

Northwest Atlantic Fisheries Organization (NAFO)



Annual Report

2002

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Preface

This Annual Report for the year 2002 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 2002. 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 2002", and the proceedings of the Scientific Council are published in the "Scientific Council Reports, 2002". 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 2002: (1) Special Meeting of the General Council (including STACFAD) and Fisheries Commission (including STACTIC) (Helsingør, Denmark, 29 January-01 February); (2) Standing Committee on International Control (STACTIC) (Copenhagen, Denmark, 6-9 May); (3) Scientific Council Meeting (Dartmouth, Canada, 6-20 June); (4) Working Group of Technical Experts on the Precautionary Approach (PA) (Dartmouth, N.S., Canada, 20-21 June); (5) Ad hoc Working Group on Management of Oceanic Redfish (Dartmouth, N.S., Canada, 24-25 June); (6) STACITC Working Group to Overhaul the NAFO Conservation and Enforcement Measures (Ottawa, Canada, 9-11 July); (7) Symposium on Elasmobranch Fisheries: Managing for Sustainable Use and Biodiversity Conservation (Santiago de Compostela, Spain, 11-13 September); (8) 24th Annual Meeting of NAFO (Santiago de Compostela, Spain, 16-20 September) (9) Scientific Council Meeting (Nuuk, Greenland, 6-13 November).

At the Annual Meeting, the Scientific Council reviewed and assessed the status of fish stocks in the NAFO Area. The scientific advice and recommendations from the Scientific Council were presented to the Fisheries Commission. The Scientific Council agreed that major groundfish stocks still remain at low abundance and, therefore, should not be recommended for directed fisheries during 2003. The biomass and fishery potentials of Yellowtail flounder in Div. 3LNO were assessed as stable with the possibility of a sustainable fishery. The Scientific Council Symposium on Elasmobranch Fisheries (held in advance of Annual Meeting) brought new ideas on shark management, harvest strategies and stock assessment.

The Fisheries Commission considered the advice of the Scientific Council in relation to the conservation of fish stocks in the Regulatory Area and agreed to conservation and enforcement measures.

The Fisheries Commission agreed to continue moratoria ("no directed fishery") in 2003 on the following stocks: Cod in Divisions 3M, 3L (that portion within the Regulatory Area) and 3NO, Redfish in Div. 3LN, American plaice in Divisions 3M and 3LNO, Witch flounder in Div. 3NO and 3L (that portion within the Regulatory Area); and Capelin in Div. 3NO.

The Fisheries Commission adopted new rules for assessing the compliance of the NAFO Contracting Parties with the Conservation and Enforcement Measures in the NAFO Area.

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

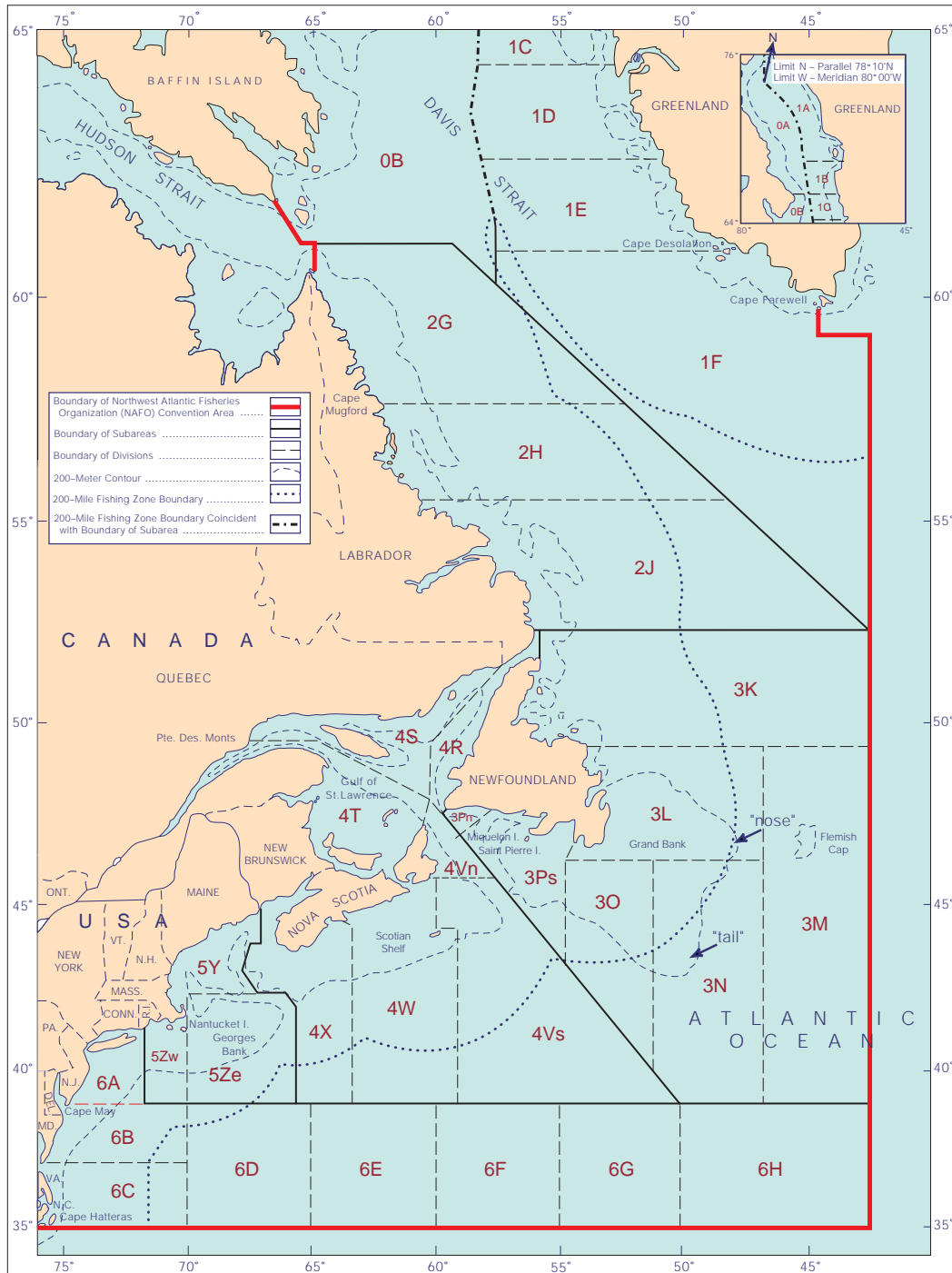
The Fisheries Commission agreed on continuing restrictive conservation measures in shrimp fishery on Flemish Cap and Division 3L by employing selective sorting grates for by-catch avoidance and 40mm mesh size. The fishing days in Div. 3M should be 90% of an earlier benchmark historical record. The Fisheries Commission also agreed on specific rules for controlling and monitoring by-catches and minimizing incidental catches in directed fisheries and modifications to the Automated Hail/Vessel Monitoring System for continuous effective monitoring of fishing activities in the Regulatory Area.

The General Council deliberated several substantive issues regarding internal and external NAFO policy and finance on the following issues: application of the FAO International Plans of Action on Illegal, Unregulated and Unreported Fishing (IUU) to NAFO needs; non-Contracting Party fishing activity in the NAFO Regulatory Area in 2002 and enforcement; communication with the non-Contracting Parties (Belize and Cyprus) whose flag vessels were involved in NAFO fishery.

The General Council considered the re-establishment of the voting rights of Bulgaria based on Bulgaria's commitment to re-pay its outstanding contributions.

The General Council elected a new Executive Secretary – Johanne Fischer (European Union), who will replace the outgoing Executive Secretary – Leonard Chepel effective January 01, 2003.

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



Structure of the Northwest Atlantic Fisheries Organization (NAFO) in 2002 (as at September 2002)

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> – R. Mayo (USA) <i>Vice-Chairperson</i> – J. Morgan (Canada)
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> – D. Swanson (USA) <i>Vice-Chairman</i> – B. Prischepa (USA)

Standing Committees

General Council	Standing Committee on Finance and Administration (STACFAD)	<i>Chairman</i> – G. F. Kingston (EU) <i>Vice-Chairperson</i> – D. Warner-Kramer (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> Bouffard (Canada)
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 – D.</i> Stansbury (Canada) <i>Chairperson – J.</i> Morgan (USA) <i>Chairman – M. Stein</i> (EU-Germany) <i>Chairman –</i> E. Colbourne (Canada)
Fisheries Commission	Standing Committee on International Control (STACTIC)	<i>Chairman – D. Bevan</i> (Canada)

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

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PART I
(pages 15 to 68)

Activities of the General Council in 2002

List of Meetings

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

- Special Meeting of the General Council and STACFAD, as 23rd Annual Meeting, Helsingør, Denmark, January 29 – February 01.
- General Council and its subsidiary bodies/committees – STACFAD and STACFAC, 24th Annual Meeting, Santiago de Compostela, Galicia, Spain, 16-20 September.

Basic Documents of the General Council in 2002

<u>Serial No.</u>	<u>GC Doc. No.</u>	<u>Title</u>
N4586	02/1	Administrative Report and Financial Statements for the fiscal year ending 31 December 2001
N4606	02/2	Report of the General Council, Special Meeting, January 29 – February 01, Helsingør, Denmark
N4699	02/3	Administrative Report and Financial Statements for the fiscal year ending 31 December 2002 (as of July 31, 2002)
N4795	02/4	Report of the General Council, 24 th Annual Meeting, September 16-20, Santiago de Compostela, Galicia, Spain

General Council Special Meeting Helsingør, Denmark, January 29 – February 01, 2002

The Special Meeting of the General Council was convened at the Marienlyst Hotel, Helsingør, Denmark. Complete proceedings of the meeting are presented in GC Doc. 02/2 and in NAFO Meeting Proceedings (General Council and Fisheries Commission), 2002. This special meeting was designed to deal with two outstanding issues – procedures for the selection of a new Executive Secretary and Budget 2002.

Opening Procedures (items 1-4 of the Agenda)

The meeting was opened by the Chairman of the General Council, Enrique Oltuski (Cuba).

The Representatives of fifteen (15) Contracting Parties were present: Canada, Cuba, (Denmark in respect of the Faroe Islands and Greenland-DFG), Estonia, European Union, France (in respect of St. Pierre et Miquelon), Iceland, Japan, Latvia, Lithuania, Norway, Poland, Russia, Ukraine and the United States of America (USA) (Annex 1). Three Contracting Parties – Bulgaria, Republic of Korea and Romania were absent. FAO was represented by an observer (Mr. D. Doulman).

The Chairman, Mr. Enrique Oltuski (Cuba), welcomed delegates emphasizing on the progress by NAFO in the establishment of a framework providing sustainable fishery in the Northwest Atlantic noting that implementation of NAFO measures has laid the ground for the recovery and rebuilding of stocks in the Convention Area. He emphasized one more important highlight regarding the NAFO science and implementation without delay of the measures recommended by scientists, which would advance the NAFO reputation as an organization that meets the challenge of world overfishing and deterioration of Ocean resources.

FAO Observer presented his opening statement underlining effective working relations between FAO and NAFO and addressing important issues of international cooperation in the framework of FAO initiatives.

The meeting appointed the Executive Secretary as Rapporteur.

The Provisional Agenda was adopted (Annex 2).

Procedures for the Selection of a new Executive Secretary and Finance

The General Council referred this matter to STACFAD. At the closing session of the General Council, February 01, 2002, the Chairman of STACFAD (F. Kingston, EU) presented its report containing recommendations on the procedures (Annexes 3-5).

The Chairman of STACFAD presented a financial report and noted the following:

- The Auditors Report had been circulated to Heads of Delegations in May 2001, and no comments have been received. The Report again was presented by the Executive Secretary in detail to STACFAD, and it was recommended for adoption by the General Council
- The special allocation of funds (\$200,000 Cdn) for the Automated Hail System was considered as appropriate and on budget (actual expenditure \$196,787.00).
- The basic budgetary items of the NAFO Secretariat were agreed as follows:
 - the budget for 2002 to be adopted in the amount of \$1,369,000 Cdn.;

- the Accumulated Surplus Account be maintained at a level not less than \$75,000 Cdn.;
- the contributions from Bulgaria and Romania be deemed uncollectible and those should be applied against the Accumulated Surplus. It was recommended that Contracting Parties should continue their efforts to reach Bulgaria and Romania.
- There was no consensus on a proposal to reclassify the salary of the Executive Secretary at the UN Salary scale D-1 level due to lack of information. It was proposed to defer the issue in application to a new Executive Secretary at the 2002 Annual Meeting.
- It was recommended that the Secretariat should
 - accelerate the transition currently underway from print to electronic communications with a view to reducing the postal and printing,
 - develop, and submit to the Contracting Parties within two months, a comprehensive overview of current printing material according to category and an identification of the optimal mode of transmission to the Contracting Parties and to the public.
- The Administrative Report (item 8a "Other Business") was reviewed by STACFAD and recommended for adoption.
- The dates of next Annual Meetings were recommended as follows:

2002	- Scientific Council	- 11-20 September
	- General Council	- 16-20 September
	- Fisheries Commission	- 16-20 September
2003	- Scientific Council	- 10-19 September
	- General Council	- 15-19 September
	- Fisheries Commission	- 15-19 September
2004	- Scientific Council	- 8-17 September
	- General Council	- 13-17 September
	- Fisheries Commission	- 13-17 September

The venue of the 2002 Annual Meeting will be in Santiago de Compostela, Galicia, Spain.

The location of the 2003-2004 annual meetings will be Halifax, Canada, unless an invitation to host is extended by a Contracting Party and accepted by the Organization.

- Mr. F. Kingston (EU) was re-elected Chairman and Ms. Deirdre Warner-Kramer (USA), Vice-Chairperson of STACFAD for next period 2002-2004.

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

Other Business (items 8b,c)

FAO International Plans of Action:

The General Council discussed this matter at length during its first session on Tuesday (Jan 29/02). Contracting Parties expressed their positions. The Representative of Norway tabled a working paper (GC W.P. 02/1) entitled "NAFO – implementation of the FAO International Plans of Action to prevent, deter and eliminate illegal, unreported and unregulated fishing". The meeting decided to continue discussions on this matter in STACFAC during the Annual Meeting, September 2002.

In its work and preparation to the Annual Meeting, STACFAC was recommended to use and compile all relevant documents, including the Norwegian paper on IUU fishing, and FAO

upcoming publication of technical guidelines. In addition to this, Contracting Parties were encouraged to send the copies of their FAO reports to the NAFO Secretariat, which in turn should circulate those to all Contracting Parties.

Report of Working Group on Dispute Settlement Procedures (DSP):

The DSP Working Group report was delivered to the General Council opening session on Tuesday by its Chairman, Mr. F. Wieland (EU). There were different opinions on the status of the report and how this matter of DSP should be dealt with in future. It was agreed that the report should be noted as accepted (but not adopted) by the General Council for further consideration (during Annual Meeting in September 2002).

Closing Procedures (items 9-11)

At the closing session, February 02, 2002, Mr. E. Oltuski (Cuba) was re-elected as Chairman and NAFO President for a second term of 2002-2004.

Mr. P. Chamut (Canada) was re-elected as Vice-Chairman for a second term of 2002-2004.

Annual Meeting 2002 was reconfirmed by the Spanish-EU delegation to be convened at Santiago de Compostela, Galicia, Spain, September 16-20.

The Press Release was drafted by the Executive Secretary and adopted by the meeting (Annex 6).

Annex 1. List of Participants

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F. D. Keating, Administrative Assistant
B. J. Cruikshank, Senior Secretary
S. Goodick, Accounting Officer
G. Moulton, Statistical/Conservation Measures Officer
F. E. Perry, Desktop Publishing/Documents Clerk

SECRETARIAT ASSISTANCE

M. Hansen, Greenland Home Rule Office, Copenhagen

Annex 2. Agenda

1. Opening by Chairman, E. Oltuski (Cuba)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Publicity
5. Formulation of selection criteria, procedures and timetable for an Administrative Committee on the recruitment of a new Executive Secretary
6. Report of STACFAD
7. Adoption of the Budget for 2002
8. Other business
 - a) Administrative Report
 - b) FAO International Plans of Action on the Management of Fishing Capacity, Shark Fisheries and Incidental Catch of Seabirds in Longline Fishery
 - c) Report of Working Group on Dispute Settlement Procedures (DSP)
9. Election of Chairman and Vice-Chairman
10. Time and Place of next Annual Meeting
11. Adjournment

Annex 3. Procedure, timetable, and selection criteria for the recruitment of a new Executive Secretary

Procedure for the recruitment of a new Executive Secretary

Advertisement

- Contracting Parties shall agree on the text of a Vacancy Announcement for the post of Executive Secretary. The Vacancy Announcement shall be placed on a recruitment page on the NAFO website together with relevant supplementary information.
- The Executive Secretary shall also place the announcement in relevant international publications and websites. Websites should be used as a preference. Contracting Parties may place the announcement in national publications and websites they consider appropriate.

Availability of applications

Each application shall be posted on a password protected section of the NAFO website to be assessed by the Heads of Delegation of the General Council. Passwords will only be provided to the Chairman of the General Council, the Heads of Delegations and the Chairman of STACFAD.

Ranking of Applicants

Each Head of Delegation shall notify the NAFO Secretariat its 10 preferred candidates in order of preference out of all the applications received. Each preference list is to be considered confidential and is not to be disclosed. Upon receipt of all preference lists, the Chair of STACFAD shall, together with the incumbent Executive Secretary, aggregate individual applicants' rankings, applying the awarding of 10 points for the first preference, 9 points for the second preference, etc.

Short list

The candidates with the four highest aggregate scores will be shortlisted for interview. Should the application of one such candidate be withdrawn, the next ranking candidate shall then be shortlisted.

Interview process

The shortlisted candidates will be notified to all Contracting Parties by the Executive Secretary and will be invited to the Annual Meeting for interviews. Some degree of standardization should be built into the interview process to ensure fairness. The interviews and the selection of the new Executive Secretary shall take place during Head of Delegation meetings of the General Council.

Travel (economy class) and per diem expenses of candidates invited for the interviews shall be reimbursed by NAFO unless the candidate is already part of a Contracting Party delegation. Contracting Parties are strongly urged to assume these costs.

Recruitment timetable

Advertisement of the position by NAFO	February 2002
Delivery of applications to the NAFO Secretariat	Deadline 15 May 2002
Applications posted on a password protected page of the NAFO homepage	Within 7 working days from 15 May 2002
Notification of preference list by Heads of Delegation of Contracting Parties	Before 30 June 2002
Notification of shortlist by Executive Secretary	Before 15 July 2002
Interviews and selection	2002 Annual Meeting

Annex 4. Vacancy Announcement

For the position of Executive Secretary in the Northwest Atlantic Fisheries Organization (NAFO)

The Northwest Atlantic Fisheries Organization (NAFO) invites applications for the position of Executive Secretary. The appointment will be for a term of four years with the possibility of an additional four-year appointment.

NAFO is an international organization with Headquarters in Dartmouth, Nova Scotia, Canada. It is responsible for giving effect to the objectives and principles of the Convention on Future Multilateral Co-operation in the Northwest Atlantic Fisheries (NAFO Convention), which is to promote the optimum utilization, rational management and conservation of the fishery resources of the Northwest Atlantic area.

The tasks of the Executive Secretary are, in particular, to manage the NAFO Secretariat with its 11 staff members, to make the necessary arrangements for NAFO meetings, to submit annual budget estimates and financial statements and to manage the annual budget.

Applicants must be citizens/nationals of a Contracting Party of NAFO.

Selection Criteria

- Experience or detailed knowledge of the operations of international, regional and/or intergovernmental organizations.
- Demonstration of a high level of proven competence in areas such as:
 - Management experience of administrative and technical staff;
 - Preparation of reports, financial budgets and management of expenditures;
 - Organization and the provision of secretariat support for international meetings;
 - Oversight and management of computer services and information technology.
- Familiarity with Atlantic fisheries management affairs.
- Good working knowledge of English: other language skills would be desirable.
- Preferably with university qualification or the equivalent.

Salary and Allowances

The annual salary is presently in the range of CDN \$89,900 to CDN \$105,800 (currently under review), depending upon experience.

Allowances include removal costs, annual leave with pay, home leave allowance every two years, sick leave credits and air travel in business class for travel outside Canada.

Availability

The candidate chosen for the post must be available starting 9 December 2002 for a period of transition with the incumbent Executive Secretary and will assume the post on 1 January 2003.

Applications

Applications shall be in English, should be marked “Personal and Confidential” and must be sent no later than 15 May 2002 (postal stamp is decisive) to the following address:

The Executive Secretary
Northwest Atlantic Fisheries Organization
P.O. Box 638
Dartmouth, Nova Scotia
Canada B2Y 3Y9

Applications may also be sent in electronic form to the following address: recruit@nafo.ca

Applications should include the following:

- Curriculum Vitae
- List of publications, if available
- Certificate of physical health; and
- Three references from persons with a recent knowledge of the applicant’s character, qualifications and experience.

Additional Information

Please consult the NAFO website at www.nafo.ca for complete information on NAFO duties and the application process.

Annex 5. Summary Description of the Position

The Executive Secretary is NAFO's chief administrative officer and must be impartial and objective in promoting and coordinating the interests of all Contracting Parties. The Executive Secretary is responsible for the effective management of NAFO's Secretariat and administration of NAFO's appropriations and budget (currently at the level of CDN \$1.3 million). The Executive Secretary is appointed by and subject to the general supervision of the General Council. He/she is responsible for delivering a professional level of service to the Contracting Parties on behalf of NAFO. He/she appoints and exercises full authority over the staff of the Secretariat and performs such other functions as described in the NAFO Convention, the Rules of Procedure of General Council, Fisheries Commission and Scientific Council, the NAFO Staff Rules, and as the General Council may prescribe from time to time. The Executive Secretary's functions include in particular the following:

- Undertakes all necessary arrangements for annual and other meetings of NAFO and its constituent bodies and committees, including the preparation and transmission of draft provisional agendas and provisional agendas for the respective bodies and committees in consultation with their respective Chairs;
- Manages and controls the Secretariat's expenses and appropriations according to the Financial Regulations and decisions of NAFO;
- Prepares annual budget estimates and forecasts, annual financial statements, and other documents as required by NAFO;
- Conducts on behalf of NAFO correspondence on routine and miscellaneous matters involving questions of fact, on questions of policy previously determined by NAFO, and on future programs which have been formally adopted by NAFO;
- Addresses communications to the Depositary Government, Canada;
- Appoints and manages the Secretariat's staff;
- Records the proceedings, resolutions, proposals, decisions and recommendations adopted by all meetings as required; maintains the official files of NAFO and keeps the records of all meetings of NAFO and its constituent bodies and committees;
- Oversees the preparation, publication and distribution of an annual report of NAFO and any other such publications as may be required by NAFO;
- Exercises leadership and innovation in the application of computer services and information technology;
- Liaises with governments and international fisheries organizations;
- Represents NAFO at meetings of other international organizations, as required;
- Assists officers of NAFO generally in the performance of their duties when requested; and
- Performs such other functions as may be assigned to him/her by the General Council or the President.

