientific Council in 1999 and 2000 regarding the need for STACTIC to examine proposals for the protection of juvenile fish. The first Canadian proposal was to implement a depth restriction prohibiting the fishing of Greenland halibut at depths less than 700m. The analysis presented by the Canadian representative indicated that such a restriction would be effective in minimizing the capture of juvenile fish but would not place undue hardship on the viability of the Greenland halibut fishery. Canada provided 47 coordinates to delineate the 700m depth contour in 3LMNO.

Following the ensuing discussions, the Chairman concluded the discussion by suggestion that this issue is scheduled to be discussed by the Scientific Council and that they will review the distribution of Greenland halibut in different depth strata early in the week of the annual meeting so that their advice will be available to STACTIC during its meeting. It was agreed that the depth restriction proposal would be revisited by STACTIC at the next annual meeting in September 2001.

The second Canadian proposal dealt with a possible enhancement of the closed area for the 3M shrimp fishery. Canada's initial proposal had been to expand the current 3M shrimp closure from the 300m depth contour to the 450m depth contour and to extend the closure from the current June 1 to September 30 to a year round closure. Recognizing that this would require a major alteration to current fishing activity, however, Canada amended its proposal to one that would retain the

coordinates of the current closed area while extending the time period of the closure to the entire year.

The Chairman and delegates agreed that further debate is required regarding both fishing gear selectivity in the shrimp fishery and the length of the closure period for the closed area.

The third Canadian proposal dealt with the possible creation of a closed area on the Southeast Shoal area of the Grand Bank in Division 3N. This area has been identified by the Scientific Council as a nursery area for 3NO cod, 3LNO American plaice, 3LNO yellowtail flounder and 3NO witch flounder. The Canadian representative indicated that there is increasing evidence that some vessels are conducting directed fisheries for moratoria species in the proposed nursery area.

The Chairman and delegates agreed that the Fisheries Commission could be asked to consider the nature of the debate at STACTIC in September and, at their discretion, take a decision or provide further direction to STACTIC on this issue.

The fourth Canadian proposal related to the minimum mesh size for groundfish fisheries. The Canadian representative indicated that Canada, as the coastal state, increased its minimum otter trawl mesh size to 145mm in the mid 1990s. The Canadian proposal was that the minimum mesh size for groundfish trawls in the NAFO Regulatory Area be increased from 130mm to 145mm when fishing at depths less than 700 meters to allow for increased escapement of juvenile Greenland halibut and cod. After discussions Canada later agreed to withdraw this proposal from consideration at this meeting.

Restriction and regulation of by-catch of moratoria species

Canadian proposal was related to the possible adoption of new measures to protect flounder species and species under moratoria in the skate fishery, where these species are taken and reported as incidental catch. The proposal calls for the establishment of a minimum mesh size for skate of 305mm for the cod-end and 254mm for all other parts of the trawl.

The Chairman suggested that since there was no consensus reached regarding the Canadian proposal, and as the Canadian information will be provided after this Meeting, this issue could be revisited at the next annual meeting of STACTIC in September. This was agreed to.

Confidential treatment of the electronic reports and messages transmitted to the NAFO Secretariat

The representative of Denmark (in respect of the Faroe Islands and Greenland) introduced STACTIC Working Paper 00/19 regarding the confidentiality and security of electronic hail reports and messages.

The representatives of the European Union, Norway, Iceland, and Russia stressed the importance of confidentiality and indicated support for the Denmark proposal. The representative of Norway however noted that the current draft of the working paper would not allow Contracting Parties that do not have an inspection presence in the NRA to have access to port inspection reports.

It was agreed to review the proposal based on the comments received at this meeting and to submit a revised proposal at the September meeting, 2001.

Program for Observers and Satellite Tracking for shrimp in Division 3M

The representative of Iceland introduced a proposal "Ideas for an alternative observer program regarding shrimp fisheries in Division 3M". He reviewed Iceland's reasons for objecting to 100% observer coverage and invited other Contracting Parties to comment on the alternative observer program proposed in the Icelandic working paper

The representative of Norway concurred with Iceland's view that 100% observer coverage was not necessary in the 3M shrimp fishery.

The representative of the European Union stated that observers and VMS are to be reviewed over the coming year with possible changes to be implemented by 2003. He emphasized the need for a systematic review and cautioned against isolated exceptions for different fisheries.

The representative from Denmark noted that there have been difficulties in ensuring that bycatch is recorded correctly in the shrimp fishery and there have also been problems with highgrading. These issues are best dealt with by observers. The representative from Iceland responded by noting that bycatch information from Icelandic observers has been provided to the Scientific Council and that this data indicates very low bycatches in the shrimp fishery.

The Representative of Iceland indicated that Iceland will be submitting a formal proposal regarding an alternative observer program at the September annual meeting, 2001.

The use of observer information for scientific purposes

The representative of the European Union referred to Scientific Council document 00/23 (Harmonized NAFO Observer Program Data System Proposal) which was adopted by the Fisheries Commission in 2000. He stated that certain elements of this document need to be revisited, e.g. confidentiality and identification of data elements required for scientific purposes.

After some discussion the representative of the EU stated that the European Union will review this issue and will submit proposed amendments to SCS 00/23 at the September annual meeting. The European Union may also submit a proposal for an observer manual.

Chartering arrangements

The representative of the European Union expressed concerns about the current chartering arrangement and stated that it was the position of the European Union that the pilot project should not continue beyond the current year. He stressed that, in principle, there should be a genuine link between the vessel and the quota beneficiary. Furthermore the 100 days of 3M shrimp should in no case be transferable.

The representative of Norway agreed with the European Union's general concern and added that the effort allocation scheme for shrimp was not meant to allow Contracting Parties with no track record in the shrimp fishery to sell or barter the 100 days of 3M shrimp fishing effort for business purposes. The allocation of 100 days was to allow Contracting Parties to participate and develop a shrimp fishery. Iceland agreed with the Norwegian observation regarding chartering arrangements in the 3M shrimp fishery.

Annex 1. List of Participants

CANADA

Head of Delegation

L. Strowbridge, Director, Special Programs, Fisheries Management, Newfoundland Region, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1
Phone: +709 772 8021 - Fax: +709 772 2046 - E-mail: strowbridgel@dfo-mpo.gc.ca

Advisers

D. Bevan, Director General, Resource Management, Dept. of Fisheries and Oceans, 200 Kent Street, Ottawa, Ontario K1A 0E6
Phone: +613 990 6794 - Fax +613 954 1407 - E-mail: bevand@dfo-mpo.gc.ca

W. Evans, Supervisor, Offshore Surveillance, Conservation and Protection, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1
Phone: +709 772 4412 - Fax: +709 772 5983 - E-mail: evansw@dfo-mpo.gc.ca

D. Kulka, Section Head, Science Br., Science, Oceans and Environment, Newfoundland Region, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1
Phone: +709 772 2064 - Fax: +709 772 5469 - E-mail: kulkad@dfo-mpo.gc.ca

B. Lester, Resource Management Officer-Groundfish, Resource Management - Atlantic, Fisheries Management, Dept. of Fisheries and Oceans, 200 Kent Street, Ottawa, Ontario K1A 0E6
Phone: +613 990 0090 - Fax +613 990 7051 - E-mail: lesterb@dfo-mpo.gc.ca

A. Saunders, Oceans, Environment and Economic Law Division (JLO), Dept. of Foreign Affairs and International Trade, 125 Sussex Drive, Ottawa, Ontario K1A 0G2
Phone: +613 996 2643 - Fax: +613 992 6483 - E-mail: allison.saunders@dfait-maeci.gc.ca

P. Steele, Director, Enforcement Br., Conservation and Protection, Fisheries Management, Dept. of Fisheries and Oceans, 200 Kent Street, Ottawa, Ontario K1A 0E6
Phone: +613 990 0109 - Fax +613 941 2718 - E-mail: steelep@dfo-mpo.gc.ca

R. Steinbock, A/Director, Atlantic Affairs Div., International Affairs Directorate, Dept. of Fisheries and Oceans, 200 Kent St., Ottawa, Ontario K1A 0E6
Phone: +613 993 1836 - Fax: +613 993 5995 - E-mail: steinbob@dfo-mpo.gc.ca

B. Whelan, Chief, NAFO Unit, Conservation and Protection, Fisheries Management, Newfoundland Region, Department of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1
Phone: +709 772 0928 - Fax: +709 772 0008 - E-mail: whelanb@dfo-mpo.gc.ca

DENMARK (IN RESPECT OF FAROES AND GREENLAND)

Head of Delegation

M. T. Nedergaard, Fiskerilicensinspektør, Head of Unit, Gronlands Fiskerilicenskontrol, Postbox 501, DK-3900 Nuuk, Greenland
Phone: +299 345377 - Fax: +299 323235 - E-mail: mads@gh.gl

Advisers

J. H. Toftum, Ministry of Fisheries, P. O. Box 64, FO-100 Torshavn, Faroe Islands
Phone: +298 353030 - Fax: +298 353035 - E-mail: jenst@fisk.fl.fo

J. Simonsen, Ministry of Fisheries, P. O. Box 64, FO-100 Torshavn, Faroe Islands
Phone: +298 313530 - Fax: +298 353035 - E-mail: js@vb.fo

ESTONIA

Head of Delegation

T. Roose, Deputy Director General, Estonian Environmental, Inspectorate, Kopli 76, 10416 Tallinn, Estonia
Phone: +372 696 2238 - Fax: +372 696 2237, E-mail: tarvo.roose@kki.ee

EUROPEAN UNION

Head of Delegation

F. Wieland, Deputy Head of Unit, European Commission, Directorate General for Fisheries, External Policy and Markets, International and Regional Arrangements, Rue de la Loi 200, B-1049 Brussels, Belgium
Phone: +32 2 296 3205 - Fax: +32 2 296 5951 - E-mail: Friedrich.Wieland@cec.eu.int

Advisers

H. Koster, Chief of Unit (Inspection), European Commission, Directorate General for Fisheries, Rue de la Loi 200, B-1049 Brussels, Belgium

Phone: +32 2 295 0235 - Fax: +32 2 296 2338 - E-mail: Harm.Koster@cec.eu.int

S. Ekwall, Administrator, European Commission, Directorate General for Fisheries, External Policy and Markets, International and Regional Arrangements, Rue de la Loi/Wetstraat 200, B-1049 Brussels, Belgium

Phone: +32 2 299 6907 - Fax: +32 2 296 5951 - E-mail: Staffan.Ekwall@cec.eu.int

V. Angot, European Commission, Directorate General for Fisheries, Rue de la Loi 200, B-1049 Brussels, Belgium

Phone: +32 2 296 6406 - Fax: +32 2 296 2338 - Email: Veronique.Angot@cec.eu.int

R. Akesson, Ministry for Agriculture and Fisheries, 10333 Stockholm, Sweden

Phone +46 08 405 1122 - Fax: +46 08 10 5061 - E-mail: rolf.akesson@agriculture.ministry.se

R. Uher, Administrator, General Secretariat, Council of the European Union, Rue de la Loi 175, B-1048 Brussels, Belgium

Phone: +32 2 285 6987 - Fax: +32 2 285 6910 - E-mail: rainer.uher@consilium.eu.int

S. Feldthaus, Head of Section, Ministry of Food, Agriculture and Fisheries, Holbergsgade 2, 1057 Copenhagen, Denmark

Phone: +45 33 92 35 60 - Fax: +45 33 11 82 71 - E-mail: sfe@fvm.dk

B. Kottmann, Federal Agency for Agriculture and Food, Palmaille 9, 22767 Hamburg, Germany

Phone: +40 38905 251 - Fax: +40 38905 128 - E-mail: Bodo.Kottmann@ffm.ble.bund400.de

S. Salvador, Chefe da Divisao de Relacoes Internacionais, Direccao Geral das Pescas e Aquicultura, Edificio Vasco da Gama, Cais de Alcantara Mar, 1399-006 Lisbon, Portugal

Phone: +351 21 3913520 - Fax: +351 21 3979790/1 - E-mail: susanas@dg-pescas.pt

M. I. Aragon, Jefa Seccion de la Subdireccion General de Organismos Multilaterales de Pesca, Secretaria General de Pesca Maritima, Jose Ortega y Gasset, 57, 28006 Madrid, Spain

Phone: +34 91 4025000 - Fax: +34 91 3093967 - E-mail: iaragonc@mapya.es

J. Del Hierro, Subdireccion General de Inspeccion Pesquera, Secretaria General de Pesca Maritima, c/ Castellana 112, 5ª Plto, Madrid, Spain

Phone: +34 91 3471645 - Fax: +34 91 3471512

ICELAND

Head of Delegation

K. Arnason, Head of Division, Ministry of Fisheries, Skulagata 4, 150 Reykjavik

Phone: +354 560 9670 - Fax: +354 562 1853 - E-mail: kolbeinn.arnason@sjr.stjr.is

Advisers

T. Skarphedinsson, Legal Adviser, Ministry of Fisheries, Skulagata 4, 150 Reykjavik

Phone: +354 560 9670 - Fax: +354 562 1853 - E-mail: thorir@hafro.is

H. Steinarsson, The Icelandic Directorate of Fisheries, Ingilfsstraeti, 150 Reykjavik

Phone: +354 5697900 - Fax: +354 5697991 - E-mail: hostein@hafro.is

JAPAN

Head of Delegation

Y. Sakamoto, Deputy Director, Far Seas Fisheries Div., Resources Management Dept., Fisheries Agency
Government of Japan, 1-2-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-8907
Phone: + 81 33 591 6582 – Fax: +81 33 591 5824– E-mail:

Advisers

N. Takagi, Director Executive Secretary, Japan Deep Sea Trawlers Association, Ogawacho-Yasuda Bldg., 6
Kanda-Ogawacho, 3-Chome, Chiyoda-ku, Tokyo 101-0052
Phone: +81 33 291 8508 - Fax: + 81 33 233 3267 - E-mail: nittoro@mx3.mesh.ne.jp
Y. Kashio, Representative, Japan Fisheries Association, Suite 1209 Duke Tower, 5251 Duke St. Tower, Halifax,
N.S., Canada B3J 1P3
Phone: +902 423 7975 - Fax: +902 425 0537 - E-mail: jfa-hfx@ns.sympatico.ca

NORWAY

Head of Delegation

T. Lobach, Directorate of Fisheries, P. O. Box 185, N-5804 Bergen
Phone: +47 55 23 80 00 Fax: +47 55 23 80 90 E-mail: terje.lobach@fiskeridir.dep.telemax.no

RUSSIA

Head of Delegation

B. F. Prischepa, Head, "MURMANRYBVOD", Kominterna 5 str., 183038 Murmansk
Phone: +7 8152 458678 – Fax: +7 8152 456028 – E-mail: mrv@an.ru

Advisers

V. E. Agalakov, "MURMANRYBVOD", Kominterna 5 str., 183038 Murmansk
Phone: +7 8152 453562 – Fax: +7 8152 456028 – E-mail: mrv@an.ru
G. V. Gusev, State Committee for Fisheries of the Russian Federation, Fisheries Dept., 12 Rozhdestvensky
Boul., Moscow 103031
Phone: +7095 921 9880 – Fax: +7095 921 3463 – E-mail: gusev@fishcom.ru
V. M. Mishkin, General Director, Scientific and Technical Firm "Complex Systems", 5, Kominterna str.,
183038, Murmansk
Phone: +78152 476080 - Fax: +7 5129510098 / +7 8152476083 – ntf@coms.ru
A. Okhanov, Russian Representative on Fisheries in Canada, 47 Oceanview Drive, Bedford, Nova Scotia,
Canada B4A 4C4
Phone: +902 832 9225 – Fax: +902 832 9608 – E-mail: rusfish@ns.sympatico.ca

UNITED STATES OF AMERICA

Head of Delegation

J. Anderson, Fisheries Management Specialist, Northeast Region, National Marine Fisheries Service, U.S.
Department of Commerce, 1 Blackburn Dr., Gloucester, MA 01930
Phone: +978 281 9226 - Fax: 978-281-9135 - E-mail: jennifer.anderson@noaa.gov

Adviser

P. Martin, Lieutenant Commander, Coast Guard Liaison Officer, Office of Marine Conservation (Rm
5806), U.S. Department of State, 2201 C Street NW, Washington, D.C. 20520
Phone: +202 647 3177 - Fax: +202 736 7350 - E-mail: pmartin@comdt.uscg.mil

SECRETARIAT

L. I. Chepel, Executive Secretary
F. D. Keating, Administrative Assistant
B. J. Cruikshank, Senior Secretary
G. Moulton, Statistical/Conservation Measures Officer

Annex 2. Agenda

1. Opening of the meeting (D. Bevan, Canada)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Report by NAFO Consultant on the NAFO Secretariat Automated System/VMS update
5. Consideration of possible measures for protection of juvenile fish
6. Restriction and regulation of by-catch in Greenland halibut fishery
7. Confidential treatment of the electronic reports and messages transmitted to the NAFO Secretariat
8. Program for observers and satellite tracking for shrimp in Division 3M
9. Report to the Fisheries Commission
10. Other matters
 - a) The use of observer information for scientific purposes
 - b) Chartering arrangements
 - c) Report of the STACTIC Working Group to overhaul the NAFO Conservation and Enforcement Measures
11. Adjournment

**Decision of the Chairman of the Fisheries Commission
on the Special Meetings, 2002
(due to the cancellation of the 23rd Annual Meeting in Cuba,
September 2001)**

Dear Dr. Chepel,

Subject: Special Meeting of the Fisheries Commission

As a consequence of the decision by the Chairman of the General Council, Mr. Enrique Oltuski, to call an intersessional meeting of the General Council and STACFAD to discuss NAFO budget 2002 and other related issues in Denmark through 29 January – 01 February 2002, I authorize as the Chairman of the Fisheries Commission to call for a meeting of the Commission to work in parallel with the General Council. Such a meeting has been requested by Canada, Denmark (in respect of the Faroe Islands and Greenland) and European Union and is called for in accordance with Article XIII.5 of the NAFO Convention.

Please, circulate this fax to the Contracting Parties.

Sincerely yours,

(original signed by)

Peter Gullestad
Chairman of the Fisheries Commission

**Fishing Activity and Utilization of Fish Resources
in the NAFO Regulatory Area
2001**

(provisional catch data from NAFO Contracting Party vessels; monthly and hail reports)

Contracting Party	No. of Vessels (see App.I)	Catches MT: Quota / Catch / %						
		Redfish 3M			Gr. halibut 3LMNO			Shrimp 3M
		Quota	Catch ^c	%	Quota	Catch ^c	%	Vessels / Catch
Canada	3	500	-	-	4446	3035	68	2 294
Cuba	-	1750	-	-	-	-	-	- 797 ^d
Denmark	-	69	-	-	-	-	-	-
Faroes	13	-	-	-	-	345 ^b	18	10 12280
Greenland	-	-	-	-	-	-	-	-
Estonia	9	(13850) ^a	167	1	-	909 ^b	46	7 9638
European Union ^c	45	3100	1750	56	16406	12678	77	10 756
France (SPM)	-	69	-	-	-	-	-	- 408 ^d
Iceland	5	-	-	-	-	-	-	5 5301
Japan	2	400	80	20	3038	2828	93	1 130
Korea	-	69	-	-	-	-	-	-
Latvia	3	(13850) ^a	11	+	-	291 ^b	15	3 2984
Lithuania	7	(13850) ^a	-	-	-	391 ^b	20	4 2702
Norway	12	-	-	-	-	-	-	12 13255
Poland	1	-	-	-	-	-	-	-
Russia	31	(13850) ^a	1281	9	3779	3760	99	9 5687
Ukraine	1	-	-	-	-	-	-	1 348
United States	-	69	-	-	-	-	-	- 411 ^d
Others	-	124	-	-	1971	1936	98	-
TOTAL &	132	5000	3289	66%	29640	24237	82%	63 54991
TAC								

^a Block quota.

^b Other Quota.

^c Catches (end of November)

^d Catches under charter

NAFO hail report system was a main tool for the Secretariat to supervise the shrimp fishery effort and to monitor the general disposition of fishing vessels in the Regulatory Area. This system worked reasonably well except some cases of mis/under/reporting of "Exit-Entry(s)", which would be very important in the case of shrimp fishing effort estimates. In such cases, the NAFO Secretariat would work with the Contracting Party involved to verify hail reports.

According to the provisions Part I.F.4(h) of the Conservation and Enforcement Measures, "...The number of fishing days should be counted from the hail reports of vessels fishing for shrimp and shall include the days of entry or moves into Div. 3M and the area defined in footnote 1 and the days of moves or exit from Div. 3M and the area defined in footnote 1".

Appendix 1

Contracting Party	Name of Vessel
Canada	Genny and Doug Kinguk Newfoundland Otter
Estonia	Eldborg Heltermaa Lomur Lootus Merike Ontika Orvar Sonar Taurus
European Union	Ana Maria Gandon Ancora D'ouro Arcay Area Cova Atlantic Peace Aveirense BeiramarTres Brites Calvao Cidade De Amarante Codeside Coimbra Dorneda Esperanza Menduina Festeiro Freiremar Uno Garoya II Hermanos Gandon IV Joana Princesa Jose Antonio Nores Lutador Maria Eugenia G Moradina Nuevo Virgen De La Barca Nuevo Virgen De Lodairo Pascoal Atlantico Patricia Nores Patricia Sotelo Pesca Vaqueiro Pescaberbes Dos Playa De Arneles Playa De Cativa Playa De Menduina Playa De Rodas

Contracting Party	Name of Vessel
EU (cont'd)	Playa De Sartaxens Playa De Tambo Puente Sabaris Punta Robaleira Rio Orxas Santa Cristina Santa Isabel Santa Mafalda Santa Marina Solsticio Xinzo
Faroes	Arctic Viking Borgin Enniberg Fuglberg Hogifossur Hviltenni Ljosafelli Ocean Castle Ocean Pride Sjurdarberg Solborg South Island Vesturvon
Iceland	Askur Baldur Arni Petur Jonsson Rauoinupur Sunna
Japan	Anyo Maru No. 7 Zuiho Maru No. 88
Latvia	Arnarborg Freija Otto
Lithuania	Anuva Atlas Eyborg Neringa Radvila Sekme Treimani
Norway	Ingar Iversen J. Bergvoll Juvel Koralen Nordoytral Ocean Trawler

Contracting Party	Name of Vessel
Norway (cont'd)	Olympic Prawn Remoy Fjord Remoy Viking Saevking Tonsnes Volstad Viking
Poland	Myrdoma
Russia	Amerlog Andrey Pashkov Andvari Bizon Dimas Eridan Eyborg Gemeny Granat Kapitan Naumov Kobrin Maroanjoca Matrioska Mozdok Murman Nikolay Afanasyev Obsha Obva Okeanator Olchan Olga Oma Onezhskiy Ozernica Polessk Semenovsk Sevryba-1 Tynda Vest Rumb Vityza Vyshgorod
Ukraine	Freija



PART III
(pages 103 to 164)

Activities of the Scientific Council in 2001

List of Meetings

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

- Scientific Council Regular Meeting, 31 May-14 June, Alderney Landing, Dartmouth, N.S., Canada.
- Symposium on Deep-Sea Fisheries, 12-14 September, Centro de Convenciones, Plaza América, Varadero, Cuba.
- Scientific Council Annual Meeting, 17-21 September, Centro de Convenciones, Plaza América, Varadero, Cuba.
- Scientific Council Meeting (shrimp), 7-14 November, NAFO Headquarters, Dartmouth, N.S., Canada.