Members of the Secretariat shall enjoy the privileges and immunities to which they are deemed to be entitled as a consequence of the NAFO Convention and pursuant to the Northwest Atlantic Fisheries Organization Privileges and Immunities Order (Order-in-Council P.C. 1980-132, 11 January 1980), or under any agreement signed between the Organization and the Contracting Party concerned.

The NAFO Staff Rules (available upon request) set the conditions and principles of employment and the responsibilities of the staff of the NAFO Secretariat.

NAFO is committed to promoting diversity and ensuring employment equity in the Secretariat staff.

It is expected that the final candidates will be interviewed at the 24th Annual Meeting of NAFO to be held in Spain during September 16-20, 2002. Expenses for finalists who would not otherwise be at the Annual Meeting will be paid by NAFO.

The expected starting date for the Executive Secretary will be December 9, 2002, to allow some overlap with the current Executive Secretary to ensure a smooth transition.

Annex 6. Press Release

1. The special meetings of the General Council and Fisheries Commission were convened to discuss outstanding substantive issues of NAFO referred from the 23rd Annual Meeting of NAFO, which was cancelled due to the tragic events in the United States of America, September 11, 2001.
2. The meetings were attended by 160 participants from fifteen Contracting Parties - Canada, Cuba, Denmark (in respect of Faroe Islands and Greenland), Estonia, European Union, France (in respect of St. Pierre et Miquelon), Iceland, Japan, Latvia, Lithuania, Norway, Poland, Russia, Ukraine and United States of America.
3. The General Council, under the chairmanship of Mr. Enrique Oltuski (Cuba), discussed the outstanding issues of:
 - Selection of a new Executive Secretary
 - Budgetary financial matters
 - FAO International Plans of Action
 - NAFO Dispute Settlement Procedures (DSP)

The General Council resolved on procedures of the selection of a new Executive Secretary, who will start his/her term from 01 January, 2003. This position will be open for applications from the nationals of NAFO Contracting Parties only and will be posted on the NAFO website www.nafo.ca. The FAO International Plans of Action will be again considered at the upcoming NAFO Annual Meeting in Spain, September 2002. The NAFO Contracting Parties will furnish their available information on this matter to the NAFO Secretariat for further circulation to all Contracting Parties, and all relevant FAO work on this subject will be taken for consideration at the Annual Meeting. The Report of the Working Group on Dispute Settlement Procedures (DSP) Working Group will be discussed at the Annual Meeting, 2002.

4. The Fisheries Commission under the chairmanship of Mr. Peter Gullestad (Norway) reviewed several outstanding issues regarding allocations and conservation and enforcement measures. There were several advanced ideas with regards to Protection of juveniles and reduced by-catch, Operation of the automated hail/VMS system, observers and satellite tracking and others.

The following new regulations were adopted for the NAFO Regulatory Area:

- TAC for Greenland halibut set at 44,000 mt for 2002;
- increased mesh size for skate fishery (280mm);
- closed period for shrimp fishery in Div. 3M of defined Area, June 01-December 31, 2002
- control and monitoring of shrimp catches in Division 3L by daily catch reports from Contracting Parties to the NAFO Secretariat

A number of new proposals for improvement of the Conservation and Enforcement Measures were transferred from this meeting for a discussion at a Special STACTIC inter-sessional meeting, which will be convened in Denmark in May 2002.

5. The following elections of NAFO officers took place:

President of the Organization and
Chairman of the General Council

- E. Oltuski (re-elected) (Cuba)

Vice-Chairman of the General Council

- P. S. Chamut (re-elected) (Canada)

Chairman of the Fisheries Commission

- D. Swanson (USA)

Vice-Chairman of the Fisheries Commission

- B. F. Prischepa (Russia)

Chairman of the Standing Committee on
Finance and Administration (STACFAD)

- G. F. Kingston (EU)

Vice-Chairman of the Standing Committee on
Finance and Administration (STACFAD)

- D. Warner-Kramer (USA)

Chairman of the Standing Committee on
International Control (STACTIC)

- D. Bevan (Canada)

NAFO General Council
February 01, 2002

NAFO Secretariat
Dartmouth, N.S., Canada

General Council Annual Meeting
(GC Doc. 02/4)

Santiago de Compostela, Galicia, Spain, 16-20 September 2002

The Twenty-Fourth Annual Meeting of the General Council was convened at the Galicia Congress and Exhibition Centre, Santiago de Compostela, Galicia, Spain. Complete proceedings of this Meeting are presented in GC Doc. 02/4 and in NAFO Meeting Proceedings (General Council and Fisheries Commission), 2002.

Opening Procedures

The Meeting was opened by the Chair of the General Council, E. Oltuski (Cuba).

The Representatives of seventeen (17) Contracting Parties were present: Bulgaria, Canada, Cuba, Denmark (in respect of the Faroe Islands and Greenland-DFG), Estonia, European Union, France (in respect of St. Pierre et Miquelon), Iceland, Japan, Republic of Korea, Latvia, Lithuania, Norway, Poland, Russia, Ukraine and the United States of America (Annex 1). Romania was absent.

The Chairman welcomed the delegates to the 24th Annual Meeting wishing them productive discussions and successful results of the upcoming discussions. He emphasized the NAFO commitments and goals of sustainable management of fish resources in the NAFO Convention Area.

The Honorable Minister of Fisheries of Galicia, Mr. Enrique Cesar Lopez Veiga, on behalf of the host country and Galician fishermen cordially invited the NAFO Meeting delegates to Galicia in the name of the Spanish Government and Galician Government. He said that "Galicia is one of the main fishing regions in Europe. We appreciate the NAFO's choice to convene this meeting in Galicia and we wish you all well and success at this meeting. Galicians believe that the sea helps to bring people together and such cooperation brings the maritime nations together for better understanding and close collaboration. We are friendly people and in this spirit, wishing you full consensus in all your agreements. And when you successfully adjourn your Annual Meeting, we would be glad to show you our friendly land and people so that you would wish sometime to come back to visit us again. Thank you very much! Again, welcome to the Land of Galicia!".

The Executive Secretary of NAFO, L. Chepel, was appointed as Rapporteur.

The adopted Agenda is attached in Annex 2.

Admission of Observers was addressed by the Executive Secretary reporting on his invitations to FAO, ICCAT, ICES, NAMMCO, NASCO, NEAFC and NPAFC in accordance with the Rules of Procedure. These organizations acknowledged NAFO's invitations and all, except FAO, NEAFC, NAMMCO, advised that they would not take part in the NAFO event due to their busy internal schedules.

FAO was represented by Mr. D. Doulman, NAMMCO was represented by the delegate of Iceland and NEAFC was represented by the delegate of Denmark (DFG).

With regards to non-Contracting Parties harvesting fishing resources in the NAFO area, invitations were dispatched to Belize, Honduras, Sao Tome e Principe and Sierra Leone. No responses from those countries have been received.

Supervision and Coordination of Organizational, Administrative and Other Internal Affairs (items 6-8)

The membership of NAFO was 18 Contracting Parties, the members of the General Council and Scientific Council. The membership of the Fisheries Commission (those member participating in fishery in the NAFO Area) was 16 as Bulgaria and Romania did not participate in NAFO fishery.

The Representative of Bulgaria was in attendance (first time since 1993), and he addressed the Meeting noting Bulgaria's intention to fully participate in NAFO activities and settle all required organizational and financial commitments according to the NAFO Convention and Financial Regulations. He further introduced Bulgaria's paper explaining their schedule of repayment of the contributions "in arrears" to the end of 2004. This matter was referred to STACFAD.

At the closing session of the General Council, September 20, 2002, the Council discussed the presentation by STACFAD, and the Chairman ruled that Bulgaria's voting rights under the provisions and functions of the NAFO Convention shall be in effect from the date of Bulgaria's first instalment-debt repayment for 2001-2002 to the NAFO budget. Then Bulgaria will fulfil its outstanding financial obligations during 2003-2004. There was a consensus on this matter.

With respect to Romania's participation in NAFO affairs, the Meeting noted the Romanian note of withdrawal from the NAFO Convention effective 31 December 2002.

Under Item 8 "Selection of the Executive Secretary", the Heads of Delegations elected (by secret ballot) a new Executive Secretary – Johanne Fischer (European Union), who should take the office from 01 January 2003. She was introduced to the General Council by the Chairman and welcomed by the Delegates with cheerful acclamation and applause.

Coordination of External Relations (items 9-11)

Under item 9 "Communication with the United Nations", the Chairman noted the NAFO paper (GF/02-380, June 19, 2002) forwarded to the UN Secretariat regarding "large-scale pelagic drift-net fishing, unauthorized fishing in zones of national jurisdiction and on the high seas, fisheries by-catch and discards, and other developments" in the NAFO Convention Area. This paper was finalized from the Executive Secretary's draft through review and approval by Contracting Parties.

Under item 10 "FAO International Plans of Action to prevent, deter and eliminate illegal, unreported and unregulated fishing", the Secretary presented a compilation report including the FAO guidelines and Norwegian paper on this subject. There was no decision for further action by the General Council.

For the item 11, "NAFO cooperation with ICES", the Executive Secretary explained that the General Secretary of ICES, Dr. David de Griffith, was in favour, through mutual discussions, to develop closer relations between ICES and NAFO, and for this purpose the signing of a Memorandum of Understanding (MoU) between these two organizations would be a useful tool for improvement of such relations.

Several Contracting Parties supported the idea of an MoU, and some Contracting Parties suggested that there was not need to formalize NAFO-ICES relations in such a form. Finally, the Chairman of

the General Council concluded that General Council would accept the consideration by the Scientific Council, which did not support the idea of MoU.

Under item 11a, "Participation in the Northwest Atlantic Regional Fisheries Organizations Meetings", the General Council agreed on the following interpretation/position regarding this matter):

"While the Executive Secretaries of the North Atlantic RFMO's obviously have no competence to decide upon the substance of the issues dealt with by the Organizations, it was generally agreed that benefits would be gained by an exchange of experience in the practicalities of running the Organizations. On this basis the General Council encouraged the Secretariat to participate in the next Meeting of North Atlantic RFMO Secretariats."

Fishing Activities in the Regulatory Area Adverse to the Objectives of the NAFO Convention (items 12-14)

Under items 12-13, the STACFAC Chairman, Daniel Silvestre (France-SPM), presented his report to the Meeting with the following highlights and recommendations:

- The Executive Secretary send a letter to the Russian Federation seeking information on the registration of the six Belizean flagged fishing vessels and encouraging the Russian Federation to take action vis à vis the transshipment to a Russian flagged cargo vessel by a Non-Contracting Party vessel;
- the President of NAFO write to Belize and Cyprus seeking more information on the registration of the Belizean fishing vessels and that these letters be delivered by the Governments of France and Canada respectively;
- The Secretariat be asked to produce annually a table compiling past communications (including responses) with Non-Contracting Parties regarding fishing in the NAFO Regulatory Area;
- The NAFO Secretariat write to the NEAFC Secretariat suggesting that information on sightings of Non-Contracting Party vessels fishing in their respective regulatory areas always be exchanged without delay;
- STACFAC be mandated to determine if measures relating to all relevant provisions of the IPOA on IUU have been established in NAFO or whether further action is desirable and report its assessment to General Council. In this respect STACFAC draws to the attention of the General Council that the IPOA on IUU is relevant to both Non-Contracting Parties and Contracting Parties but that STACFAC is limited to assessing the IPOA with regard to Non-Contracting Parties;
- Contracting Parties submitting information pursuant to paragraph 6 of the Scheme should mark it accordingly for easy identification by the Secretariat, and STACFAC should develop guidance on implementation of paragraph 11 of the Scheme;
- The specific discrepancies noted between the Scheme and the Conservation and Enforcement Measures per agenda item 10 above be drawn to the attention of the Fisheries Commission for STACTIC's consideration;
- Contingent upon adoption of relevant proposals by the Fisheries Commission, that oceanic redfish (pelagic *Sebastes mentella*) be added to annex A or B, as appropriate, of the Scheme;
- It recommend to the Fisheries Commission that the Drafting Group engaged in the overhaul of the Conservation and Enforcement Measures review the possible incorporation of the entirety of the Scheme in the Conservation and Enforcement Measures as part of its work.

The General Council adopted the STACFAC Report as a whole.

Under item 14, the delegates exchanged their opinions on the status of the Working Group on Dispute Settlement Procedures and possible continuation of DSP discussions in the frame of a Working Group.

The European Union Representative proposed to organize consultations between Canada, the EU and the USA to identify the grounds for discussions and possible avenues to achieve progress on this matter. The outcome of such consultations will be reported to the Chairman of the General Council, and then there should be a decision on whether to proceed with a Working Group meeting. The Representatives of Canada and United States supported the EU suggestion. The other delegates noted all Contracting Parties should take active participation as DSP procedures would be very important not only for Canada, EU and USA.

The General Council agreed to undertake consultations between interested Contracting Parties, and, if necessary, then to convene the DSP Working Group.

Finance (items 15-16)

The Chairman of STACFAD, G F. Kingston (EU), presented its report to the General Council on 20 September and highlighted the following recommendations:

- the 2001 Auditors' Report be adopted.
- the Secretariat engage a Human Resources Consultant, at an estimated cost of \$2,400, to prepare job descriptions for 3 other employees that had previously been in the CR category, which would then be forwarded to Canada for its analysis.
- the contribution from Romania be deemed uncollectable and that the amount be applied against the Accumulated Surplus Account. The Chairman noted Romania's announcement to withdraw from NAFO as of 31 December 2002.
- that contributions, which had been deemed uncollectable in prior years, shall be returned to the Accumulated Surplus Account. The distribution of these recovered contributions shall be returned to Contracting Parties as a reduction of the following year's assessed contributions. The distribution shall be calculated on the same basis as the year of the original billing distribution when the contributions were deemed uncollectable.
- that \$75,000 be maintained as a minimum balance in this account in order to fulfill NAFO's financial obligations in early 2003 until contributions are received. The remaining estimated accumulated surplus balance of \$106,286 at the end of 2002 would be used to reduce contributions due from Contracting Parties in 2003.
- the starting salary of the incoming Executive Secretary be set at the maximum level in the EX-2 Category of the Canadian system. Under this system there is the eligibility for a performance bonus at the end of her first year in office (as per the previous paragraph). (Appraisal at Annual Meeting, September 2003.)
- the budget of \$1,385,400 for the year 2003 be adopted.
- the dates for the 2005 Annual Meeting be as follows, with the location in Halifax, unless an invitation to host is extended by a Contracting Party and accepted by the Organization:

Scientific Council	-	07-16 September
General Council	-	12-16 September
Fisheries Commission	-	12-16 September

The General Council discussed the STACFAD recommendations and adopted the 2003 budget and report as a whole.

Closing Procedures (items 17-20)

Item 17, "Time and Place of Next Annual Meeting" was reported by STACFAD (above).

Under item 18 "Other Business", the Chairman introduced a "Schedule of NAFO Intersessional Meetings, 2002-2003" which was adopted by the General Council (Annex 3).

The Press Release was drafted by the Executive Secretary and circulated to Heads of Delegations (Annex 4).

At the conclusion, the Chairman and Heads of Delegations wished all the best to the outgoing Executive Secretary, Leonard Chepel, who in response took the floor and expressed his gratitude to Contracting Parties and his colleagues at the Secretariat for their cooperation during his 12-year assignment with NAFO. Mr. Chepel presented all Contracting Parties' delegations with his memorable token of historical book – "Northwest Atlantic: Fisheries, Science, Regulations, XX Century", which summarizes all major developments and decisions by two international organizations in the Northwest Atlantic – ICNAF and NAFO during XX Century.

Annex 1. List of Participants

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Annex 2. Agenda

I. Opening Procedure

1. Opening by Chairman, E. Oltuski (Cuba)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Admission of Observers
5. Publicity

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

6. Review of Membership
 - a) General Council
 - b) Fisheries Commission
 - c) Reports from Contracting Parties on their communication with Bulgaria
7. Administrative Report
8. Selection of the Executive Secretary

III. Coordination of External Relations

9. Communication with the United Nations General Assembly (Resolution 55/8, October 30, 2000)
10. FAO International Plans of Action to prevent, deter and eliminate illegal, unreported and unregulated fishing
11. NAFO cooperation with ICES
 - a) Participation in North Atlantic Regional Fisheries Management Organizations (NARFMO) Meetings

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

12. Consideration of non-Contracting Party activity in the NAFO Regulatory Area and agreement on the task of STACFAC at the current meeting
13. Report of STACFAC at the Annual Meeting and decisions on actions
14. Consideration of the status of the Working Group on Dispute Settlement Procedures (DSP)

V. Finance

15. Report of STACFAD at the Annual Meeting
16. Adoption of the Budget and STACFAD recommendations for 2003

VI. Closing Procedure

17. Time and Place of Next Annual Meeting
18. Other Business
19. Press Release
20. Adjournment

Annex 3. Schedule of NAFO Intersessional Meetings, 2002 – 2003
(GC Working Paper 02/8)

<u>Meetings</u>	<u>Chair</u>	<u>Date (full days)</u>	<u>Place</u>
STACTIC W.G. on Pilot Project	D. Bevan	18-20 November 2002 (after NEAFC AM)	London (at NEAFC)
W.G. of Fisheries Commission On Allocation (FC WP 02/30 Rev.), (EU)	26-28 March ¹⁾ or 18-20 February	Florida, USA
W.G. of the General Council on Dispute Settlement (if decided)	?	29-30 April	Brussels
W.G. (small) of STACTIC to Overhaul Conservation and Enforcement Measures	?	before STACTIC June meeting	“preferably by phone”
STACTIC	D. Bevan	16-20 June	Copenhagen, Denmark
<ul style="list-style-type: none"> - Evaluation of Part VI (incl. STACTIC W.P. 02/31) - Pilot Project (proposal from STACTIC WG) - Green Bible – CEM (proposal from small group) - Compliance (structure of work for September STACTIC Meeting) - Others 			

¹⁾Heads of Delegations will be notified by September 27, 2002 of the chosen dates upon notification from the US delegation.

Annex. 4 Press Release

1. The 24th Annual Meeting of the Northwest Atlantic Fisheries Organization (NAFO) was held in Santiago de Compostela, Galicia, Spain, during 16-20 September 2002, under the chairmanship of Enrique Oltuski (Cuba), President of NAFO. The NAFO constituent bodies - General Council, Fisheries Commission and Scientific Council convened their sessions at the Galicia Congress and Exhibition Centre.
2. The meeting was attended by 200 delegates from seventeen Contracting Parties - Canada, Bulgaria, Cuba, Denmark (in respect of Faroe Islands and Greenland), Estonia, European Union, France (in respect of St. Pierre et Miquelon), Iceland, Japan, Republic of Korea, Latvia, Lithuania, Norway, Poland, Russia, Ukraine and United States of America.
3. Prior to the Annual Meeting, the following NAFO meetings occurred during 2001: (1) Special Meetings (General Council and Fisheries Commission) in a framework of the 23rd Annual Meeting (Helsingør, Denmark, Jan. 29 – Feb. 01); (2) Standing Committee on International Control (Copenhagen, Denmark, May 6-9); (3) Working Group of Technical Experts on Precautionary Approach (Dartmouth, N.S., Canada, June 20-21); (4) Working Group on Management of Oceanic Redfish (Dartmouth, N.S., Canada, June 24-25); (5) Scientific Council Regular Meeting (Dartmouth, N.S., Canada, June 6-20); (6) STACTIC Drafting Group to Overhaul Conservation and Enforcement Measures (Ottawa, Canada, July 9-11).
4. The Scientific Council, under the chairmanship of Ralph Mayo (USA), reviewed and assessed the status of fish stocks in the NAFO Area. The scientific advice and recommendations from the Scientific Council were presented to the Fisheries Commission. The Scientific Council agreed that major groundfish stocks still remain at low abundance and, therefore, should not be recommended for directed fisheries during 2003. The biomass and fishery potentials of Yellowtail flounder in Div. 3LNO were assessed as stable with the possibility of a sustainable fishery. The Scientific Council Symposium on Elasmobranch Fisheries (held in advance of Annual Meeting) brought new ideas on shark management, harvest strategies and stock assessment.
5. The Fisheries Commission, under the chairmanship of Dean Swanson (USA), considered the advice of the Scientific Council in relation to the conservation of fish stocks in the Regulatory Area and agreed to conservation and enforcement measures.

The Fisheries Commission agreed to continue moratoria ("no directed fishery") in 2003 on the following stocks: Cod in Divisions 3M, 3L (that portion within the Regulatory Area) and 3NO, Redfish in Div. 3LN, American plaice in Divisions 3M and 3LNO, Witch flounder in Div. 3NO and 3L (that portion within the Regulatory Area); and Capelin in Div. 3NO. The Quota Table for 2003 was adopted (Attachment 1).

With respect to management measures for cod in Div. 2J3KL, Contracting Parties other than Canada expressed their serious concern that management measures for this stock may not be consistent throughout its range in the Convention Area in the year 2002.

The Fisheries Commission adopted new rules for assessing the compliance of the NAFO Contracting Parties with the Conservation and Enforcement Measures in the NAFO Area.

The Fisheries Commission agreed on continuing restrictive conservation measures in shrimp fishery on Flemish Cap and Division 3L by employing selective sorting grates for by-catch avoidance and 40mm mesh size. The fishing days in Div. 3M should be 90% of an earlier

benchmark historical record. The Fisheries Commission also agreed on specific rules for controlling and monitoring by-catches and minimizing incidental catches in directed fisheries and modifications to the Automated Hail/Vessel Monitoring System for continuous effective monitoring of fishing activities in the Regulatory Area.

6. The General Council, under the chairmanship of Enrique Oltuski (Cuba), deliberated several substantive issues regarding internal and external NAFO policy and finance on the following terms:
 - Standing Committee on non-Contracting Party Fishing Activity in the Regulatory Area (STACFAC) shall continue the study for application of the FAO International Plans of Action on Illegal, Unregulated and Unreported Fishing (IUU) to NAFO needs;
 - Concern was expressed with regards to non-Contracting Party fishing activity in the NAFO Regulatory Area in the second half of 2002, and STACFAC was instructed to review and monitor this situation.
 - The President of NAFO will contact the non-Contracting Parties (Belize and Cyprus) whose flag vessels were involved.
 - The General Council considered the re-establishment of the voting rights of Bulgaria based on Bulgaria's commitment to re-pay its outstanding contributions.
7. The General Council of NAFO elected a new Executive Secretary – Johanne Fischer (European Union), who will replace the outgoing Executive Secretary – Leonard Chepel effective January 01, 2003.
8. The following elections of NAFO officers took place:

Chairman of Standing Committee on Fishing Activities of non-Contracting Parties in the Regulatory Area (STACFAC)	- D. Silvestre (France in respect of St. Pierre et Miquelon) (re-elected)
Vice-Chairman of Standing Committee on Fishing Activities of non-Contracting Parties in the Regulatory Area (STACFAC)	- N. Bouffard (Canada) (re-elected)

NAFO General Council
20 September 2002

NAFO Secretariat
Dartmouth, N.S.
Canada

Quota Table – first page

Oceanic Redfish
(pelagic *Sebastes mentella*)

NAFO SA 2 and
Divisions 1F and 3K

Denmark (in respect of Faroe Islands and Greenland)	}	25,000 ^{1);2);3)}
European Union		
Iceland		
Norway		
Poland		
Russia		
Canada	}	7,500 ^{1);3)}
Cuba		
Estonia		
France (St. Pierre et Miquelon)		
Japan		
Korea		
Latvia		
Lithuania		
Ukraine		
USA		

- ¹⁾ The Contracting Parties shall notify the Executive Secretary bi-weekly of catches taken by its vessels from this allocation. The Executive Secretary shall notify without delay all Contracting Parties the dates on which accumulated reported catch taken by vessels of Contracting Parties estimated equal to 50% and then 100% of that allocation.
- ²⁾ As acceptance of this decision the quantities taken from that allocation in the NAFO Convention Area by respective Contracting Parties shall be deducted from the quotas allocated to these Contracting Parties in the NEAFC Convention Area.
- ³⁾ This arrangement applies to 2003 and is without prejudice to sharing arrangements for this stock in future years.

PART II

(pages 69 to 162)

Activities of the Fisheries Commission in 2002

List of Meetings

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

- Special Meeting of the Fisheries Commission, Helsingør, Denmark, January 29 – February 01.
- Standing Committee on International Control (STACTIC), Copenhagen, Denmark, May 6-9.
- Working Group on Precautionary Approach, Dartmouth, N.S., Canada, June 20-21.
- Redfish ad hoc Working Group, Dartmouth, N.S., Canada, June 24-25.
- STACTIC Drafting Group to Overhaul the NAFO Conservation and Enforcement Measures, Ottawa, Canada, July 9-11.
- The Fisheries Commission and its subsidiary body (STACTIC), 24th Annual Meeting, Santiago de Compostela, Spain, September 16-20.
- STACTIC Working Group on Observer Pilot Project, NEAFC Headquarters, London, UK, November 18-20.

Basic Documents of the Fisheries Commission in 2002

<u>Serial No.</u>	<u>FC Doc. No.</u>	<u>Title</u>
N4587	02/1	Amendment to Part I.K. of the Conservation and Enforcement Measures – Other Measures – Management Measures for Shrimp in Division 3L
N4588	02/2	Amendment to Part I.G.4e) of the Conservation and Enforcement Measures – Other Measures – Management Measures for Shrimp in Div. 3M
N4589	02/3	Authorized Mesh Size of Nets
N4590	02/4	Amendment to Part I.G.4b) of the Conservation and Enforcement Measures – Other Measures – Management Measures for Shrimp in Div. 3M
N4591	02/5	Greenland halibut allocation for 2002
N4592	02/6	Data Elements re North Atlantic Format
N4593	02/7	Fisheries Commission's Request for Scientific Advice on Management in 2003 of Certain Stocks in Subareas 3 and 4
N4605	02/8	Report of the Fisheries Commission Special Meeting, January 29 – February 01, 2002, Helsingør, Denmark
N4624	02/9	Conservation and Enforcement Measures
N4687	02/10	Summary of Status of Proposals and Resolutions of NAFO (as of July 2002)
N4697	02/11	Report of the Standing Committee on International Control (STACTIC), May 6-9, 2002 Copenhagen, Denmark

N4704	02/12	Report of the Working Group of Technical Experts on the Precautionary Approach (PA), June 20-21, 2002, Dartmouth, N.S., Canada
N4705	02/13	Report of the Ad hoc Working Group on Management of Oceanic Redfish, June 24-25, 2002, Dartmouth, N.S., Canada
N4701	02/14	Summary of Inspection Information for 2001
N4741	02/15	Decisions on Management Measures for 2003 in the NAFO Convention Area by the Coastal State, Canada, pursuant to the provisions of Article XI(3) of the NAFO Convention
N4765	02/16	Amendment of the Rules of Procedure for the Fisheries Commission for New Terms of Reference of the Standing Committee on International Control (STACTIC) and for a Supportive Role by the Executive Secretary
N4766	02/17	Amend Conservation and Enforcement Measures, Part I.K.
N4767	02/18	Amend Conservation and Enforcement Measures, Part I – Management – I.A.5(a) and (d)
N4768	02/19	Amendment of the Conservation and Enforcement Measures
N4769	02/20	Part VIII - Provisions on Secure and Confidential Treatment of Electronic Reports and Messages Transmitted Pursuant to Part III.E, VI and VII of the Conservation and Enforcement Measures
N4792	02/21	Report of the Drafting Group to Overhaul the NAFO Conservation and Enforcement Measures, July 9-11, 2002, Ottawa, Canada

Fisheries Commission Special Meeting Helsingor, Denmark, January 29 – February 2002

The Special Meeting was called in the frame of 23rd Annual Meeting (cancelled in 2001 due to tragic events in the USA on 11 September 2001) to discuss management of stocks and quotas. Complete proceedings of this meeting are presented in FC Doc. 02/8 and in NAFO Meeting Proceedings (General Council and Fisheries Commission), 2002.

Opening Procedures (items 1-3 of the Agenda)

The meeting was called to order by the Chairman, Mr. Peter Gullestad (Norway), at 1600 hrs on January 29, 2002. Representatives from the following Contracting Parties were present: Canada, Cuba, Denmark (in respect of Faroe Islands and Greenland), Estonia, European Union (EU), France (in respect of St. Pierre et Miquelon), Iceland, Japan, Latvia, Lithuania, Norway, Poland, Russian Federation, Ukraine, and United States of America (Annex 1).

Mr. Allan Maclean (Canada) was appointed Rapporteur.

The provisional agenda was reviewed and adopted (Annex 2).

Report of STACTIC June 2001 Meeting (item 4)

The Chair of STACTIC (D. Bevan – Canada) summarized the five proposals discussed at the June 2001 inter-sessional meeting with respect to the protection of juvenile fish and the reduction of excessive by-catch:

- restrict directed fishing for Greenland halibut to a depth of 700 meters;
- expansion of the closed area for the 3M shrimp fishery to 300 or 450 m contour;
- closed area on the Southeast Shoal of the Grand Banks with a view to protecting juvenile fish;
- increase in mesh size for groundfish to 145 mm; and
- increase the skate mesh size to 305 mm with a view to protecting stocks under moratoria and juvenile fish.

Possible Amendments to the Conservation and Enforcement Measures (item 5)

A number of working papers were presented as possible amendments to the Conservation and Enforcement Measures:

- Calculation of Incidental Catch Limits
- Proposal for an Alternative Observer Program
- Proposal to amend the NAFO Conservation and Enforcement Measures Regarding 3L Shrimp
- Depth Restrictions in the Greenland Halibut Fishery
- Closed Nursery Area for Groundfish
- Discussion Paper - Rules for By-catches and Undersized Fish

The Representative of Iceland made a formal presentation with respect to its proposal for an alternate observer program in shrimp fishing in Division 3M. Under its proposal, vessels fishing in the area carry VMS and report to the monitoring and control of their flag State. The vessel would notify of its intention to enter the area and would report the catch onboard; the flag State would notify the NAFO Secretariat; and the vessel would transmit weekly catch reports. These reports

would be sent to the Secretariat to permit a comparison of the catch and catch composition between vessels that have observers onboard and those without observers. This information would be transmitted to Contracting Parties that have an inspection presence in the area.

There was considerable discussion on the Icelandic proposal. Some Contracting Parties saw benefits to reduced coverage but indicated that more information was necessary. Others expressed the view that since the entire observer program would be examined at the 2002 annual meeting, there was no reason for the 3M shrimp fishery to be treated in isolation.

In reference to bycatch issues, it was agreed to form a special working group under STACTIC to modernize the Conservation and Enforcement Measures.

The Representative of Canada proposed the adoption of depth restrictions in the Greenland halibut fishery to depths greater than 700m, an increased mesh size in the skate fishery to 305mm, and a closed area on the Southeast Shoal which is nursery area for certain flatfish stocks. The proposal was not adopted with three Contracting Parties voting in favour of the proposal (Canada, Japan, USA), six against (Estonia, European Union, France-SPM, Latvia, Lithuania, Poland) and six abstained (Cuba, Denmark, Iceland, Norway, Russia, Ukraine).

For a skate mesh size increase, most Contracting Parties agreed that there were merits to a mesh size increase however the proposed size was questionable. The proposal to increase the mesh to 280mm in the codend was adopted.

Canadian Management Measures for Cod in Div. 2J3KL in 2001 (item 7)

There was considerable debate on Canada's decision to conduct a fishery for cod in Div. 2J3KL in 2001. Three Contracting Parties expressed displeasure with this decision and stated that it was inconsistent with the NAFO practice of having consistent measures inside and outside the Canadian zone. Misgivings were expressed that Canada not only fished over 5,000 tonnes last year but also once again has opened a cod fishery in this area, this time for a three-year period. The representative of the European Union stressed that the opening of this fishery was inconsistent with scientific advice and was done in disregard of concerns expressed on numerous occasions. As in previous years, there were neither any indications whatsoever to distinguish between different stock components for the inshore and offshore fisheries nor any justification of the decision in question. There was, therefore, in his view a clear and present danger that the Canadian measures would seriously undermine the efforts to ensure a long-term sustainability and the recovery of the stock.

The Representative of Canada stated that it was Canada's sovereign right to manage fisheries in its waters. He advised that the fishery would be conducted within 12-miles by inshore vessels, most less than 35 feet, with very strict limitations in place. The fishery is conducted to provide information on stock structure, distribution and age structure of the inshore component of this stock.

Conservation of Fish Stocks in the Regulatory Area (items 8-11)

The Chair of Scientific Council (shared by Mr. Bill Brodie and Mr. Ralph Mayo) drew the attention of delegates to three reports from Scientific Council: SCS Document 01/24, June 2001, 01/25, September 2001, and 01/26 from November 2001.

Advice for 2002

Redfish 3M	3,000- 5,000mt - by-catch of juvenile redfish at lowest possible level
Yellowtail Flounder 3LNO	not to exceed 13,000mt
Squid (<i>Illex</i>) 3+4	19,000 - 34,000mt
Greenland Halibut 2 + 3KLMNO	not to exceed 2001 level of 40,000mt
Capelin 3NO	no advice available
Cod 3NO	no directed fishery, lowest possible by-catch
Redfish 3LN	no directed fishery, lowest possible by-catch
American plaice 3LNO	no directed fishery, lowest possible by-catch
Shrimp 3L	6,000mt
Shrimp 3M	45,000mt

Scientific Council provided an interim report on 3M cod, 3NO witch flounder and American plaice in 3M, witch flounder in Div.2J, 3K, 3L and Squid (*Illex*) in SA 3 + 4. There were no changes from previous advice.

There was considerable discussion on the management measures for shrimp in Division 3M. A number of Contracting Parties expressed the desire to have a roll over of the management measures in this fishery from 2001 (75% of effort level) while others wanted a return to the 2000 management measures (90% of effort level). The Representative of Estonia proposed to have the management measure return to a 90% effort level. The proposal was adopted (nine affirmative votes: Denmark-F&G, Estonia, European Union, Japan, Latvia, Lithuania, Poland, Russia, Ukraine and six against: Canada, Cuba, France-SPM, Iceland, Norway, United States of America).

There was considerable discussion on management measures for shrimp in Division 3L and it was agreed that the management measures that were in place relating to quota and sharing of the quota were rolled over from 2001. The quota was 6000mt with 5000mt available to Canada and 1000mt to other Contracting Parties (67mt per CP).

No consensus could be reached on the TAC for Greenland halibut in Div. 3LMNO fishery. The Representative of the European Union proposed an increase of the Greenland halibut TAC to 44,000mt. This proposal was put to a vote and was adopted with eight Contracting Parties in favour (Estonia, European Union, Japan, Latvia, Lithuania, Poland, Russia, Ukraine), six against (Canada, Cuba, Denmark-F&G, Iceland, Norway and the United States of America) and one abstention (France-SPM).

For Redfish in Division 1F, the Representative of Canada introduced a proposal for a cooperative management approach between NAFO and NEAFC with respect to oceanic redfish (FC WP 02/7 - NAFO Management of Pelagic *Sebastes mentella* (Oceanic Redfish) in the NAFO Convention Area). There had been discussions on Oceanic Redfish at the Special Fisheries Commission Meeting in March 2001. It had been agreed to apply the NEAFC allocation on an interim basis for 1F redfish in 2001 and to otherwise use the NAFO Conservation and Enforcement Measures. Information received since then had prompted Canada to review this decision. In 2000 there was a substantial fishery in 1F and this continued in 2001. In 2001 the fishery moved further westward into Divisions 2J and 2H. There appeared to be a few thousand tonnes of redfish harvested outside Division 1F in the NRA in 2001.

ICES had indicated that the stock component in the upper water column has a higher distribution in the NAFO Regulatory Area than that which occurs in the NEAFC Convention Area. The Representative of Canada indicated that the distribution extends westward into Canada's fishing

zone. As a result, the Representative of Canada proposed a sharing of the quota 75% to the coastal States and 25% to other Contracting Parties.

The Representative of Denmark (on behalf of Greenland) indicated that as a coastal State it had some say with respect to Oceanic Redfish. He appreciated the Canadian proposal and agreed that there was a need to find a way to ensure management between NAFO and NEAFC and it was important to have scientific advice from one body (i.e. ICES). He agreed with the idea of NEAFC setting the overall TAC but the sharing of quotas was a concern. The numbers in the sharing exercise would have to address what Greenland as a coastal State wanted in its zone. At this time, Denmark (on behalf of Greenland) could not enter into a discussion on quota shares as they have no instructions.

There appeared to be a consensus on the need for cooperation among NAFO and NEAFC/ICES given that this was an extremely complex situation. After the Chairman divided FC WP 02/17 (Revised) into 2 issues, namely the first two and the last pages, the Fisheries Commission adopted by consensus a revised version of the terms of reference of the ad hoc group (Annex 4) and then agreed that the ad hoc group would meet in Dartmouth, June 24-26. Canada withdrew the first two pages of its proposal.

The request for advice from the Scientific Council for 2002 was adopted (Annex 3).

Election of Chairman and Vice-Chairman (item 12)

Mr. Dean Swanson (USA) was elected as Chairman of the Fisheries Commission and Mr. Boris Prischepa (Russia) was elected as Vice Chairman of the Fisheries Commission.

Closing Procedures (items 14-15)

For other business, the Representative of the United States of America tabled FC WP 02/15 which revisited the Precautionary Approach and reaffirmed what had been agreed at the 2000 annual meeting. She proposed that the Fisheries Commission agree to a working group meeting prior to the 2002 annual meeting.

It was agreed that an informal meeting of the working group on the precautionary approach would be held June 20-21 in Dartmouth, N.S., Canada.

The Representative of Denmark indicated that there were some issues related to chartering and they wanted this issue tabled at the next annual meeting. In preparation for this discussion, he requested that the NAFO Secretariat prepare two papers:

- a comprehensive overview of all chartering arrangements; and
- an overview of compliance with Part 1.B. 7 of the Conservation and Enforcement Measures.

The Representative of the United States of America indicated that there had been an agreement in 2000 to return to quota allocation issues and she requested that this item be reflected on the September 2002 agenda.

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Annex 2. Agenda

1. Opening by the Chairman, P. Gullestad (Norway)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Report of STACTIC June 2001 Meeting
5. Possible amendments to the Conservation and Enforcement Measures
6. Report of STACTIC at the Special Meeting
7. Canadian Management Measures for Cod in Div. 2J3KL in 2001
8. Summary of Scientific Advice by the Scientific Council
9. Management and Technical Measures for Fish Stocks in the Regulatory Area, 2002
 - 9.1 Shrimp in Div. 3M
10. Management and Technical Measures for Fish Stocks Straddling National Fishing Limits, 2002
 - 10.1 Shrimp in Div. 3LNO
 - 10.2 Greenland halibut in Div. 3LMNO
 - 10.3 Redfish in Division 1F
11. Formulation of Request to the Scientific Council:
 - a) Timetable and Frequency of Assessments
 - b) Scientific advice on the management of fish stocks in 2003
12. Election of Chairman and Vice-Chairman
13. Time and Place of the Next Meeting
14. Other Business
15. Adjournment

Annex 3. Fisheries Commission's Request for Scientific Advice on Management in 2003 of Certain Stocks in Subareas 3 and 4

1. The Fisheries Commission with the concurrence of the Coastal State as regards the stocks below which occur within its jurisdiction, requests that the Scientific Council, at a meeting in advance of the 2002 Annual Meeting, provide advice on the scientific basis for the management of the following fish and invertebrate stocks or groups of stocks in 2003:

Redfish (Div. 3M)
Shrimp (Div. 3M, 3LNO)
Greenland halibut (Subarea 2 and Div. 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 2002 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)
Yellowtail flounder (Div. 3LNO)
American plaice (Div. 3LNO; Div. 3M)
Witch flounder (Div. 2J3KL; Div. 3NO)
Squid (Subareas 3 and 4)

- In 2001, advice was provided for 2002 and 2003 for cod in 3NO, witch flounder in 2J3KL and redfish in 3LN. These stocks will next be assessed in 2003.
- In 2001, advice was provided for 2002 and 2003 for American plaice in 3LNO. The Fisheries Commission with the concurrence of the Coastal State, requests Scientific Council in advance of the 2002 Annual Meeting, to conduct a full analytical assessment of American plaice in Div. 3LNO and to review its advice for 2003. Scientific Council is further requested to analyse and comment on the precision of the estimates of the recent increase in fishing mortality. The next assessment will then take place in 2003 as per the alternate year schedule.
- In 2002, advice will be provided for 2003 and 2004 for cod in 3M, American plaice in 3M, yellowtail flounder in 3LNO, witch flounder in 3NO and squid in SA 3 & 4. These stocks will next be assessed in 2004.

The Fisheries Commission requests the Scientific Council to continue to monitor the status of all 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_{2001} in 2003 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 2003 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 stock (SSB)
 - an age or size-range chosen to represent the fishable stock biomass
 - 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 fishable stock.

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 shrimp in Div. 3M, including the area in footnote 1 of Part I, G of the Conservation and Enforcement Measures (the 3L 'box'), Scientific Council is requested, in advance of the annual NAFO Meeting of September 2002, to provide information on the monthly distribution of shrimp by size as taken in the commercial fishery and to comment on these distributions in relation to the closed area of Div. 3M as defined by co-ordinates in footnote 2 of Part I, G of the Conservation and Enforcement Measures and the consequences to the stock of the following scenarios: a) closure of the area during June 1 through December 31, and b) no closure at any time.
4. 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 2002 Annual Meeting of the Fisheries Commission for stocks under its responsibility requiring advice for 2003, or 2003 and 2004:
- 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.
5. 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} .
6. For squid (Illex) in Subareas 3 and 4, the Scientific Council is encouraged to further analyze available data toward developing possible indicators that could be used under an in-season management regime.
 7. The Fisheries Commission, with the concurrence of the Coastal State, requests that the Scientific Council comment on the possible relationship of witch flounder in 2J3KL to that reported as caught in Div. 3M based on examination of all survey and biological data available.
 8. Regarding pelagic *S. mentella* redfish in NAFO Subareas 1-3, the Scientific Council is requested to review the most recent information on the distribution of this resource, 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 and to the shelf stocks of redfish found in ICES Sub-areas V, VI and XIV, and NAFO Subareas 1-3.
 9. With regard to shrimp in Divisions 3LNO, the Fisheries Commission, with the concurrence of the Coastal State, requests that the Scientific Council, in advance of the September 2002 Annual Meeting, provide information on the geographical distribution of this resource including the relative and seasonal distribution inside and outside the NAFO Regulatory Area by both Division and age group. With reference to the proposed closed area in the region of the South East Shoal in Div. 3N as referenced in FC Working Paper 02/10, Scientific Council is further requested to provide information on the abundance and distribution of shrimp in the area proposed for closure.

Standing Committee on International Control (STACTIC) Copenhagen, Denmark, May 6-9, 2002

The Meeting was held in accordance with the decision taken by the Fisheries Commission at its Special Meeting, January 2002 (FC Doc. 02/8, Item 4.7). Complete proceedings of this meeting are presented in FC Doc. 02/11 and in the NAFO Meeting Proceedings (General Council and Fisheries Commission), 2002.

Opening Procedures

The Chairman, Mr. David Bevan (Canada), opened the meeting at 10:00 on May 6, 2002. Representatives from the following Contracting Parties were present: Canada, Denmark (in respect of Faroe Islands and Greenland), Estonia, the European Union, Iceland, Japan, Lithuania, Norway, Russian Federation, and the United States (Annex 1).

Mr. Paul Steele (Canada) was appointed rapporteur.

The proposed agenda was adopted with one amendment (see Annex 2).

Review of the NAFO Observer/VMS Scheme

The Secretariat introduced STACTIC Working Paper 02/4, which included a summary of observer reports received from Contracting Parties and the format/contents of those reports.

It was agreed that the first step of the review process should be for each Contracting Party to clearly describe their current observer and VMS programs. Two questionnaires were developed to guide this information gathering process.

It was agreed that the NAFO Secretariat should be asked to compile the information provided in the questionnaires, including the additional information to be provided by Contracting Parties not attending this meeting. The Secretariat should then use this and other available information to develop summary tables and graphs regarding surveillance activities, costs and results. The format would be similar to the document prepared by STACTIC in 1998 as part of the evaluation of the observer and satellite tracking program (FC Doc. 98/13). A working paper describing the review framework was developed. The Secretariat will take steps, with the Contracting Parties, to implement the agreed-upon framework.