Scientific Council Meeting
31 May-14 June 2001, Alderney Landing, Dartmouth, N.S., Canada

Chairman: W. B. Brodie (Canada)

Rapporteur: T. Amaratunga, Assistant Executive Secretary

The Scientific Council report was published as NAFO/SCS Doc. 01/24 and in Scientific Council Reports, 2001.

Representatives attended from: Canada, Cuba, Denmark (Faroe Islands and Greenland), Estonia, European Union (France, Germany, Portugal, Spain and United Kingdom), Japan, Norway, Russian Federation and United States of America (USA) (Annex 1).

The agenda was adopted (Annex 2).

The LAN (local area network) system was incorporated for review and deliberations of the stock assessments and other matters.

FISHERIES ENVIRONMENT

Annual air temperatures throughout the Northwest Atlantic were above normal in 2000 but slightly lower than the record highs set in 1999. The atmospheric circulation was intense in 2000 with the centre of activity over the eastern side of the Atlantic. This resulted in a relatively high NAO index, at a level similar to 1999 levels. The index was similar to the values of the early-1990s.

While ice formed on schedule or slightly later-than-usual, the warm temperatures during the winter resulted in an early disappearance and shorter ice duration in 2000 than normal off southern Labrador, Newfoundland and in the Gulf of St. Lawrence. Little to no ice reached the Scotian Shelf. Although there was slightly more ice in 2000 compared to 1999, sea ice conditions for the past three years have been light. During 2000, the number of icebergs to reach south of 48°N increased dramatically relative to 1999 (from 22 to 843).

Annual sea surface temperatures (SSTs) from satellite imagery and measured *in situ* indicated warmer-than-normal values, continuing a trend that was established over the past several years. Temperatures off Newfoundland and Labrador during 2000 were warmer-than-normal throughout most of the water column. The area of CIL (Cold Intermediate Layer) water increased to above normal values and the largest area in the past 6 years from southern Labrador to northern Newfoundland. On the Grand Bank the CIL area was similar to 1999 and was slightly below normal. The CIL volume during the autumn of 2000 rose compared to 1999.

Deep-water temperatures on the Scotian Shelf (Emerald Basin) continued to remain higher-than-normal. Warmer-than-normal waters were observed over substantial portions of the bottom and at intermediate waters over the northeastern Scotian Shelf for the second year in succession.

Both the shelf/slope front and the north wall of the Gulf Stream moved further northward during 2000 with both north of their climatological mean positions.

The meeting discussed environmental indices (implementation in the assessment process). There were diverse opinions all the way from the views that environmental information was useless for management purposes, to it was essential for stock assessments. For example, catchability effects related to temperature may have to be accounted for in order to obtain good estimates of stock abundance. Activities related to incorporating environmental data into assessments was seen as a

way to further promote cooperative work between oceanographers and assessment biologists. Some examples where environment has been used in stock assessment were provided, including in the assessment of squid. Also, the assessment of American plaice was done under two different productivity regimes. Some felt that the latter was a good example of how environmental information could be used, i.e. building different scenarios. Discussions were also held on the inclusion of environmental variables in the precautionary approach. If recruitment trends were established from environmental variables, then one could use these for prediction. Given that the environmental influence is often on the egg and larval stages and recruitment to the fishery occurs one to several years later, this lag allows some future predictive capability. Forecasting of the environment using statistical techniques also looks promising.

FISHERIES SCIENCE

The Standing Committee on Fisheries Science (STACFIS) continued its initiative (from 1999) to assess the stocks in geographical order of four (4) regions: a) Greenland and Davis Strait; b) Flemish Cap; c) Grand Bank and Subareas 2+3; d) widely distributed stocks in Subarea 3+4 - Grenadiers, Greenland halibut, Squid and Cod in 2J3KL.

A brief summary of general fishery trend of NAFO Regulatory Area in 2001 is demonstrated in the following table (by the NAFO Secretariat):

(from NAFO monthly reports)
2001

Contracting Party	Cod 3M		Redfish 3M		Yellowtail 3LNO		G. halibut 3LMNO	
	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
1. Bulgaria	-	-	-	-	-	-	-	-
2. Canada	0	0	500	-	12675	12036	4 446	3 035
3. Cuba	0		1750		-		-	
4. Denmark (Faroe Islands and Greenland)	0	0	69	0	-	0	-	345
5. European Union ³	0	62	3100	1750	260	773	16 406	12 678
6. France (St. Pierre et Miquelon)	-		69		-		-	-
7. Iceland	-	0	-	0	-	0	-	-
8. Japan	-	0	400	80	-	0	3 038	2 828
9. Korea	-		69		-		-	
10. Norway	0	0	-	0	-	0	-	0
11. Poland	0	0	-	0	-	0	-	0
12. Estonia		0		167		46		909
13. Latvia	0 ¹	0		11		0		291
14. Lithuania		0	13850 ¹	0		0		391
15. Russia		27		1281		148	3 779	3 760
16. United States of America	-		69		-		-	
17. Others	0		124		65		1 971	
TAC and Catch	0	89	5000 ²	3289	13 000	13003	29 640	24 237
% of utilization of TAC	-			66		100		82

¹"Block quota" (Estonia, Latvia, Lithuania, Russia).

²This is a specific TAC (less than the sum of national allocations) with the following conditions: Each Contracting Party shall notify the Executive Secretary bi-weekly of catches taken by its vessels from this stock. Not more than 2500 tons may be fished before July 1, 2000. The Executive Secretary shall notify without delay all Contracting Parties of the date on which, for this stock, accumulated reported catch taken by Contracting Parties is estimated to equal 50 then 100 percent of the TAC for that stock.

³Catches until 30 November.

The provisional data from the above table indicate that major allocated stocks were under-utilized. This trend has been indicative for all previous period (during 90s).

Assessment of Fish Stocks

The Scientific Council and Fisheries Commission during the Annual Meetings, September 1999 and 2000, agreed to consider certain stocks on an alternating basis. This section presents those stocks for which the Scientific Council provided scientific advice for the year 2002. The Coastal States – Canada and Denmark (Greenland) furnished their requests for the scientific advice.

I. Assessment/Advice on fish stocks at the request of the Fisheries Commission

Redfish (Sebastes spp.) in Division 3M

There are 3 species of redfish which are commercially fished on Flemish Cap: deep-water redfish (*Sebastes mentella*), golden redfish (*Sebastes marinus*) and Acadian redfish (*Sebastes fasciatus*). The present assessment evaluates the status of the Div. 3M beaked redfish stock, regarded as a management unit composed of two populations from two very similar species (*Sebastes mentella* and *Sebastes fasciatus*). The reason for this approach is that evidence indicates this is by far the dominant redfish group on Flemish Cap.

The Council was unable to advise on a specific TAC for year 2002, however, in order to maintain relatively low fishing mortalities so as to promote stock recovery, recommended that catch for Div. 3M redfish in year 2002 be in the range of 3 000-5 000 tons.

Yellowtail Flounder (Limanda ferruginea) in Divisions 3L, 3N and 3O

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.

Based on results of 2 additional surveys since the 2000 assessment, the current view was that the stock size has increased over the past year. The stock biomass was perceived to be at the level well above that of the mid-1980s.

The TAC for yellowtail flounder in Div. 3LNO for the year 2002 was advised not to exceed 13 000 tons, based on the projection of $F=2/3 F_{msy}$ and an assumed catch of 14 300 tons in the year 2001.

American Plaice (Hippoglossoides platessoides) in Divisions 3L, 3N and 3O

Historically, American plaice in Div. 3LNO had comprised the largest flatfish fishery in the Northwest Atlantic. In most years the majority of the catch has been taken by offshore otter trawlers. There was no directed fishing in 1994 and there has been a moratorium from 1995 to 2001. Even under moratorium catches have increased substantially in recent years.

The Scientific Council concluded that the stock remained low compared to historic levels. No directed fishery on American plaice in Div. 3LNO was recommended in 2002 and 2003.

Witch Flounder (Glyptocephalus cynoglossus) in Divisions 2J, 3K and 3L

Historically, the stock mainly occurred mainly in Div. 3K although recently the proportion of the stock in Div. 3L has been greater. In recent years, catches have been reported from the Flemish Pass area of Div. 3M. This is likely to represent an extension of the Div. 3L component of the stock. In the past, the stock had been fished mainly in winter and spring on spawning concentrations but is now only a by-catch of other fisheries. The catches during 1995-99 ranged between 300-1400 tons including unreported catches. The 2000 catch was 700 tons.

The Scientific Council recommended no directed fishing on witch flounder in the years 2002 and 2003 in Div. 2J, 3K and 3L to allow for stock rebuilding. By-catches in fisheries targeting other species should be kept at the lowest possible level.

Cod (Gadus morhua) in Divisions 3N and 3O

The 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. There has been no directed fishery since mid-1994. The stock remained close to its historical low with weak representation from all year-classes.

The Council recommended that there should be no directed fishing for cod in Div. 3N and 3O in 2002 and 2003. Catches of cod should be kept at the lowest possible level and restricted to unavoidable by-catch in fisheries directing other species.

Redfish (Sebastes spp.) in Divisions 3L and 3N

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 to Div. 3O, is unclear and further investigations are necessary to clarify the integrity of the Div. 3LN management unit.

Catches averaged about 22 000 tons from 1959 to 1985, increased sharply to an historical high of 79 000 tons in 1987 then declined steadily to about 500 tons in 1996. Catch increased to 850 tons by 1998 and was about 2 000 tons in 1999 and 2000. A moratorium on directed fishing was implemented in 1998. Catches since 1998 were taken as by-catch primarily in Greenland halibut fisheries by EU-Portugal, EU-Spain and Russia.

The Council advised that based on the available data, the stock appears to be at a very low level. There are indications of some increases in the stock since 1996 due to growth in weight of the relatively strong 1986-87 year-classes and possibly through some immigration of fish from Div. 3O to Div. 3N. There should be no directed fishing for redfish in Div. 3LN, and by-catches of redfish in fisheries targeting other species should be kept at the lowest possible level.

Redfish in Div. 1F and Adjacent ICES Area

Scientific Council recommended that *the pelagic redfish resource in the NAFO Convention Area (NCA) not be referred to as "redfish in Div. 1F" but more specifically as "pelagic S. mentella in the NAFO Convention Area"*.

With regard to redfish in NAFO Division 1F, the Scientific Council was requested by the Fisheries Commission to: *review all available information on the distribution of this resource over time, as well as on the affinity of this stock to the pelagic redfish resource found in ICES Sub-area XII, parts of SA Va and XIV or the redfish found in NAFO Subareas 1-3.*

The Scientific Council responded that information had been provided to Fisheries Commission during the September 2000 Annual Meeting (*NAFO Sci. Coun. Rep.*, 2000, p. 182-183) indicating that since the initiation of systematic surveys in the early-1990s, the stock had been shown to be distributed in the ICES Sub-area XII, parts of SA Va and XIV. During the 1999 international survey, the stock was found distributed to a great extent inside the NAFO Regulatory Area (Div.

1F). Scientific Council also indicated that it considered the pelagic redfish distributed in NAFO Div. 1F as part of the pelagic stock previously distributed in the NEAFC Convention Area.

Scientific Council concluded that the redfish found in NAFO Div. 1F do constitute a part of the pelagic redfish in the NEAFC Area, and recommended that *the pelagic S. mentella resource should be managed in a compatible manner between NAFO and NEAFC. Scientific Council noted that Fisheries Commission has done this for the 2001 fishing year, but recommends that longer-term arrangements be made.*

Scientific Council was unable to evaluate the possible relationships between the pelagic redfish and the shelf stocks in the NAFO Convention Area and that ICES has also been unable to agree on the relationship of the pelagic redfish with those in the shelf areas of Iceland.

The Council noted another related **request on pelagic redfish was forwarded by the Coastal State Canada:**

With regard to redfish in Division 1F the Scientific Council was requested by Canada:

- a) *to review the available information related to the biology and distribution of oceanic redfish in the north Atlantic and to provide, to the extent possible, commentary on possible links to the various shelf stocks in the northwest Atlantic.*
- b) *to make recommendations on the most appropriate means of interaction with ICES with regards to this resource.*

Scientific Council responded that information pertaining to part (a) of the request is contained in the STACFIS report (at Appendix IV, pages 182-183). With regard to part (b), Scientific Council considered that it is important to have close, ongoing interaction between NAFO Scientific Council and ICES on the issue of pelagic *S. mentella*.

Scientific Council advises against the establishment of a Joint NAFO/ICES Working Group to examine this resource. The resource is assessed annually by the North-Western Working Group of ICES, and members of Scientific Council normally participate in these activities.

Greenland Halibut (Reinhardtius hippoglossoides) in Subarea 2 and Divisions 3KLMNO

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.

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 to 20 000 tons per year in 1995 to 1998 as a result of lower TACs under management measures introduced by the Fisheries Commission. The catch has been increasing since 1998 and in 2000 was estimated to be 34 000 tons, the highest since 1994.

The Scientific Council recommendation was: The results of the assessment are considered uncertain. There is a high level of uncertainty associated with the estimates of the 1994 and 1995 year-classes, and these year-classes are expected to contribute significantly to the catches in 2001 and 2002. In addition, the high exploitation of immature fish and the low abundance of adult fish (>70 cm) is indicative of a situation of significant biological risk, although this risk cannot be quantified at present. The Scientific Council therefore recommends that the catch for 2002 should not exceed the 2001 level of 40 000 tons until the contribution of the 1994 and 1995 year-classes to the catches in 2001 can be evaluated during the 2002 assessment.

Capelin (Mallotus villosus) in Divisions 3N and 3O

No advice was possible. Scientific Council has noted previously that there are data available from multi-species surveys in Div. 3NO that may be useful for evaluating the status of this capelin resource. Despite repeated recommendations that these data be examined and the results of the analyses be brought forward to review by Scientific Council, this has not happened. Scientific Council recommended that data on capelin in Div. 3NO available from Canadian bottom trawl surveys be analyzed and the results be presented at the June 2002 Meeting.

It was noted that NAFO has recognized the role that capelin play in the Northwest Atlantic ecosystem as a very important prey species for fish, marine mammals and seabirds. In acknowledgement of this, for many years Scientific Council has maintained the perspective that exploitation should not exceed 10% of the known spawning biomass. Historically, the spawning biomass was determined through the use of hydroacoustics.

Short-finned Squid (Illex illecebrosus) in Sub-areas 3 and 4

The northern short-finned squid is an annual species (1-year life cycle) that is considered to comprise a unit stock throughout its range in the Northwest Atlantic Ocean, from Newfoundland to Florida, including Subareas 3-6.

Catches in Subareas 3+4 increased during the late-1970s, averaging 81 000 tons during 1976-81, and peaking at 162 000 tons in 1979. Catches in Subareas 3+4 declined to 100 tons in 1986, ranged between 600 and 11 000 tons during 1987-95, increased to 16 000 tons in 1997, and declined to 300 tons in 1999 and 2000. A TAC for Subareas 3+4 was first established in 1975 at 25 000 tons but was increased in 1978, 1979 and 1980. The TAC remained at 150 000 tons during 1980-98 and was set at 75 000 tons for 1999 and 34 000 tons for 2000-2001. Based on survey data, the short-finned squid resource in Subareas 3+4 remained at a low level in 2000.

The Scientific Council was unable to advise on a specific level of catch for year 2002. However, based on available information (including an analysis of the upper range of yields that might be expected under the present low productivity regime), the Council advises that the TAC for year 2002 for short-finned squid in Subareas 3+4 be set between 19 000 tons and 34 000 tons.

The advised TAC range (19 000-34 000 tons) was applicable only during periods of low productivity. In periods of high productivity, higher catches and TAC levels would be appropriate.

Response to Fisheries Commission Special Request for Scientific Advice in the Year 2002 Regarding Squid (*Illex*) in Subareas 3+4

The Fisheries Commission stated: *For squid (Illex) in Subareas 3 and 4, the Scientific Council is requested to advise on the level of TAC in high abundance years and on the criteria which could be reliably used to forecast changes in productivity under an annual management regime. Scientists are encouraged to further analyze available data toward developing other possible indicators that could be used under an in-season management regime for squid, recognizing that the practical use of such indicators would require that they be available as early in the season as possible.*

The Scientific Council responded that in 2000, Scientific Council was unable to advise on any modification to the protocol for determining productivity of the short-finned squid resource in NAFO Subareas 3+4 to ensure its applicability in the long term. There are no new data available to address this issue. Furthermore, Scientific Council is not in a position to advise on a specific level of TAC that would be applicable during the high productivity regime.

II. Assessment/Advice on fish stocks at the Request of the Coastal States (Canada and Denmark-Greenland)

- a) The Scientific Council was requested by the Coastal State Canada to provide advice on stock status for Greenland halibut in Subareas 0-3, cod in Div. 2J+3KL, by-catch of yellowtail flounder in Div. 3LNO, by-catch of American plaice in Div. 3LNO and redfish in Div. 1F. This section provides the Scientific Council responses where possible.

Greenland Halibut in Subareas 0-3

The Scientific Council noted there was no information available at this meeting.

*Cod (*Gadus morhua*) in Divisions 2J, 3K and 3L*

Considerable uncertainty exists about the structure of the Div. 2J and 3KL stock. The available tagging, genetic, survey and biological data are consistent with the two hypothesis: a) the inshore constitutes a separate inshore subpopulation that is functionally separate from the offshore; and b) inshore and offshore fish together constitute a single functional population. The only over-wintering aggregation known to exist occurs in a deepwater inlet in northern Div. 3L, Smith Sound. Fish from this aggregation migrate seasonally out of the sound in the spring, mainly northward in Div. 3L and southern Div. 3K, supporting most of the commercial fishery which has taken place in the autumn over the last three years. Elsewhere densities are extremely low throughout the stock area, with the exception of the southern portion of Div. 3L where there is a seasonal migration of fish from Subdiv. 3Ps. This migration was much reduced in 2000. Slightly elevated abundances of fish were detected in 1999-2000 in surveys on the shelf near the boundary between southern Div. 3K and northern Div. 3L.

The rapid decline in the resource in the early-1990s led to reduced TACs and eventually to a moratorium on commercial fishing in 1992. A recreational fishery was permitted in 1992-94, 1996, 1998 and 1999 but not in 1995 and 1997. Catches also came from sentinel surveys in 1995-99 and a commercial index fishery 1998. The commercial fishery was reopened in 1999 with a TAC of 9 000 tons for the inshore only. In 2000, a TAC of 7 000 tons was established for sentinel surveys and a commercial index fishery in the inshore for vessels under 65 feet.

Regarding the state of the stock, indices of exploitable biomass from commercial and sentinel catch rates and the autumn bottom-trawl survey in inshore strata show downward trends over the recent period but are inconsistent with estimates from tagging which indicate a stable biomass and an acoustic index for Smith Sound which shows an increase. Therefore, it cannot be said whether recent levels of exploitation have been sustainable. The commercial gillnet catch-rate data for the last three years suggests a progressive shrinkage of the area of highest concentration to a restricted portion of northern Div. 3L. The fact that only about 70% of the TAC was taken in the 2000 commercial index fishery is further cause for concern. Overall, there is no doubt that the Div. 2J and 3KL cod spawner biomass remains at an extremely low level and there is no evidence of a recovery. Any fishery on the remnant in the inshore will delay recovery of the stock.

By-catch of Yellowtail Flounder in Div. 3LNO

The Scientific Council was requested to comment on the potential impacts of by-catches on the long-term sustainability of the yellowtail flounder resource.

The Council noted that total catches of yellowtail flounder have been above the TAC in all years since the fishery re-opened: 9% in 1998 and 1999 and 11% in 2000. Scientific Council reiterates its concern that all removals (directed plus by-catch) above the advised catch will result in higher fishing mortality than intended. This will result in an immediate loss in yield available for the next fishing year and, if maintained, could impact the long-term sustainability of the resource.

By-catch of American plaice in Div. 3LNO

Canada requested Scientific Council:

Scientific Council was requested to review all available information and provide the best estimate of actual by-catch removals of American plaice in the NRA and to comment on the potential impacts of these by-catches on the recovery of the resource.

Scientific Council noted that estimates of the catch of American plaice in 2000 in Div. 3LNO ranged from about 2 400 tons as reported on STATLANT 21A forms compared to an agreed best estimate of catch used in the assessment of about 5 200 tons. Based on the assessment, this agreed catch translated into a fishing mortality of 0.25; about double that which would have been estimated had the STATLANT 21A data been accepted.

Scientific Council recommended that Fisheries Commission take all possible steps to ensure that by-catches of American plaice are reduced significantly and restricted to true and unavoidable by-catches in fisheries directed for other species.

b) Request by Denmark (Greenland) for Advice**Redfish and Other Finfish in Subarea 1*****Demersal Redfish (Sebastes spp.) in Subarea 1***

There are two species of commercial importance in Subarea 1, golden redfish (*Sebastes marinus*) and deep-sea redfish (*Sebastes mentella*). Relationships to other North Atlantic redfish stocks are unclear.

During the last decade, redfish were taken mainly as by-catch in the trawl fisheries for cod and shrimp. Both redfish species golden redfish and deep-sea redfish were included in the catch statistics since no species specific data were available. Recent catch figures do not include the weight of substantial numbers of small redfish discarded by the trawl fisheries directed to shrimp.

No analytical assessment of *Sebastes marinus* (**Golden Redfish**) was possible. Recruitment index has been low during the last decade. The stock remains severely depleted. There are indications that the probability of future recruitment is reduced at the current low SSB. Short-term recovery is very unlikely.

No analytical assessment of *Sebastes mentella* (**Deep-sea Redfish**) was possible. The spawning stock of deep-sea redfish in Subarea 1 remains severely depleted, and an increase is unlikely in the short term.

The scientific recommendation for Golden and Deep-sea Redfish stocks was no directed fishery should occur on redfish in Subarea 1 in 2002 and 2003. By-catches in the shrimp fishery should be at the lowest possible level.