Evaluation of Options to Modify the Observer/VMS Scheme

The representative from Iceland made a presentation regarding an alternative observer program. The alternative program proposed by Iceland is based on 20% observer coverage, daily electronic transmission of observer reports and catch reports, transmission of VMS messages every two hours and timely comparison of results from observed and unobserved vessels.

STACTIC noted a number of points for consideration by the Fisheries Commission, including:

Definition of the scope. The scope of such pilot project should be clearly defined in volume (number of vessels), percentage of coverage and time. As this pilot project implies that certain vessels may operate in the Regulatory Area without an observer onboard, the Fisheries Commission may consider to define the maximum number of vessels by Contracting Party without an observer. In part VI of the NAFO Conservation and Enforcement Measures a temporary exemption from the requirement to have 100 % observer coverage needs to be foreseen.

Furthermore, as the pilot project proposed provides for daily catch reporting as well as the daily transmission of observer report, the total number of vessels participating in the pilot project should also be defined.

Technical facilities. It should be prohibited to engage in such pilot project if the technical facilities are not in place and tested. Only Contracting Parties which have these facilities put in place and tested with the NAFO Secretariat and with the Contracting Parties having means of inspection and surveillance in the Regulatory Area, could participate in the pilot project.

Evaluation criteria. At the end of the pilot project or more regularly if directed by the Fishery Commission, each Contracting Party should submit a detailed report on the execution of the pilot project containing all necessary information. STACTIC supported by the Executive Secretary should evaluate the results of the pilot project on the basis of the following criteria:

- Cost / Savings
 - For the industry
 - For the authorities of the Contracting Parties (including those with an inspection presence)
 - For the NAFO Secretariat
- Interaction with traditional means of control
- Compliance overall and notably comparison between vessels with and without observers
- Technical functioning of the Scheme and reliability

Use of Observer Information for Scientific Purposes and Confidentiality Issues

The discussion focussed on a paper titled Harmonized NAFO Observer Program Data System Proposal (NAFO SCS Doc. 00/23). This document had been developed by the Scientific Council to define scientific requirements for observer program data.

Contracting Parties agreed on the value of an automated system with common data elements. The issue was brought to the attention of the Fisheries Commission at the annual meeting, 2002.

A proposal was introduced for amendments to the Conservation and Enforcement Measures to provide for secure and confidential treatment of electronic reports and messages.

The amended working paper was recommended to the Fisheries Commission for adoption.

Improvements to the Automated Hail/VMS System

The Secretariat introduced STACTIC Working Paper 02/6, giving an update regarding implementation of the automated hail/VMS system. Since July, 2001 the Secretariat has been receiving automatic position reports from most Contracting Parties. It was noted that approximately 5% of entries are still being made manually and that some Contracting Parties do not yet have monitoring centres. Changes to the operating system were agreed upon at the Helsingor meeting in January 2002. The estimated cost for implementing those changes is \$10,000 Cdn. This issue will be discussed at the annual meeting of STACFAD in September, 2002.

Review of Compliance

The representative of the European Union introduced STACTIC Working Paper 02/8, describing proposed new terms of reference for STACTIC and a supportive role for the Executive Secretary with regard to the production of an annual report on compliance.

On the basis of the documents developed at the meeting, STACTIC would conduct its review of compliance in connection with the annual meeting. The first compliance review would be based on 2002 data, with the first compliance report to be submitted to the Fisheries Commission at the 2003 annual meeting.

Review of Options for the Control/Avoidance of Incidental Catches

A working group developed STACTIC Working Paper 02/15 (Revised), which proposes to amend the Conservation and Enforcement Measures to add a definition for directed fishery and revise the limits for incidental catches and the method of calculation. It was agreed that these proposed amendments will be submitted to the Fisheries Commission for consideration at the annual meeting in September 2002.

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Annex 2. Agenda

1. Opening of the Meeting
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Review of the NAFO Observer/VMS Scheme
 - a) Use of observer information for scientific purposes
 - b) Review of performance of Automated Hail/VMS System
 - c) Evaluation of options to modify the observer/VMS Scheme
 - i) Effectiveness
 - ii) Benefits/Costs
 - d) Confidentiality issues respecting data received as a result of the Automated Hail/VMS System (discussion at Ad hoc group)
 - e) Improvements to the Automated Hail/VMS System (at Ad hoc group)
5. Review of Compliance
 - a) Framework for evaluation of compliance
 - b) Data sources, timeframes/formats for submission of data
 - c) Schedule of future work/meetings
6. Review of options for the control/avoidance of incidental catches
 - a) Measures for the control of incidental catches
 - b) Possible options with identified impacts for consideration by the Fisheries Commission
7. Other Matters
8. Time and Place of Next STACTIC Meeting
9. Adjournment

Working Group of Technical Experts on the Precautionary Approach (PA)

Dartmouth, N.S., Canada, June 20-21, 2002

The Working Group met in accordance with the decision taken by the Fisheries Commission at its Special Meeting, January 2002 (FC Doc. 02/8, item 12.5). Complete proceedings of this meeting are presented in FC Doc. 02/12 and in the NAFO Meeting Proceedings (General Council and Fisheries Commission), 2002.

Opening Procedures

The Working Group of Technical Experts on the Precautionary Approach (PA) was called to order by Mr. Dean Swanson (USA), Chair of the Fisheries Commission at 1000 hr, June 20, 2002 at the Ramada Plaza Hotel in Dartmouth, Nova Scotia. Representatives from Canada, the European Union, United States of America, Russian Federation, Iceland, Japan and Norway were present (Annex 1). The Chairman welcomed participants to Dartmouth.

Mr. Jim Baird (Canada) was appointed as Chairman for the meeting.

Judy Dwyer (Canada) was appointed Rapporteur for the meeting.

The agenda (Annex 2) was adopted as modified.

Presentations on Precautionary Approach for Discussion

There were three presentations made:

1. A Review which outlined the steps taken to date by NAFO in developing the Precautionary Approach.

Material was presented outlining the history and evolution of the Precautionary Approach within NAFO. Work began in 1996 with a request from Fisheries Commission to Scientific Council to begin work in this area. Since then, there has been development of biological reference points for some stocks managed by Fisheries Commission as well as development, again by Scientific Council, of a proposed framework for application. A Fisheries Commission/Scientific Council WG was formed and discussions of the PA have taken place during three meetings of the WG during which the biological perspectives as well as other conservation measures were discussed. The specific roles of scientists and managers has been determined, and issues pertaining to harmonization of terminologies have been outlined.

1. An overview of the work done by ICES in developing the Precautionary Approach

The development of fisheries advice within the Precautionary Approach Framework was described. Precautionary Approach Limits were introduced into ICES advice in 1981 and further developed in 1986. The development of ICES Precautionary Approach framework for advice is described within four ICES Study Groups on the Precautionary Approach. The 1997 Study Group described how reference points should be defined, and proposed the use of pre-agreed harvest control rules and recovery plans to maintain or restore stocks within safe biological limits. The 1998 Study Group estimated reference point values that were adopted by ACFM in giving advice and that are generally still in use, although some reference values

have since been recalculated by individual assessment working groups. The 2001 Study Group provided a general overview of the current status of the PA in ICES, and reviewed the technical basis for the points currently in use.

The reference points proposed by ICES have been formally accepted for the management of fish stocks shared by Norway and the EU, which have adopted the PA reference points in the management agreement for herring, cod, haddock, saithe and plaice in the North Sea, and mackerel in western waters.

The ICES Precautionary Approach Study Group has noted that the present implementation in management has deficiencies. It is based on a single species concept, whereas many species are caught in mixed or multispecies fisheries, and the advice has no consideration for the side effects of the fisheries such as the impact on the ecosystem. F_{pa} was intended as the upper bound of the fishing mortality that can be applied to a fishery in order to have a high probability of maintaining a sustainable resource. Similarly B_{pa} was intended to be interpreted as the minimum required adult spawning biomass. It was expected that fishery managers would have set targets beyond the reference points taking into account biological, catch/revenue or employment objectives. In practice the management system has not been able to agree on such targets and the precautionary reference points are being used as targets. By managing the stocks so close to the F_{pa} and B_{pa} targets, however, there is a substantial probability that stocks will move above or below the target from year to year so that management action has to be taken frequently to change the stock trend.

ICES has recently begun the process of establishing a series of meetings that will review the current reference points for each stock this process is scheduled to be completed by the end of 2003.

2. Management Experience with the ICES Precautionary Approach Framework.

The group heard opinions that implementing the ICES PA framework had brought notable benefits, mostly that it had promoted general acceptance by managers and industry of a more cautious and longer-term approach to fisheries management. The clear framework for advice and assessments assists transparency and “good governance”. Where the approach has been applied consistently, positive results are starting to show (e.g. North Sea herring).

However, there were a number of drawbacks and problem areas.

- The system is based only on stock dynamics and risk, with no yield considerations. Managers are interested in questions of catch and harvesting rate, but are no longer being informed about, for example, current fishing mortality compared to F_{max} ;
- Risk acceptance is highly variable across different stocks in the ICES area;
- In the absence of defined fishing mortality values, the F_{pa} value which was intended to be a limiting value can become used as a target;
- There is no consideration of stability and assessment noise in the framework, and there is no consideration of when TAC changes are really useful or needed, or else are largely due to stochastic variability of fish stock assessments;

- Despite recent progress, the approach has not yet altered the perception that assessment revisions are “mistakes by scientists”, rather than inescapable consequences of attempting to measure fish stocks with limited observations;
- Furthermore, such assessment “noise” means that stocks are unpredictably crossing the safe biological limits despite management actions to prevent this;
- A key issue for fish stock management is the appropriate regulation of fishing activities that result in several species being caught, some of which may require stronger conservation measures than others. The existing frameworks provide managers with very little assistance in this regard.
- While the creation of a formal and rigid advisory framework assists in good governance and transparency, it may arguably have the drawback that there is correspondingly less scope for inputs from knowledgeable experts and case-specific adaptation.
- In the ICES framework, there is no definition of measures to apply in case of stocks below B_{pa} . In the event of stock depletion, managers need additional resources to develop case-specific recovery plans.
- Two more technical issues are that the ICES PA framework recognises assessment noise but not structural uncertainty; furthermore, the PA reference point values are usually given as absolute values (e.g. “ $B_{pa} = 1.4$ Million t”) when they are model-conditioned and could better be expressed in model-independent terms (“ B_{pa} =average spawning stock size in the years 1985 to 1990).

Matters to be considered by the Fisheries Commission regarding the Implementation of the Precautionary Approach in NAFO

It was noted that there were a number of common elements between the Precautionary Approach framework utilized by ICES and the framework developed by the Scientific Council of NAFO. These similarities are evident in the model formulation from both scientific organizations and also reflect concerns expressed by managers in implementation. These common elements include the establishment of limit reference points (B_{lim}) and associated biomass buffer reference points (B_{buf} in NAFO and B_{pa} in ICES). The role of managers, on the basis of scientific advice and in consultation with stakeholders, is to establish reference points and in the event that stocks fall below the established reference points, to determine appropriate corrective action. The work of Scientific Council also includes the determination of associated risk, while managers should determine, in consultation with stakeholders, what level of risk may be acceptable.

Scientific Council representatives clarified that the linear decrease in fishing mortality between the biomass target and the buffer was for illustrative purposes only. The actual trajectory for fishing mortality in this zone should be determined by fisheries managers in consultation with stakeholders. SC representatives further clarified that Harvest Control Rules below B_{lim} or B_{buf} would not necessarily result in a cessation of fishing, and it was noted that it is also the role of managers to determine corrective action when stocks fall below predetermined biological limits. With regard to using F_{msy} as a fishing mortality limit, SC representatives indicated that this was one option, however some other fishing mortality levels could also be used (e.g. F_{max} , $F_{0.1}$, etc.).

A concern was also identified that whereas the Scientific Council framework provides specifically for target biomass and/or fishing mortality when the resource is within safe biological limits, the

ICES framework is not as explicit on this issue such that B_{pa} is often used as a target and variability and uncertainty cause stocks to move in and out of safe biological limits.

**Development of Recommendations for future work of the
Fisheries Commission/Scientific Council Working Group**

It was agreed that further progress on the above issues as well as overall implementation of the PA within NAFO, would benefit by addressing specific cases and problems. As such, the Group **recommends** that *Fisheries Commission determine an appropriate example(s) then instruct the Joint FC/SC Working Group on the Precautionary Approach to meet intersessionally to address the points above as they apply to the example(s).*

The Group suggests that Fisheries Commission consider steps to develop proposals for long-term plans for the management of different fleet sectors of the fisheries.

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Annex 2. Agenda

1. Opening of the Meeting
2. Election of a Chairman
3. Appointment of Rapporteur
4. Adoption of Agenda
5. Presentations on PA for Discussion
 - 5.1 Summary of Discussions to Date
 - 5.2 Recent Experiences with the PA Within ICES
 - 5.3 Management Experience with the ICES Precautionary Approach Framework
6. Matters to be considered by the Fisheries Commission regarding the Implementation of the Precautionary Approach in NAFO
7. Development of Recommendations for future work of the Fisheries Commission/Scientific Council Working Group
8. Other Matters
9. Adjournment of the Meeting

**Ad hoc Working Group on
Management of Oceanic Redfish
Dartmouth, N.S., Canada, June 24-26, 2002**

The Meeting was held in accordance with the decision taken by the Fisheries Commission at its Special Meeting, January 2002, (FC Doc. 02/8, item 8.10). Complete proceedings of this Meeting are presented in FC Doc. 02/13 and in NAFO Meeting Proceedings (General Council and Fisheries Commission), 2002.

Opening Procedures

The ad hoc Working Group on Management of Oceanic Redfish was called to order by Mr. Dean Swanson (USA), Chair of the Fisheries Commission at 1015 hours, June 24, 2002 at the Ramada Plaza Hotel in Dartmouth, Nova Scotia. Representatives from Canada, the European Union, Denmark (on behalf of the Faroe Islands and Greenland), Iceland, Japan, Latvia, Lithuania, Norway, Poland, Russian Federation and the United States of America were present (Annex 1). The Chair welcomed participants to Dartmouth.

Mr. Terje Lobach (Norway) was appointed as Chair for the meeting.

Mr. Robert Steinbock (Canada) was appointed as Rapporteur for the meeting.

The agenda was adopted (Annex 2).

**Review of the scientific advice on Oceanic Redfish, including the
distribution of it in the Northwest Atlantic**

Mr. Thorsteinn Sigurdsson (Iceland) provided an update of the survey information and fishery related data for oceanic redfish (Pelagic *Sebastes mentella*):

- A total of about 715,000 tonnes redfish was measured acoustically above 500 m. Redfish is now observed more south-westerly than it was prior to 1999.
- Observed decrease in acoustic abundance since 1994 – exceeds the removed biomass by a factor of 2.
- Redfish is mixed with the scattering layer.
- Based on the trawl method, about 1 million tonnes were estimated below 500 m. The estimate is highly uncertain and only a very rough indicator of the abundance.
- About 1.1 million tonnes were estimated above 500 m with the trawl method highly uncertain, only a very rough indicator of the abundance.
- It is not possible to combine the results from the acoustics and the results from the trawl method.

The meeting noted that ICES interpretations of the evidence on stock structure were still diverging and that individual indicators were inconclusive. Therefore the stock structure remains uncertain. On distribution, ICES noted that observations indicate that since 1996:

- a) the fisheries in the Northeastern area in the first half of the year are occurring at depths deeper than 500 m and catching larger fish (35-45 cm).
- b) The fisheries in the Southwestern area in the second half of the year are mainly occurring at depths shallower than 500 m catching smaller fish (33-38 cm).

- c) All information supports that the fishery in the NAFO Convention Area is from the same stock as fished in the western part of ICES Sub-area XII.

Delegates raised questions on the ICES scientific advice and highlighted the uncertainty of using catch rates as a reflection of stock status and that concerns had been expressed by some ICES scientists. It was noted that the distribution of fishing effort does not coincide with the distribution of the stock due, in part, to economic factors related to the quality of the fish. Although the fishery is concentrated on small geographical areas, the distribution of the stock/stocks during the fishing season is very large. There are no indicators from the surveys that the distribution area has been shrinking as a result of the fishery.

Chair of the Scientific Council (Mr. Ralph Mayo, USA) summarized the Scientific Council's review of the information on oceanic redfish. He advised that Scientific Council was not in a position to re-evaluate the ICES information but only commented on the applicability of the information with respect to decisions on the state of the pelagic *Sebastes mentella* resource in the North Atlantic. Scientific Council considered that CPUE (standardized or not) in hours fished for redfish can be misleading and may be optimistic. Scientific Council does not consider this as a reliable indicator of stock status since redfish exhibit schooling behavior and relatively good catch rates may still be possible while the area of distribution of the resource is declining or the number of schools is diminishing. Scientific Council concluded that a stronger statement should be made about the uncertainty in the stock status of pelagic *Sebastes mentella* in ICES Sub-areas V, XII and XIV and the NAFO Convention Area, particularly for the considerations that the standardized CPUE series do not indicate significant stock reductions since 1995.

Discussion of possible recommendations to the Fisheries Commission on the relationship and management process between NAFO and NEAFC

The Chair recalled the background to the management decisions for Division 1F redfish which were developed at the Special Fisheries Commission meeting in March 2001 and then "rolled over" for 2002 at the Special Fisheries Commission meeting in January 2002. He noted that NEAFC adopted measures for pelagic redfish for 2002 and on April 8, 2002, adopted a supplementary measure to concur with the NAFO decision regarding catches in the NAFO Convention Area in 2002.

The Working Group agreed to recommend management measures/quotas to the Fisheries Commission (Annex 3). The Representative of Lithuania stated that a significant percentage of the overall resources were found in the NAFO Convention Area. Therefore, he was of the opinion that NAFO should manage separately that portion of the oceanic redfish resources in the NAFO Convention Area. Lithuania recommended that a NAFO quota larger than 5000 tonnes should be established by the Fisheries Commission.

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Annex 2. Agenda

1. Opening of the Meeting
2. Election of a Chairman
3. Appointment of Rapporteur
4. Adoption of Agenda
5. Review of the scientific advice on Oceanic Redfish, including the distribution of it in the Northwest Atlantic
6. Discussion of possible recommendations to the Fisheries Commission on the relationship and management process between NAFO and NEAFC
7. Other matters
8. Adjournment of the Meeting

**Annex 3. Proposal re Oceanic Redfish (pelagic *Sebastes mentella*)
in NAFO SA 2 and Divisions 1F and 3K**

The management of Oceanic Redfish in NAFO SA 2 and Divisions 1F and 3K entails issues involving the reconciliation of conservation and enforcement measures for the stock in two adjacent convention areas (NAFO and NEAFC).

The Working Group recommends that the Fisheries Commission of NAFO, as long as the Oceanic Redfish fishery in the NAFO Convention Area continues, establish quotas of Oceanic Redfish for the NAFO Convention Area. Recognizing that this will require consultations between NAFO and NEAFC on a potential sharing arrangement and without prejudice to the right of Contracting Parties to advance allocation positions at future meetings of the NAFO Fisheries Commission, the Working Group recommends that the Fisheries Commission adopt the following proposal for 2003:

1. Add the following column to the 2003 NAFO Quota Table:

Oceanic Redfish (Pelagic <i>Sebastes mentella</i>)	
NAFO SA 2 and Divisions 1F and 3K	
Denmark (in respect of Faroe Islands & Greenland)	To be determined as per point 2 below.
European Union	
Iceland	
Norway	
Poland	
Russia	
Contracting Parties who are not members of NEAFC	
	To be determined as per points 3 and 4 below.

2. NEAFC will establish the 2003 TAC for Oceanic Redfish and the associated quota table applicable to NEAFC Contracting Parties. Quantities taken in the NEAFC Convention Area shall be deducted from the quotas mentioned.
3. The Working Group recommends that the Fisheries Commission of NAFO, after consultations with NEAFC, establish a quota of 5,000 tons from the 2003 TAC that NEAFC will establish, for allocation by the Fisheries Commission to NAFO Contracting Parties who are not NEAFC Contracting Parties, to be fished in the NAFO Convention Area.
4. The Fisheries Commission should establish a quota key or other means of sharing the quota to be fished by Contracting Parties who are not NEAFC Contracting Parties. In addition, the Fisheries Commission should establish relevant reporting requirements.

5. Combined catches in the NAFO Convention Area for Contracting Parties who are also NEAFC Contracting Parties shall not exceed 25,000 tons in 2003. These Contracting Parties shall notify the Executive Secretary bi-weekly of catches taken by its vessels from this allocation. The Executive Secretary shall notify without delay all Contracting Parties the dates on which accumulated reported catch taken by vessels of Contracting Parties who are members of NEAFC is estimated to equal 12,500t and then 25,000t.
6. It is understood that when fishing in NAFO SA 2 and Divisions 1F and 3K, NAFO Conservation and Enforcement Measures shall apply.
7. This arrangement applies to 2003 and is without prejudice to sharing arrangements for this stock in future years.

**Drafting Group to Overhaul the NAFO
Conservation and Enforcement Measures
9-11 July 2002, Ottawa, Canada**

The Working Group met in accordance with the decision taken by the Fisheries Commission at its Special Meeting, January 2002 (FC Doc. 02/8, item 4.5). Complete proceedings of this Meeting are presented in FC Doc. 02/21 and in the NAFO Meeting Proceedings (General Council and Fisheries Commission), 2002.

Opening Procedures

The Drafting Group met in Ottawa from 9-11 July 2002.

Participants are listed in Annex 1.

The Drafting Group adhered to its mandate to identify and remove redundancies and inconsistencies in the NAFO Conservation and Enforcement Measures. The Drafting Group made considerable progress in its mandate, helped by the provision of a base text by the European Commission.

A draft revision of the Conservation and Enforcement Measures was developed on the understanding that this revision was a work in progress and further consideration of a variety of issues would still be needed by the Drafting Group with guidance from STACTIC on a number of substantive changes. Due to a lack of time, there were a number of items, including the Annexes of the Conservation and Enforcement Measures, which the Drafting Group was not able to focus on.

The Drafting Group agreed that its report should be submitted to STACTIC at its 2002 meeting and circulated by email by the Executive Secretary to all Contracting Parties as far in advance as possible of that meeting.

The Drafting Group noted that any new measures that may be adopted by the Fisheries Commission will need to be incorporated into the revision. To prevent continuous revision, the Drafting Group was hopeful that a finalized text could be submitted for adoption by the Fisheries Commission at the 2003 annual meeting.

Annex 1. List of Participants

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Fisheries Commission Annual Meeting
(FC Doc. 02/24)

September 16-20, 2002, Santiago de Compostela, Galicia, Spain

The Twenty-Fourth Annual Meeting of the Fisheries Commission was convened at the Galicia Congress and Exhibition Centre, Santiago de Compostela, Galicia, Spain. Complete proceedings of this Meeting are presented in FC Doc. 02/24 and in NAFO Meeting Proceedings (General Council and Fisheries Commission), 2002.

Opening Procedures (items 1-5)

The meeting was called to order by the Chairman, Dean Swanson (USA), at 0920 hrs on September 17, 2002. Representatives from the following Contracting Parties (CP) were present: Bulgaria, Canada, Cuba, Denmark (in respect of 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, Russian Federation, Ukraine, and United States of America (Annex 1).

Mr. B. Lester (Canada) was appointed Rapporteur.

The Provisional Agenda was adopted as attached (Annex 2).

Review of membership was discussed at the opening session of the General Council (under provisions of Article XIII.1 of the NAFO Convention). There were no additions to the membership of the Fisheries Commission.

Conservation and Enforcement Measures (items 7-19)

Precautionary Approach to NAFO managed stocks (item 7) was reviewed on the presentation by the Scientific Council recommending further joint discussions with the Fisheries Commission. No action was taken to call a joint Fisheries Commission and Scientific Council working group on this matter.

Compliance with the NAFO Regulatory Measures was discussed (item 8) and areas of concern were identified as follows:

- directed fishing-excessive by-catch of moratoria species
- exceeding allocations/misreporting
- directed fishing after closure (3L shrimp)
- increased frequency of mesh size violations
- increase in issuance of citations for apparent infringements
- non-submission or late submission of observer reports.

The Fisheries Commission adopted new rules for assessing the compliance of NAFO Contracting Parties with the Conservation and Enforcement Measures in the NAFO Regulatory Area.

The Fisheries Commission adopted new recommendations and measures on presentation by STACTIC and following discussions (items 9-14):

- Evaluation of the Program for Observers and Satellite Tracking
- Modification of the Observer/Vessel Monitoring System (VMS)

- Confidential treatment of electronic reports and messages and improvements to Hail/VMS Systems
- Modernization of the Conservation and Enforcement Measures
- Control/avoidance of incidental catches

Chartering arrangements (item 10) were discussed with a final resolution to allow a limited involvement by Contracting Parties in such activity.

For inspection presence in the Regulatory Area (item 11), Canada and EU appealed to all Contracting Parties to participate in inspection and control.

The outstanding quota allocation issues were addressed with a final resolution to develop discussions at a working group in March 2003.

Conservation of Fish Stocks in the Regulatory Area

The Scientific Council advice is summarized in tables below:

Recommendations for one year - 2003 were provided for four stocks:

Species	Recommendation for 2003
Redfish 3M	3,000-5,000t, by-catch of juvenile redfish at lowest possible level
American plaice 3LNO	no directed fishery, lowest possible by-catch
Greenland halibut 2 + 3KLMNO	not to exceed average level of 2000 and 2001 level of 36,000t, reduced harvest of juveniles
Capelin 3NO	no directed fishery

Two-year (2003/2004) advice for five other stocks:

Species	Recommendation for 2003/2004
Cod 3M	no directed fishery, lowest possible by-catch
American plaice 3M	no directed fishery, lowest possible by-catch
Witch 3NO	no directed fishery, lowest possible by-catch
Yellowtail flounder 3LNO	not to exceed 14,500t
Squid (<i>Illex</i>) 3+4	19,000 – 34,000t

SC provided the relative seasonal distribution for 3LNO shrimp biomass as follows:

Percentage of 3LNO shrimp biomass by division	Percentage of divisional biomass in the NRA
90% of biomass is in 3L	11-30% of 3L divisional biomass occurs in the NRA
<10% of biomass is in 3N	90% of 3N divisional biomass occurs in the NRA
1% of biomass is in 3O	

The Scientific Council provided information on decadal trends in environmental conditions in the Northwest Atlantic that indicated relatively warm conditions in the 1950s and 1960s to a region in the 1970s to 1990s where temperatures were relatively cool. The decreasing trends in temperatures would have resulted in a decreased abundance of groundfish and an increased abundance of shellfish.

Considering the Scientific Council recommendations, the Fisheries Commission agreed to continue moratoria ("no directed fishery") in 2003 on the following stocks: Cod in Divisions 3M, 3L (that portion within the Regulatory Area) and 3NO, Redfish in Div. 3LN, American plaice in Divisions 3M and 3LNO, Witch flounder in Div. 3NO and 3L (that portion within the Regulatory Area); and Capelin in Div. 3NO.

The Quota Table (Annex 3) reflects the decisions of the Fisheries Commission on allocations and other management options.

Management of Currently Unregulated Stocks

The Representative of Canada introduced a proposal for a precautionary TAC for 3O redfish in the range of 13,000t. He noted the current high exploitation rate of this slow growing stock and suggested that SC be asked to provide advice on reference points and conservation measures for this stock for future years.

Following discussions, the FC agreed to adopt the process that requests SC to provide a full assessment of 3O redfish in advance of the 2003 Annual Meeting.

The other stock under consideration was regarding possible catch limits for thorny skates in Divisions 3LNO, which the USA delegation proposed to establish at 6,500mt for 2003. It was noted that there was a need for SC advice before establishing a TAC.

The Fisheries Commission request for advice from the Scientific Council for Management in 2004 was adopted (Annex 4).

Summary of provisional information on fishing activities and utilization of the fishery resources in the NAFO Regulatory Area in 2002 is attached in Annex 5.

The following intersessional meetings were agreed for 2003:

STACTIC WG on Pilot Project	Nov. 18-20, 2002 London, UK
Fisheries Commission WG on Allocations	March 26-28, 2003 Florida, USA
STACTIC WG to overhaul the Conservation and Enforcement Measures	before June 2003 STACTIC - preferably by teleconference
STACTIC Intersessional Meeting	June 16-20, 2003 Copenhagen, Denmark

The meeting was adjourned at 1020 hrs on September 20, 2002.

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Annex 2. Agenda

I. Opening Procedure

1. Opening by the Chairman, D. Swanson (USA)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Admission of Observers
5. Publicity

II. Administrative

6. Review of Commission Membership

III. Conservation and Enforcement Measures

7. Report of the Working Group on Precautionary Approach
8. Presentations on compliance
9. Report of STACTIC, May 2002 (Copenhagen); presentation proposals
 - a) review of program for observers and satellite tracking
 - b) use of observer information for scientific purposes
 - c) evaluation of options to modify the observer/VMS system
 - d) confidential treatment of electronic reports and messages and improvements to hail/VMS system
 - e) modernization of the Conservation and Enforcement Measures
 - f) control/avoidance of incidental catches
 - g) compliance issues (Rules of Procedure of the Fisheries Commission)
 - h) other
10. Review of the provisions on chartering operations in the NAFO Regulatory Area
11. Increase of inspection presence in the NAFO Regulatory Area
12. Quota Allocation Issues
13. Report of STACTIC at the Annual Meeting
14. Canadian Management Measures for 2J3KL Cod in 2002

IV. Conservation of Fish Stocks in the Regulatory Area

15. Summary of Scientific Advice by the Scientific Council
 - a) Stock assessments and recommendations (Scientific Council Chairman)
 - b) Decadal trends in environmental conditions in the Northwest Atlantic (Chair of STACFEN or his designate)

16. Management and Technical Measures for Fish Stocks in the Regulatory Area, 2003

- 16.1 Cod in Div. 3M
- 16.2 Redfish in Div. 3M
- 16.3 American plaice in Div. 3M
- 16.4 Shrimp in Div. 3M

17. Management and Technical Measures for Fish Stocks Straddling National Fishing Limits, 2003

- 17.1 Cod in Div. 3NO
- 17.2 Redfish in Div. 3LN
- 17.3 American plaice in Div. 3LNO
- 17.4 Yellowtail flounder in Div. 3LNO
- 17.5 Witch flounder in Div. 3NO
- 17.6 Capelin in Div. 3NO
- 17.7 Squid (*Illex*) in Subareas 3 and 4
- 17.8 Shrimp in Div. 3LNO
- 17.9 Greenland halibut in Div. 3LMNO
- 17.10 If available in the Regulatory Area:
 - i) Cod in Div. 2J3KL
 - ii) Witch flounder in Div. 2J3KL
- 17.11 Pelagic *Sebastes Mentella* in the NAFO Convention Area
 - Report of the ad hoc Working Group on Oceanic Redfish
- 17.12 Management of Currently Unregulated Stocks – 3O redfish

18. Formulation of Request to the Scientific Council for:

- a) Scientific advice on the management of fish stocks in 2004

19. Transfer of Quotas Between Contracting Parties

V. Closing Procedure

20. Time and Place of the Next Meeting

21. Other Business

22. Adjournment

Annex 3. Quota Table for 2003

first page

Oceanic Redfish
(pelagic *Sebastes mentella*)

NAFO SA 2 and
Divisions 1F and 3K

Denmark (in respect of Faroe Islands and Greenland)	}	25,000 ^{1);2);3)}
European Union		
Iceland		
Norway		
Poland		
Russia		
Canada	}	7,500 ^{1);3)}
Cuba		
Estonia		
France (St. Pierre et Miquelon)		
Japan		
Korea		
Latvia		
Lithuania		
Ukraine		
USA		

- ¹⁾ The Contracting Parties shall notify the Executive Secretary bi-weekly of catches taken by its vessels from this allocation. The Executive Secretary shall notify without delay all Contracting Parties the dates on which accumulated reported catch taken by vessels of Contracting Parties estimated equal to 50% and then 100% of that allocation.
- ²⁾ As acceptance of this decision the quantities taken from that allocation in the NAFO Convention Area by respective Contracting Parties shall be deducted from the quotas allocated to these Contracting Parties in the NEAFC Convention Area.
- ³⁾ This arrangement applies to 2003 and is without prejudice to sharing arrangements for this stock in future years.

**Annex 4. Fisheries Commission's Request for Scientific Advice on
Management in 2004 of Certain Stocks in Subareas 2, 3 and 4.**

1. The Fisheries Commission with the concurrence of the Coastal State as regards the stocks below which occur within its jurisdiction, requests that the Scientific Council, at a meeting in advance of the 2003 Annual Meeting, provide advice on the scientific basis for the management of the following fish and invertebrate stocks or groups of stocks in 2004:

Shrimp (Div. 3M, 3LNO)
Greenland halibut (Subarea 2 and Div. 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 2003 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. 3M; Div. 3LN)
Yellowtail flounder (Div. 3LNO)
American plaice (Div. 3LNO; Div. 3M)
Witch flounder (Div. 2J3KL; Div. 3NO)
Squid (Subareas 3 and 4)

- In 2002, advice was provided for 2003 and 2004 for cod in 3M, American plaice in 3M, yellowtail flounder in 3LNO, witch flounder in 3NO and squid in SA 3&4. These stocks will next be assessed in 2004.
- In 2003, advice will be provided for 2004 and 2005 for cod in 3NO, American plaice in 3LNO, witch flounder in 2J3KL, redfish in 3M and redfish in 3LN. These stocks will next be assessed in 2005.

The Fisheries Commission requests the Scientific Council to continue to monitor the status of all 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 Fisheries Commission with the concurrence of the Coastal State requests Scientific Council, at a meeting in advance of the 2003 Annual Meeting, provide advice on the scientific basis for the management of redfish in Div. 3O including recommendations regarding the most appropriate TAC for 2004 and 2005. This stock will be assessed in alternate years thereafter.
4. 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_{2002} in 2004 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 should be provided 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 2004 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 should be provided. 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 a 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.

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 2003 Annual Meeting of the Fisheries Commission for stocks under its responsibility requiring advice for 2004, or 2004 and 2005:
 - a) the limit and target precautionary reference points as 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 in developing 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 reasonable 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 Scientific Council, at a meeting in advance of the 2003 Annual Meeting, to consider options available for the provision of annual advice as regards shrimp in Div. 3LNO and 3M in advance of the Annual Meetings.
 8. Regarding pelagic *S. mentella* redfish in NAFO Subareas 1-3, the Scientific Council is requested to review the most recent information on the distribution of this resource, 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 and to the shelf stocks of redfish found in ICES Sub-areas V, VI and XIV, and NAFO Subareas 1-3.
 9. With respect to thorny skate in Divisions 3LNO, the Fisheries Commission with the concurrence of the Coastal State requests Scientific Council, at a meeting in advance of the 2003 Annual Meeting to provide the following:
 - a) Information on exploitation rates in recent years, as well as information on by-catches of other groundfish in the 3LNO skate fishery;
 - b) Information on abundance indices and the distribution of the stock in relation to groundfish resources, particularly for the stocks which are under moratorium;
 - c) Information on the distribution of thorny skate in Divisions 3LNO, as well as a description of the relative distribution inside and outside the NAFO Regulatory Area;
 - d) Advice on reference points and conservation measures that would allow for exploitation of this resource in a precautionary manner;
 - e) Information on annual yield potential for this stock in the context of (d) above;
 - f) Identification and delineation of fishery areas and exclusion zones where fishing would not be permitted, with the aim of reducing the impact on the groundfish stocks which are under moratorium, particularly juveniles;
 - g) Determination of the appropriate level of research that would be required to monitor the status of this resource on an ongoing basis with the aim of providing catch options that could be used in the context of management by Total Allowable Catch (TAC); and
 - h) Information on the size composition in the current catches and comment on these sizes in relation to the size at sexual maturity.

**Annex 5. Fishing Activity and Utilization of Fish Resources
in the NAFO Regulatory Area
2002**

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

Contracting Party	No. of Vessels	Catches MT: Quota / Catch / %						
		Redfish 3M Quota / Catch / %			Gr. halibut 3LMNO Quota / Catch / %			Shrimp 3M Vessels / Catch
Canada	2	500	-	-	4890	1581	32	1 8
Cuba	-	1750	-	-	-	-	-	- 153 ^c
Denmark		69			-			
Faroes	7		-	-		123 ^b	6	6 8509
Greenland	2		-	-		-	-	2 680
Estonia	7	(13850) ^a	5	+	-	899 ^b	41	7 13674
European Union	45	3100	1624	52	18046	16981	94	10 1045
France (SPM)	-	69	-	-	-	-	-	- 161 ^c
Iceland	3	-	-	-	-	-	-	3 5757
Japan	2	400	68	17	3341	2781	83	1 100
Korea	-	69	-	-	-	-	-	- -
Latvia	3	(13850) ^a	-	-	-	11 ^b	1	3 1885
Lithuania	9	(13850) ^a	10	+	-	298 ^b	14	4 3321
Norway	6	-	-	-	-	-	-	6 11225
Poland	-	-	-	-	-	-	-	- -
Russia	11	(13850) ^a	1155	8	4157	3146	76	3 1145
Ukraine	-	-	-	-	-	-	-	- -
United States	-	69	-	-	-	-	-	- 96 ^c
Others		124			2169	1331	61	
TOTAL & TAC	97	5000	2862	57%	32604	25820	79%	46 47759

^a Block quota.

^b Other Quota.

^c 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".

STACTIC Working Group on Observer Program
(FC Doc. 02/23)

November 18-20, 2002, NEAFC Headquarters, London, U.K.

The Working Group met in accordance with the decision taken by the Fisheries Commission at its Special Meeting, January 2002 (FC Doc. 02/8, item 4.5). Complete proceedings of this Meeting are presented in FC Doc. 02/23 and in the NAFO Meeting Proceedings (General Council and Fisheries Commission), 2002.

Opening Procedures

The Chair of STACTIC, Mr. David Bevan (Canada), chaired the Working Group.

The list of delegates is attached in Annex 1.

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

It was agreed to discuss the review of the current NAFO Program for Observers and Satellite Tracking and the overhaul of the NAFO Conservation and Enforcement Measures under Agenda Item 7 - Other Business. The provisional agenda was thus adopted (Annex 2).

Review and Evaluation of the Pilot Project

With the concurrence of the Working Group, the delegate of Canada made a presentation that outlined its position on a number of steps that should precede any change to the current observer program and the preparations necessary for the June 2003 STACTIC intersessional meeting. He presented a working paper that raised a series of operational questions with respect to elements of the current proposal for a pilot project on observers, satellite tracking and electronic reporting.

Extensive discussions followed on the various changes leading to a consensus on the technical aspects which are reflected in STACTIC W.G. (pilot project) W.P. 02/2-Revision 3 (Annex 3).

Delegates noted that given the wide variability in catches and the different types of vessels, agreement is needed on the standard for a discrepancy that would warrant a flag for further consideration and possible action. There was a consensus that data is to be compiled by the Secretariat for use by Contracting Parties with an inspection presence in the Regulatory Area; the decision to inspect a fishing vessel should not be triggered by the analysis of the data but should remain the decision of the inspector. The EU and Iceland consulted to develop proposed text with respect to comparison of species caught and catch rates for inclusion in the Working Paper. There was a consensus that some flexibility should be afforded to the Executive Secretary in the format of the report presentation to be sent to Contracting Parties with an inspection presence.

Proposals and Recommendations to the Fisheries Commission

It was agreed to recommend the following for review as appropriate:

- Statement of Work for Contractor – modification of software for the pilot. The delegate of Iceland will pursue this further.
- Statement of Work for Contractor to be reviewed and approved by the Technical WG – by conference call
- Secretariat to advise on costs
- Work to be done, validated and tested

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Annex 2. Agenda

1. Opening of the Meeting (D. Bevan-Canada)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Presentation of a Pilot Project
5. Review and Evaluation of the Pilot Project
6. Proposals and Recommendations
7. Other Business
8. Next Meeting
9. Adjournment

**Annex 3. Working Paper Concerning a Pilot Project on Observers,
Satellite Tracking and Electronic Reporting**
(STACTIC W.G. (pilot project) W.P. 02/2, Revision 3)

For the purpose of future evaluation, the objectives of the pilot project include:

- Maintenance of or improvement to compliance with the Conservation and Enforcement Measures
- Enhancement of fisheries protection and enforcement systems
- Improved cost-efficiency and cost-effectiveness

In order to implement the Pilot Project on Observers, Satellite Tracking and Electronic Reporting, it will be necessary to add Part VI(c) to the Conservation and Enforcement Measures as follows:

PART VI (c) – PILOT PROJECT ON OBSERVERS, SATELLITE TRACKING AND ELECTRONIC REPORTING

A Pilot Project, which combines the use of daily electronic catch reports, observer reports and satellite tracking of fishing vessels, shall be established.

1. Scope

Only vessels of Contracting Parties with functional VMS systems that have the necessary technical facilities in place to send electronic "observer reports" and "catch reports" are eligible for this pilot project.

The total number of vessels in the Regulatory Area at any one time, which are participating in the Pilot Project shall be limited to 20, with the total number of vessels without observers not to exceed 10 at any time. Any Contracting Party shall have no more than 8 vessels participating in the Pilot Project at any one time in the Regulatory Area.

Contracting Parties shall notify the Executive Secretary of their intention to participate in the Pilot Project within 30 days following the adoption of the pilot project by the Fisheries Commission. The Pilot Project shall enter into force 60 days following adoption and, should provisionally continue for a period of two years. They shall also notify the Executive Secretary of the maximum number of vessels concerned that would be in the Regulatory Area at any one time. If the number of vessels notified by Contracting Parties exceeds 20 vessels the Executive Secretary, with the agreement of the Chairman of the Fisheries Commission, shall reduce the number without excluding any Contracting Party and advise the relevant Contracting Parties prior to the commencement of the pilot project.

Each Contracting Party is entitled to at least one vessel to participate in the Pilot Project at any time.

If a Contracting Party does not utilize its right for a vessel to participate or withdraws from the Pilot Project, the right becomes available for another Contracting Party. In such a case, the Contracting Parties with the fewest vessels participating in the Pilot Project at that time shall have priority to choose to utilize the right for a new vessel to participate.

2. Implementation

Participating Contracting Parties should notify the names of the vessels participating in the pilot project to the NAFO Secretariat. Such vessels shall have observers on board in accordance with Part VI.A of the NAFO Conservation and Enforcement Measures.

However, by way of derogation from these measures a Contracting Party may withdraw observers from vessels participating in the Pilot Project on the condition that the technical facilities on board the vessel necessary to send electronic "observer reports" and "catch reports" have been tested with the NAFO Secretariat and Contracting Parties with an inspection presence in the Regulatory Area.

The testing of this exchange shall be deemed successful once data exchanges have been completed with all recipients at a 100% reliability rate.

A Contracting Party with one vessel participating in the Pilot Project shall withdraw the observer for no more than 50% of the time that the vessel spends in the Regulatory Area during the year. Other Contracting Parties shall withdraw the observers from no more than 50% of the vessels participating in the Pilot Project that are present in the Regulatory Area.

When withdrawing observers Contracting Parties shall ensure that there is a balance between vessels participating in the Pilot Project with observers and without observers, in terms of the type of fishery in which the vessels are engaged.

Contracting Parties shall not withdraw observers from vessels with catch onboard when entering the Regulatory Area unless such vessels are subject to an inspection.

Participating Contracting Parties shall provide at all times to the NAFO Secretariat the names of vessels participating in the pilot project as well as the period during which they have no observer onboard. The Executive Secretary shall forward this information to all Contracting Parties.

In the case where a vessel without an observer is found by an inspector to be engaged in any infringement, the Contracting Party shall apply the provisions of part IV point 10 of the Scheme, as appropriate, and, when the vessel is not re-routed, it shall embark an observer without delay.

In addition to their duties under the Conservation and Enforcement Measures observers on board vessels participating in the Pilot Project shall report daily by electronic channels via the FMC to the NAFO Secretariat ("OBR report") of his duties described in Part VI.A.3. a) i) to iv) of the Conservation and Enforcement Measures.

3. Daily Reports

- a) Masters of vessels and observers taking part in the Pilot Project shall transmit daily reports by division.
- b) The daily reports are to be received by the NAFO Secretariat by 1200 UTC daily. The report period will run from 0001 hours to 2400 hours of the previous day.
- c) The catch reported in the daily report of the master will correspond with those recorded in the log.
- d) The daily reports shall include as appropriate the amounts, by Division, of the following categories:

- i) The daily catch by species retained on board
 - ii) Discarding
 - iii) Undersize fish
- e) If the electronic means of transmitting daily reports (to and from FMC) is not functioning, the master and the observer will continue to report daily by other means keeping a written log of these transmissions on board and available to inspectors.