Other Finfish in Subarea 1

The resources of other finfish in Subarea 1 are mainly Greenland cod (*Gadus ogac*), American plaice (*Hippoglossoides platessoides*), Atlantic and spotted wolffishes (*Anarhichas lupus* and *A. minor*), thorny skate (*Raja radiata*), lumpsucker (*Cyclopterus lumpus*), Atlantic halibut (*Hippoglossus hippoglossus*) and sharks. No recommendations can be made for Greenland cod, lumpsucker, Atlantic halibut and sharks

No analytical assessment was possible for all these stocks. The following recommendations were provided:

No directed fishery in Subarea 1 for American plaice, Atlantic wolffish, spotted wolffish and thorny skate should occur in 2002 and 2003. By-catches of these species in the shrimp fisheries should be at the lowest possible level.

Roundnose grenadier in Subareas 0 and 1

The Scientific Council reviewed the status of this stock at this June 2001 Meeting and found no significant change in status. Therefore, the Scientific Council has not provided updated/revised advice for 2002 for this stock. The next Scientific Council assessment of this stock will be in 2002.

Distribution of biomass of Greenland halibut between SA 0 and SA 1

Denmark (Greenland) requested the Scientific Council to: *in its 1993 report, the Scientific Council noted that the offshore component of Greenland halibut was distributed equally between Subareas 0 and 1. The Council is asked to up date the information on the distribution of Greenland halibut and provide advice on allocation of TACs to Subareas 0 and 1 offshore.*

The Council responded:

In 1999 Canada conducted a survey in Div. 0A in which the biomass was estimated at 83 000 tons. There have been no surveys covering Div. 1A. In 2000 Canada conducted a survey in Div. 0B where the biomass was estimated at 56 000 tons. A similar survey in Div. 1CD in 2000 estimated the biomass at 59 000 tons. Based on the surveys in 1987, 1988, and 1990 (*NAFO Sci. Coun. Rep.*, 1993, p. 98) and the recent surveys in Div. 0B and Div. 1CD, the biomass seems to be distributed approximately 50:50 between the two Subareas 0 and 1. There are planned surveys that will cover SA 0 and Div. 1A-1D in 2001.

Greenland halibut in Div. 1A inshore

The Scientific Council was requested by Denmark (Greenland) to: *provide advice on allocation of TACs distributed in areas of Ilulissat, Uummannaq and Upernavik*, and assessed the following:

The inshore stock is dependent for recruitment on immigration from the offshore nursery grounds in Div. 1A and 1B and the spawning stock in Davis Strait. Only sporadic spawning seems to occur in the fjords, hence the stock is not considered self-sustainable. The fish remain in the fjords, and

do not appear to contribute back to the offshore spawning stock. This connection between the offshore and inshore stocks implies that reproductive failure in the offshore spawning stock for any reason will have severe implications for the recruitment to the inshore stocks.

The fishery is mainly conducted with longlines and to a varying degree gillnets. Total catches in all areas have increased from 8 000 tons in the late-1980s increasing to greater than 20 000 since 1998.

		Catches ¹ (‘000 tons)	TAC (‘000 tons) Recommended
Disko Bay	1998	10.7	– ²
	1999	10.6	7.9
	2000 ³	7.6	7.9
	2001		7.9
Uummannaq	1998	6.9	– ²
	1999	8.4	6.0
	2000 ³	7.6	6.0
	2001		6.0
Upernavik	1998	7.0	– ²
	1999	5.3	4.3
	2000 ³	3.8	4.3

¹ Provisional.

² No TAC advised before 1999.

³ The total catches are likely to have been underestimated by about 2 000 tons in Div. 1A inshore total.

The age compositions in catches in all three areas have been reduced to fewer age groups compared to the early-1990s and the stock has thus become more sensitive to incoming year-classes.

Disko Bay: Indices of abundance have been relatively stable since 1993. Stock structure has also been stable although it consists of relatively few and young age groups compared to before 1990.

Uummannaq: Indices of abundance have been relatively stable since 1993. Stock structure has since the mid-1990s moved towards younger and fewer age groups but have stabilized in recent years.

Upernavik: Stock structure has since the mid-1990s moved towards younger and fewer age groups in the traditional fishing areas around Upernavik and up to 73°45’N (Giesecke Ice fjord). In the northern parts of the district, where new fishing grounds are exploited, data are insufficient to determine the status of the resource.

Scientific Council recommended that separate TACs are appropriate for each of the three areas.

Assessments indicate that there has been no improvement in stock status in any of the three areas. Therefore, Scientific Council concludes that there be no change in the TACs recommended for 2000. The TAC for 2001 for each of the inshore areas are therefore recommended to be: Disko Bay 7 900 tons, Uummannaq 6 000 tons, and Upernavik 4 300 tons.

Request by Canada and Denmark (Greenland) for Advice on TACs and Other Management Measures

The Scientific Council was requested by the Coastal States Canada and Denmark (Greenland) to: *provide advice for certain stocks*. This section presents the stock for which the Scientific Council provided advice for the year 2002.

Scientific Council noted the request usually makes reference to Greenland halibut in Subareas 0 and 1. The Council noted that the specific stock area to be addressed under this request is Greenland halibut in Subarea 0 offshore, Div. 1A offshore and Div. 1B-1F. The Council considerations are given below.

Greenland Halibut (*Reinhardtius hippoglossoides*) in Subarea 0 + Division 1A Offshore and Divisions 1B-1F

The Greenland halibut stock in Subarea 0 + Div. 1A offshore and Div. 1B-1F is part of a common stock distributed in Davis Strait and south to Subarea 3.

Due to an increase in offshore effort, catches increased from 2 000 tons in 1989 to 18 000 tons in 1992 and have remained at about 10 000 tons annually since.

The scientific advice was that the TAC for year 2002 should not exceed 11 000 tons for Div. 0B and 1B-1F where the fishery primarily has taken place since it began.

The relationship between Greenland halibut in Div. 0A + 1A (offshore) and the remaining areas needs to be resolved. In June 2000 Scientific Council recommended an additional TAC of 4 000 tons for Div. 0A + 1A offshore based on recent survey results. No new information was available to update this advice

III. Scientific Advice from Scientific Council on its Own Accord

Roughhead Grenadier Subareas 2 and 3

The Scientific Council on its own accord considered roughhead grenadier in Subareas 2 and 3. Based on information available the Council noted that the state of the stock is unknown and is therefore not able to provide advice at this time. The next Scientific Council assessment of this stock should be in 2003.

Elasmobranchs

The Council agreed to defer this discussion to its September 2001 Meeting.

RESEARCH ACTIVITY AND COORDINATION

Scientific Surveys

Very limited surveys were conducted during 2001 in the NAFO Regulatory Area. The most surveys were deployed by Canada and USA in their 200-mile zones, and by Denmark (Greenland) in western part of Greenland.

The Northwest Atlantic Groundfish Research Trawl Survey Data System (NWAGS) was presented by Bedford Institute of Oceanography (BIO), Dartmouth, Canada. The data system consists of a common ORACLE data model, Internet web site and data products proposed for NW Atlantic groundfish trawl surveys conducted by Canadian and United States fisheries research laboratories including: Bedford Institute of Oceanography, Gulf Fisheries Centre, Maurice Lamontagne Institute,

Northeast Fisheries Science Centre, Northwest Atlantic Fisheries Centre, and the St. Andrews Biological Station. The new system will replace the ECNASAP data system that was developed in 1995. The Maritimes Science Virtual Data Centre (VDC) would be used to provide data products: including up-to-date interactive data tables, maps and graphs for biomass, abundance, size and age composition for 400+ groundfish and invertebrate species ranging from Cape Hatteras, North Carolina, USA, to the Labrador Shelf in Canada starting in 1970. An interactive demonstration showed features of this proposed system using the existing intranet site.

Several aspects of this system require further evaluation before the various data sets collected under many different survey configurations of vessel, gear, tow duration, etc., can be combined for analysis. STACREC considered many of the positive features of a combined Northwest Atlantic Survey Database.

STACREC recommended that Contracting Parties should check to see what interest there is to having their national data included in the Northwest Atlantic Survey Database.

It was felt that the database could be housed and maintained on a server outside NAFO.

On NAFO Observer Protocol: It was recommended that the Conservation and Enforcement Measures Part VI, Program for Observers and Satellite Tracking, be amended to formally incorporate the Scientific Council protocols as specified in NAFO SCS Doc. 00/23 and as adopted by the Fisheries Commission in September 2000.

STACREC noted that the Conservation and Enforcement Measures Part VI, Program for Observers and Satellite Tracking (Section 3 d), is inconsistent with the Scientific Council protocols adopted by the Fisheries Commission in 2000 and therefore recommended that *the Chairman of the Scientific Council contact the Chairman of the Fisheries Commission to develop a means of resolving this inconsistency at the 2001 Fisheries Commission meeting.*

It was recommended that *the development of a training and operation manual for the collection of scientific data continue, and that the Scientific Council be represented at the September 2001 STACTIC meeting to further pursue this issue.*

On Tagging Activities: STACREC reviewed the list of tagging activities carried out in 2000 (SCS Doc. 01/16) compiled by the Secretariat, and requested national representatives to update the list during the meeting.

In 2000 a 5-year tagging program for yellowtail flounder began on the Grand Bank (SCR Doc. 01/53). Five-thousand fish were tagged with a combination of single and double Petersen disc tags and 200 fish were tagged with 'dummy' archival tags in Div. 3NO and released at 25 selected stations. To-date, 3.9% of the Petersen disc tags and 6% of the archival tags have been returned. There was a marginally higher percentage of double tag returns (4.4%) than single tag returns (3.5%). Year two of the tagging program began in June 2001, in which 5 000 or more fish will be tagged with Petersen disc tags and 300 fish will be tagged with real archival tags to measure depth and temperature on a daily basis.

On Conversion Factors: STACREC noted that FAO had recently published Fisheries Circular C847 Rev.1 on the factors used by national authorities in converting the landed weight of fishery products to the live weight equivalent and that a program developed by EUROSTAT for interrogating the data-file would shortly be available on the FAO website. It also noted that FAO had started distributing the FISHSTAT CF1 questionnaire requesting national authorities to submit updated lists of conversion factors.

On comparative fishing between Canada and EU-Spain: Comparative trials between the Canadian R/V *Wilfred Templeman*, using a Campelen gear, and the Spanish C/V *Playa de Menduïña*, using a Pedreira commercial type gear, were initiated in 2000 and continued in 2001 (SCR Doc. 01/69). The trial in 2001 included 18 simultaneous parallel hauls at daytime. Catches of the C/V *Playa de Menduïña* were several times higher than those of the R/V *Wilfred Templeman* for American plaice, thorny skate and yellowtail flounder. The results seem to confirm that the catch efficiency for flatfish of the Pedreira gear is higher than that of the Campelen gear.

CWP Intersessional Meeting, Rome, 20-21 February 2001 and 19th Session, July 2001

STACREC noted the intersessional meetings were *ad hoc* consultations during 20-23 February 2001 in Rome. The Assistant Executive Secretary contributed NAFO's input toward revising and developing the Agenda for CWP-19. Consultations also included STATLANT questionnaire issues, FAO development of FIGIS software and other statistical considerations.

STACREC was presented the Provisional Agenda for CWP 19th Session to be held during 10-13 July 2001 in New Caledonia. The review of the Agenda suggested that NAFO's contributions be formulated by the Assistant Executive Secretary and STACREC Chairman, particularly focusing on recent developments within Scientific Council and the possible further developments with respect to statistical information and dissemination.

Biological Sampling

STACREC noted and reviewed the listings of Biological Sampling Data prepared by the NAFO Secretariat. These listings (SCS Doc. 01/12) include biological sampling data for 2000 reported to the Secretariat prior to the present meeting.

Interagency Data Harmonization (NAFO/FAO)

Secretariat has continued interactions with FAO to harmonize data. During the Assistant Executive Secretary visit to Rome in February 2001, further consultations showed FAO had revised most of their data, noting NAFO data were, in principle, the appropriate official statistics.

The EUROSTAT representative reported that, following the CWP initiative at its intersessional meeting at ICES Headquarters in February 2000, the catch data from the various Atlantic agencies for the period 1950-98 had been integrated in a single file in the FAO FISHSTAT Plus format. Wherever possible the data at the level of the STATLANT A questionnaires (annual data by species, by country and by statistical sub-division) had been included. This file was now available for down-loading from the FAO website (<ftp://ftp.fao.org/fi/stat/windows/fishplus/atlant.zip>) for use with the FAO FISHSTAT Plus program (available from ftp://ftp.fao.org/fi/stat/windows/fishplus/fst_plus.zip). Although the basic data had been obtained from the various agency websites, notes with the data file recognized that EUROSTAT was tasked the reformatting and presentation of the data. The CWP-19 session would be reviewing the success of this work, the procedure for up-dating the file and the possibility of extending the operation to include data from inland waters and the other oceans.

Use of Scientific Names in STATLANT data

In 2000 STACREC added 4 new species of skates to the list of species to be reported on STATLANT questionnaires. In addition, following the recent publication of a revision to the genera of several species of skates, STACREC amended the list of names to reflect these taxonomic revisions. The decision to go forward with the new scientific names for these skate

species was based primarily on the paper by McEachran and Dunn (1998). The primary author of this paper is an authority on skate taxonomy, and the American Fisheries Society (AFS) has accepted these revisions as well. The revised edition of Catalog of Fishes (Eschmeyer, 1998, revised in November 2000) has also accepted these changes.

(McEachran, J. D., and K. A. Dunn. 1998. Phylogenetic analysis of skates, a morphologically conservative clade of elasmobranchs (Chondrichthyes: Rajidae). *Copeia*, 2: 271-290.)

The seven species were formerly considered to be in the genus *Raja*. The new names are as follows: little skate – *Leucoraja erinacea*; arctic skate – *Amblyraja hyperborea*; barndoor skate – *Dipturus laevis*; winter skate – *Leucoraja ocellata*; spinytail skate – *Bathyrāja spinicauda*; thorny skate – *Amblyraja radiata*; and smooth skate – *Malacoraja senta*.

STACREC considers these revised genera to represent the most up-to-date information on skate taxonomy and agreed that FAO/CWP should be requested to incorporate these revisions on the STATLANT 21 forms.

Use of GRT vs GT in recording effort data

The EUROSTAT representative presented a paper (SCR Doc. 01/5) demonstrating that the Gross Tonnage (GT) (London Convention, 1969) of a vessel was significantly greater than the Gross Registered Tonnage (GRT) (Oslo Convention, 1947). This change from GRT to GT was taking place at different rates in different countries and was generally spread over a number of years. NAFO Contracting Parties were requested to submit on the STATLANT 21B questionnaire catch and effort data by tonnage classes of fishing vessels and the change in the method of measuring tonnage of vessels brought into doubt the comparability of catch and effort data for individual vessel tonnage classes over time.

STACREC recognized this problem. It was proposed that other agencies be consulted to see how they may have resolved it. In the meantime it was important that the potential risks be brought to the attention of users of the catch and effort data.

Considerations on internet site for statistical data

STACREC noted STATLANT 21A data were currently updated on the NAFO Website. It was noted Scientific Council had agreed STATLANT 21B data will not be uploaded, but the Secretariat has attended to all individual requests for data.

Noting that the FISHSTAT program is a large software program, the NAFO website would be set up such that the software will be linked remotely to communicate with the STATLANT database which is posted on the NAFO website. The goal of using FISHSTAT is to create user-friendly interfaces that may enable direct compilations of statistical information currently published in the NAFO *Statistical Bulletin*.

Fishery Statistics

STATLANT 21A data were used for the compilation of SCS Doc. 01/10 on "*Historical Nominal Catches for Selected Stocks*" and SCS Doc. 01/14 on "*Provisional Nominal Catches in the Northwest Atlantic, 1999*".

The STATLANT 21B data constitute the final catch and effort data for the compilation of the annual publication of NAFO *Statistical Bulletin*.

Publication of *NAFO Statistical Bulletin*, Volumes 45 to 48, has been seriously delayed due to missing data. STACREC agreed that Volumes 45-48 of the *NAFO Statistical Bulletins* should now be compiled from 1995-1998 STATLANT 21B information in accordance with the procedures applied to the compilation of Volume 44. It was suggested that consideration be given to electronic publication of partial SATLANT data in the future, but in such cases, there must be accompanying warnings about the incomplete nature of the data.

NOMINATION AND ELECTION OF OFFICERS

The following appointments were for two-year terms beginning at the end of the September 2001 Annual Meeting:

Chairman Scientific Council. For the office of Chairman of Scientific Council, the current Vice-Chairman, R. K. Mayo (USA) was nominated by the Committee. There being no other nominations, the Council elected him by unanimous consent.

Vice-Chairman Scientific Council. For the office of Vice-Chairman of Scientific Council, M. J. Morgan (Canada) was nominated by the Committee. There being no other nominations, the Council elected her by unanimous consent.

Chairman STACPUB. For the office of Chairman of the Standing Committee on Publications (STACPUB), M. Stein (EU-Germany) was nominated by the Committee. There being no further nominations, the Council elected him by unanimous consent.

Chairman STACFIS. For the office of Chairman of the Standing Committee on Fisheries Science (STACFIS), D. E. Stansbury (Canada) was nominated by the Committee. There being no other nominations, the Council elected him by unanimous consent.

Chairman STACREC. The Rules of Procedure determined that the Vice-Chairman would take the office of the Chairman of the Standing Committee on Research Coordination (STACREC). M. J. Morgan (Canada) was accordingly appointed to the office.

Chairman STACFEN. For the office of Chairman of the Standing Committee on Fisheries Environment (STACFEN), E. Colbourne (Canada) was nominated by the Committee. There being no other nominations, the Council elected him by unanimous consent.



Committee Chairmen, Scientific Council Meeting, 31 May-14 June 2001 (Top to Bottom):

W. B. Brodie, Chair Scientific Council
H.-J. Rätz, Chair STACFIS, O. Jørgensen, Chair, STACPUB
R. K. Mayo, Chair STACREC, M. Stein, Chair STACFEN



Scientific Council in session during the 31 May-14 June 2001 Meeting.



Participants at Scientific Council Meeting, 31 May-14 June 2001 (Bottom to top – left to right):

A. Nicolajsen, F. Gonzalez, T. Amaratunga, E. A. Colbourne
 H. Murua, S. Junquera, J.-C. Mahé, A. Avila de Melo, W. B. Brodie
 M. J. Morgan, D. W. Kulka, D. B. Atkinson, K. F. Drinkwater
 D. Maddock Parsons, E. F. Murphy, M. Treble, C. Stransky, G. Wegner
 A. Vazquez, E. Valdes, S. Correia, D. Stansbury, C. Darby, M. Stein
 V. Lisovsky, V. A. Rikhter, S. Mitsuo, D. Parmiter
 O. Jorgensen, V. Babyan, R. Alpoim, L. Hendrickson
 B. Healey, A. Vaskov, T. Dougherty-Poupore, K. A. Sosebee
 D. Power, W. R. Bowering, S. Mehl
 H.-J. Rätz, P. A. Shelton

Missing from picture: N. G. Cadigan, E. G. Dawe, S. J. Walsh, J. Black, S. Campana, M. A. Showell, E. Trippel, H. Siegstad, C. Simonsen, T. Saat, D. Cross, A. Okhanov, R. K. Mayo, D. C. A. Auby, B. L. Marshall, C. L. Kerr, G. M. Moulton

Annex 1. List of Participants

CANADA

Representatives:

- Atkinson, D.B. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P.O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: + 709-772-2027 – Fax: + 709-772-6100 – E-mail: atkinsonb@dfp-mpo.gc.ca
- Bowering, W.R. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P.O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: + 709-772-2054 – Fax: + 709-772-4188 – E-mail: boweringr@dfp-mpo.gc.ca

Advisers/Experts:

- Brodie, W.B. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P.O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-3288 – Fax: +709-772-4105 – E-mail: brodieb@dfp-mpo.gc.ca
- Cadigan, N.G. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-5028 – Fax: +709-772-4188 – E-mail: cadigann@dfp-mpo.gc.ca
- Colbourne, E.A. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-6106 – Fax: +709-772-5315 – E-mail: colbourne@dfp-mpo.gc.ca
- Dawe, E. G. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-2076 – Fax: +709-772-4105 – E-mail: dawec@dfp-mpo.gc.ca
- Healey, B.P. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: + 709-772-8674 – Fax: + 709-772-4105 – E-mail: healeybp@dfp-mpo.gc.ca
- Kulka, D.W. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: + 709-772-2064 – Fax: + 709-772-5469 – E-mail: kulkad@dfp-mpo.gc.ca
- Maddock Parsons, D. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-2495 – Fax: + 709-772-4188 – E-mail: parsonsd@dfp-mpo.gc.ca
- Morgan, M. J. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-2261 – Fax: +709-772-4105 – E-mail: morganji@dfp-mpo.gc.ca
- Murphy, E.F. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: + 709-772-5479 – Fax: + 709-772-4188 – E-mail: murphye@dfp-mpo.gc.ca
- Parmiter, D. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-8892 – Fax: +709-772-6100 – E-mail: parmiterd@dfp-mpo.gc.ca
- Power, D. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-4935 – Fax: +709-772-4105 – E-mail: powerd@dfp-mpo.gc.ca
- Shelton, P.A. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: + 709-772-2341 – Fax: + 709-772-4105 – E-mail: sheltonp@dfp-mpo.gc.ca
- Stansbury, D.E. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-0559 – Fax: +709-772-4105 – E-mail: stansburyd@dfp-mpo.gc.ca
- Walsh, S.J. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-5478 – Fax: +709-772-4105 – E-mail: walshs@dfp-mpo.gc.ca
- Drinkwater, K.F. Coastal Oceanog., Dept. of Fish. & Oceans, BIO, P. O. Box 1006, Dartmouth, N.S. B2Y 4A2
Phone: +902-426-2650 – Fax: +902-426-6927 – E-mail: drinkwaterk@mar.dfo-mpo.gc.ca
- Black, J. Marine Fish Division, Dept. of Fisheries & Oceans, BIO, P. O. Box 1006, Dartmouth, NS B2Y 4A2
Phone: + 902-426-2950 – Fax: + 902-426-1506 – E-mail: blackj@mar.dfo-mpo.gc.ca
- Campana, S.E. Marine Fish Division, Dept. of Fisheries & Oceans, BIO, P. O. Box 1006, Dartmouth, NS B2Y 4A2
Phone: + 902-426-3233 – Fax: + 902-426-9710 – E-mail: campanas@mar.dfo-mpo.gc.ca
- Showell, M. Marine Fish Division, Dept. of Fisheries & Oceans, BIO, P. O. Box 1006, Dartmouth, NS B2Y 4A2
Phone: + 902-426-3501 – Fax: + 902-426-7750 – E-mail: showellm@mar.dfo-mpo.gc.ca
- Trippel, E. Dept. of Fisheries & Oceans, St. Andrews Biological Station, St. Andrews, NB E0G 2X0
Phone: +506-529-8854 – Fax: +506-529-5862 – E-mail: trippelc@mar.dfo-mpo.gc.ca
- Dougherty-Poupore, T. Marine Envir. Data Service (MEDS), 12082, 200 Kent St., Ottawa, Ont. K1A 0E6
Phone: +613-990-0243 – Fax: +613-993-4658 – E-mail: dougherty@meds-sdmm.dfo-mpo.gc.ca
- Treble, M.A. Dept. of Fisheries & Oceans, Freshwater Inst., 501 University Cres., Winnipeg, Man. R3T 2N6
Phone: +204-984-0985 – Fax: +204-984-2403 – E-mail: treblem@dfp-mpo.gc.ca

CUBA

Representative:

- Valdes, E. Centro de Investigaciones Pesqueras, Sta. Ave y 248, Barlovento, Sta Fe, Playa C. Habana 19100
Phone: +537 29 80 55 – Fax: +537 24 98 27 – E-mail: ecarles@fishnavy.inf.cu

DENMARK (in respect of Faroe Islands and Greenland)

FAROE ISLANDS

Representative:

Nicolajsen, A. Fiskeriannsoknarstovan, Noatun, Postboks 3051, FR-1100, Torshavn
Phone: +298 1 50 92 – Fax: +298 1 8264 – E-mail: aminic@frs.fo

GREENLAND

Representative:

Siegstad, H. Greenland Institute of Natural Resources, P. O. Box 570, DK-3900 Nuuk
Phone: +299 321095 - Fax: +299 325957 - E-mail: helle@natur.gl

Advisers/Experts:

Jørgensen, O.A. Danish Institute for Fisheries Research, Department of Marine Fisheries, Charlottenlund Slot
DK-2920 Charlottenlund, Denmark
Phone: +45 33 96 3300 - Fax: +45 33 96 3333 - E-mail: olj@dfu.min.dk
Simonsen, C.S. Greenland Institute of Natural Resources, P. O. Box 570, DK-3900, Nuuk
Phone: +299 32 1095 - Fax: +299 32 5957 - E-mail: claus@natur.gl

ESTONIA

Representative:

Saat, T. Estonian Marine Institute, 18b Viljandi Road, EE-3600 Tallinn
Phone: +372 6281 570 – Fax: +372 6281 563 – E-mail: tsaat@sea.ee

EUROPEAN UNION (EU)

Representative:

Vazquez, A. Instituto de Investigaciones Marinas, Eduardo Cabello 6, 36208 Vigo
Phone: +34 9 86 23 1930 – Fax: +34 9 86 29 2762 – E-mail: avazquez@iim.csic.es

Advisers/Experts:

Cross, D.G. EUROSTAT, European Commission, Jean Monnet Bldg, B.P. 2920, Luxembourg (G.D.)
Phone: +352 4301 37249 – Fax: +352 4301 37318 – E-mail: david.cross@cec.eu.int
Mahé, J.-C. IFREMER, Station de Lorient, 8, Rue François Toullec, 56100 Lorient, France
Phone: +33 2 9787 3818 – Fax: +33 2 9787 3801 – E-mail: jcmahe@ifremer.fr
Rätz, H.-J. Institute of Sea Fisheries, Palmaille 9, D-22767 Hamburg, Federal Republic of Germany
Phone: +49 40 389 05169 – Fax: +49 40 389 05263 – E-mail: raetz.ish@bfa-fisch.de
Stein, M. Institut für Seefischerei, Palmaille 9, D-22767 Hamburg, Federal Republic of Germany
Phone: +49 40 38905 174 – Fax: +49 40 38905 263 – E-mail: stein.ish@bfa-fisch.de
Stransky, C. Institut für Seefischerei, Palmaille 9, D-22767 Hamburg, Federal Republic of Germany
Phone: +49 40 38905 228 – Fax: +49 40 38905 263 – E-mail: stransky.ish@bfa-fisch.de
Wegner, G. Institut für Seefischerei, Palmaille 9, D-22767 Hamburg, Federal Republic of Germany
Phone: +49 40 38905 224 – Fax: +49 40 38905 263 – E-mail: wegner.ish@bfa-fisch.de
Avila de Melo, A. Inst. de Investigacao das Pescas e do Mar (IPIMAR), Av. de Brasilia, 1400 Lisbon, Portugal
Phone: +351 21 302 7000 – Fax: +351 21 301 5948 – E-mail: amelo@ipimar.pt
Alpoim, R. Inst. de Investigacao das Pescas e do Mar (IPIMAR), Av. de Brasilia, 1400 Lisbon, Portugal
Phone: +351 21 302 7000 – Fax: +351 21 301 5948 – E-mail: ralpoim@ipimar.pt
Gonzalez, F. Instituto Español de Oceanografía, Aptdo 1552, E-36280 Vigo (Pontevedra), Spain
Phone: +34 9 86 49 2111 – Fax: +34 9 86 49 2351 – E-mail: fernando.gonzalez@vi.ieo.es
Murua, H. AZTI, Technological Institute for Fisheries & Food, Herrera kaia, Portualde z/g, 20110 Pasaia
Basque Country, Spain
Phone: +34 943 004800 – Fax: +34 943 004801 – E-mail: hmurua@pas.azti.es
Junquera, S. Instituto Español de Oceanografía, Aptdo 1552, E-36280 Vigo (Pontevedra), Spain
Phone: +34 9 86 49 2111 – Fax: +34 9 86 49 2351 – E-mail: susana.junquera@vi.ieo.es
Darby, C. Centre for Fisheries & Aquaculture Science (CEFAS), Lowestoft Laboratory,
Pakefield Rd., Lowestoft (Suffolk), England NR33 OHT, United Kingdom
Phone: +44 1502 524 329 – Fax: +44 1502 513 865 – E-mail: c.d.darby@cefasc.co.uk

JAPAN

Representative:

Mitsuo, S. National Research Institute of Far Seas Fisheries, Fish. Res. Agency, 5-7-1 Orido, Shimizu 424-8633
Phone: +81 543 36 6057 – Fax: +81 543 35 9642 – E-mail: sakaimit@affrc.go.jp

NORWAY

Representative:

Mehl, S. Institute of Marine Research, P. O. Box 1870 Nordnes, 5817 Bergen
Phone: +47 55 23 8500 – Fax: +47 55 23 8687 – E-mail: sigbjorn@imr.no

RUSSIAN FEDERATION

Representatives:

Rikhter, V.A. Atlantic Scientific Research Institute of Marine Fisheries and Oceanography (AtlantNIRO),
5 Dmitry Donskoy Street, Kaliningrad 23600

Phone: +70 112 21 5645 – Fax: +70 112 21 9997 – E-mail: atlant@baltnet.ru

Shibanov, V.N. Knipovich Polar Research Institute of Marine Fisheries and Oceanography (PINRO),
6 Knipovich Street, Murmansk 183763

Phone: +7 8152 47 26 14 – Fax: +7 8152 47 33 31 – E-mail: inter@pinro.murmansk.ru

Advisors/Experts:

Babayan, V.K. Russian Federal Research Institute of Fisheries & Oceanography (VNIRO), 17, V. Krasnoselskaya,
Moscow, 107140

Phone: +70 95 264 6893 – Fax: +70 95 264 9187 – E-mail: vbabayan@vniro.ru

Lisovsky, S.F. Knipovich Polar Research Institute of Marine Fisheries & Oceanography (PINRO),
6 Knipovich Street, Murmansk 183763

Phone: +7 8152 47 3050 – Fax: +47 789 10518 – E-mail: inter@pinro.murmansk.ru

Vaskov, A.A. Knipovich Polar Research Institute of Marine Fisheries & Oceanography (PINRO),
6 Knipovich Street, Murmansk 183763

Phone: +7 8152 45 05 68 – Fax: +7 8152 47 3331 – E-mail: inter@pinro.murmansk.ru

Okhanov, A.A. Representative Russian Federation on Fisheries, 47 Oceanview Drive, Bedford, N.S.,
Canada B4A 4C4

Phone: +902-832-9225 – Fax: +902-832-9608 – E-mail: rufish@ns.sympatico.ca

UNITED STATES OF AMERICA (USA)

Representatives:

Correia, S. J. Massachusetts Division of Marine Fisheries, 50A Portside Drive, Pocasset, MA 02559

Phone: +508-563-1779 Ext. 111 – Fax: +508-563-5482 – E-mail: steven.correia@state.ma.us

Serchuk, F.M. National Marine Fisheries Service, NEFSC, 166 Water St., Woods Hole, MA 02543

Phone: +508-495-2245 – Fax: +508-495-2258 – E-mail: fred.serchuk@noaa.gov

Advisers/Experts:

Hendrickson, L.C. National Marine Fisheries Service, NEFSC, 166 Water St., Woods Hole, MA 02543

Phone: +508-495-2285 – Fax: +508-495-2393 – E-mail: lisa.hendrickson@noaa.gov

Sosebee, K. National Marine Fisheries Service, NEFSC, 166 Water St., Woods Hole, MA 02543

Phone: +508-495-2372 – Fax: +508-495-2393 – E-mail: ksosebee@whsun1.wh.whoi.edu

Mayo, R.K. National Marine Fisheries Service, NEFSC, 166 Water St., Woods Hole, MA 02543

Phone: +508-495-2310 - Fax: +508-495-2393 - E-mail: ralph.mayo@noaa.gov

NAFO SECRETARIAT

T. Amaratunga, Assistant Executive Secretary

D. C. A. Auby, Secretary

B. L. Marshall, Statistical Clerk

C. L. Kerr, Statistical/Reception Clerk

G. M. Moulton, Statistical/Conservation Measures Officer

Annex 2. Agenda

- I. Opening (Chairman: W. B. Brodie)
 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. Review of Scientific Council Recommendations in 2000
- III. Fisheries Environment (STACFEN Chairman: M. Stein)
 1. Opening
 2. Chairman's introduction; report on intersessional activities
 3. Review of recommendations in 2000
 4. Invited lecture (G. Wegner, ISH, Hamburg, Germany: "The EU Concerted Action on Stock Assessment and Prediction: Aim, Procedure, Results")
 5. Review of environmental conditions
 - a) Marine Environmental Data Service (MEDS) Report for 2000
 - b) Review of environmental studies in 2000
 - i) Results from physical oceanographic studies
 - ii) Results from interdisciplinary studies
 - c) Overview of environmental conditions in 2000
 6. Long-term environmental indicators
 - a) Review of environmental indicators
 - b) Formulation of recommendations based on environmental conditions
 7. Environmental indices (implementation in the assessment process)
 8. Review of recent trans-Atlantic environmental conditions
 - a) Review of hydrographic and larval studies
 - b) Establishing a study group
 9. Cooperative research programs
 - a) Russian/German data evaluation (ICNAF/NAFO data; status report)
 - b) Other research programs
 10. ICES/NAFO Symposium on Hydrobiological Variability, August 2001, Edinburgh, UK (progress report)
 11. National representatives
 12. Other matters
- IV. Research Coordination (STACREC Chairman: R. K. Mayo)
 1. Opening

2. Review of recommendations in 2000
3. Fishery statistics
 - a) Progress report on Secretariat activities in 2000/2001
 - i) Acquisition of STATLANT 21A and 21B reports for recent years
 - ii) Publication of statistical information
 - iii) Considerations on internet site for statistical data
 - iv) Interagency data harmonization
 - v) Use of scientific names in STATLANT data
 - vi) Use of GRT vs. GT in recording effort data
 - b) CWP Sessions 2001
 - i) Report on the CWP Intersessional Meeting, Rome, 20-21 February 2001
 - ii) CWP 19th Session, July 2001
 - Review of Agenda
 - New proposals
4. Research Activities
 - a) Biological sampling
 - i) Report on activities in 2000/2001
 - ii) Report by National Representatives on commercial sampling conducted
 - iii) Report on data availability for stock assessments (by Designated Experts)
 - b) Biological surveys
 - i) Review of survey activities in 2000 (by National Representatives and Designated Experts)
 - ii) Surveys planned for 2001 and early-2002
 - iii) Northwest Atlantic Survey database
5. Report of Working Group on Biological Information Database Exchange (Cod in Div. 3NO)
6. Report of the *ad hoc* Working Group on NAFO Observer Protocol
 - a) Protocol for scientific data on Pilot Observer Program
 - b) Format on data from Pilot Observer Program for Scientific Council purposes
7. Review of SCR and SCS Documents
8. Other matters
 - a) Tagging activities
 - b) Conversion factors
 - c) Comparative fishing between Canada and EU-Spain
 - d) Research activities
 - e) Other business

V. Publications (STACPUB Chairman: O. A. Jørgensen)

1. Opening
2. Review of recommendations in 2000
3. Review of STACPUB membership
4. Review of scientific publications since June 2000
 - a) Journal of Northwest Atlantic Fishery Science
 - b) NAFO Scientific Council Studies
 - c) NAFO Statistical Bulletin

- d) Scientific Council Reports
 - e) Index and Lists of Titles
 - f) Others
5. Production costs and revenues for Scientific Council publications
 6. Promotion and distribution of scientific publications
 - a) Invitational papers
 - b) Abstracts from Research Documents
 - c) NAFO Website
 - d) Scientific Citation Index (SCI)
 - e) CD-ROM versions of reports, documents
 - f) New initiatives for publications
 7. Editorial matters regarding scientific publications
 - a) Review of Editorial Board
 - b) Progress review of publication of 2000 Workshop Workbook
 - c) Review process for publication of Symposium proceedings
 - d) Review of the Journal editorial process
 8. Papers for possible publication
 - a) Review of proposals resulting from the 2000 Meetings
 - b) Review of contributions to the June 2001 Meeting
 9. Other matters
- VI. Fisheries Science (STACFIS Chairman: H.-J. Rätz)
1. Opening
 2. General review
 - a) Review of recommendations in 2000
 - b) General review of catches and fishing 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 and Div. 3LNO will be undertaken during Scientific Council Meeting 7-14 November, 2001):
 - Cod (Div. 3NO (Item 10); Div. 3M (monitor))
 - Redfish (Div. 3LN; Div. 3M)
 - American plaice (Div. 3LNO (Items 10 and 11), Div. 3M (monitor))
 - Witch flounder (Div. 2J and 3KL (Item 7), Div. 3NO (monitor))
 - Yellowtail flounder (Div. 3LNO) (Items 10 and 11)
 - Squid (Subareas 3 and 4) (Item 3.g)
 - Greenland halibut (Subareas 2 and 3) (Items 10 and 14)
 - Capelin (Div. 3NO)
 - b) Analyses pertaining to other Fisheries Commission requests (Attachment 1)
 - Unregulated species in the Regulatory Area (Item 8)
 - Depth distribution of fishable biomass of the main commercial species by maturity and landing size (Item 9)
 - Pelagic redfish in Div. 1F (Item 12)
 - Scientific research methodology for stocks under moratoria (Item 15)

- c) Stocks within the 200-mile fishery zone in Subareas 0 to 4, as requested by Canada (Attachment 2)
 - i) Greenland halibut in Subareas 0-3 (Item 1)
 - ii) Cod in Div. 2J and 3KL (Item 3)
 - iii) By-catch of yellowtail flounder in Div. 3LNO (Item 4)
 - iv) By-catch of American plaice in Div. 3LNO (Item 5)
 - v) Redfish in Div. 1F (Item 6)
 - d) Stocks within the 200-mile fishery zone in Subarea 1 and at East Greenland as requested by Denmark (Greenland) (Attachment 3) (Northern shrimp in Denmark Strait and off East Greenland will be undertaken during Scientific Council Meeting, 7-14 November 2001):
 - i) Redfish and other finfish in Subarea 1 (Item 1)
 - ii) Roundnose grenadier in Subareas 0 and 1 (monitor) (Item 1)
 - iii) Distribution of biomass of Greenland halibut between Subarea 0 and Subarea 1 (Item 2)
 - iv) Greenland halibut in Div. 1A inshore (Item 2)
 - e) Stocks overlapping the fishery zones in Subareas 0 and 1, as requested by Canada and by Denmark (Greenland) (Annexes 2 and 3) (Northern shrimp in Subareas 0 and 1 will be undertaken during Scientific Council Meeting, 7-14 November 2001):
 - Greenland halibut (Subareas 0 and 1) (Attachment 2, Item 1; Attachment 3, Item 2)
 - f) Assessment of other stocks:
 - Roughhead grenadier (Subareas 2 and 3 (monitor))
4. Other matters
- a) New Designated Experts
 - b) Other business

VII. Management Advice and Responses to Special Requests

- 1. Fisheries Commission (Attachment 1)
 - a) Request for advice on TACs and other management measures for year 2002
 - Redfish in Div. 3M
 - Yellowtail flounder in Div. 3LNO
 - Squid in Subareas 3 and 4 (see also Item 3.g)
 - Greenland halibut in Subareas 2 and 3
 - Capelin in Div. 3NO
 - b) Request for advice on TACs and other management measures for the years 2002 and 2003
 - Cod in Div. 3NO
 - Redfish in Div. 3LN
 - American plaice in Div. 3LNO
 - c) Special requests for management advice (see Attachment 1, Items 5-15)

- i) Formulation of advice under the precautionary approach (Items 5 and 6)
 - ii) Witch flounder in Div. 2J and 3KL (Item 7)
 - iii) Information on unregulated species in the Regulatory Area (Item 8)
 - iv) Distribution of fishable biomass of main commercial species (Item 9)
 - v) Medium term development of several stocks under various assumptions (Item 10)
 - vi) Distribution of juvenile American plaice and yellowtail flounder (Item 11)
 - vii) Redfish in Div. 1F and adjacent ICES area (Item 12)(see also Canadian request Attachment 2)
 - viii) Effect of increasing mesh size in Greenland halibut fishery (Item 14)
 - ix) Methodology for scientific research for stocks under moratoria (Item 15)
- d) Monitoring of stocks for which multi-year advice was provided in 2000
- Cod in Div. 3M
 - American plaice in Div. 3M
 - Witch flounder in Div. 3NO

2. Coastal States

- a) Request by Canada for advice (Attachment 2):
- i) Greenland halibut in Subareas 0-3 (Item 1)
 - ii) Cod in Div. 2J and 3KL (Item 3)
 - iii) By-catch of yellowtail flounder in Div. 3LNO (Item 4)
 - iv) By-catch of American plaice in Div. 3LNO (Item 5)
 - v) Redfish in Div. 1F (Item 6)
- b) Request by Denmark (Greenland) for advice (Attachment 3):
- i) Redfish and other finfish in Subarea 1 (Item 1)
 - ii) Roundnose grenadier in Subareas 0 and 1 (monitor) (Item 1)
 - iii) Distribution of biomass of Greenland halibut between SA 0 and SA 1 (Item 2)
 - iv) Greenland halibut in Div. 1A inshore (Item 2)
- c) Request by Canada and Denmark (Greenland) for advice on TACs and other management measures:
- Greenland halibut in Subareas 0 and 1

3. Scientific advice from Scientific Council on its own accord

- Roughhead grenadiers in Subareas 2 and 3 (monitor).
- Elasmobranchs

VIII. Future Scientific Council Meetings 2001 and 2002

1. Scientific Council Meeting and Special Session, September 2001
2. Scientific Council Meeting in November 2001 (assessment of shrimp stocks)
3. Scientific Council Meeting, June 2002
4. Scientific Council Meeting and Special Session, September 2002
5. Scientific Council Meeting, November 2002 (assessment of shrimp stocks)

IX. Arrangements for Special Sessions

1. Progress report on Special Session in September 2001: Symposium on "Deep Sea Fisheries"
2. Progress report on ICES/NAFO Symposium on Hydrobiological Variability in August 2001

3. Progress report on Special Session in 2002: the Symposium on "Elasmobranch Fisheries"
 4. Topic for Special Session in 2003
- X. Reports of Working Groups
1. Working Group on Reproductive Potential (Chairman: E. A. Trippel)
 2. Joint NAFO-ICES Working Group on harp and hooded seals
- XI. Nomination and Election of Officers
1. Chairs of all Standing Committees (STACFEN, STACPUB, STACREC, STACFIS)
 2. Chair and Vice-Chair of Scientific Council
- XII. Review of Scientific Council working procedures/protocols
1. Implementation of Precautionary Approach
 2. NAFO Scientific Council observership at ICES ACFM meetings
 3. Summaries of Standing Committee reports for NAFO Website
 4. Website and technology issues
 5. Facilitating workload of Scientific Council during Annual Meeting in September
- XIII. Other Matters
1. Report on Second Meeting of FAO and Non-FAO Regional Fishery Bodies, Rome, Italy, 20-21 February 2001
 2. Report on Second Technical Consultation on Illegal, Unreported and Unregulated Fishing, Rome, Italy, 22-23 February 2001
 3. Participation in FAO Committee on Fisheries (COFI)
 4. Report on NAFO intersessional meetings
 5. Other business
- XIV. Adoption of Committee Reports
1. STACFEN
 2. STACREC
 3. STACPUB
 4. STACFIS
- XV. Scientific Council Recommendations to General Council and Fisheries Commission
- XVI. Adoption of Scientific Council Report
- XVII. Adjournment

**ATTACMENT 1. FISHERIES COMMISSION'S REQUEST FOR SCIENTIFIC ADVICE
ON MANAGEMENT IN 2002 OF CERTAIN STOCKS IN SUBAREAS 3 AND 4,
INCLUDING SUPPLEMENTARY QUESTIONS ON DIVISION 3M SHRIMP FOR 2001**

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 2001 Annual Meeting, provide advice on the scientific basis for the management of the following fish and invertebrate stocks or groups of stocks in 2002:

Redfish (Div. 3M)
Yellowtail flounder (Div. 3LNO)
Squid (Sub-areas 3 and 4)
Shrimp (Div. 3M, 3LNO)
Greenland halibut (Sub-areas 2 and 3KLMNO)
Capelin (Div. 3NO)

2. 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 2001 Annual Meeting, provide advice on the scientific basis for the management of the following fish stocks on an alternating year basis:

Cod (Div. 3NO; Div. 3M)
Redfish (Div. 3LN)
American plaice (Div. 3LNO; Div. 3M)
Witch flounder (Div. 3NO)

To implement this system of assessments in alternating years, all stocks were assessed in 1999 but advice pertained to different time periods to allow the introduction of the new scheme over time. Consequently:

- In 2000, advice was provided for 2001 and 2002 for cod in 3M, American plaice in 3M and witch flounder in 3NO. These stocks will then next be assessed in 2002.
- In 2001, advice will be provided for 2002 and 2003 for American plaice in 3LNO, cod in 3NO and redfish in 3LN. The next assessment of these stocks will thus be conducted in 2003.