The templates for Catch and Observer Reports are further described in addition to PART III – ANNEX 1 – HAIL SYSTEM MESSAGE FORMAT.

4. Data Collection/Compilation/Analysis

The Executive Secretary shall collect and compile, on a weekly basis, the data provided by the daily catch reports to compare, among other items, catch rates of species caught by Division, by-catch percentage rate, discard rates for similar fisheries. The details of this data compilation are outlined in Annex 2.

The Executive Secretary shall forward this information to Contracting Parties with an inspection presence.

The NAFO Secretariat shall monitor the receipt of daily reports from each vessel participating in the pilot. When a report has not been received for 2 consecutive days, the NAFO Secretariat will notify the relevant Contracting Party as well as Contracting Parties with an Inspection Presence.

The Executive Secretary shall make available as soon as possible the information received under paragraphs 2 and 3 to other Contracting Parties with an active inspection presence in the Regulatory Area. All reports and messages shall be treated in a confidential manner.

5. Confidentiality

All data submitted under the Pilot Project shall be maintained by the Executive Secretary for the duration of the Pilot Project as well as the assessment period. When assessing this data at the end of the project, the Executive Secretary and STACTIC will ensure confidentiality by replacing vessel names with a neutral identifier. All other confidentiality rules, as outlined in the Conservation and Enforcement Measures, will apply.

6. Costs

Subject to any other arrangements between Contracting Parties, each Contracting Party shall pay all its costs associated with this system.

7. Follow-up

Each Contracting Party (including those with an inspection presence) shall submit an interim report at the first annual meeting of the Fisheries Commission following adoption of the pilot project and a detailed report on the execution of the pilot project containing all necessary information at the annual meeting of the Fisheries Commission following completion of the pilot project. STACTIC supported by the Executive Secretary should evaluate the results of the pilot project at its next meeting on the basis of the criteria set out below as well as the objectives identified, together with any recommendations or proposals:

- a) Compliance overall and notably comparison between vessels with and without observers.
- b) Assessment by the Executive Secretary on issues related to data compatibility, data collection/compilation, and data transmission.
- c) Cost/savings; for the industry; for the authorities of the Contracting Party (including those with an inspection presence); for the NAFO Secretariat.
- d) Interaction with traditional means of control.
- e) Technical functioning of the Scheme and reliability.

(Annex 1 – STACTIC W.G. W.P. 02/2, Rev. 3)

1.6 Daily Catch Report

Data Element:	Code	Mandatory / Optional	Remarks:
Start record	SR	M	System detail; indicates start of record
Address	AD	M	Message detail; destination, “XNW” for NAFO
Sequence Number	SQ	M	Message detail; message serial number in current year
Type of Message	TM	M	Message detail; message type, “CAT” as Catch report
Radio call sign	RC	M	Vessel registration detail; international radio call sign of the vessel
Trip Number	TN	O	Activity detail; fishing trip serial number in current year
Vessel Name	NA	O	Vessel registration detail; name of the vessel
Contracting Party Internal Reference Number	IR	O	Vessel registration detail; unique Contracting Party vessel number as ISO-3 flag state code followed by number
External Registration Number	XR	O	Vessel registration detail; the side number of the vessel
Relevant Area	RA	M	Activity detail: NAFO Division
Latitude	LA	M ¹	Activity detail; position at time of transmission
Longitude	LO	M ¹	Activity detail; position at time of transmission
Daily Catches species live weight	CA	M M	Activity detail; cumulative catch by species retained on board (exclusive of discards), either since commencement of fishing in R.A. ² or last “Catch” report, in pairs as needed. FAO species code Live weight in kilograms, rounded to the nearest 100 kilograms
Discarding species live weight	RJ	M	Activity detail; discarded catch by species, either since commencement of fishing in R.A. ² or last “Catch” report, in pairs as needed. FAO species code Live weight in kilograms, rounded to the nearest 100 kilograms
Undersize species live weight	US	M	Activity detail; undersize catch by species, either since commencement of fishing in R.A. ² or last “Catch” report, in pairs as needed. FAO species code Live weight in kilograms, rounded to the nearest 100 kilograms
Date	DA	M	Message detail; date of transmission
Time	TI	M	Message detail; time of transmission
End of record	ER	M	System detail; indicates end of the record

1 Optional if a vessel is subject to satellite tracking

2 Meaning the first “Catch Report” in current fishing trip in the R.A.

1.7 Observer Report

Data Element:	Code :	Mandatory / Optional	Remarks:
Start record	SR	M	System detail; indicates start of record
Address	AD	M	Message detail; destination, “XNW” for NAFO
Sequence Number	SQ	M	Message detail; message serial number in current year
Type of Message	TM	M	Message detail; message type, “OBR” as Observer report
Radio call sign	RC	M	Vessel registration detail; international radio call sign of the vessel
Fishing Gear	GE	M	Activity detail; FAO code for fishing gear
Directed Species ⁷	DS	M	Activity detail; FAO species code
Mesh Size	ME	M	Activity detail; average mesh size in millimeters
Relevant Area	RA	M	Activity detail; NAFO Division
Daily Catches species live weight	CA	M M	Activity detail; cumulative catch by species retained on board, (exclusive of discards), either since commencement of fishing in R.A. ² or last “Catch” report, in pairs as needed. FAO species code Live weight in kilograms, rounded to the nearest 100 kilograms
Discarding species live weight	RJ	M ¹	Activity detail; discarded catch by species, either since commencement of fishing in R.A. ² or last “Catch” report, in pairs as needed. FAO species code Live weight in kilograms, rounded to the nearest 100 kilograms
Undersize species live weight	US	M ¹	Activity detail; undersize catch by species, either since commencement of fishing in R.A. ² or last “Catch” report, in pairs as needed. FAO species code Live weight in kilograms, rounded to the nearest 100 kilograms
Log Book	LB	M	Activity detail; “Yes” or “No” ³
Production	PR	M	Activity detail; code for the production
Hails	HA	M	Activity detail; observers verification if the reports made by the captain are correct, “Yes” or “No” ⁴
Apparent Infringements	AF	M	Activity detail; “Yes” or “No” ⁵
Observer Name	ON	M	Message detail; name of the observer signing the report
Date	DA	M	Message detail; date of transmission
Free Text	MS	O ⁶	Activity detail; for further comments by the observer
Time	TI	M	Message detail; time of transmission
End of record	ER	M	System detail; indicates end of the record

1 Only to be transmitted if relevant

2 Meaning the first “Catch Report” in current fishing trip in the R.A.

3 “Yes” if the observer approves the Log Book entries by the captain

4 “Yes” if the observer approves the Hails transmitted by the captain

5 “Yes” if an infringement is observed

6 Mandatory if “LB” = “No”, or “HA” = “No”, or “AF” = “Yes”.

7 Directed species is the species which represents the greatest catch for that day

Data to be compiled by Executive Secretary and Forwarded to Inspection Parties**Catch and Catch Rate Report (Weekly)**

Vessel Type	Division	Species	Total catch	Total Effort	Catch Rate
With observer - Masters					
With observer - Observer					
Without observer					

By-catch Report (Weekly)

Vessel Type	Division	Species	Total catch	Total Overall Catch	By-catch%
With observer - Masters					
With observer - Observer					
Without observer					

Discards Report (Weekly)

Vessel Type	Division	Species	Total catch	Total Discards	Discard%
With observer - Masters					
With observer - Observer					
Without observer					

PART III
(pages 163 to 225)

Activities of the Scientific Council in 2002

List of Meetings

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

- Scientific Council Regular Meeting, Alderney Landing, Dartmouth, N.S., Canada, June 6-20.
- Symposium on Elasmobranch Fisheries: Managing for Sustainable Use and Biodiversity Conservation, Santiago de Compostela, Galicia, Spain, September 11-13.
- Scientific Council Annual Meeting, Santiago de Compostela, Galicia, Spain, September 16-20.
- Scientific Council Meeting (shrimp), Nuuk, Greenland, November 5-12.

**Scientific Council Meeting
Dartmouth, N.S., Canada, June 6-20, 2002**

Chairman: R. K. Mayo (USA)

Rapporteur: T. Amaratunga, Assistant Executive Secretary

The Scientific Council report was published as NAFO/SCS Doc. 02/19 and in Scientific Council Reports, 2002.

Representatives attended from: Canada, Denmark (Faroe Islands and Greenland), European Union (France, Germany, Portugal, Spain and United Kingdom), Japan, Norway (as of 11 June), Russian Federation and United States of America (USA) (Annex 1).

The agenda was adopted (Annex 2).

FISHERIES ENVIRONMENT

In accordance with the agreement of Scientific Council during the September 2001 meeting, a mini-Symposium, entitled *Hydrographic variability in NAFO waters for the decade 1991-2000 in relation to past decades*, was held at Alderney Landing, 2 Ochterloney Street, Dartmouth, Nova Scotia, Canada, on 7 June 2002. There were 40 registrants representing Canada, Denmark (in respect of Faroe Islands and Greenland), France, Germany, Portugal, Spain, United Kingdom, Japan, Russian Federation and United States of America. A total of 8 oral presentations were given reviewing meteorological, sea-ice and oceanographic variability in all NAFO Subareas from SA 1 off West Greenland to SA 6 off the northeast coast of the United States. They ranked the past decade in relation to long-term climate change and several also considered the effects of the climate variations on the fisheries.

The mini-Symposium considered detailed climate conditions and their effects on the fishery within NAFO Subareas 0/1, 2, 3, 4, 5 and 6 during the decade of 1991-2000. In general the past decade was one of extremes, both in terms of ocean climate variability and fish production in the Northwest Atlantic. A brief review of the presentations for each Subarea follows.

A Review of the Atmospheric and Sea-ice Conditions in the Northwest Atlantic during the Decade 1991-2000 (K. F. Drinkwater)

The atmospheric and sea ice conditions in the decade 1991-2000 were described. The North Atlantic Oscillation (NAO) index in the 1990s was the highest in the past 11 decades and there has been a general increase from the minimum of the 1960s. This was accompanied by increasing southwesterly winds. Mean decadal air temperatures were above their long-term means throughout the NAFO area except at West Greenland and have been increasing since the 1960s. Sea-ice conditions off the Labrador and northern Newfoundland coast, in the Gulf of St. Lawrence and the Scotian Shelf indicate the least amount of ice was during the decade of the 1960s. From Labrador to the Gulf there was little difference in ice severity between the 1970s, 1980s and 1990s, however, on the Scotian Shelf, ice area was less during the 1990s compared to the previous two decades. The decadal mean of the number of icebergs drifting along the Labrador and Newfoundland Shelves was at a maximum during the 1990s. There has been large variability within the decade, however. The early years of the 1990s were characterized by high NAO indices, strong northwesterly winds, cold temperatures from the Labrador Sea to the Gulf of Maine and extensive ice cover. In 1996, the NAO index experienced its largest annual decline in the over 100-year record. During the remaining years of the 1990s decade, the NAO rose achieving values that even exceeded those of the early years of the 1990s. Also an eastward shift in the pressure fields occurred during the late-1990s. During this time there were weaker

northwesterly winds, warmer temperatures in the Labrador Sea to the Gulf of Maine, and a reduction in sea-ice coverage.

Climatic Overview NAFO Subarea 1 – 1991-2000 (M. Stein)

Based on air temperatures, sea-ice cover and sea surface temperatures, as well as on autumn subsurface oceanographic time series data, the climatic conditions off West Greenland were described for the 1990s, including a comparison with previous decades. The 1990s was a decade of extremes: The NAO index flipped from its most positive value in winter 1995 to its most negative value in the winter thereafter and reached a high level again during the last winter of the decade. Air temperatures followed these extremes in the first part of the 1990s when cold air temperatures at West Greenland paralleled a high NAO-index. The northward extension of warm Irminger Water along the West Greenland banks and slopes showed extreme situations varying from 1992 when no Irminger mode water was found to 1999 when the northernmost extension of this warm water was observed. Cold polar water masses were most prevalent in 1992 and 1993 whereas warm waters such as the Irminger component of the West Greenland Current system dominated the second half of the 1990s. Sea-ice cover at the two southern-most sites off West Greenland, Nuuk and Prins Christian Sound, show high concentrations of ice in the first half of the 1990s. From 1998 onwards there was little sea-ice cover in the vicinity of these stations. The northern two locations, Upernavik and Egedesminde, reveal sea-ice presence throughout the decade, however, there is a significant decrease in coverage during the second half of the 1990s. Winter duration at West Greenland meteorological observation sites seems to differ from north to south. In the north, winters extended into March during all decades, while observations from southern sites show longer winters only from the 1960s onwards. Before that period, winters were shorter at Nuuk and the southern tip of Greenland. It is suggested that the warmer-than-normal winter conditions during the first half of the 20th century favoured spawning of cod and led to increasing cod (*Gadus morhua*) populations off West Greenland.

Oceanographic Conditions in the Labrador Sea in the 1990s and in the Context of Interdecadal Variability (I. Yashayaev, A. Clarke and R. Hendry)

The Labrador Sea is a key location in terms of the circulation and climate change in the North Atlantic. It has the freshest and coldest conditions relative to the zonal means of temperature and salinity and serves as the source of the major intermediate water mass of the North Atlantic, referred to as the Labrador Sea Water (LSW). The water masses, which descend from the Nordic Seas into the North Atlantic across the Greenland Scotland Ridge, fill the deep and abyssal layers of the North Atlantic below LSW. They carry the signals from their sources and also respond to significant climatic variations in the Labrador Sea. In the 1990s, the Labrador Sea experienced the largest full-depth change ever observed in the modern instrumental oceanographic record becoming 0.6°C colder and 0.05 fresher (relative to the late-1960s), which is an equivalent of mixing an extra 6 to 7 m of fresh water into the water column. Hydrographic and profiling float data are used to identify seasonal cycles and long-term variations in the upper layer of the Labrador Sea. The magnitude of seasonal variation in temperature in the central region of the Labrador Sea is between 6°C (10 m) and 1.5°C (100 m). The seasonal change in fresh water content is 0.55 m, which is an order of magnitude less than the reported accumulation of fresh water between the 1960s and 1970s. A long-term cooling of the upper 300 m of the central Labrador Sea was observed between 1930s and 1980s by about 1°C. Between 1984 and 1999 the Labrador Sea became warmer, with a period of weaker cooling between 1988 and 1994. Between 1999 and 2001 the upper layer cooled by about 0.3°C. In the early-1970s and 1980s the upper 300 m layer experienced freshening, lowering salinity by 0.2. However, the cold anomaly of the early-1990s was not accompanied by lower salinity and this resulted in the highest recorded density of

the upper layer and the deepest convection ever observed in the Labrador Sea (in 1993-1994 it reached 2 300 m depth).

Geostrophic Circulation and Heat Flux across the Flemish Cap (1988-2000) (J. Gil, R. Sánchez)

Historical data, together with CTD data from bottom trawl surveys performed in the Flemish Cap, were used to estimate geostrophic circulation over the bank and the heat flux across 47°N. The recurrence of anticyclonic circulation around Flemish Cap during the July surveys suggests topographic forcing plays an important role in the gyre dynamics. A coherent cold flow skirts around the northeastern flank of the Cap with enhanced southerly geostrophic velocities of $\sim 0.07 \text{ ms}^{-1}$ on the eastern slope. Part of this flow continues around the southern and southwestern flanks of the Cap with a mean speed of $\sim 0.03 \text{ ms}^{-1}$ forming an anticyclonic gyre over Flemish Cap. The gyre contains warmer and less saline waters than water surrounding the Cap. The most significant source of variability in the water masses over Flemish Cap was linked to the variability of the advective flows, namely the offshore branch of the Labrador Current and oscillations of the North Atlantic Current's north wall. The series of geostrophic heat flux anomaly was estimated to be balanced to within order 2.3 TW, with the long-term trend of the heat flux series suggesting a net shift from positive (poleward) in the late-1980s to slightly negative (equatorward) in the second half of the 1990s. The latter was attributed to enhanced Labrador Current during 1995-2000, which was also observed to strengthen the anticyclonic gyre over the Flemish Cap.

Decadal Changes in the Ocean Climate in Newfoundland Waters from the 1950s to the 1990s (E. B. Colbourne)

A review of decadal changes in the ocean climate in NAFO waters adjacent to Newfoundland and Labrador were presented based on standard station and section data, as well as data from fishery resource assessment surveys. Both the annual trends and decadal means were examined for the decades of the 1950s to the 1990s. The analysis indicated that the 1950s and particularly the 1960s were the warmest decades during the latter half of the 20th century and the 1990s represent the 3rd consecutive decade with below normal temperatures on the Newfoundland Shelf. The decadal mean salinity indicated that the magnitude of negative salinity anomaly on the inner Newfoundland Shelf during the 1990s was comparable to that experienced during the 'Great Salinity Anomaly' of the early-1970s. In addition, the decade of the 1990s experienced some of the most extreme variations since measurements began during the mid-1940s. Ocean temperatures ranged from record low values during 1991 to record highs during 1999 in many areas, particularly on the Grand Bank of Newfoundland. The potential impact of these changes in ocean climate during the past several decades on marine production in Newfoundland waters was discussed.

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 2002 is demonstrated in the following table (by the NAFO Secretariat):

(from NAFO monthly reports)

2002

Contracting Party	Cod 3M		Redfish 3M		Yellowtail 3LNO		G. halibut 3LMNO	
	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
1. Bulgaria	-	-	-	-	-	-	-	-
2. Canada	0	-	500	-	12675	8532	4 890	1 581
3. Cuba	0	-	1750	-	-	-	-	-
4. Denmark (Faroe Islands and Greenland)	0	-	69	0	-	0	-	123
5. European Union	0	30	3100	1624	260	302	18 046	16 981
6. France (St. Pierre et Miquelon)	-	-	69	-	-	-	-	-
7. Iceland	-	-	-	-	-	-	-	-
8. Japan	-	-	400	68	-	-	3 341	2 781
9. Korea	-	-	69	-	-	-	-	-
10. Norway	0	-	-	0	-	0	-	0
11. Poland	0	-	-	0	-	0	-	0
12. Estonia	-	-	-	5	-	14	-	899
13. Latvia	0 ¹	-	13850 ¹	0	-	0	-	11
14. Lithuania	-	-	-	10	-	0	-	298
15. Russia	-	1	-	1155	-	103	4 157	3 146
16. Ukraine	-	-	-	-	-	-	-	-
17. United States of America	-	-	69	-	-	-	-	-
18. Others	0	-	124	-	65	-	2 169	1 331
TAC and Catch	0	31	5000 ²	2862	13 000	8951	32 604	25 820
% of utilization of TAC	-	-	57	-	69	-	79	-

¹"Block quota" (Estonia, Latvia, Lithuania, Russia).² This 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, 2002. 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.

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 at its meeting of September 2001 agreed to consider certain stocks on a multi-year rotational basis. While this schedule was agreed to by the Fisheries Commission during the 29 January – 01 February 2002 Meeting, the Fisheries Commission additionally forwarded requests for advice on certain stocks. This section presents those stocks for which the Scientific Council provided scientific advice for the year 2003:

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.

Scientific Council concluded that while the decline in stock biomass appears to have halted, it is still unclear as to whether there has been any actual increase. The total stock and spawning stock

are currently at a low level compared to the earlier period in the time series. At the low fishing mortalities of the most recent years, with growth of the relatively strong 1990 year-class, spawning biomass should gradually increase.

The Council was unable to advise on a specific TAC for year 2003; however, in order to maintain relatively low fishing mortalities so as to promote stock recovery, Scientific Council recommends that catch for Div. 3M redfish in year 2003 be in the range of 3 000-5 000 tons.

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. The stock remains low compared to historic levels.

Scientific Council reiterates its recommendation of no directed fishery on American plaice in Div. 3LNO in 2003 and by-catches be kept to the lowest possible level.

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 NAFO Regulatory Area in Div. 3LMNO 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 2001 was estimated to be 38 000 tons, the highest since 1994.

The stock appeared to be recovering from about 1996-99 due to good recruitment and relatively low fishing mortality but the biomass of fish over 70 cm remained low. Most stock size indicators from commercial CPUE and research vessel surveys suggest that presently the stock is either relatively stable or declining. If the TAC of 44 000 tons for 2002 is fully realized the stock will likely decline.

Although there remains a high level of uncertainty associated with the estimates of the strong 1993-95 year-classes, of these three, only the 1995 year-class is expected to contribute significantly to the catch in 2003. The major contribution is expected to come from the 1996 and 1997 year-classes, which are about average. In addition, the 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. Given the current uncertainty as to the contribution of the above-average year-classes to the fishable stock, Scientific Council recommends that the catch for 2003 should not increase above the average level of 2000 and 2001 (36 000 tons) until the fishable biomass has increased.

The Council again recommends that measures be considered to reduce, as much as possible, the exploitation of juvenile Greenland halibut in all fisheries.

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

There has not been a directed fishery since 1993 when a moratorium was established, and no commercial catches have been reported since then. The only indicator of stock dynamics presently available may be capelin biomass indices obtained during Canadian stratified-random bottom trawl surveys. Trawlable biomass of capelin in Div. 3LNO and 3NO for 1977-2001 was converted into absolute values on the basis of the relationship between trawl and acoustic estimates of capelin stock in Div. 3LNO in spring 1977-1994. Assuming the existence of a correlation between biomass estimates derived by the acoustic and the trawl methods, it was

concluded that in 1990-1995, both the calculated and the trawlable biomass of capelin in Div. 3LNO fluctuated within a wide range. Since 1995, capelin biomass has remained at a low level compared to late-1980s.

Scientific Council recommends no directed fishery on capelin in Div. 3NO in 2003.

Advice on TACs and Other Management Measures for the Years 2003 and 2004

Cod (Gadus morhua) in Division 3M

The cod stock on Flemish Cap is considered to be a discrete population.

Catches exceeded the TAC from 1988 to 1994, but were below the TAC from 1995 to 1998. Large numbers of small fish were caught by the trawl fishery in most recent years. By-catches were estimated to be low in the shrimp fishery since 1993. The fisheries since 1996 were very small compared with previous years. In 1999 the fishery was closed. Virtually all of the catch in 1999 was taken by vessels from non-Contracting Parties.

Year	Catch ('000 tons)		TAC('000 tons)	
	STACFIS	21A	Recommended	Agreed
1999	0.4	0.0	ndf	ndf
2000	0.1	0.0 ¹	ndf	ndf
2001	0.0	0.1 ¹	ndf	ndf
2002			ndf	ndf

¹ Provisional.

ndf No directed fishing.