The Fisheries Commission requests the Scientific Council to continue to monitor the status of these stocks annually and, should a significant change be observed in stock status (e.g. from surveys) or in by-catches in other fisheries, provide updated advice as appropriate.

3. The Commission and the Coastal State request the Scientific Council to consider the following in assessing and projecting future stock levels for those stocks listed above:
- a) The preferred tool for the presentation of a synthetic view of the past dynamics of an exploited stock and its future development is a stock assessment model, whether age-based or age-aggregated.
 - b) For those stocks subject to analytical-type assessments, the status of the stocks 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 $F_{0.1}$ and F_{2000} in 2002 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.
 - c) 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.

- d) For those resources for which only general biological and/or catch data are available, few standard criteria exist on which to base advice. The stock status should be evaluated in the context of management requirements for long-term sustainability and the advice provided should be consistent with the precautionary approach.
- e) Spawning stock biomass levels 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 reproductive potential of the stock, management options should be offered that specifically respond to such concerns.
- f) Information should be provided on stock size, spawning stock sizes, recruitment prospects, fishing mortality, catch rates and TACs implied by these management strategies for the short and the long term in the following format:
- I. For stocks for which analytical-type assessments are possible, graphs of all of the following for the longest time-period possible:
 - historical yield and fishing mortality;
 - spawning stock biomass and recruitment levels;
 - catch options for the year 2002 and subsequent years over a range of fishing mortality rates (F) at least from $F_{0.1}$ to F_{max} ;
 - spawning stock biomass corresponding to each catch option;
 - yield-per-recruit and spawning stock per recruit values for a range of fishing mortalities.
 - II. For stocks for which advice is based on general production models, the relevant graph of production as a function of fishing mortality rate or fishing effort. Age-aggregated assessments should also provide graphs of all of the following for the longest time-period possible:
 - exploitable biomass (both absolute and relative to B_{MSY})
 - yield/biomass ratio as proxy for fishing mortality (both absolute and relative to F_{MSY})
 - estimates of recruitment from surveys, if available.
 - III. Where analytical methods are not attempted, the following graphs should be presented, for one or several surveys, for the longest time-period possible:
 - time trends of survey abundance estimates, over:
 - an age or size range chosen to represent the spawning population
 - an age or size-range chosen to represent the exploited population
 - recruitment proxy or index for an age or size-range chosen to represent the recruiting population.
 - fishing mortality proxy, such as the ratio of reported commercial catches to a measure of the exploited population.

For age-structured assessments, yield-per-recruit graphs and associated estimates of yield-per-recruit based reference points should be provided. In particular, the three reference points, actual F, $F_{0.1}$ and F_{max} should be shown.

- g) For squid (*Illex*) in Sub-areas 3 and 4, the Scientific Council is requested to advise on the level of TAC in high abundance years and on the criteria, which could be reliably used to forecast changes in productivity under an annual management regime. Scientists are encouraged to further analyze available data toward developing other possible indicators that could be used under an in-season management regime for squid, recognizing that the practical use of such indicators would require that they be available as early in the season as possible.
- h) For shrimp in 3M, the Fisheries Commission notes that information to date from the commercial fishery in 2000 is showing relatively high catch rates. In light of this apparent change in stock status, the Scientific Council is requested to review information from the 2000 fishery at its November 2000 meeting and to evaluate the impact on this resource of removals in year 2001

and 2002 corresponding to 25,000 t, 30,000 t, 35,000 t and 40,000 t respectively. Furthermore, the Scientific Council is requested at its November 2000 meeting to evaluate, on the basis of the best data available, whether the provision for a Div. 3M shrimp closure in FC Working Paper 99/16 (Rev.) would be a precautionary approach-based measure and, if so, whether proposed area and timing of the closure are appropriate.

4. The results described in Section 3 should include information about the reliability of the results. To this end, the following information should be included in a synoptic form:
- Parameter uncertainty in assessments, possibly as confidence intervals
 - Robustness of assessments to alternative assumptions or data series
 - Illustration of conflicts in data series

This information may be accompanied by quality statements giving the opinion of the Scientific Council about the reliability of the various data series for particular purposes.

5. Noting the progress made by the Scientific Council on the development of a framework for implementation of the Precautionary Approach, the Fisheries Commission requests that the Scientific Council provide the following information for the 2001 Annual Meeting of the Fisheries Commission for stocks under its responsibility requiring advice for 2002, or 2002 and 2003:
- a) the limit and target precautionary reference points described in Annex II of the UN Fisheries Agreement indicating areas of uncertainty (when precautionary reference points cannot be determined directly, proxies should be provided);
 - b) information including medium term considerations 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 of Annex II of the Agreement; these research requirements should be set out in the order of priority considered appropriate by the Scientific Council;
 - d) any other aspect of Article 6 and Annex II of the Agreement which the Scientific Council considers useful for implementation of the Agreement's provisions regarding the precautionary approach to capture fisheries;
 - e) propose criteria and harvest strategies for re-opening of fisheries and for new and developing fisheries; and
 - f) to work toward the harmonization of the terminology and application of the precautionary approach within relevant advisory bodies.
6. In addition, the following elements should be taken into account by the Scientific Council when considering the precautionary approach:

- a) Many of the stocks in the NAFO Regulatory Area are well below any appreciable level of B_{lim} or B_{buf} . For these stocks, the most important task for the Scientific Council is to inform on how to rebuild the stocks. In this context and building on previous work of the Scientific Council in this area, the Scientific Council is requested to evaluate various scenarios corresponding to recovery plans with timeframes of 5 to 10 years, or longer as appropriate. This evaluation should provide the information necessary for the Fisheries Commission to consider the balance between risks and yield levels, including information on the consequences and risks of no action at all.

References to "risk" and to "risk analyses" should refer to estimated probabilities of stock population parameters falling outside biological reference points.

- b) Where reference points are proposed by the Scientific Council as indicators of biological risk, they should be accompanied by a description of the nature of the risk incurred if the reference point is crossed (e.g. short-term risk of recruitment overfishing, loss of long-term yield, etc.)
- c) When a buffer reference point is proposed in order to maintain a low probability that a stock, measured to be at the buffer reference point may actually be at or beyond the limit reference

point, the Scientific Council should explain the assumptions made about the uncertainty with which the stock is measured, and also the level of 'low probability' that is used in the calculation.

- d) Wherever possible, short and medium term consequences should be identified for various exploitation rates (including no fishing) in terms of yield, stability in yield from year to year, and the risk or probability of moving the stock beyond B_{lim} or B_{buf} . Whenever possible, this information should be cast in terms of risk assessments relating fishing mortality rates to the risks of falling below B_{lim} and B_{buf} , as well as of being above F_{lim} and F_{buf} , the risks of stock collapse and recruitment overfishing, as well as the risks of growth overfishing and the consequences in terms of both short and long term yields.
 - e) When providing risk estimates, it is very important that the **time horizon** be clearly spelled out. By way of consequence, risks should be expressed in timeframes of 5, 10 and 15 years (or more), or in terms of other appropriate year ranges depending on stock specific dynamics. Furthermore, in order to provide the Fisheries Commission with the information necessary to consider the balance between risks and yield levels, each harvesting strategy or risk scenario should include, for the selected year ranges, the risks and yields associated with various harvesting options in relation to B_{lim} (B_{buf}) and B_{target} , and F_{lim} (F_{buf}) and F_{target} .
7. The Fisheries Commission, with the concurrence of the Coastal State, requests that the Scientific Council review available information, including any Canadian assessment documentation on the stock status, and provide advice on catch levels for the 2J3KL witch flounder resource for 2002 and 2003. 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.
 8. The Scientific Council is requested to review all available information from both research vessel surveys and commercial catches on the relative biomass and geographic distribution of the following unregulated species/stocks occurring within the NAFO Regulatory Area: monkfish (*Lophius americanus*), wolffishes (*Anarhichas lupus*, *A. minor*, *A. denticulatus*), thorny skate (*Amblyraja radiata*), black dogfish (*Centroscyllium fabricii*), eelpouts (*Lycodes* spp.), longfin hake (*Urophycis chesteri*), and orange roughy (*Hoplostethus atlanticus*).
 9. The Scientific Council is requested to evaluate the distribution of the fishable biomass of the main commercial species of fish in relation to depth (in 100-m intervals). Separate values should be provided a) for fish above and below the length of 50% maturity and b) for fish above and below the current minimum landing size.
 10. The Fisheries Commission also requests, with the concurrence of the Coastal State, that the Scientific Council evaluate the likely future medium-term development for Greenland halibut in 2+3KLMNO, Yellowtail flounder in 3LNO, American plaice in 3LNO (if possible) and cod in 3NO, under the following assumed constraints:
 - a) Closure of targeted Greenland halibut fishery in depths less than 200, 500 and 800 meters or any other depths considered appropriate. These cases, which will have to make a reasonable assumption on the redirection of effort so removed onto the remaining depth strata, should be compared with evaluation of current fishing practices.
 - b) Subject to the above, likely future medium-term consequences (5 to 10 years) for the yield, spawning biomass, exploitable biomass and recruitment, stating the relevant biological assumptions.
 - c) The scenarios should be explored for a range of fishing effort assumptions corresponding to:
 - i) Maintaining overall fishing effort at the same levels as estimated in the last year for which good information is available.
 - ii) Increases or decreases of +/- 30% in fishing effort from this value.
 - iii) Additional scenarios as considered appropriate by the scientific Council.

In these scenarios, the Scientific Council should evaluate whether these fishing strategies provide adequate long-term protection to juvenile fish to allow maintenance of the spawning biomass at an appropriate level.

11. The Scientific Council is requested to review the distribution of juvenile American plaice and update the distribution of yellowtail flounder based on results from comprehensive research surveys. The Scientific Council is also requested to delineate further the areas of juvenile concentration in the Southeast Shoal area and its surroundings.
12. Regarding redfish in NAFO Division 1F, the Scientific Council is requested to review all available information on the distribution of this resource over time, as well as on the affinity of this stock to the pelagic redfish resource found in the ICES Sub-area XII, parts of SA Va and XIV or to the redfish found in NAFO Sub-areas 1-3.
13. With regard to shrimp in Divisions 3LNO, the Fisheries Commission, with the concurrence of the Coastal State, requests that the Scientific Council provide information on the geographical distribution of this resource, as well as describe the relative and seasonal distribution inside and outside the NAFO Regulatory Area.
14. The Fisheries Commission requests the Scientific Council to provide information on the long-term effects of increasing mesh size from 130 mm to 145 mm in yield-per-recruit and stock spawning biomass-per recruit for Greenland halibut in 2+3KLMNO and in reducing by-catch of other species in that fishery. The Scientific Council is also requested to evaluate the medium term consequences in terms of yield and stock size of any such changes in mesh size.
15. The Fisheries Commission requests the Scientific Council to provide advice regarding the methodology for scientific research on fish stocks under moratoria.

ATTACHMENT 2. CANADIAN REQUEST FOR SCIENTIFIC ADVICE ON MANAGEMENT IN 2002 OF CERTAIN STOCKS IN SUBAREAS 0 TO 4

1. Canada requests that the Scientific Council, at its meeting in advance of the 2001 Annual Meeting of NAFO, subject to the concurrence of Denmark (on behalf of Greenland), provide advice on the scientific basis for management in 2002 of the following stocks:

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

The Scientific Council has noted previously that there is no biological basis for conducting separate assessments for 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 (on behalf of 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 2002. 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.

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-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. The implications of no fishing as well as fishing at $F_{0.1}$ and F_{1999} in 2001 and subsequent years should be evaluated in relation to precautionary reference points of both fishing mortality and spawning stock biomass. The present stock size and spawning stock size should be described in relation to those observed historically and those to be expected in the longer term under this range of fishing mortalities, and any other options Scientific Council feels worthy of consideration under a precautionary framework.

Opinions of the Scientific Council should be expressed in regard to stock size, spawning stock sizes, recruitment prospects, catch rates and catches implied by these management strategies for the short- and long-term. Values of F corresponding to the reference points should be given. Uncertainties in the assessment should be evaluated and presented in the form of risk analyses related to B_{lim} (B_{buf}) and B_{target} , and F_{lim} (F_{buf}) and F_{target} .

- 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. Management options should be within the precautionary framework.
- c) For those resources for which only general biological and/or catch data are available, few standard criteria exist on which to base advice. The stock status should be evaluated in the context of management requirements for long-term sustainability and management options evaluated in the way described above to the extent possible. Management options should be within the precautionary framework.
- d) Presentation of the results should include the following:

I. For stocks for which analytical-type assessments are possible:

- A graph of historical yield and fishing mortality for the longest time period possible;
- A graph of spawning stock biomass and recruitment levels for the longest time period possible;
- Graphs and tables of catch options for the year 2001 and subsequent years over a range of fishing mortality rates (F) at least from $F = 0$ to $F_{0.1}$ including risk analyses;
- Graphs and tables showing spawning stock biomass corresponding to each catch option including risk analyses;
- Graphs showing the yield-per-recruit and spawning stock per recruit values for a range of fishing mortalities.

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, $F = 0$, actual F , and $F_{0.1}$ should be shown.

3. For the cod stock in Divisions 2J+3KL, the Scientific Council is requested to report on recent trends in (and the current size of) the total and spawning biomass based on the most recent assessment of the stock.
4. Noting the increase in by-catch of 3LNO yellowtail flounder in other fisheries, in particular the skate fishery, the Scientific Council is requested to comment on the potential impacts of these by-catches on the long-term sustainability of the yellowtail flounder resource.
5. Based on information available to date regarding the 2000 fisheries in the NAFO Regulatory Area, there appears to be significant discrepancies regarding by-catches of American plaice between observer reports and the STATLANT 21A information. Scientific Council is requested to review all available information and provide its best estimate of the actual by-catch removals of American plaice in the NRA. Further, the Scientific Council is requested to comment on the potential impacts of these by-catches on the recovery of this resource. This will require that national scientists analyse their

respective observer reports for the 2000 fishery and bring the results to the June Scientific Council meeting for discussion.

6. With regard to redfish in Division 1F the Scientific Council is requested.
 - a) to review all available information related to the biology and distribution of oceanic redfish in the north Atlantic and to provide, to the extent possible, commentary on possible links to various shelf stocks in the northwest Atlantic.
 - b) to make recommendations on the most appropriate means of interaction with ICES with regards to this resource.

Canada would also like to put the Scientific Council on notice that we will possibly be asking further questions regarding shrimp later in the year in time for consideration of the shrimp assessment that is now normally conducted in November.

P. S. Chamut
 Assistant Deputy Minister
 Fisheries Management, Department of Fisheries and Oceans
 Ottawa, Canada

**ATTACHMENT 3. DENMARK (GREENLAND) REQUEST FOR SCIENTIFIC ADVICE ON
 MANAGEMENT IN 2002 OF CERTAIN STOCKS IN SUBAREAS 0 AND 1**

1. In the Scientific Council report of 1999 scientific advice on management of redfish (*Sebastes* spp.) and other finfish in Subarea 1 was given for 2000 and 2001. Denmark on behalf of Greenland, requests the Scientific Council in advance of the 2001 Annual Meeting, provide advice on the scientific basis for the management of these stocks Subarea 1 for 2002 and 2003.

Advice for Roundnose grenadier in Subareas 0+1 was in 1999 given as a 3-year advice (for 2000, 2001 and 2002). Denmark, on behalf of Greenland, requests the Scientific Council to continue to monitor the status of Roundnose grenadier in Subareas 0+1 annually and, significant change in stock status be observed, to provide an updated advice as appropriate.

2. Subject to the concurrence of Canada, the Scientific Council is also requested to provide advice on the scientific basis for the management of Greenland halibut overlapping Subareas 0 and 1.

In its 1993 report, the Scientific Council noted that the offshore component of Greenland halibut was distributed equally between Subareas 0 and 1. The Council is asked to update the information on the distribution of Greenland halibut and provide advice on allocation of TACs to Subarea 0 and Subarea 1 offshore.

Further, for Subarea 1 inshore, the Council is asked to provide advice on allocation of TACs distributed in areas of Ilulissat, Uummannaq and Upernavik, respectively.

3. Denmark, on behalf of Greenland, further requests the Scientific Council of NAFO before December 2001 to provide advice on the scientific basis for management of Northern shrimp (*Pandalus borealis*) in Subareas 0 and 1 in year 2002, and as many years forward as data allow.

Further, the Council is requested to advise, in cooperation with ICES, on the scientific basis for management of Northern shrimp (*Pandalus borealis*) in the Denmark Strait and adjacent areas east of southern Greenland in 2002, and as many years forward as data allow.

On behalf of The Ministry of Industry
 Sincerely
 Jørn Birk Olsen



SYMPOSIUM ON DEEP-SEA FISHERIES
(Organized and hosted by the NAFO Scientific Council)

The Symposium, *Deep-Sea Fisheries*, was held at the Centro de Convenciones de Plaza de América, Varadero, Matanzas, Cuba, with co-conveners J. A. Moore (NAFO), J. D. M. Gordon (ICES), and A. Koslow (CSIRO) during 12-14 September 2001. There were 104 participants from Australia, Austria, Brazil, Canada, Cuba, Denmark, Estonia, Faroe Islands, France, Greece, Iceland, Ireland, Italy, Mexico, New Zealand, Norway, Poland, Portugal, Russia, Spain, United Kingdom, and United States of America.

W. B. Brodie, Chairman of Scientific Council, opened the symposium by welcoming the participants and presenting a brief overview of NAFO and its activities. The participants were welcomed by Mr. E. Oltuski, Ministerio de la Industria Pesquera, Cuba, as the Cuban host, and the President of NAFO and Chairman of General Council.

The Symposium considered current research, advances and impacts of deep-water fisheries in many different locations around the world. In addition, two sessions were devoted to important deep-water fisheries (Greenland halibut and redfish) of the North Atlantic area.

Deepwater Fisheries

The leadoff invited paper (by Koslow) and co-authors reviewed recent evidence for high diversity and endemism and highly localized distributions of seamount benthic communities, based on data from the Southwest Pacific. Trawl fishing was shown to be capable of severely impacting these communities, leading to the need to conserve this fauna based on localized networks of representative protected areas.

The exploratory work at Bear Seamount, just off Georges Bank had revealed a rich fauna, including 115 species of fish. Another paper described recent trends in the deep-water fishery off southern Brazil and emphasized the need for orderly development of that region's deepwater fishery, based on initial explorations now being carried out with chartered foreign fishing vessels. Their systematic exploration, based on use of a range of gears over that country's deepwater zone, provided a valuable model for deepwater fishery development. In contrast, multi-species deep-sea fishery in the international waters of the Hatton Bank (ICES Sub-area XII) showed the rapid development of the Spanish trawl fishery for *Alepocephalus bairdii* (Baird's smoothhead) and *Coryphaenoides rupestris* (roundnose grenadier). Only five years old, the fishery is already Spain's largest deepwater trawl fishery. The Spanish fishery indicated declining catch and catch per unit of effort, indicating that a cautious approach to future management of the fishery is warranted. The Norwegian exploratory fisheries presented interesting results from Hatton Bank, showing a clear relationship between the fish assemblages and water mass characteristics. The fish fauna within the arctic-influenced water to the west of the bank had more coldwater affinities, while the fauna to the east had more typically Atlantic affinities.

The distribution and density of carnivorous fish species around Lanzarote and Fuerteventura, Canary Islands, based on commercial long-line data illustrated the potential to obtain important ecological information from available commercial fishery. This first session ended with a review of recent catch records, which extend the range for *Hoplostethus atlanticus* (orange roughy) into Canadian waters. The catches were generally quite low, on the order of one individual per set, so the fishery potential appears negligible at present.

The Rockall Trough (northeast Atlantic) and its deep-water fisheries that began in the 1980s and has been well documented providing insights into the fishery effects on the ecosystem. The other

presentation described a comparison of a long-line and a gill net fishery for *Merluccius merluccius* (hake) in deep-water off southern Portugal.

Greenland halibut

The discussion focused almost entirely on the maturation issues. The key results were 1) that length and age at maturity indicated high interannual variation among stocks throughout the North Atlantic; 2) the interpretation of the maturity cycle can be difficult since it has been shown that the fish may not spawn annually and 3) the length and age at maturity was rather similar throughout the North Atlantic except for NAFO Div. 2J+3K where fish matured at a larger size and age. It was also noted that some imprecision in the length- and age-at-maturity can be caused by errors in the visual interpretation of the immature and resting stages and it was suggested that precision could be improved by using histological techniques for interpreting maturity stages. It was also suggested that some of the annual variation observed in length- and age-at-first-maturity might be removed if sampling could be spread throughout the year. For practical purposes averaging maturity rates over some years may be useful for approximating SSB trends. It was suggested that it might be useful to consider whether the experience of managing long established Greenland halibut fisheries might have something to offer to the management of some of the new deep-water fisheries. It was noted that all Greenland halibut stocks declined rapidly when F increased even at relatively low average values. SSB remains at low levels in most stocks in the North Atlantic but when F is reduced the population can rebuild fairly rapidly as demonstrated by the NAFO Subarea 2 and Div. 3KLMNO stock. However, it remains to be seen whether the SSB will improve to former levels for this stock. From the experience of Greenland halibut it was clear that other species that live much longer, grow slower and have a lower reproductive potential will be much more sensitive to F, even at much lower values. Any stock rebuilding will take much longer, if it occurs at all.

Deep-water fisheries; impacts assessment and management

The deepwater trawl fishery for orange roughy on seamounts off New Zealand was discussed. It was shown that seamount habitat could be severely affected by bottom trawling, with extensive removal of coral cover. Another paper showed that the large reefs of *Lophelia* off the Norwegian coast are also vulnerable to bottom trawling. Management action has been taken to close 19 seamounts around New Zealand, and to prohibit trawling in several areas of reef habitat off the Norwegian coast.

The meeting reviewed the distribution of deepwater fish and fisheries throughout the ICES area, which was then followed by a paper presenting and discussing options for their assessment and management. This included data requirements, possible stock assessment models and approaches, and management measures. Strong decreases in catch levels and CPUE in several fisheries highlight the need for immediate management action to limit catches. ICES area boundaries also need to be revised for deep-water species, as they are not consistent with bathymetry or water masses in some areas. Several are also very large, which does not recognize the small spatial scales often necessary to monitor some of these deepwater fisheries to prevent serial depletion of populations/stocks.

Biological data were presented for several deepwater species off Ireland that further advocated a cautious approach to fishery development. Estimates of population replacement rates for deepwater species were much lower than for some shelf species.

An account was presented of the biology and fishery for the deepwater prawn *Aristeus antennatus* in the western Mediterranean Sea. Established fishing grounds could be extended into deeper waters, but care is required to establish migration and life-history links between the areas.

Biology and life history

A study of the behaviour of deep-water fishes in nine habitats observed in the Bay of Biscay using a manned submersible showed that some species were more flexible than others in their choice of habitat. A multivariate analysis of the numerous observed parameters grouped the species in to a number of assemblages associated with one or more habitat types.

There were discussions of the biology of the deep-water witch flounder (*Glyptocephalus cynoglossus*), the deep-water sharks, the blue hake (*Antimora rostrata*) and the roughhead grenadier (*Macrourus berglax*) and some of the many of the characteristics of deep-water species such as slow growth, high age at first maturity, non-seasonal reproduction and missing stages in the life cycle.

Redfish

The three oral presentations covered a variety of topics. The first was a paper on the stock structure and ecology of *S. mentella* and suggested that only a single stock exists in the Irminger Sea. The second paper presented an age validation for *S. mentella* in NAFO Div. 3M and suggested density-dependent growth may be occurring for the 1990 year-class. The final paper provided Norwegian information from a long-line and gillnet fishery for the 'giant' *S. marinus* conducted along the Reykjanes Ridge. The data suggested CPUE declined by 27-85% between 1996 and 1997 before the fishery ceased due to a decline in its economic viability.

The session discussion focused on the population structure and migrations of *S. mentella* in the Irminger Sea. There was no general consensus amongst the participants on whether there were one stock or three.

Fisheries Ecology

A paper describing studies on the distribution growth and exploitation of *Argentina silus* (greater silver smelt) in Norwegian Sea during the early 1980s was followed by a presentation on some of the results of acoustic surveys in the early 1990s. At the start of the fishery this species was managed by TAC but this has now changed to a control of effort by licensing. A paper on the size structure and production of ten demersal species off the Canadian shelf demonstrated the importance of predation as a link between the species in the community and the importance of life history parameters in determining dominance. The deep-bathyal, oligotrophic ecosystem of the western Mediterranean is co-dominated by fish and decapod crustacea. A paper described an analysis of the intensity of faunal change in relation to size and depth using material from two surveys to the southwest of the Balearic Islands.

In the summing up it was noted that otolith collections could be an important record of past history both for age composition and stock identification and should be archived. The Mediterranean, although sharing many of the same deep-water fish species of the Atlantic, is a very different ecosystem (e.g. high temperature, oligotrophic) and the maximum size of many species tends to be smaller. Comparative studies between the Mediterranean and the Atlantic could yield useful insights into processes in the deep-sea.

Conclusion

In the general discussion it was considered that the emerging deep-water fisheries could learn from the experience in managing some of the longer established fisheries such as Greenland halibut and redfish. The 2001 report of the ICES Working Group on the Biology and Assessment of Deep-sea Fishery Resources had, at the request of NEAFC, made a first attempt at ranking life history

characteristics of deep-water fish in relation to these two species. A recurring theme in many papers had been the fact that the current ICES Sub-areas and Divisions are, in many instances, unsuitable in terms of bathymetry and water masses for reporting information on deep-water species. Given the high discard rates and likely high mortality of escapees in trawl fisheries it was considered to be important to report catch and not simply landings. There is increasing public awareness about the impact of fishing activities on the deep-water ecosystem and the conservation of deep-water coral reefs and seamounts were good examples of how there should be wider involvement in the decision making process. The importance of the use of non-invasive technology for studies in the deep-sea, such as the plans for further exploration of the Bear Seamount, is an area that should be given greater priority.

Scientific Council Annual Meeting
17-21 September, Centro de Convenciones de Plaza de América
Varadero, Cuba

Chairman: W. B. Brodie (Canada)

Rapporteur: T. Amaratunga, Assistant Executive Secretary

Representatives attended from Canada, Cuba, Denmark (in respect of Faroe Islands and Greenland), Estonia, European Union (Germany, Portugal and Spain), Iceland, Russian Federation, Ukraine and United States of America. Observers were present from FAO, ICES and SEAFO. (Annex 1)

The Executive Committee met prior to the opening session of the Council, and the Provisional Agenda, plan of work and other related matters were discussed. The Council noted the Scientific Council Special Session Symposium on "Deep-sea Fisheries" was successfully conducted during 12-14 September 2001.

The Chairman welcomed everyone to Cuba and to this venue for the Meeting. The Council noted that as a result of the tragic events in the USA, meetings of other Constituent Bodies of NAFO (General Council and Fisheries Commission) scheduled for this 23rd Annual Meeting were not held. The Council noted that most representatives of the Scientific Council had arrived in Cuba to attend the Special Session, before the unfortunate USA events. The Council therefore agreed to complete its scheduled work as announced in the Provisional Agenda.

The Council noted with concern that important issues on Conservation and Enforcement Measures and Allocations in the work of the Fisheries Commission and Administration in the work of the General Council, usually addressed during the Annual Meeting, will remain outstanding. The Council therefore noted some additional agenda items may be needed to address the Council's concerns on some of these issues.

The Agenda was adopted (Annex 2).

FISHERIES SCIENCE

Unregulated Species and Elasmobranchs in the NAFO Regulatory Area

- a) **Monkfish** are at the northern extent of their distribution on the Grand Banks, restricted primarily to the southwest slope (about 1/3 in Subdiv. 3Ps, 2/3 in Div. 3O). Research survey data indicate only occasional records in Div. 3N and 3L (and north in Div. 3K on the Labrador Shelf) in deeper, warmer trenches and on the slope edge. A shift to deeper waters after the mid-1980s followed by a return to shallower depths in recent years may be related to a cooling trend during the mid-1980s. The highest densities of monkfish on the Grand Banks were associated with the warmest areas (southwest slope) where bottom temperatures exceed 4°C.

Biomass and abundance indices fluctuated, low in 1979, peaking in 1988 again reaching a low in 1992-93. Since then, the index has fluctuated widely, particularly from the Campelen survey gear. 2000 represents a year of peak abundance; almost double that of the previous year. Such abrupt changes from year to year likely do not reflect dramatic fluctuations in the population. Rather, these changes suggest that there may be a catchability issue. Mean monkfish weight peaked in the late-1980s, in conjunction with the peak in biomass. Its average size has declined since 1996.

- b) **Orange roughy** was previously unreported from Canadian waters. From 1982 (first record) and 1991 to 2000, fishery observers recorded 506 specimens of orange roughy from 218 of a total of 202 741 sets for various fleets fishing on the slope waters off Canada. With the exception of the fishery for shrimp in Div. 3M, there was no fishery information available in the NRA although survey data confirm their presence there in Div. 3L, 3N and 3O. The range of orange roughy extends from the slope waters off southwest Greenland to the southwest Scotian Shelf but is mostly concentrated north of the NRA centered at Latitude 60°, primarily at depths exceeding 800 m and associated with the warmest available bottom temperatures.

Distribution patterns suggest that orange roughy are rare in the Northwest Atlantic and are a fringe component of the northeast Atlantic population.

- c) **Arctic and Vahl's eelpout** comprised about 85% of the catch of eelpouts among 10 eelpout species identified from the surveys. An increase in unidentified species since 1995 is due to the increase in capture of small (difficult to identify) eelpouts captured with the introduction of the Campelen trawl. Eelpouts, as a group, are found over the entire extent of the bank in Div. 3L and mainly in slope waters in the other Divisions. In both the spring and autumn surveys, catches of eelpouts in Div. 3NO appear to be concentrated in deeper water along the edge of the bank. Thus, they commonly occur in the NRA. This is particularly apparent prior to the change to Campelen gear in 1995.

Based on both the spring and autumn surveys, a decline in abundance and biomass is apparent from the late-1980s to 1994. From 1995-2000, following the change to the Campelen trawl, abundance and biomass have been relatively stable.

- d) **Longfin hake** are concentrated mainly along the Laurentian Channel slope and the southwest slope of the Grand Banks, in Subdiv. 3Ps and Div. 3O, intermittently and to a lesser extent in Div. 3LN, spring and autumn. When they do occur in Div. 3LN in the autumn surveys, they are found along the edge of the bank. Similar to monkfish, longfin hake are found largely where bottom temperature exceeds 3°C.

Prior to the switch to the Campelen trawl, relative abundance and biomass estimates were very low across all Divisions. After the change, the autumn research vessel surveys show a steady increase in biomass and abundance from 1996 to present in particularly Div. 3O. In Div. 3LN, the abundance of longfin hake in the autumn appears to be variable. While the abundance and biomass estimates from the spring research vessel surveys in Div. 3O and Subdiv. 3Ps are greater than those observed in the autumn surveys, the general increase in abundance in Div. 3O is not apparent.

- e) **Thorny skate** are widely distributed throughout the survey area. Since the late-1980s, fewer catches of thorny skate occurred in Div. 3L particularly to the western extent. In recent surveys catches of thorny skate appear to be concentrated mainly in Div. 3NO and Subdiv. 3Ps along the southwest slope and edge of the Grand Bank overlapping the 200-mile boundary. Thorny skate undergoes a limited on/off (autumn /winter, spring/summer, respectively) bank migration.

Thorny skate relative abundance and biomass underwent a decline during the late-1980s and early-1990s particularly in Div. 3L. Since the change to the Campelen trawl, thorny skate relative abundance and biomass have been variable and concentrated in Div. 3NO and Subdiv. 3Ps. The majority of the catch, about 80% continues to be non-Canadian from the NRA.

- f) **Spotted wolffish** are concentrated in Div. 3L, mainly on the north and east edges of the Grand Bank. Smaller catches are taken along the shelf edge in Div. 3N and 3O.

In both spring and autumn surveys, abundance and biomass underwent a decline from the late-1980s through the early-1990s and remained low in the mid-1990s. In spring surveys, there has been an apparent increase in abundance and biomass from 1997 to present. The increase is less apparent from in the autumn surveys.

- g) **Striped wolffish** is concentrated along the edge of the Grand Bank and on the southwest slope of the Grand Bank in Div. 3LNO. Historically, striped wolffish were more widespread in Div. 3L and areas north. In Subdiv. 3Ps, it appears to be concentrated on the northern slope of the Laurentian channel and along the slopes of Hermitage channel.

Striped wolffish abundance declined from the late-1980s to 1994 in both the autumn and spring surveys. Since 1996, relative biomass and abundance estimates have fluctuated at a low level.

- h) **Broadhead wolffish** are concentrated along the shelf edge of the Grand Bank in Div. 3LNO and Subdiv. 3Ps distributed deeper than the other two species.

As for the other wolffish, broadhead wolffish relative biomass and abundance declined from the late-1980s to early-1990s. Prior to 1994, broadhead wolffish were most abundant in Div. 3L, and present at low levels in Div. 3NO. In recent years, the abundance and biomass of broadhead wolffish has been variable in Div. 3LNO, with a slight increasing trend. However, the abundance and biomass estimates from the autumn survey in 2000 show a lower value in Div. 3L.

- i) **Black dogfish** occur in deeper waters along the edge of the Grand Bank in Div. 3LNO and in the deep waters of the Laurentian channel, to a lesser degree in the Hermitage channel. In Div. 3O, black dogfish are also found along the southwest slope of the Grand Bank at the greatest depths sampled. Commercial catches at depths exceeding 1 000 m commonly take this species along the entire slope.

Black dogfish were detected at very low levels in the autumn surveys prior to the change to Campelen trawl and when deep sets were fewer. Relative biomass and abundance from the spring surveys show a fairly stable pattern during the late-1980s and early-1990s in Subdiv. 3Ps. Since 1995, black dogfish relative abundance and biomass have been quite variable. In recent surveys, levels were lower than that observed immediately after the gear change in 1996.

The species described above can be placed into two general categories: those that have a more widespread distribution on the banks within the area surveyed and those restricted to warmer slope waters. The more widespread species namely the eelpouts, thorny skate and the wolffishes underwent a decline in abundance during the late-1980s (or earlier) and early-1990s. The other group, longfin hake, monkfish and black dogfish were distributed along the slope, particularly in the Laurentian Channel and the southwest slope of the Grand Bank where bottom temperatures were warmest. A decline in abundance was not apparent for these species.

Abrupt inter-annual changes have been observed for many of the species, particularly those less abundant. These changes do not likely reflect dramatic fluctuations in the population. Rather, these changes suggest that there may be a catchability issue associated with the sparse distribution.

Fishable Biomass of Main Commercial Species

The research data clearly showed that Greenland halibut biomass increases steadily with depth as a proportion of the biomass of the five species combined. It is also evident that yellowtail flounder were not found deeper than about 100 m. American plaice biomass was greatest in depths shallower than about 200 m, then declined in deeper waters but showed some increase in depths between 732-914 m. Cod were found to about 550 m in 1999 but extended to 732 m in 1998. Witch flounder were widely distributed with no clear trend in biomass in relation to depth. Other important species, redfish and roughhead grenadier, are missing from the data so it is not possible to examine its distribution in the area. The catch rates for Greenland halibut are very low for depths shallower than 600 m compared to greater depths. This is also reflected in that relatively little effort is directed for Greenland halibut in depths shallower than 700 m. Catch rates were highest for skate in depths shallower than 400 m, and yellowtail flounder and American plaice in depths shallower than 200 m. For cod, catch rates were highest from depths shallower than 500 m. The fishery data on redfish indicate that most catches are taken in depths of 200-800 m. Roughhead grenadiers were also captured in depths generally deeper than 600 m. This is a similar pattern of distribution demonstrated in research surveys and suggests the fishable biomass is found in depths greater than 600 m.

Medium Term Development of Several Stocks Under Various Assumptions

The Fisheries Commission requested: *with the concurrence of the Coastal State, that the Scientific Council evaluate the likely future medium-term development for Greenland halibut in 2+3KLMNO, Yellowtail flounder in 3LNO, American plaice in 3LNO (if possible) and cod in 3NO, under the following assumed constraints:*

- a) *Closure of targeted Greenland halibut fishery in depths less than 200, 500 and 800 meters or any other depths considered appropriate. These cases, which will have to make a reasonable assumption on the redirection of effort so removed onto the remaining depth strata, should be compared with evaluation of current fishing practices.*

The Council responded that:

Adherence to the NAFO by-catch regulations would, in itself, contribute significantly to reducing by-catches of species under moratoria.

Divisions 3LM

Data available through the 1990s and most particularly from the recent years, indicate that only limited directed fishing for Greenland halibut takes place in depths shallower than 800 m in Div. 3L or 3M. Fisheries carried out by Japan, Russia and Spain would not be significantly displaced compared to current practices. For Portugal, there would be a displacement of 2.5% of the 1999/2000 effort in Div. 3L, and 7.2% of the Div. 3M effort. Greenland halibut is the main species in their fishery deeper than 500 m in Div. 3L and 3M.

Data from the fisheries indicates that currently by-catches of cod, American plaice and redfish are low in Div. 3L in depths where Greenland halibut is fished. American plaice overlaps Greenland halibut distribution in all depths shallower than 1 000 m. Historically, American plaice catch rates were low deeper than about 600 m.

In Div. 3M, the Portuguese data indicate that the redfish fishery is at depths shallower than 500 m.

Russian data from their 2000 fishery do not indicate any fishing in depths shallower than 600 m. For both Div. 3L and 3M, catches rates for American plaice were highest at this shallowest depth but decreased in deeper water.

Divisions 3NO

The situation in Div. 3N is somewhat different (than 3LM). In depths deeper than 800 m there will be significant by-catches of American plaice at certain times of the year, particularly in the spring.

A higher proportion of effort was reported to be directed toward Greenland halibut in depths shallower than 800 m. There is, however, concern about the legitimacy of the claim that they are directed for Greenland halibut. Based on available information, the proportion of Greenland halibut in the overall catches is relatively low and these fisheries would be better described as 'mixed'.

The fishing in these depths may be related to the consideration of by-catch 'limits' being treated as 'targets'. This is considered inappropriate generally, but especially given that the species being caught as 'by-catch' are mainly those under moratoria – American plaice, witch flounder, redfish and cod.

Restricting the Greenland halibut directed fishery to depths deeper than 500 m would limit the American plaice catch from depths deeper than 200 m to unavoidable by-catch taken from this fishery. Scientific Council did note however, that commercial catch rates of Greenland halibut are significantly lower in depths shallower than 600 m. The American plaice catches from the ongoing skate fishery in Div. 3N in shallow waters which, according to Spanish data for 1999 form the bulk of the of Div. 3LNO American plaice catches, would remain unaffected. Moreover, redirection of effort in the intermediate depths from the target species being Greenland halibut to being an unregulated species could result in an increase in the existing problem. Introduction of mesh regulations for the directed skate fishery would help to alleviate the problem of by-catch in this fishery.

Relatively little effort is directed for Greenland halibut in Div. 3O. Most of the fishing is in depths shallower than 800 m but much of this is directed for redfish, and unregulated species in this area, as well as skate (also unregulated). There is concern about the catch of American plaice, witch flounder, yellowtail flounder and cod in these unregulated fisheries and Fisheries Commission should consider the introduction of controls on these fisheries.

Yellowtail flounder do not appear in catches deeper than 200 m. Cod in Div. 3NO have not been reported in Spanish and Portuguese fisheries in depths deeper than 500 m. The redfish by-catch in the Portuguese fishery is at depths of 200-800 m in Div. 3N. The redfish catch by Spain in Div. 3O is at 400-600 m, while that for Portugal is in depths of 200-800 m. American plaice overlaps Greenland halibut distribution in all depths shallower than 1 000 m in Div. 3N. Catch rates of American plaice in depths greater than 500 m are low compared to in shallower depths in Div. 3N.

The Russian data for 2000 indicate a gradual increase in catch rates of American plaice from 300 m to higher levels in 800-1 000 m. In Div. 3O, high catch rates were reported for 0-400 m, followed by a decline at 500 m, then a gradual increase again to 700-800 m. There was no fishing deeper than 800 m.

In conclusion:

Choosing 500 m or 600 m as a limit for the Greenland halibut fisheries would have minimal impact on the directed fisheries for this species and would eliminate by-catch of yellowtail flounder and cod. By-catch of American plaice would be reduced, as would that of redfish. Choosing 700 m or 800 m would have only moderate impact. This restriction would substantially reduce the by-catch of redfish.

Juveniles

It is not possible, with current data, to evaluate whether or not restricting fishing for Greenland halibut to depths deeper than 800 m will afford 'adequate' protection to juveniles of Greenland halibut and other species. The nature of the Greenland halibut fishery is such that mainly juveniles are taken. Thus 'adequate' protection must be achieved through careful limits to overall exploitation.

Available data do not suggest changes in the proportions of mature and immature American plaice with depth.

As indicated above, lowering exploitation rates on American plaice from the current level is essential if there is to be any hope of increasing the stock size. At current spawning stock biomass, it is critical that as many mature fish be allowed to survive as possible in order to enhance the possibility of good recruitment, an event necessary for rebuilding. As stated above, the exploitation should be reduced through elimination of 'mixed' fisheries in shallower than 800 m depths and mesh size regulation for the skate fishery. The same may be said for redfish, witch flounder and cod; ongoing survival of the mature fish is important to improve the chances of good recruitment.

Scientific Council has also repeatedly expressed concern regarding the high proportion of juveniles caught in the Greenland halibut fishery. When coupled with the current low spawning stock size relative to historical levels, this presents a situation of considerable risk. It is the nature of any bottom-trawling fishery for Greenland halibut that larger fish are poorly represented in the catches. While the research data suggest an increase in size of fish with increasing depth, and suggest that the mature portion of the population is in depths deeper than 800 m, the fishery data do not clearly indicate increases in mean size with increasing depth of capture. The data do show that the larger fish (>70 cm) are primarily taken in depths deeper than 800 m although the proportions are generally shallower than 2%. Restricting fishing to depths deeper than 800 m would result in only a moderate increase in the catch of these larger fish with a related decline in the catch of smaller individuals, but any benefit would probably only accumulate after many years.

Update on Pelagic *S. mentella* (Redfish) in Division 1F and Adjacent ICES Area

Regarding redfish in Division 1F, the Fisheries Commission requested (see Agenda Annex 1, Item 12) the Scientific Council to: *review all available information on the distribution of this resource over time, as well as on the affinity of this stock to the pelagic redfish resource found in the ICES Sub-area XII, parts of SA Va and XIV or to the redfish found in NAFO Sub-areas 1-3.*

The Council reviewed new information on the stock size and distribution of pelagic *Sebastes mentella* in NAFO Convention Area (Div. 1F, 2GHJ, 3K) and ICES Divisions XIV, XII and Va. (NAFO SCR Doc. 01/161). EU-Germany, Iceland, Russia and Norway carried out an ICES co-ordinated trawl-acoustic survey in June/July 2001. Five vessels participated and over 420 000 sq. naut. miles were covered. The stock size measured with the acoustic instruments was assessed to

be about 715 000 tons at depths down to the deep-scattering layer (to about 350 m), with redfish having a mean length of 34.6 cm. Highest concentrations of redfish were in the southwest part of the area covered. The redfish was also mixed with the deep scattering layer. In addition to the acoustic measurements, an attempt was made to estimate the redfish in and below the deep scattering layer. This was done by correlating catches and acoustic values at depths between 100 and 450 m. The obtained correlation was used to transfer the trawl data at greater depths to acoustic values and from there to abundance. A total of approximately 1 075 000 tons were estimated to be at depths between 0 and 500 m and about 1 056 000 tons below 500 m depth. Below 500 m, the densest concentrations were found in the northeastern part of the area. The average length of the fishes caught below 500 m was 38.3 cm. The estimated abundance derived from the trawl data should be treated with great caution and they cannot be combined with the acoustic results. The preliminary data evaluation did not indicate significant changes in the stock size or distribution as compared with 1999 survey results.

A decreasing trend in the proportion of females at shallower water than 500 m during the last decade, but whether it is related to overexploitation of the females is not known. During the survey in 2001, recruits (25-30 cm) were observed, particularly in the western most area of the investigation; the western part of NAFO Div. 1F but also in the eastern parts of Div. 2H and 2J.

Council noted that a review on information about the stock structure of pelagic *Sebastes mentella* was presented during the NAFO Symposium on Deep-sea Fisheries (12-14 September 2001, Varadero, Cuba) and that there was no consensus with regard to various hypotheses.

FUTURE SPECIAL MEETINGS

Special Session and Annual Meeting, September 2002

The Council reconfirmed the Special Session, the Symposium, which is now titled "Elasmobranch Fisheries: managing for sustainable use and biodiversity conservation" will be held in conjunction with the Annual Meeting during 11-13 September 2002 in Spain.

The background information and justification for the chosen theme is as follows:

Elasmobranch resources are increasingly exploited in various places around the world. A worldwide trend exists towards increasing exploitation of the fishery resources. This has raised a number of issues concerning both the biology and management of these resources. Countries and various regional management bodies (notably tuna commissions) around the world are preparing Shark Assessment Reports and Plans of Action in response to FAO's International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks), where the term 'shark' is defined to include all chondrichthyans. It is the generally low productivity of shark populations compared with the productivity of teleosts and invertebrates that led to development of the IPOA-Sharks. The IPOA-Sharks has two main thrusts:

1. Sustainable and rational use of targeted and by-product species through responsible management, and
2. Conservation of biodiversity through management of by-catch.