An analytical assessment was presented. However, the analysis is strongly dependent on survey results at the current low levels of the commercial fishery.

The stock remains at a very low level. Given the absence of recruitment to the stock after 1992, little improvement in this stock can be expected in the foreseeable future.

It was recommended there be no directed fishery for cod in Div. 3M in years 2003 and 2004. Also, by catch of cod in fisheries directed to other species on Flemish Cap should be kept at the lowest possible level.

American Plaice (Hippoglossoides platessoides) in Division 3M

The stock occurs mainly at depths shallower than 600 m on Flemish Cap. The stock biomass and the SSB are at a very low level and there is no sign of recovery. It was recommended there should be no directed fishery on American place in Div. 3M in years 2003 and 2004 and by-catch should be kept at the lowest possible level.

Witch Flounder (Glyptocephalus cynoglossus) in Divisions 3N and 3O

The stock mainly occurs in Div. 3O along the deeper slopes of the Grand Bank. It has been fished mainly in winter and springtime on spawning concentrations. The stock remains at a low level.

It was recommended there be no directed fishing on witch flounder in the years 2003 and 2004 in Div. 3N and 3O to allow for stock rebuilding. By-catches in fisheries targeting other species should be kept at the lowest possible level.

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.

Stock size has increased over the past year and is perceived to be at a level well above that of the mid-1980s.

It was recommended that the total catches should not exceed 14 500 tons in 2003 and 2004. This corresponds to catch projections based on $F = 2/3 F_{msy}$ and an assumed catch of 14 300 tons in the year 2002. Scientific Council noted that catches have been about 10% higher than TACs during 1998-2001. In providing its advice, Scientific Council notes that the advice applies to all removals (directed plus by-catch). Scientific Council recommends that measures be put in place to ensure that total catches do not exceed the recommended levels.

Northern Shortfin Squid (Illex illecebrosus) in Subareas 3 and 4

Northern shortfin 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.

Based on survey biomass indices and mean body weights, in Division 4VWX, the Northern shortfin squid resource in Subareas 3+4 remained at a low level in 2001.

The Scientific Council is unable to advise on a specific level of catch for 2003 or 2004. 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 years 2003 and 2004, for Northern shortfin squid in Subareas 3+4, be set between 19 000 tons and 34 000 tons.

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

The Fisheries Commission requested: *For squid (Illex) in Subareas 3 and 4, the Scientific Council is encouraged to further analyze available data toward developing possible indicators that could be used under an in-season management regime.*

The Council responded:

In 2002, the Scientific Council reviewed a series of pre-fishery abundance and biomass indices from the Canadian spring bottom trawl survey in Div. 3LNO and Subdiv. 3Ps and concluded that these indices did not adequately characterize trends in *Illex illecebrosus* biomass. A comparative analysis of *Illex* and *Loligo pealeii* abundance in relation to environmental variables (SCR Doc. 02/40) was also reviewed, which indicated that correlations exist between some environmental variables and *Illex* abundance indices. However, further research is required before a reliable pre-season indicator of *Illex* abundance is available.

Special Requests by the Fisheries Commission for Management Advice

Relationship of witch flounder in Division 2J and 3KL to Division 3M

The Scientific Council concluded that:

- Witch flounder in Div. 3M in depths less than 730 m do not appear to be strongly linked with witch flounder in Div. 2J and 3KL.
- Witch flounder in the deep waters of Flemish Pass (>730 m) are likely to be closely associated with witch flounder along the slope of the Grand Bank in Div. 3L.
- Almost no witch flounder were observed in the northwestern part of Div. 3M in depths greater than 550 m.

Distribution of shrimp in Division 3M

The Council could not provide advice on this subject.

Pelagic *Sebastes mentella* in NAFO Subareas 1-3 and Adjacent ICES Area

The Fisheries Commission requested: *regarding pelagic S. mentella redfish in NAFO Subareas 1-3 Scientific Council is requested to review the most recent information on the distribution of this resource, 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 and to the shelf stocks of redfish found in ICES Sub-areas V, VI and XIV, and NAFO Subareas 1-3.*

The Council responded as follows:

At its September 2001 Meeting, Scientific Council reviewed the most recent information available on the distribution of pelagic *S. mentella* based on the July 2001 international acoustic survey (SCR Doc. 01/161). The Scientific Council's conclusions on this subject can be found in *NAFO Sci. Coun. Rep.*, 2001, pages 211-212.

Scientific Council noted that the issue of possible relationships between pelagic *Sebastes mentella* and demersal *Sebastes mentella* in the NAFO area has not been considered by the ICES Working Group.

Scientific Council concludes that the recent report of the ICES North-Western Working Group presents the best available summary of knowledge about the distribution of pelagic *Sebastes mentella* and its affinity to the shelf stocks in the relevant ICES area. Possible relationships between pelagic *Sebastes mentella* and shelf *Sebastes mentella* (demersal) have not been studied in the NAFO area, and no data adequate to address this question exist. No national funds have been committed to this research area at present. Additional funding for specific research studies would be needed in order to address this topic.

Scientific Council also noted the following as it pertains to the state of the pelagic *S. mentella* resource in ICES Sub-areas V, XII and XIV and the NAFO Convention area:

In the 2001 trawl-acoustic survey, as well as in that of 1999, the stock shallower than 500 m was observed more southwesterly and deeper than it has been during former acoustic surveys in the last decade. During the same period, a gradual increase in temperature in the observation area has

been observed. This may have influenced the distribution pattern of the redfish in June-July as the highest concentrations were found in the colder, i.e. southwestern part of the survey area. In June/July 2001, about half of the total acoustically estimated stock biomass was found in the NAFO Convention Area shallower than 500 m omitting the Canadian EEZ. Scientific Council noted that the surveys in 1999 and 2001 extended further to the south and west into the NAFO Convention Area and this may in past account for the perception of greater distribution to the west.

Since 1994, acoustic estimates of stock biomass show a drastic decreasing trend. The estimate was only 0.7 million tons in 2001, compared with 2.2 and 1.6 and 0.6 million tons in 1994, 1996 and 1999, respectively. This represents a reduction of about 1.5 million tons in the period. During the same period, the total catch has been about 800 000 tons. Therefore, the catch alone cannot explain the changes in the stock estimate. During the same period, the fishery has also developed towards greater depth and towards bigger fish, and in recent years, the majority of the catch has been caught at depths deeper than 500 m. Based on these results, the NWWG concluded that acoustic estimates cannot be considered accurate measures of relative changes in stock size of the upper layer fish, as availability may have changed during the surveyed period. Information suggests that fish inhabiting the upper layer may have migrated out of the surveyed area, both horizontally and vertically (deeper). Scientific Council agreed with this evaluation.

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 convert the trawl data at greater depths to acoustic values and subsequently to an abundance and biomass estimate. Standardized trawl hauls were carried out at different depth intervals, evenly distributed over the survey area. Data for the correlation calculations between trawl catches and the acoustic results were obtained during trawling only. In addition, scrutinized acoustic values were only taken from exactly the same position and depth range as covered by the trawl. Using this method, 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. In June/July 2001, one third of the biomass obtained with the trawl method of about 2 million tons was found in the NAFO Convention Area outside the Canadian EEZ. The NWWG considered that the low correlation between catch and the acoustic values used for abundance estimation and the assumption that catchability of the trawl is the same, regardless of the trawling depth, make the method questionable. Estimates based on these calculations both above and below 500 m depth, must be considered as a very rough measure with high uncertainty as the applicability of the method can only be verified after replicate measurements. The NWWG considered that the estimated abundance derived from the trawl data should be treated with great caution and they cannot be combined with the acoustic results. Scientific Council agreed with this evaluation.

In summary, Scientific Council concluded that a stronger statement should be made about the uncertainty in the stock status of pelagic *S. mentella* resource in ICES Sub-areas V, XII and XIV and the NAFO Convention Area, particularly for the considerations that the standardized CPUE series do not indicate significant stock reductions since 1995.

Distribution of shrimp in Divisions 3LNO

The Council responded that:

Canadian bottom trawl surveys indicate shrimp are widely distributed along the edge of the Grand Banks. However, the preponderance of shrimp is in NAFO Div. 3L. The biomass index increased from 5 921 tons in autumn of 1995 to 59 914 tons during autumn of 1998, remained

stable until spring of 2000, at which time it increased to 121 815 tons but then decreased to 103 451 tons the following spring.

Relative Seasonal Distribution, inside and outside the NAFO Regulatory Area

Over the study period, more than 90% of the biomass was found within Div. 3L, mostly within depths from 185 to 550 m. Over the six autumn surveys, the biomass within the NRA portion of Div. 3L ranged between 11 and 24% of the total Div. 3L biomass. During spring, shrimp in the NRA of Div. 3L contribute between 18-30% of the total Div. 3L biomass.

Divisions 3N and 3O accounted for less than 10 and 1% of the total Div. 3LNO biomass, respectively. Over 90% of the Div. 3N biomass was found in the Div. 3N NRA. However, Div. 3O shrimp catches were highly variable; therefore, between 5 and 85% of the Div. 3O biomass was found in the Div. 3O NRA.

The NRA accounted for between 12 and 31% of the total Div. 3LNO shrimp biomass.

Monitoring of Stocks for Which Multi-year Advice was Provided in 2001

The Scientific Council in 2001 provided 2-year advice (for 2002 and 2003) for three stocks (cod in Div. 3NO; redfish in Div. 3LN; and witch flounder in Div. 2J and 3KL). The Scientific Council reviewed the status of these three stocks at this meeting of June 2002, and found no significant change in status for any of the stocks. Therefore, the Scientific Council has not provided updated/revised advice for 2003 for these stocks. The next Scientific Council assessment of these stocks will be in 2003.

Request by Coastal States

Request by Canada for Advice

Greenland halibut in distribution in Subareas 0-3

The Council responded that:

The continuous distribution of the catches in the offshore surveys in Div. 0A-B and Div. 1A-D indicate that Greenland halibut in the area likely constitute a single stock. This has also been suggested by a few other studies but the basis for the hypothesis has not been fully evaluated.

The offshore surveys in 2001 showed that fish were generally smaller in the northern areas, compared to the southern areas indicating that Div. 0A and 1AB could act as recruitment area for Div 0B and 1CD.

The inshore fishery in the Uummannaq and Upernavik area is probably dependent on recruitment from the offshore area. A fishery in Div.0A and 1A (and Div. 1B) is likely to have an impact on the inshore fishery in Div. 1A and the offshore fishery in Div. 0B and 1CD, but the impact cannot be quantified.

Cod in Divisions 2J and 3KL

The Council responded:

The total and spawning biomass indices are both extremely low relative to historic levels.

The biomass index from the autumn survey in 2001 remained extremely low at only 2% of the average in the 1980s. Since 1999, the biomass index has remained more or less constant at a level that is less than 20% of that which was measured in the year in which the moratorium was declared. Furthermore, the biomass index from the spring bottom-trawl survey in Div. 3L is also currently much lower than the historical average. The biomass index increased from 1998 to 1999, then declined in 2000 and 2001. The Div. 3L biomass index in 2001 is less than 1% of the average in the 1980s.

A spawner index from the survey numbers using weights and proportion mature was not computed for the stock status update in 2002. However, the sentinel and commercial indices, as well as the tagging index, can serve as a proxy of mature biomass given the age ranges involved (commercial size fish). The sentinel and commercial indices were among the lowest observed in the time series for all areas. Based upon the tagging data, there is concern that a number of experiments resulted in exploitation rates that were calculated to be greater than 10% with one as high as 30% in 2001.

The only known over wintering aggregation of any significance throughout the entire stock area is found in Smith Sound, Trinity Bay. Acoustic studies have estimated this aggregation around 20 000 tons. Fish from this aggregation migrate seasonally out of the sound in the spring, mainly northward in Div. 3L and into southern Div. 3K, supporting most of the commercial fishery which has taken place in the autumn over the last three years.

For the stock status update, age specific mortality estimates were calculated for the autumn Div. 2J+3KL bottom-trawl survey for ages 1-14. The current levels of mortality rates are similar to or higher than those observed during periods when there was a substantial fishery.

Redfish in Div. 3O

The Scientific Council noted that there are two species of redfish that are fished in Div. 3O, *Sebastes fasciatus* and *S. mentella*. These species overlap in distribution and are very similar in appearance, which requires special techniques to separate in the catch. It is therefore unlikely that these will ever be properly separated in the fishery statistics and are not separated out in most research surveys. It is noted this pertains to the following:

The Scientific Council noted it is not possible to estimate fishing mortality for this stock. There is insufficient historical catch sampling for some fleets and no data for others to conduct analytical assessments. The Scientific Council noted that there is some doubt about the magnitude of actual catches reported from Div. 3O as it is not regulated by TAC in the Regulatory Area. Accepting this caveat and the observation that Canadian spring and autumn survey estimates of Div. 3O redfish are relatively stable in the last few years, the increase in catches in Div. 3O in recent years, particularly in 2001 at 20 000 tons, suggests that fishing mortality may have increased in 2001.

With regard to by-catches of other groundfish in the Div 3O redfish fishery, it was noted that based on the NAFO STATLANT 21B data for 1998-2000, Atlantic cod, American plaice, Greenland halibut, witch flounder, and yellowtail flounder constitute the major by-catch species in the directed redfish fishery in Div. 3O. The percentage of by-catch, calculated as the sum of by-catch for all species as a percentage of redfish catch, suggests that there are differences by fleet and by year, which ranged between 2% to 20% from 1998-2000. There were large differences between by-catch within the Canadian EEZ (at less than 3% each year) and by-catch within the NRA (between 12% to 20% annually depending on the fleet).

The Scientific Council noted the relative distribution inside and outside the NRA was determined based on Canadian survey data. As noted earlier, redfish reside primarily in the 100 m to 750 m depth zone. The area of redfish habitat in the NRA is about 496 square nautical miles compared to 5 515 square nautical miles inside the Canadian EEZ. This represents about 8.25% of the area. Based on spring survey data, the proportion of the redfish survey biomass in the NRA ranged from 1.4% to 37.9% with an average of about 12%. Based on the autumn surveys, the proportion ranges from 3.4% to 16.4% with an average of about 9%.

The Scientific Council noted there is insufficient information on which to base predictions of annual yield potential for this resource. Stock dynamics and recruitment patterns are also poorly understood. Catches have averaged about 13 000 tons since 1960 and over the longer timer, catches at this level do not appear to have been detrimental.

The Scientific Council noted the following information with regard to depth fished while directing for redfish by the primary fleets in 2001:

Canada:	65 m-450 m
EU/Spain:	200 m-600 m
EU/Portugal:	68 m-553 m
Russia:	300 m-600 m

Request by Denmark (Greenland) for Advice

The Scientific Council was requested by Denmark (Greenland) to provide advice for various stocks.

Roundnose grenadier (*Coryphaenoides rupestris*) in Subareas 0+1

The roundnose grenadier stock in Davis Strait is probably connected to other stocks in the North Atlantic. The stock component found in Subareas 0+1 is at the margin of the distribution area. Canadian and Russian surveys that covered both Subareas 0 and 1 showed that most of the biomass generally was found in Subarea 1.

Recommended TACs were at 8 000 tons in the period 1977-95. The advice since 1996 has been that the catches should be restricted to by-catches in fisheries targeting other species. There has been no directed fishery for this stock since 1978. An unknown proportion of the reported catches are roughhead grenadier (*Macrourus beglax*).

No analytical assessment could be performed.

The stock of roundnose grenadier is still at the very low level observed since 1993.

No reference points available.

It was recommended that there should be no directed fishing for roundnose grenadier in Subareas 0 and 1 in 2003-2005. Catches should be restricted to by-catches in fisheries targeting other species.

Monitoring of demersal redfish and other finfish in Subarea 1

The Scientific Council responded:

At its June 2001 Meeting Scientific Council provided 2-year advice for 2002 and 2003 for demersal redfish and other finfish (American plaice, Atlantic wolffish, spotted wolffish and thorny skate) in SA 1. The Scientific Council reviewed the status of these stocks at this June 2002 Meeting and found no significant changes in the status of these stocks. Therefore, Scientific Council has not provided updated/revised advice for 2003. The next Scientific Council assessment of these stocks will be in 2003.

Greenland Halibut (*Reinhardtius hippoglossoides*) in Division 1A, inshore

The inshore stock is dependent on the spawning stock in Davis Strait and immigration of recruits from the offshore nursery grounds in Div. 1A and 1B. 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 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. Age structure has also been stable although it consists of relatively few and younger age groups compared to before 1990.

Uummannaq: Abundance indices from 1993 to 1999 indicate an increase in abundance until 1999. In 2001 abundance index decreased significantly to a level observed in the mid-1990s. Since the mid-1990s age structure has moved towards younger and fewer age groups but has stabilized in recent years.

Upernavik: Abundance indices from 1993 onwards indicate a steady and significant decline. Since the mid-1990s age structure has 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.

Recommendation: Scientific Council still considers that separate TACs are appropriate for each of the three areas.

Assessments indicate that there has been no appreciable change in stock status in Disko Bay or Uummannaq. Scientific Council therefore reiterates its 2002 TAC advice for 2003 for each of the two areas to be: Disko Bay 7 900 tons and Uummannaq 6 000 tons.

For Upernavik Scientific Council advises that the 2003 TAC should be no more than 2 400 tons which is 25% below the 2001 catch. The justification for this reduction is a continued decline in survey indices since 1994 concurrent with a decrease in catches since 1998.

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. Catches increased to 13 000 tons in 2001, primarily due to increased effort in Div. 0A.

Year	Catch ('000 tons)		TAC('000 tons)	
	STACFIS	21A	Recommended	Autonomous
1999	10	17	11	11
2000	11	5 ¹	11	11
2001	13	8 ¹	15 ²	15
2002			15 ²	

¹ Provisional.

² Including 4 000 tons allocated specifically to Div. 0A and 1A.

The age composition in the catches has been stable in recent years. Although the survey series from Div. 1B-1D in 1987-95 is not directly comparable with the series from 1997-2001, the decline in the stock observed in these Divisions until 1994 has stopped. It now appears that the stock component in the traditional off shore fishing area is at the level of the late-1980s and early-1990s. Recent survey estimates from Div. 0B (2000-2001) have been of similar magnitude. Although biomass estimates from Div. 0A and Div. 1A are relatively high, the values cannot be put into any historical context.

Recommendation: Considering the relative stability in biomass indices and CPUE rates, the TAC for year 2003 should not exceed 11 000 tons for Div. 0B and 1B-1F.

At its 2000 meeting the Scientific Council advised a modest catch of 4 000 tons for Div. 0A + 1A based on a survey biomass estimate of 83 000 tons in Div. 0A. This was believed to generate a low F. The survey estimate for 2001 for Div. 0A + 1A combined is about double the previous value for Div. 0A alone. The Scientific Council therefore advises a catch in 2003 of 8 000 tons for Div. 0A + 1A. It is believed that this catch will generate a relatively low F.

Distribution of biomass of Greenland halibut between Subareas 0 and 1

The Council responded that:

Based on results from survey in Div. 0B and Div. 1CD in 2000 conducted by Canada and Greenland the biomass was estimated at 56 000 tons and 59 000 tons, respectively.

In 2001 Canada conducted two surveys covering Div 0A and 0B from which the biomass was estimated at 98 000 tons at 69 000 tons, respectively. The total biomass in SA 0 was hence estimated at 167 000 tons.

Greenland also conducted two surveys in 2001 covering Div. 1AB and 1CD, respectively. The biomass in Div. 1A was estimated at 50 000 tons and 12 000 ton in Div. 1B, which is adjacent to the southern part of Div. 0B. The biomass in Div. 1CD was estimated at 78 000 tons. The total biomass in Div. 1A-1D is hence estimated at 140 000 tons.

The surveys were conducted one after the other with same vessel and gear allowing comparison between the two Subareas.

Based on the surveys in 1987, 1988, and 1990 (*NAFO Sci. Coun. Rep.*, 1993 p. 98), the surveys in Div. 0B and Div. 1CD in 2000 and the surveys in 2001, the biomass seems to be distributed approximately 50:50 between the two Subareas 0 and 1.

RESEARCH ACTIVITIES AND COORDINATION

Scientific Surveys

Limited surveys were conducted during 2002 in the NAFO Regulatory Area, mostly by the Coastal States (Canada, Denmark-Greenland and USA), and the European Union (groundfish survey in Subarea 3). The USA research vessels were deployed in Subarea 4-6 (in 200-mile zone). The summary of biological surveys and sampling is presented in the Scientific Council Report (SCS Doc. 02/19, pp. 74-81).

Northwest Atlantic Survey Database

The virtual data centre developed by the Bedford Institute of Oceanography (BIO) was presented to STACREC at the June 2001 meeting and STACREC discussed the rationale for the development of a comprehensive North Atlantic Trawl Survey database. At that time representatives were asked to provide information on progress in their home institutes to STACREC in June 2002. STACREC noted that formal arrangements have developed between the BIO and the Northeast Fisheries Science Center, Woods Hole, Massachusetts (USA). A letter of intent has been submitted by these institutes to implement international standard network services for Canadian and USA research trawl databases.

BIO will initiate development of procedures to create metadata and datasets according to ANSI/NISO Z39.50 standards. Initially, BIO will develop and serve distribution and abundance data for 99 species presently displayed on the ECNASAP website, and ultimately, it is planned that data for over 400 species will be included.

Initiatives are also under development at the Northwest Atlantic Fisheries Centre, St. John's, Newfoundland (Canada) to eventually allow incorporation of survey data from the Grand Banks and Labrador Shelf into the virtual data centre. Participants were asked again to check with their institutes on interest in this database to inform STACREC of any developments.

NAFO Observer Protocol

In 1996 a pilot Observer Program was implemented with a requirement for 100% coverage on vessels fishing in the NAFO Regulatory Area. In 1999, STACTIC requested Scientific Council (STACREC) to define scientific requirements for the Pilot observer program in a harmonized format. An ad hoc Working Group of Scientific Council on Observer Data Harmonization worked inter-sessionally to prepare draft collection forms and associated documentation. The result, a series of 4 forms based on a harmonization of existing formats was presented to STACTIC in September 1999 (STACTIC WP 99/12). These forms were designed to capture the basic information as required for assessing removals from stocks in the regulatory area.

STACREC 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. Specifically, that Section 3.d of the Conservation and Enforcement Measures Part VI, Program for Observers and Satellite Tracking be amended to be consistent with the requirements of SCS Doc.00/23 in that set-by-set information shall be available to any Contracting Party that requests it.

STACREC recommended that the development of a training and operation manual for the collection of scientific data in the Program for Observers and Satellite Tracking continue, and that the Scientific Council be represented at the September 2002 STACTIC meeting to further pursue this issue.