The Symposium will provide the first opportunity for international discussion following adoption of the IPOA-Sharks. The purpose of this Symposium will be to discuss the available biological information and the issues in the management of elasmobranch fisheries. The Symposium will address elasmobranch resources around the world.

Second Scientific Council Workshop on the Precautionary Approach to Fisheries

The Scientific Council discussed the desirability of convening a second Workshop to further develop limit reference points within the Precautionary Approach framework for as many stocks as possible. The workshop will focus on methods that utilize biomass and exploitation values based primarily on research vessel survey indices as proxies for absolute values. Scientific Council agreed on the value of such a Workshop but could not determine an appropriate time to schedule the Workshop. It was noted that spring 2003 is the most likely period. In the interim, Scientific Council will review the data available for each stock at the June 2002 Meeting.

Special Session 2003

The Council noted that there was a proposal in 1998-99 for a Symposium titled "Managing Marine Ecosystem Variability in the NAFO Area". The objectives of that Symposium were to take a retrospective look at major changes in the ecosystems in the NAFO area over the past 40 years with influential effects on stock assessment and management. The Council was informed in 1999 that Canada had initiated a project that encompassed subject areas suggested for this symposium theme. Although Canadian participants in this project have expressed interest in a future Symposium in this area, Scientific Council was unable to commit to this proposal for a Scientific Council Special Session in 2003, at this time. Canadian members of the Scientific Council involved in this project were encouraged to keep Scientific Council informed of developments in this project.

The Council noted that a likely topic for a Special Session in 2003 was on geostatistics methodology and its use in studying fish stocks. It was agreed the Council will receive more information on this in June 2002, before deciding on its suitability for a Scientific Council Special Session.

JOINT NAFO/ICES WORKING GROUPS OR MEETINGS

Joint NAFO/ICES WG on Harp and Hooded Seals

The Chairman informed the Working Group on Harp and Hooded Seals (WGHARP) had worked by correspondence during 2001 and had agreed to meet in late August-early September 2002 in Arkhangelsk, Russia.

One important issue at the 2002 meeting will be to review the results from the Pinniped Population Modelling Workshop. A subgroup (R. Merrick, N. Øien, G. Stenson) was designated to work by correspondence to develop the workshop. The result from their efforts is that the WGHARP will hold a three-day Workshop on "Harvest modeling of pinniped populations" to be hosted by the U.S. National Marine Fisheries Service, in Woods Hole, Massachusetts, USA in the period 28-30 January 2002 (tentative dates).

Joint NAFO/ICES Symposium on Hydrobiological Variability, August 2001

Conclusions from the Symposium: The 1990s was a decade of extremes: extreme warm, extreme cold, North Atlantic Oscillation (NAO) strongly positive, in one occasion strongly negative (winter 1995/96). In the central Labrador Sea there was a four-year period of unusually intense convection followed by five years of restratification. The period of intense convection was caused by unusually severe winter weather associated with a persistently deep Icelandic Low in the atmosphere. The influence of NAO was visible on the North Atlantic space scale, both in the west, and in the east. In the Barents Sea warmest conditions were encountered since the 1930s. A causal link was made for the Barents Sea: NAO+ strong westerlies – high Barents Sea air temperatures –

high Barents Sea water temperatures – growth of the Copepod *Calanus finmarchicus* – inflow of *Calanus finmarchicus* – increased cod growth. At the Norwegian coast, the winters during the 1990s indicated highest decadal mean temperatures at the sea surface and in the deep layers. For the North Sea, the 1990s revealed outstanding change in wind forcing compared to previous decades.

For the region of the Faroe Islands, it could be shown that during the 1990s there was a shift from an oceanic environment to a neritic environment, from *Calanus finmarchicus* dominated to neritic copepods dominated environment. There was a collapse of the cod and haddock stocks during the early-1990s, and recovery afterwards. The primary production index correlated with the growth of cod and haddock and the recruitment to these stocks.

In the Norwegian Sea, there was a significant positive correlation between herring condition index and NAO. Even on the short-time scale interaction between climate and fish could be shown: strong variations of NAO index (winter 1995/96, from highly positive to highly negative) led to a lower herring condition index.

For the Newfoundland waters it could be shown that the increase observed in the productivity of the pelagic ecosystem during the latter half of the 1990s was consistent with the expected biological response to changes in the physical ocean environment.

SCIENTIFIC COUNCIL WORKING PROCEDURES AND PROTOCOLS

Scientific Council agreed to the following overall schedule (+ is assessment year, *i* is interim monitor) subject to the Fisheries Commission requests for advice and concurrence:

Stock	1999	2000	2001	2002	2003	2004	2005
<u>Current schedule</u>							
American plaice in Div. 3LNO	+	<i>i</i>	+	<i>i</i>	+	<i>i</i>	+
Cod in Div. 3N	+	<i>i</i>	+	<i>i</i>	+	<i>i</i>	+
Redfish in Div. 3LN	+	<i>i</i>	+	<i>i</i>	+	<i>i</i>	+
Cod in Div. 3M	+	+	<i>i</i>	+	<i>i</i>	+	<i>i</i>
American plaice in Div. 3M	+	+	<i>i</i>	+	<i>i</i>	+	<i>i</i>
Witch flounder in Div. 3NO	+	+	<i>i</i>	+	<i>i</i>	+	<i>i</i>
<u>Council's additional schedule</u>							
Yellowtail flounder in Div. 3LNO			+	+	<i>i</i>	+	<i>i</i>
Squid in Subareas 3 and 4			+	+	<i>i</i>	+	<i>i</i>
Redfish in Div. 3M			+	+	+	<i>i</i>	+

For American plaice in Div. 3LNO, the Council decided to leave this stock on its current 2-year timetable, after some debate. Several reasons were considered for changing the frequency of assessments to an annual basis, including an increasing trend in fishing mortality, and perceived increases in some survey indices. However, considering its advice from the 2001 Meeting that the stock remains at a low level, Scientific Council concluded that the current schedule of assessment was acceptable. During the interim monitoring, there is a need to continue to monitor the level of fishing mortality.

Working Procedures and Membership

Scientific Council agreed that the availability of accepted electronic manuscripts prior to the actual publication of the Journal issue was an excellent feature worthy of promotion. Notification of these manuscripts should be sent to web-based discussion lists, etc. as soon as they are ready, indicating that pdf versions of these papers can be downloaded from the NAFO Website.

STACPUB Membership

The Council after some discussion agreed that appointed STACPUB membership was no longer required and accordingly recommended that *the Scientific Council Rules of Procedure be modified by deleting Rule 5.1.(c).(ii).*

Observer Program Database

The Scientific Council discussed the availability of data collected under the Program for Observers and Satellite Tracking and noted the STACREC recommendation from June 2001 with regard to the ACCESS database developed by Canada to capture these data. This database is designed to accept data in a variety of formats as submitted by Contracting Parties. The Scientific Council considers this database to be an effective tool for managing the Observer Program database and, therefore, recommended that *the existing database be installed at the NAFO Secretariat in the immediate future to capture current data, and that work should commence to evaluate requirements for entry of the remaining historical data.*

Geostatistics Methodology for Studying Fish Stocks

Scientific Council considered a proposal for a 3-day Workshop to be held, in conjunction with the September 2003 NAFO Meeting, to educate Scientific Council members about the use of geostatistical methods in fisheries stock assessments.

Northern shortfin squid

Scientific Council agreed to use the common name "northern shortfin squid" for *Illex illecebrosus* in all its reports, documents and databases. This is in keeping with current taxonomic nomenclature.

Annex 1. List of Participants

CANADA

Representatives:

- Atkinson, D.B. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P.O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: + 709-772-2027 – Fax: + 709-772-6100 – E-mail: atkinsonb@dfo-mpo.gc.ca
- Bowering, W.R. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P.O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: + 709-772-2054 – Fax: + 709-772-4188 – E-mail: boweringr@dfo-mpo.gc.ca

Advisers/Experts:

- Brodie, W.B. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P.O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: + 709-772-3288 – Fax: + 709-772-4105 – E-mail: brodieb@dfo-mpo.gc.ca
- Kulka, D.W. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P.O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: + 709-772-2064 – Fax: + 709-772-5469 – E-mail: kulkad@dfo-mpo.gc.ca
- Price, J. Dept. of Fisheries & Oceans, 7 Eaton Place, St. John's, Newfoundland A1E 6A9
Phone: + 709-772-4427 – Fax: + 709-772-6306 – E-mail: pricejo@dfo-mpo.gc.ca

CUBA

- Valdes, E. Centro de Investigaciones Pesqueras, Sta. Ave y 248, Barlovento, Sta Fe, Playa C. Habana 19100
Phone: + 537 298055 – Fax: + 537 339168 – E-mail: evaldes@cip.fishnavy.inf.cu

DENMARK (IN RESPECT FOR FAROE ISLANDS AND GREENLAND)

FAROE ISLANDS

Representative:

- Nicolajsen, A. Fiskorannsóknarstovan, Noatun, Postboks 3051, FR-1100, Torshavn
Phone: + 298 1 50 92 – Fax: + 298 1 8264 – E-mail: arninic@frs.fo

GREENLAND

Representative:

- Jørgensen, O.A. Danish Institute for Fisheries Research, Charlottenlund Slot, DK-2900 Charlottenlund
Phone: + 45 33 96 33 00 - Fax: + 45 33 96 33 33 – E-mail: olj@dfu.min.dk

ESTONIA

- Saat, T. Estonian Marine Institute, 18b Viljandi Road, EE-3600 Tallinn
Phone: + 372 6281 570 – Fax: + 372 6281 563 – E-mail: tsaat@sea.ee

EUROPEAN UNION (EU)

Representative:

- Vazquez, A. Instituto de Investigaciones Marinas, Eduardo Cabello 6, 36208 Vigo, Spain
Phone: + 34 9 86 23 1930 – Fax: + 34 9 86 29 2762 – E-mail: avazquez@iim.csic.es

Advisers/Experts:

- Cross, D.G. EUROSTAT, European Commission, Jean Monnet Bldg, B.P. 2920, Luxembourg (G.D.)
Phone: + 352 4301 37249 – Fax: + 352 4301 37318 – E-mail: david.cross@cec.eu.int
- Rätz, H-J. Institute of Sea Fisheries, Palmaille 9, D-22767 Hamburg, Federal Republic of Germany
Phone: + 49 40 389 05169 – Fax: + 49 40 389 05263 – E-mail: raetz.ish@bfa-fisch.de
- Stein, M. Institut für Seefischerei, Palmaille 9, D-22767 Hamburg, Federal Republic of Germany
Phone: + 49 40 389 05174 – Fax: + 49 40 38905 263 – E-mail: stein.ish@bfa-fisch.de
- Stransky, C. Institut für Seefischerei, Palmaille 9, D-22767 Hamburg, Federal Republic of Germany
Phone: + 49 40 38905 228 – Fax: + 49 40 38905 263 – E-mail: stransky.ish@bfa-fisch.de

- Avila de Melo, A. Inst. de Investigacao das Pescas e do Mar (IPIMAR), Av. de Brasilia, 1400 Lisbon, Portugal
Phone: + 351 21 302 7000 – Fax: + 351 21 301 5948 – E-mail: amelo@ipimar.pt
- Alpoim, R. Inst. de Investigacao das Pescas e do Mar (IPIMAR), Av. de Brasilia, 1400 Lisbon, Portugal
Phone: + 351 21 302 7000 – Fax: + 351 21 301 5948 – E-mail: ralpoim@ipimar.pt
- De Cárdenas, E. Instituto Español de Oceanografía, Avenida de Brasil 31, 28020 Madrid, Spain
Phone: + 34 91 417 5911 – Fax: + 34 91 597 4770 – E-mail: e.decardenas@md.ieo.es
- Junquera, S. Instituto Español de Oceanografía, Apto 1552, E-36280 Vigo, Pontevedra, Spain
Phone: + 34 9 86 49 2111 – Fax: + 34 9 86 49 2351 – E-mail: susana.junquera@vi.ieo.es
- González, F. Instituto Español de Oceanografía, Apto 1552, E-36280 Vigo, Pontevedra, Spain
Phone: + 34 9 86 49 2111 – Fax: + 34 9 86 49 2351 – E-mail: fernando.gonzalez@vi.ieo.es
- Murua, H. Fish, Resour. – AZTI Foundation, Herrera Kaia, Portualde z/g, 20110 Pasaia, Basque Country, Spain
Phone: + 34 9 43 00 48 00 – Fax: + 34 9 43 00 48 01 – E-mail: hmurua@azti.es

ICELAND

Representative:

- Sigurðsson, T. Marine Research Institute, Skúlagata 4, Pósthólf Box 1390, 150 Reykjavik
Phone: + 354 552 0240 – Fax: + 354 562 3790 – E-mail: steini@hafro.is

RUSSIAN FEDERATION

Representatives:

- Rikhter, V.A. Atlantic Scientific Research Institute of Marine Fisheries and Oceanography (AtlantNIRO),
5 Dmitry Donskoy Street, Kaliningrad 23600
Phone: + 70 112 22 5547 – Fax: + 70 112 21 9997 – E-mail: atlant@baltnet.ru
- Shibanov, V.N. Knipovich Polar Research Institute of Marine Fisheries and Oceanography (PINRO),
6 Knipovich Street, Murmansk 183763
Phone: + 7 8152 47 34 61 – Fax: + 47 789 10 518 – E-mail: inter@pinro.murmansk.ru

Advisers/Experts:

- Babayan, V. K. Head of Laboratory for System Analysis of Fishery Resources, VNIRO, 17, V. Krasnoselskaya,
Moscow 107140
Phone: + 70 95 264 6893 – Fax: + 70 95 264 9187 – E-mail: vbabayan@vniro.ru
- Boltnev, A. Knipovich Polar Research Institute of Marine Fisheries and Oceanography (PINRO),
6 Knipovich St., Murmansk
Phone: + 7 815 2 47 2532 – Fax: + 815 2 473331 – E-mail: boltnev@pinro.murmansk.ru

UKRAINE

- Serobaba, I. I. Deputy Director for Scientific Work, Southern Scientific Research Institute of Marine Fisheries and
Oceanography (YugNIRO), 2, Sverdlov St., 98300 Kerch, Crimea
Phone: + 38 06561 2 35 30 – Fax: + 38 06561 21572 – E-mail: postmaster@ugNIRO.crima.com

UNITED STATES OF AMERICA (USA)

Representative:

- Correia, S. J. Massachusetts Division of Marine Fisheries, 50A Portside Drive, Pocasset, MA 02559
Phone: + 508-563-1779 Ext. 111 – Fax: + 508-563-5482 – E-mail: steven.correia@state.ma.us
- Serchuk, F.M. National Marine Fisheries Service, NEFSC, 166 Water St., Woods Hole, MA 02543
Phone: + 508-495-2245 – Fax: + 508-495-2258 – E-mail: fred.serchuk@noaa.gov

Advisers/Experts:

- Hendrickson, L.C. National Marine Fisheries Service, NEFSC, 166 Water St., Woods Hole, MA 02543
Phone: + 508-495-2285 – Fax: + 508-495-2393 – E-mail: lisa.hendrickson@noaa.gov
- Mayo, R.K. National Marine Fisheries Service, NEFSC, 166 Water St., Woods Hole, MA 02543
Phone: + 508-495-2310 – Fax: + 508-495-2393 – E-mail: ralph.mayo@noaa.gov

OBSERVERS

- Doulman D. J., FAO Observer, Senior Fishery Liaison Officer, Inter. Institutions and Liaison Service, Fishery Policy and
Planning Division, Fisheries Dept., Viale delle Terme di Caracalla, Room F-409, 00100 Rome, Italy
Phone: + 39 0657 056752 – Fax: + 39 0657 056500 – E-mail: david.doulman@fao.org

Rätz, H-J. *, ICES Observer, Institute of Sea Fisheries, Palmaille 9, D-22767 Hamburg, Federal Republic of Germany
Phone: + 49 40 389 05169 – Fax: + 49 40 389 05263 – E-mail: raetz.ish@bfa-fisch.de
Kashindi M. S., SEAFO Observer, Republic of Namibia, Directorate of Policy, Planning and Economics, Ministry of Fisheries
and Marine Resources, Private Bag 13355, Windhoek, Namibia
Phone: + 264 61 2053029 – Fax: + 264 61 2053041 – E-mail: mkashini@mfmr.gov.na

* Also EU expert/advisor to Scientific Council

NAFO SECRETARIAT

T. Amaratunga, Assistant Executive Secretary
D. C. A. Auby, Secretary
F. D. Keating, Administrative Assistant
S. Goodick, Accounting Officer

Annex 2. Agenda

- I. Opening (Chairman: W. B. Brodie)
 1. Appointment of Rapporteur
 2. Adoption of Agenda
 3. Attendance of Observers
 4. Plan of Work

- II. Review of Scientific Council Recommendations in 2000 and 2001

- III. Fishery Science (STACFIS Chairman: H.-J. Rätz)
 1. Opening
 2. Results of the International Hydroacoustic Survey on Pelagic Redfish
 3. Nomination of Designated Experts
 4. Other Matters
 - a) Review of SCR and SCS documents (if necessary)
 - b) Other business

- IV. Research Coordination (STACREC Chairman: R. K. Mayo)
 1. Opening
 2. Fisheries Statistics
 - a) Progress reports on Secretariat activities
 - i) Acquisition of STATLANT 21 data
 - ii) Publication of statistical information
 - iii) Internet site for statistical information
 - loading FISHSTAT software
 - b) Report of the 19th CWP session
 3. NAFO Observer Protocol
 - a) Report of the *Ad hoc* Working Group on NAFO Observer Protocol
 - Progress report from June 2001 STACTIC meeting
 - b) Observer Program Data
 4. Other Matters
 - a) Review of SCR and SCS documents (if necessary)
 - b) Other business

- V. Publications (STACPUB Chairman: O. Jørgensen)
 1. Opening
 2. Review of recommendations from June 2001
 3. Review of Scientific Publications
 - a) Papers from June 2001 meeting
 - b) Status of the 2000 workshop workbook
 - c) Information from the 2001 special session
 - d) Status of invitational papers
 - e) Other Reviews
 4. Consideration of NAFO Website
 - a) Status of scanning of papers

5. Scientific Citation Index (SCI)
 6. Other Matters
- VI. Response to Special Requests from Fisheries Commission
1. Information on unregulated species, including elasmobranchs, in the Regulatory Area
 2. Distribution of fishable biomass of main commercial species
 3. Medium term development of several stocks under various assumptions
 4. Update on pelagic *S.mentella* (redfish) in Div. 1F and adjacent ICES area
- VII. Review of Future Meeting Arrangements
1. Special Session and Annual Meeting, September 2002
 2. Scientific Council Meeting on shrimp, November 2002
 3. Scientific Council Meeting, June 2003
 4. Additional meetings
- VIII. Future Special Sessions
1. Progress Report on Symposium in 2002
 2. Proposal for Special Session 2003
- IX. Joint NAFO/ICES Working Groups or Meetings
1. Update on activities of joint NAFO/ICES WG on harp and hooded seals.
 2. Report from joint NAFO/ICES Symposium on Hydrobiological Variability in August 2001.
 3. Proposal for joint meeting on shrimp, November 2002.
- X. Scientific Council Working Procedures and Protocol
1. Timetable and frequency of assessments for the following stocks:
 - Redfish in Div. 3M
 - Short-finned Squid in Subareas 3+4
 - American plaice in Div. 3LNO
 - Yellowtail flounder in Div. 3LNO.
 2. STACPUB working procedures and membership.
 - a) New Initiatives for Publications
 - i) Future publishing policy for the Journal
 - ii) Publishing of GLOBEC proceedings
 - iii) Methods of promotion of the Journal
- XI. Other Matters
1. Report of STACTIC intersessional meeting, June 2001
 2. Workshop on Sequential Population Analysis for Greenland halibut in SA 2 + Div. 3KLMNO
 3. Geostatistics methodology for studying fish stocks
 4. Other business
- XII. Adoption of Reports
1. Consideration of Report of the Symposium on Deep-sea Fisheries, 12-14 September 2001
 2. Committee Reports of Present Meeting (STACFIS, STACREC, STACPUB)
 3. Report of Scientific Council Present Meeting 17-21 September 2001
- XIII. Adjournment



Scientific Council Meeting
7-14 November 2001, NAFO Headquarters, Dartmouth, N.S., Canada

Chairman: R. K. Mayo (USA)

Rapporteur: T. Amaratunga, Assistant Executive Secretary

Representatives attended from Canada, Denmark (in respect of Faroe Islands and Greenland), Iceland, Russian Federation and United States of America.

The Provisional Agenda was adopted (Annex 2).

FISHERIES SCIENCE

Northern Shrimp (Pandalus borealis) in Division 3M

Total catches were approximately 27 000 tons in 1993, increased to 48 000 tons in 1996 and declined to 25 000 in 1997 and thereafter increased to 50 000 tons in 2000.

No analytical assessment was available and fishing mortality is unknown. Evaluation of stock status was based upon interpretation of commercial fishery and research survey data.

Scientific Council was unable to estimate absolute stock size. Stock size indicators are stable and higher in 1998-2001 compared to 1994-97. In the 2000 assessment the 1997 year-class was indicated to be below average. However, considering the contributions of this year-class to both the biomass estimates from recent surveys and the 2001 fishery, it was indicative that the 1997 year-class is at least average or above average, and the 1998 year-class below average, and the 1999 year-class above average.

The stock appears to have sustained an average annual catch of about 45 000 tons since 1998 with no appreciable effect on stock biomass. Considering the re-evaluation of the strength of the 1997 year-class in the current assessment to average or above average and that it is expected to be the main contributor to the catch biomass in 2002, the Scientific Council advised a catch of 45 000 tons for 2002.

Northern Shrimp (Pandalus borealis) in Divisions 3LNO

Most of this stock is located in Div. 3L, and exploratory fishing began there in 1993. The stock came under TAC regulation in 2000, and fishing was restricted to Div. 3L.

Nine nations participated in the fishery in 2001. Canadian vessels took most of the catches in 2000 and 2001. The use of a sorting grid to reduce by-catches of fish is mandatory for all fleets in the fishery.

No analytical assessment was available. Evaluation of the status of the stock was based on interpretation of research survey indices and biological data.

Scientific Council was not able to provide estimates of absolute stock size. The indices of stock sizes showed that both the recruitment and SSB estimates in 2000 are the highest observed. In addition, the stock appeared to be well represented by a broad range of size groups.

In 1999, Scientific Council advised if there is a fishery in Div. 3L, catches be restricted to no more than 6 000 tons for a number of years until the response of the resource to this catch level can be evaluated.

Northern Shrimp (Pandalus borealis) in Subareas 0 and 1

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

The fishery is conducted by Greenland and Canada. Recent catches from the stock are as follows:

Year	Catch ('000 tons) ¹			TAC ('000 tons) Recommended
	Inshore	Offshore	Total	
1998	9.5	56.6	66.1	55.0
1999 ¹	17.3	58.8	76.0	65.0
2000 ¹	20.5	59.4	79.9	65.0
2001			83.5 ²	85.0

¹ Provisional.

² Projected to the end of 2001

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), research survey indices and biological data.

Scientific Council was not able to provide estimates of absolute stock size. The indices of stock size show that both the recruitment and SSB estimates in 2000 were the highest observed. In addition, the stock appears to be well represented by a broad range of size groups.

Scientific Council evaluated the stock as being in good condition, and considers that it can support the current level of exploitation into 2002. Scientific Council therefore recommended that the TAC for 2002 should be set at 85 000 tons.

Northern Shrimp (Pandalus borealis) in Denmark Strait and off East Greenland

The fishery began in 1978 in areas north of 65°N in Denmark Strait, where it occurs on both sides of the midline between Greenland and Iceland. Areas south of 65°N in Greenlandic waters have been exploited since 1993.

Five nations participated in the fishery in 2001. Recent catches and recommended TACs are as follows:

	Catch ('000 tons)			TAC ('000 tons)
	North	South	Total	Recommended
1998	4.5	4.8	9.3	5.0
1999 ¹	4.0	5.5	9.5	9.6
2000 ¹	3.5	6.1	9.6	9.6
2001			9.9 ²	9.6

¹ Provisional catches.

² Projected to the end of 2001.

Scientific Council was not able to provide estimates of absolute stock size. Standardized CPUE data for all the areas combined indicate a general increasing trend in fishable biomass since 1993 to a peak in 1999 and 2000 equaling the historic high value at which the series started in 1987. The preliminary estimate of standardized CPUE for 2001 may suggest a small decrease. Several year-classes of male and female shrimp are evident in the sampling data in all recent years.

Since 1994, annual catches have remained near the recently recommended TAC of 9 600 tons, while stock biomass indices have increased. This increase may not, however, have continued through 2001. Scientific Council therefore advised that catches of shrimp in Denmark Strait and off East Greenland should not exceed 9 600 tons in 2002.

Formulation of Advice Under a Precautionary Approach Framework

The Council noted that with respect to the Precautionary Approach Framework, there are some new developments and different methodologies being considered by various Institutions. For shrimp stocks in particular, it was noted that the "Traffic Light" software applications had been in focus for some time. The Council therefore reviewed the latest developments in the methodology.

A Traffic Light software application developed at the Bedford Institute of Oceanography was demonstrated as a possible way of implementing the Precautionary Approach for data-poor or data-rich stocks. This program inputs stock indicator data sets and their respective limits (between red, yellow and green lights), polarity (whether an increase in an indicator is good or bad), weight (indicator's importance in the summary calculation), and assignment to stock characteristics (e.g. abundance, production or mortality) to which they are most relevant. It was noted that the method has parallels to the Precautionary Approach defined previously by NAFO Scientific Council and with further development could be considered within that framework for data poor stocks.

Scientific Council also discussed other approaches that were presented at this meeting, including an age-structured analysis of the *Div. 3M shrimp* stock. This approach may eventually allow calculation of Precautionary Approach reference points based on biomass and fishing mortality. In addition, an age-aggregated stock dynamics modelling approach employing Bayesian priors was presented to describe the dynamics of shrimp in Subareas 0 and 1. Uncertainty associated with model assumptions and errors associated with observed data were incorporated into the analysis. Scientific Council considered that this approach could also be implemented within the Precautionary Approach Framework for data-poor stocks.

Annex 1. List of Participants

CANADA

Representative:

Bowering, W.R. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P.O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: + 709-772-2054 – Fax: + 709-772-4105 – E-mail: boweringr@dfo-mpo.gc.ca

Adviser/Experts:

Brodie, W.B. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P.O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: + 709-772-3288 – Fax: + 709-772-4105 – E-mail: brodieb@dfo-mpo.gc.ca

Colbourne, E.A. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-6106 – Fax: +709-772-5315 – E-mail: colbourne@dfo-mpo.gc.ca

Orr, D. C. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-7343 – Fax: +709-772-4105 – E-mail: orrd@dfo-mpo.gc.ca

Stansbury, D.E. Science, Oceans & Envir. Br., Dept. of Fish. & Oceans, P. O. Box 5667, St. John's, Nfld. A1C 5X1
Phone: +709-772-0559 – Fax: +709-772-4105 – E-mail: stansburyd@dfo-mpo.gc.ca

Koeller, P.A. Dept. of Fish. & Oceans, Bedford Inst. of Oceanography, P. O. Box 1006, Dartmouth, N.S. B2Y 4A2
Phone: +902-426-5379 – Fax: +902-426-1862 – E-mail: koellerp@mar.dfo-mpo.gc.ca

DENMARK (in respect of Faroe Islands and Greenland)

FAROE ISLANDS

Representative:

Nicolajsen, A. Fiskorannsóknarstovan, Noatun, Postboks 3051, FR-1100, Torshavn
Phone: +298 1 50 92 – Fax: +298 1 82 64 – E-mail: aminic@frs.fo

GREENLAND

Representative:

Siegstad, H. Greenland Institute of Natural Resources, P. O. Box 570, DK-3900 Nuuk
Phone: +299 32 1095 – Fax: +299 32 5957 – E-mail: helle@natur.gl

Advisers/Experts:

Kanneworff, P. Greenland Institute of Natural Resources, P. O. Box 2151, DK-1016 Copenhagen K, Denmark
Phone: +45 33 69 3456 – Fax: +45 33 69 3406 – E-mail: grfipka@inet.uni2.dk

Hvingel, C. Greenland Institute of Natural Resources, P. O. Box 570, DK-3900 Nuuk
Phone: +299 32 1095 – Fax: +299 32 5957 – E-mail: hvingel@natur.gl

Kingsley, M.C.S. Greenland Institute of Natural Resources, P. O. Box 570, DK-3900 Nuuk
Phone: +299 32 1095 – Fax: +299 32 5957 – E-mail: mcsk@natur.gl

Wieland, K. Greenland Institute of Natural Resources, P. O. Box 570, DK-3900 Nuuk
Phone: +299 32 1095 – Fax: +299 32 5957 – E-mail: wieland@natur.gl

ICELAND

Representative:

Skúladóttir, U. Marine Research Institute, Skúlagata 4, Pósthólf Box 1390, 121 Reykjavik
Phone: +354 552 0240 – Fax: +354 562 3790 – E-mail: ummur@hafro.is

RUSSIAN FEDERATION

Representative:

Bakanev, S. Knipovich Polar Research Institute of Marine Fisheries and Oceanography (PINRO), 6 Knipovich Street, Murmansk 183763
Phone: +81 52 47 2464 – Fax: +47 789 10 518 – E-mail: borisber@pinro.murmansk.ru

Advisers/Expert:

Okhanov, A.O. Rep. of the Russian Federation in Canada on Fisheries, 47 Oceanview Dr., Bedford, N.S., Canada
B4A 4C4
Phone: +902 832-9225 - Fax: +902-832-9608 - E-mail: rusfish@ns.sympatico.ca

UNITED STATES OF AMERICA (USA)**Advisers/Expert:**

Mayo, R.K. National Marine Fisheries Service, NEFSC, 166 Water St., Woods Hole, MA 02543
Phone: + 508-495-2310 - Fax: + 508-495-2393 - E-mail: ralph.mayo@noaa.gov

NAFO SECRETARIAT

T. Amaratunga, Assistant Executive Secretary
D. C. A. Auby, Secretary
B. L. Marshall, Statistical Clerk

Annex 2. Agenda

- I. Opening (Chairman: R. K. Mayo)
 1. Appointment of rapporteur
 2. Adoption of agenda
 3. Plan of work

- II. Fisheries Science (STACFIS Chairman: D. Stansbury)
 1. Review of Recommendations in 2000 and 2001
 2. General environmental review
 3. Stock assessments
 - Northern shrimp (Div. 3M)
 - Shrimp in Div. 3LNO
 - Northern shrimp (Subareas 0 and 1)
 - Northern shrimp (in Denmark Strait and off East Greenland)
 4. Other business

- III. Formulation of Advice
 1. Advice for Northern Shrimp
 - Northern shrimp (Div. 3M)
 - Northern shrimp (Div. 3LNO)
 - Northern shrimp (Subareas 0 and 1)
 - Northern shrimp (in Denmark Strait and off East Greenland)
 2. Responses to Special Requests
 - Distribution of northern shrimp in Div. 3LNO)
 3. Formulation of advice under a Precautionary Approach framework

- IV. Other Matters
 1. Meeting of November 2002
 2. Meeting of November 2003

- V. Adoption of Reports

- VI. Adjournment

PART IV
(pages 165 to 179)

**Administrative and Financial Report
for the year ended 31 December 2001**

Administrative Report for the Year Ended 31 December 2001

Meetings and NAFO Secretariat Activities

Scientific Council Meeting, Copenhagen, Denmark, 8-15 November 2000.

STACTIC Technical Working Group on Communications, Brussels, Belgium, 18-19 January 2001.

NAFO/NEAFC Working Group on Oceanic Redfish, Reykjavik, Iceland, 13-14 February 2001.

Fisheries Commission Working Group on Statistics, Copenhagen, Denmark, 27 March 2001.

Fisheries Commission Special Meeting, Copenhagen, Denmark, 28-30 March 2001.

International Fisheries Commissions Pension Society Annual Meeting, Vancouver, B.C., Canada, 25-27 April 2001. The NAFO Secretariat was represented by Mr. F. D. Keating and Mr. S. M. Goodick.

STACTIC Working Group to Overhaul the NAFO Conservation and Enforcement Measures, Ottawa, Canada, 1-3 May 2001.

Scientific Council and its Standing Committees, Dartmouth, N.S., Canada, 31 May - 14 June 2001.

Working Group on Dispute Settlement Procedures (DSP), Dartmouth, N.S., Canada, 12-14 June 2001.

Meeting of the Standing Committee on International Control (STACTIC), Halifax, N.S., Canada, 26-28 June 2001.

Symposium on "Deep-sea Fisheries", Varadero, Cuba, 12-14 September 2001.

Scientific Council Meeting, Varadero, Cuba, 17-21 September 2001.

Scientific Council Meeting, Dartmouth, N.S., Canada, 7-14 November 2001.

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 650,000 pages of printed material will be distributed in publications and an additional 500,000 pages of printed material distributed in documents/letters before the end of 2001.

NAFO Annual Report for the year 2000 (216 pages) was distributed in April 2001.

NAFO Meeting Proceedings for the year 2000 (386 pages) was distributed in February 2001.

NAFO Scientific Council Reports for 2000 (303 pages) was distributed in January 2001.

NAFO Journal of Northwest Atlantic Fishery Science Volume 26 (145 pages), Volume 27 (289 pages), and Volume 28 (121 pages) were distributed in December 2000.

NAFO Statistical Bulletin Volume 44 for 1994 (201 pages) was issued December 2000, Volume 45 for 1995 (207 pages) was issued October 2001, Volumes 46 for 1997 (214 pages), 47 for 1997 (216 pages) and 48 for 1998 (210 pages) were issued November 2001.

NAFO Newsletter "NAFO News" was published in three (3) editions: No. 13 for July-December 2000 was issued in January 2001, No. 14 for January-June 2001 was issued in July 2001, and No. 15 for July-December 2001 was issued in January 2002.

Fishery Statistics

The NAFO statistical database is at the NAFO Secretariat and available in computer diskette form or hard copies to the Contracting Parties, and from 1999, the statistical data of catches have been posted on the NAFO website www.nafo.ca.

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 – USA (partial); for 1995 – USA (partial); for 1996 – USA (partial); for 1997 – USA (partial); for 1998 – USA (partial); for 1999 – USA (partial); for 2000 – Greenland, EU-France (M), Korea, Poland and USA (partial).

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 1994 - USA; for 1995 - USA; for 1996 - USA; for 1997 – USA; for 1998 - USA; for 1999 – USA. For 2000, STATLANT 21B reports have been received from Cuba, Denmark (Faroes), Estonia, EU-Denmark, EU-Germany, EU-Great Britain, France (SP), Iceland, Japan, and Latvia.

Financial Report for the Year Ended 31 December 2001

An audit of the NAFO accounts for the fiscal year 2001 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 statement of financial position of the Northwest Atlantic Fisheries Organization as at December 31, 2001 and the statements of revenue and expenditures, statement of accumulated surplus and changes in cash flow 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 Canadian 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, 2001, these enhanced benefits amounted to approximately \$40,300. Failure to record this amount as a liability in 2001 is not in accordance with the Organization's stated accounting principles. Had the liability been recorded \$40,300 would have been reflected as a prior period adjustment and the net assets at the end of the year would have been reduced by \$40,300.

In our opinion, except for the effects of the Organization's failure to record the liability referred to in the preceding paragraph, and the policy not to capitalize capital assets as referred to in Note 10, these financial statements present fairly, in all material respects, the financial position of the Organization as at December 31, 2001 and the results of its operations and the changes in its cash flow 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.

February 15, 2002

Deloitte & Touche
Chartered Accountants

Statement of Revenue and Expenditures
(Year Ended 31 December 2001)
(Expressed in Canadian Dollars)

	Budget 2001	Actual 2001	Actual 2000
Revenue			
Contributions assessed Contracting			
Parties (Note 5)	\$ 1,199,583	\$ 1,199,583	\$ 1,028,643
Allocation from surplus for operations	189,417	189,417	128,357
Personal income taxes			
Federal	-	109,674	112,852
Provincial	-	49,313	55,266
Interest	-	29,713	32,570
Sales of publications	-	6,766	4,120
	<u>1,389,000</u>	<u>1,584,466</u>	<u>1,361,808</u>
Expenditures			
Salaries	699,500	726,406	683,613
Vacation pay	1,000	5,939	2,669
Superannuation (Note 6)	76,000	74,461	73,244
Group medical and insurance plan	57,500	59,398	58,416
Termination benefits (Note 4)	33,000	48,385	31,668
Travel	19,000	24,584	19,353
Transportation	1,000	788	662
Communications	60,000	59,765	50,267
Publications	37,000	38,062	27,559
Contractual services	44,000	44,082	42,003
Additional help	1,000	-	-
Materials	30,000	28,133	29,332
Equipment	5,000	4,533	4,636
Annual and Scientific Council Meetings	64,000	47,290	73,014
Inter-sessional meetings	30,000	46,761	26,099
Symposium	16,000	12,169	-
Computer services	15,000	34,234	15,568
Automated Hail System	200,000	196,787	-
	<u>1,389,000</u>	<u>1,451,777</u>	<u>1,138,103</u>
Excess of revenue over expenditures before provision for uncollectible accounts	-	132,689	223,705
Provision for uncollectible accounts and write-off of contributions	<u>39,986</u>	<u>39,986</u>	<u>34,288</u>
Excess of revenue over expenditures	<u>\$ (39,986)</u>	<u>\$ 92,703</u>	<u>\$ 189,417</u>

Statement of Accumulated Surplus
(Year Ended 31 December 2001)

(Expressed in Canadian Dollars)

	2001	2000
Balance, beginning of year	\$ 264,417	\$ 203,357
Allocations		
To operations	<u>189,417</u>	<u>128,357</u>
	75,000	75,000
Excess of revenue over expenditures	<u>92,703</u>	<u>189,417</u>
Balance, end of year	<u>\$ 167,703</u>	<u>\$ 264,417</u>

Statement of Financial Position as at 31 December 2001

(Expressed in Canadian Dollars)

	2001	2000
ASSETS		
Current		
Cash and short-term deposits.....	\$ 166,188	\$ 207,983
Contributions receivable (Note 3)	20,993	35,475
Accounts receivable.....	32,116	5,878
Accrued interest receivable	-	15,613
Grant receivable-Province of Nova Scotia.....	49,313	56,603
Prepaid expenses.....	<u>10,549</u>	<u>13,490</u>
	279,159	335,042
Investments segregated for employee termination benefits	<u>356,303</u>	<u>337,409</u>
	<u>\$ 635,462</u>	<u>\$ 672,451</u>
LIABILITIES		
Current		
Accounts payable and accrued liabilities	\$ 30,131	\$ 18,330
Accrued vacation pay payable.....	20,166	14,227
Advance contributions	-	6,400
	50,297	38,957
Provision for employee termination benefits (Note 4).....	<u>417,462</u>	<u>369,077</u>
	<u>467,759</u>	<u>408,034</u>
MEMBERS' NET ASSETS		
Accumulated Surplus.....	<u>167,703</u>	<u>264,417</u>
	<u>\$ 635,462</u>	<u>\$ 672,451</u>
Commitments (Note 7)		

Statement of Changes in Cash Flow
(Year Ended 31 December 2001)

(Expressed in Canadian Dollars)

	2001	2000
Net inflow (outflow) of cash related to the following activities:		
Operating		
Excess of revenue over expenditures	\$ 92,703	\$ 189,417
Item not affecting cash		
Allocation from surplus	<u>(189,417)</u>	<u>(128,357)</u>
	(96,714)	61,060
Changes in non-cash operating working capital items (Note 10)	<u>25,428</u>	<u>(25,193)</u>
	<u>(71,286)</u>	<u>35,867</u>
Investing		
Increase in investments segregated for employee termination benefits	<u>(18,894)</u>	<u>(53,177)</u>
Financing		
Increase in provision for employee termination benefits	<u>48,385</u>	<u>31,668</u>
Net cash (outflow) inflow	(41,795)	14,358
Cash position, beginning of year	<u>207,983</u>	<u>193,625</u>
Cash position, end of year	<u>\$ 166,188</u>	<u>\$ 207,983</u>

Notes to the Financial Statements
(Year Ended 31 December 2001)

(Expressed in Canadian Dollars)

1. Authority and Objective

The Northwest Atlantic Fisheries Organization was established by the Convention on Future Multilateral 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 optimum 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.

h) Cash

Cash is made up of funds held in the Organization's bank account.

3. Contributions Receivable

This account reflects current assessments due from Contracting Parties as follows:

	<u>2001</u>	<u>2000</u>
Bulgaria.....	\$ 19,993	\$ 17,144
Cuba.....	19,993	17,460
Lithuania.....	1,000	-
Romania.....	19,993	17,144
Russian Federation.....	-	18,015
	<u>60,979</u>	<u>69,763</u>
Less: Allowance for uncollectible assessments	<u>39,986</u>	<u>34,288</u>
	<u>\$ 20,993</u>	<u>\$ 35,475</u>

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, 2001, the additional liability resulting from this enhancement amounted to approximately \$40,300, 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 (22nd Annual Meeting, September, 2000).

5. Contributions Assessed Contracting Parties

	<u>2001</u>	<u>2000</u>
Bulgaria.....	\$ 19,993	\$ 17,144
Canada.....	521,305	426,259
Cuba.....	19,993	17,761
Denmark (in respect of the Faroe Islands and Greenland).....	120,337	105,305
Estonia.....	24,743	19,736
European Union.....	40,002	34,487
France (in respect of St. Pierre et Miquelon).....	25,493	19,472
Iceland.....	25,679	22,884
Japan.....	22,584	19,119
Republic of Korea.....	19,993	17,144
Latvia.....	21,001	17,946
Lithuania.....	22,656	18,564
Norway.....	21,145	20,107
Poland.....	20,137	17,144
Romania.....	19,993	17,144
Russian Federation.....	22,224	18,317
Ukraine.....	19,993	17,144
United States of America.....	<u>212,312</u>	<u>202,966</u>
	<u>\$ 1,199,583</u>	<u>\$1,028,643</u>

6. Superannuation

The Organization has a defined benefit pension plan which covers all employees. The last actuarial valuation was performed as at January 1, 1999. At that time, the value of the plan assets resulted in an unfunded pension liability of \$63,000. The estimated accrued pension obligation and value of the assets at December 31, 2001 resulted in an unfunded pension liability of \$15,924. The unfunded pension liability is being funded at a rate of \$18,000 per year.

	<u>Actuarial Valuation</u> <u>January 1, 1999</u>	<u>Actuarial Estimate</u> <u>December 31, 2001</u>
Pension Plan obligations	\$ 2,013,000	\$2,532,500
Fair value of plan assets	<u>1,950,000</u>	<u>2,516,576</u>
Funded status – unfunded liability	<u>\$ 63,000</u>	<u>\$ 15,924</u>

The significant actuarial assumption adopted in measuring the Organization's pension fund obligation as at January 1, 1999 is as follows:

Expected rate of return on plan assets 7.0%

All plan assets are held by Sun Life. The Organization's pension plan expense for the year was \$74,461 (2000 - \$73,244).

7. Operating Lease Obligations

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

<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
\$18,686	\$10,222	\$2,820	\$2,820	\$2,350

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. Payroll (Equivalent Tax) Deductions

An action has been taken by any employee to recover certain payroll deductions withheld for a number of years. No decisions have been made, to date, by management or the Board concerning this matter and hence no provision concerning the financial implications, if any, are included in these financial statements.

10. Changes in Non-Cash Operating Working Capital Items

	<u>2001</u>	<u>2000</u>
Contributions receivable.....	\$ 14,482	\$ (13,282)
Accounts receivable.....	(26,238)	6,738
Accrued interest receivable	15,613	(5,333)
Accrued <i>ex gratia</i> grant receivable	7,290	(11,603)
Prepaid expenses.....	2,941	(2,643)
Accounts payable and accrued liabilities	11,801	2,479
Accrued vacation pay	5,939	2,669
Advance contributions	<u>(6,400)</u>	<u>(4,218)</u>
	<u>\$ 25,428</u>	<u>\$ (25,193)</u>

11. Capital Assets

Capital assets are expensed on acquisition which, as noted in the Auditors' Report is contrary to the accounting requirements of the Canadian Institute of Chartered Accountants. Capital assets held at December 31, 2001 include computer hardware and software, and office furniture and equipment. An analysis of the approximate acquisition costs of all capital assets up to December 31, 2001, and the amortization of them over the same period, is reflected in the following:

	<u>Cost</u>	<u>Accumulated Amortization</u>	<u>Rates</u>	<u>Net Book Value</u>	
				<u>2001</u>	<u>2000</u>
Computer equipment	\$ 253,195	\$ 53,087	25%	\$ 200,108	\$ 18,354
Office furniture and equipment	<u>171,444</u>	<u>145,089</u>	10%	<u>26,355</u>	<u>36,988</u>
	<u>\$ 424,639</u>	<u>\$198,176</u>		<u>\$ 226,463</u>	<u>\$ 55,342</u>

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