STACREC recognizes that the development of harmonized data collection forms and protocols, while important, is only the first step. For this information to be usable, it must be available in the form of a properly structured relational database including input, storage and output elements to accommodate the data elements, and the resources to support such a system be made available on an ongoing basis. The database should be structured with the appropriate links and should provide timely access of the information to users. It was noted that without the data available in such an electronic format that it will not be possible for Scientific Council to respond to any requests requiring the analyses of Observer data.

Joint NAFO-ICES Working Group on Harp and Hooded Seals

It was expected that the working group would hold a 3-day workshop entitled "Harvest Modeling of Pinniped Populations" in February 2002. Due to logistical issues, the workshop did not take place as scheduled, and is now scheduled for February 2003 under a revised title. Thus, a "Workshop to Develop Improved Methods for Providing Harp and Hooded Seal Harvest Advice" will be held at the Northeast Fisheries Science Center in Woods Hole, MA, USA, on 11-13 February 2003.

During recent meetings, the Working Group discussed the need for a workshop to examine methods of modeling pinniped populations, with specific focus on North Atlantic harp and hooded seals. The Working Group has so far been unable to assess existing pinniped population models and decide upon a standardized series of models. At the proposed workshop, a variety of population models are to be presented and their performance evaluated under different scenarios concerning the availability of data and the degree of uncertainty expected. The Working Group notes that, as more information becomes available on the various harp and hooded seal stocks, there will be an increased need to standardize a suite of population models that can most effectively accommodate the range and type of data collected. Topics of the workshop will include, but not necessarily be limited to:

- A review of existing Working Group models.
- Comparison of other modeling regimes (e.g. the International Whaling Commission's Revised Management Procedure and the US Marine Mammal Protection Act) to the current Working Group approach.
- Approaches to the incorporation of density dependence into pinniped models.
- Use of simulation to test the assumptions implicit in model parameters.
- Comparison of age-aggregated *versus* disaggregated models, especially under scenarios where the age structure of the catch is highly skewed.
- Consider the applicability of biological reference points.

Scientific Council noted that the Workshop Conveners intend to draw upon a wide range of experts in the field of population modeling and pinniped biology. As such, the Working Group Chair requested that NAFO provide funds to assist some scientists with travel costs associated with the workshop. After considerable discussion, Scientific Council agreed that such funds could not be provided, but looked forward to learning about progress on this proposed Workshop.

Further Development of Precautionary Approach (PA) Methodology

Scientific Council discussed options for advancing further development of Precautionary Approach methodology. Several approaches were suggested including developing multi-species concepts, re-opening criteria, and additional measures to reduce exploitation on stocks, which are currently fished and those under moratorium.

Scientific Council agreed that a separate meeting devoted specifically toward advancing the PA methodology will be required. Although no specific time frame was identified, it is suggested that a Workshop be held in 2003. Topics to be addressed globally and for each stock must first be identified. Scientific Council recommended that in preparation for a Precautionary Approach Workshop in 2003, each Designated Expert is requested to identify data requirements and specific approaches for their stock and present the information for further discussion at the September 2002 Scientific Council Meeting. It was further recommended that \$5 000 be requested to fund travel costs for 2 invited experts to participate in a 2003 Workshop.

INTERNATIONAL COOPERATION

CWP Meeting, Rome, Italy, 21-22 March 2002

Discussions took place on a draft partnership agreement providing for international cooperation in the development and implementation of the Fisheries Resources Monitoring System (FIRMS), which will be part of the Fisheries Global Information System (FIGIS) being developed at FAO. This draft agreement was based on discussions held with some CWP members. It provides the basis for a working agreement between FAO and any Regional Fishery Body. Further discussions on this matter will continue through 2002 and perhaps during the 20th CWP Session. The proposed agreement when ready would be brought to Scientific Council by the Assistant Executive Secretary for review.

Proposed International Plan of Action (IPOA) on Status and Trends Reporting: The meeting reviewed the general nature and intent of the proposed IPOA to be discussed at the Technical Consultation on the issue to be held at FAO from 25th to 28th March 2002. The meeting noted the concordance of the aims and content of the IPOA with work for which the CWP is mandated, and recognized the importance of the opportunity for CWP to be represented at the Technical Consultation.

FAO Technical Consultation on Status and Trends, Rome, Italy, 25-28 March 2002

The Technical Consultation on Improving Information on the Status and Trends of Capture Fisheries was attended by 38 Members of FAO and by observers from one non-Member Nation of FAO. Observers from 13 FAO intergovernmental organization and international non-governmental organizations also attended the Consultation. NAFO was represented by the Assistant Executive Secretary.

The Council noted the Twenty-fourth session of COFI (Committee on Fisheries, FAO) held in February 2001 considered a proposal for improving reporting on the status and trends of fisheries. COFI had unanimously recognized that information on the status and trends of fisheries is fundamental to the mandate of FAO. Many COFI members supported development of an International Plan of Action (IPOA).

The Consultation revised the draft IPOA for Improving Status and Trends of Capture Fisheries to reflect the choice of a Strategy as the instrument to promote this initiative.



Participants at Scientific Council Meeting, 6-20 June 2002:

Back Row (left to right): D. W. Kulka, D. E. Stansbury, C. Darby, V. N. Shibanov, D. Power, R. Alpoim, W. R. Bowering, K. V. Gorchinsky, S. E. Lisovsky, B. P. Healey, D. Maddock Parsons, C. S. Simonsen, H. Murua, O. Jorgansen, A. Vazquez, P. Durán-Muñoz, L. Hendrickson, E. G. Dawe, J.-C. Mahé, D. Cross, W. B. Brodie, M. Stein

Front Row (left to right): R. K. Mayo, V. A. Rikhter, A. Avila de Melo, D. B. Atkinson, A. Nicolajsen,, K. Dwyer, T. Ichii, F. Gonzalez, E. A. Colbourne, M. J. Morgan, S. J. Correia, K. F. Drinkwater, T. Amaratunga

Missing from picture: A. Aglen, D. C. A. Auby, C. L. Kerr, B. L. Marshall, G. M. Moulton, A. Okhanov, D. C. Orr, K. Patterson, F. M. Serchuk, M. A. Treble



The Chairs, Scientific Council Meeting, 6-20 June 2002 (Left to Right):

R. K. Mayo, Chair Scientific Council

M. J. Morgan, Chair STACREC, M. Stein, Chair STACPUB

D. E. Stansbury, Chair STACFIS, E. B. Colbourne, Chair STACFEN



STACFIS in session during the 6-20 June 2002 Meeting.

Annex 1. List of Participants

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¹ Attended Mini Symposium on "Environmental Conditions in the NAFO Water of the Northwest Atlantic during the Decade of the 1990s" only.

Annex 2. Agenda

- I. Opening (Chairman: R.K. Mayo)
 - 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 2001
- III. Fisheries Environment (STACFEN Chair: E. Colbourne)
 - 1. Opening
 - a) Plan of work, appointment of rapporteur
 - 2. Chairman's Introduction; Report on Intersessional Activities
 - 3. Review of Recommendations in 2001
 - 4. Mini-symposium on Hydrographic Variability in NAFO Waters 1991-2000
 - 5. Review of Environmental Conditions
 - a) Marine Environmental Data Service (MEDS) Report for 2001
 - b) Review of environmental studies in 2001
 - i) Results from physical oceanographic studies
 - ii) Results from interdisciplinary studies
 - c) Overview of environmental conditions in 2001
 - 6. Long-term Environmental Indicators
 - a) Review of environmental indicators
 - b) Formulation of recommendations based on environmental conditions in 2001
 - 7. Environmental Indices (Implementation in the Assessment Process)
 - 8. Review of Trans-Atlantic Environmental Conditions
 - a) Review of hydrographic and larval studies
 - b) Establishing a study group
 - 9. The Production of a NAFO Annual Ocean Climate Status Summary
 - 10. Cooperative Research Programs
 - a) Russian/German assessment of short-term climate variations in the Labrador Sea
 - b) Other research programs
 - 11. National representatives
 - 12. Other matters
- IV. Publications (STACPUB Chair: M. Stein)
 - 1. Opening
 - a) Appointment of rapporteur
 - 2. Review of Recommendations in 2001
 - a) Recommendations in June
 - b) Recommendations in September
 - c) Reporting of catch statistics in Scientific Council Summary Sheets

3. Review of Publications
 - a) Publications
 - i) Journal of Northwest Atlantic Fishery Science
 - ii) NAFO Scientific Council Studies
 - iii) NAFO Statistical Bulletin
 - iv) NAFO Scientific Council Reports
 - v) Index and Lists of Titles
 - vi) Others
 - b) Review of mailing lists and continuation of printed copies
4. Production Costs and Revenues for Scientific Council Publications
5. Electronic Communication, Including NAFO Website
 - a) Public access areas of website
 - b) Password protected areas of website for Scientific Council
6. Promotion and Distribution of Scientific Publications
 - a) Invitational papers
 - b) NAFO website
 - c) Scientific Citation Index (SCI)
 - d) CD-ROM versions of reports, documents
 - e) New initiatives for publications
7. Editorial Matters Regarding Scientific Publications
 - a) Review of Editorial Board
 - b) Progress report of publication of 2000 workshop workbook
 - c) Progress report of publication of Symposium proceedings
8. Papers for Possible Publication
 - a) Review of proposals resulting from 2001 Meetings
 - i) Papers nominated by STACPUB
 - ii) Up-date since June 2001
 - b) Review of contributions to the June 2002 Meeting
9. Funding of Future NAFO Symposia
10. Other Matters
 - a) Highlights of Scientific Council Meeting
 - b) Other business

V. Research Coordination (STACREC Chair: M. J. Morgan)

1. Opening
2. Review of Recommendations in 2001
3. Fishery Statistics
 - a) Progress report on Secretariat activities in 2001/2002
 - i) Acquisition of STATLANT 21A and 21B reports for recent years
 - ii) Interagency data harmonization
 - b) CWP Sessions 2002/2003
 - i) Report on the CWP Intersessional Meeting, Rome, 21-22 March 2002
 - ii) CWP 20th Session, January 2003
 - Review of Agenda
 - New proposals

- c) Reporting of catch statistics in Scientific Council Summary Sheets

4. Research Activities

- a) Biological sampling
 - i) Report on activities in 2001/2002
 - 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 2001 (by National Representatives and Designated Experts)
 - ii) Surveys planned for 2002 and early-2003
 - iii) Northwest Atlantic Survey Database

5. NAFO Observer Protocol

- a) Report on STACTIC Intersessional meeting in May 2002
- b) Results of discussions on Conservation and Enforcement Measures
- c) Training manual
- d) Conversion of NAFO Observer Program data into electronic format

6. Review of SCR and SCS Documents

7. Other Matters

- a) Tagging activities
- b) Conversion factors
- c) Comparative fishing between Canada and EU-Spain
- d) Research activities
- e) Use of GRT vs. GT in recording effort data
- e) Other business

VI. Fisheries Science (STACFIS Chair: D. E. Stansbury)

1. Opening

2. General Review

- a) Review of recommendations in 2001
- 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 6-13 November, 2002):
 - Cod (Div. 3NO (monitor); Div. 3M)
 - Redfish (Div. 3LN (monitor); Div. 3M)
 - American plaice (Div. 3LNO; Div. 3M)
 - Witch flounder (Div. 2J and 3KL (monitor, see also Attachment 1, Item 7); Div. 3NO)
 - Yellowtail flounder (Div. 3LNO)
 - Northern shortfin squid (Subareas 3 and 4) (see also Attachment 1, Item 6)
 - Greenland halibut (Subareas 2 and 3)
 - Capelin (Div. 3NO)
- b) Analyses pertaining to other Fisheries Commission requests (Attachment 1)
 - Pelagic *S. mentella* (redfish) (Subareas 1-3)(Item 8)

- c) Stocks within the 200-mile fishery zone in Subareas 0 to 4, as requested by Canada (Attachment 2)
 - Greenland halibut in Subareas 0-3 (Item 1)
 - Cod in Div. 2J and 3KL (Item 3)
 - Redfish in Div. 3O (Item 4)
- 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, 6-13 November 2002):
 - Roundnose grenadier in Subareas 0 and 1 (3 year) (Item 2)
 - Demersal redfish and other finfish in Subarea 1 (monitor) (Item 1)
 - Distribution of Greenland halibut biomass between Subarea 0 and Subarea 1 (Item 3)
 - Greenland halibut in Div. 1A inshore (Item 3)
- e) Stocks overlapping the fishery zones in Subareas 0 and 1, as requested by Canada and by Denmark (Greenland) (Attachments 2 and 3) (Northern shrimp in Subareas 0 and 1 will be undertaken during Scientific Council Meeting, 6-13 November 2002):
 - Greenland halibut (Subareas 0 and 1) (Attachment 2, Item 1; Attachment 3, Item 3)

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 2003
 - i) Redfish in Div. 3M
 - ii) American Plaice in Div. 3LNO (see Item 2)
 - iii) Greenland halibut in Subareas 2 and 3
 - iv) Capelin in Div. 3NO
- b) Request for advice on TACs and other management measures for the years 2003 and 2004
 - i) Cod in Div. 3M
 - ii) American plaice in Div. 3M
 - iii) Witch flounder in Div. 3NO
 - iv) Yellowtail flounder in Div. 3LNO
 - v) Northern shortfin squid in Subareas 3 and 4 (see also Item 6)
- c) Special requests for management advice (see Items 4-9)
 - i) Formulation of advice under the precautionary approach (Items 4 and 5) (note: Working Group of (FC/SC) Technical Experts on Precautionary Approach Meeting, Dartmouth, 20-21 June 2002)
 - ii) Relationship of witch flounder in Div. 2J and 3KL to Div. 3M (Item 7)
 - iii) Distribution of shrimp in Div. 3M (see also Item 3g)

- iv) Pelagic *S. mentella* (redfish) in Subareas 1-3 and adjacent ICES area (Item 8)
(note: *Ad hoc* Working Group on Management of Oceanic Redfish Meeting, Dartmouth, 24-26 June 2002)
 - v) Distribution of shrimp in Div. 3LNO (Item 9)
 - d) Monitoring of stocks for which multi-year advice was provided in 2001
 - i) Cod in Div. 3NO
 - ii) Redfish in Div. 3LN
 - iii) Witch flounder in Div. 2J and 3KL (see also Item 7)
- 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) Redfish in Div. 3O (Item 4)
 - b) Request by Denmark (Greenland) for advice (Attachment 3)
 - i) Multi-year advice for Roundnose grenadier in Subareas 0 and 1 for 2003-2005 (Item 2)
 - ii) Demersal redfish and other finfish in Subarea 1 (monitor) (Item 1)
 - iii) Greenland halibut in Div. 1A inshore (Item 3)
 - c) Request by Canada and Denmark (Greenland) for advice on TACs and other management measures
 - i) Greenland halibut in Subareas 0 and 1
- VIII. Future Scientific Council Meetings 2002 and 2003
 - 1. Scientific Council Meeting and Special Session, September 2002
 - 2. Scientific Council Meeting, November 2002 (assessment of shrimp stocks)
 - 3. Scientific Council Meeting, June 2003
 - 4. Scientific Council Meeting and Special Session, September 2003
 - 5. Scientific Council Meeting, November 2003 (assessment of shrimp stocks)
- IX. Arrangements for Special Sessions
 - 1. Progress Report on Special Session in 2002: The Symposium on "Elasmobranch Fisheries"
 - 2. Topic for Special Session in 2003
 - 3. Topic for Special Session in 2004
- X. Reports of Working Groups
 - 1. Working Group on Reproductive Potential (Chair: E. A. Trippel)
 - 2. Joint NAFO-ICES Working Group on Harp and Hooded Seals
- XI. Review of Scientific Council Working Procedures/Protocol
 - 1. Implementation of Precautionary Approach
 - a) Report of the 2002 ICES PA Workshop
 - b) Further development of PA methodology
 - 2. NAFO Scientific Council Observership at ICES ACFM Meetings
 - 3. Website and Technology Issues
 - 4. Facilitating Workload of Scientific Council During Annual Meeting in September

XII. Other Matters

1. Report of CWP Intersessional Meeting, Rome, Italy, 21-22 March 2002
2. Report of FAO Technical Consultations on Status and Trends, Rome, Italy, 25-28 March 2002
3. Participation in FAO Committee on Fisheries (COFI)
4. Report on NAFO Intersessional Meetings
5. Meeting Highlights for NAFO Website
6. Other Business

XIII. Adoption of Committee Reports

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

XIV. Scientific Council Recommendations to General Council and Fisheries Commission

XV. Adoption of Scientific Council Report

XVI. Adjournment

**ATTACHMENT 1. FISHERIES COMMISSION'S REQUEST FOR SCIENTIFIC ADVICE
ON MANAGEMENT IN 2003 OF CERTAIN STOCKS IN SUBAREAS 3 AND 4**

1. The Fisheries Commission with the concurrence of the Coastal State as regards the stocks below which occur within its jurisdiction, requests that the Scientific Council, at a meeting in advance of the 2002 Annual Meeting, provide advice on the scientific basis for the management of the following fish and invertebrate stocks or groups of stocks in 2003:

Redfish (Div. 3M)
Shrimp (Div. 3M, 3LNO)
Greenland halibut (Subarea 2 and Div. 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 2002 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)
Yellowtail flounder (Div. 3LNO)
American plaice (Div. 3LNO; Div. 3M)
Witch flounder (Div. 2J3KL; Div. 3NO)
Squid (Subareas 3 and 4)

- In 2001, advice was provided for 2002 and 2003 for cod in 3NO, witch flounder in 2J3KL and redfish in 3LN. These stocks will next be assessed in 2003.
- In 2001, advice was provided for 2002 and 2003 for American plaice in 3LNO. The Fisheries Commission with the concurrence of the Coastal State, requests Scientific Council in advance of the 2002 Annual Meeting, to conduct a full analytical assessment of American plaice in Div. 3LNO and to review its advice for 2003. Scientific Council is further requested to analyse and comment on the precision of the estimates of the recent increase in fishing mortality. The next assessment will then take place in 2003 as per the alternate year schedule.
- In 2002, advice will be provided for 2003 and 2004 for cod in 3M, American plaice in 3M, yellowtail flounder in 3LNO, witch flounder in 3NO and squid in SA 3 & 4. These stocks will next be assessed in 2004.

The Fisheries Commission requests the Scientific Council to continue to monitor the status of all 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_{2001} in 2003 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 2003 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 stock (SSB)
 - an age or size-range chosen to represent the fishable stock biomass
 - 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 fishable stock.
- 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 shrimp in Div. 3M, including the area in footnote 1 of Part I, G of the Conservation and Enforcement Measures (the 3L 'box'), Scientific Council is requested, in advance of the annual NAFO Meeting of September 2002, to provide information on the monthly distribution of shrimp by size as taken in the commercial fishery and to comment on these distributions in relation to the closed area of Div. 3M as defined by co-ordinates in footnote 2 of Part I, G of the Conservation and Enforcement Measures and the consequences to the stock of the following scenarios: a) closure of the area during June 1 through December 31, and b) no closure at any time.
4. 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 2002 Annual Meeting of the Fisheries Commission for stocks under its responsibility requiring advice for 2003, or 2003 and 2004:

- 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.
5. 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} .
6. For squid (*Illex*) in Subareas 3 and 4, the Scientific Council is encouraged to further analyze available data toward developing possible indicators that could be used under an in-season management regime.

7. The Fisheries Commission, with the concurrence of the Coastal State, requests that the Scientific Council comment on the possible relationship of witch flounder in 2J3KL to that reported as caught in Div. 3M based on examination of all survey and biological data available.
8. Regarding pelagic *S. mentella* redfish in NAFO Subareas 1-3, the Scientific Council is requested to review the most recent information on the distribution of this resource, 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 and to the shelf stocks of redfish found in ICES Sub-areas V, VI and XIV, and NAFO Subareas 1-3.
9. With regard to shrimp in Divisions 3LNO, the Fisheries Commission, with the concurrence of the Coastal State, requests that the Scientific Council, in advance of the September 2002 Annual Meeting, provide information on the geographical distribution of this resource including the relative and seasonal distribution inside and outside the NAFO Regulatory Area by both Division and age group. With reference to the proposed closed area in the region of the South East Shoal in Div. 3N as referenced in FC Working Paper 02/10, Scientific Council is further requested to provide information on the abundance and distribution of shrimp in the area proposed for closure.

**ATTACHMENT 2. CANADIAN REQUEST FOR SCIENTIFIC ADVICE ON MANAGEMENT
IN 2003 OF CERTAIN STOCKS IN SUBAREAS 0 TO 4**

1. Canada requests that the Scientific Council, at its meeting in advance of the 2002 Annual Meeting of NAFO, subject to the concurrence of Denmark (on behalf of Greenland), provide advice on the scientific basis for management in 2003 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 2003. In particular, the Council is asked to advise on appropriate TAC levels separately for Division 0B+1B-F (offshore), 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.

Given that Greenland halibut in the offshore area of Division 0A+1A is currently being managed separately from the remainder of SA 0+1, the Scientific Council is requested to:

- a) provide an assessment of the status of the Greenland halibut stock component in Division 0A+1A;
- b) advise on an appropriate TAC level for 2003 for Greenland halibut in the offshore area of Division 0A+1A and any other management measures the Scientific Council deems appropriate to ensure the sustainability of the resource;
- c) comment on the relationship between Greenland halibut in the offshore area of Division 0A+1A and the remainder of SA 0+1 as well as the potential impact of any fishery in Division 0A+1A on stock development throughout SA 0+1; and
- d) outline the elements of a scientific program necessary to provide a detailed response to "c" above and the timeframe if such a program were implemented.

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 Shrimp and Greenland halibut in Subareas 0 and 1:

- 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_{2001} in 2003 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 2003 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 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 the total and spawning biomass based on the most recent stock status update.
4. With respect to redfish stock in Division 3O, the Scientific Council is requested provide the following:

- a) Information on the fishing mortality on redfish in Division 3O in recent years, as well as information on by-catches of other groundfish in the 3O redfish fishery;
- b) Information on abundance indices and the distribution of the stock in relation to groundfish resources, particularly for the stocks which are under moratorium;
- c) Information on the distribution of redfish in Division 3O, as well as a description of the relative distribution inside and outside the NAFO Regulatory Area;
- d) Advice on reference points and conservation measures that would allow for exploitation of this resource in a precautionary manner;
- e) Information on annual yield potential for this stock in the context of (d) above;
- f) Identification and delineation of fishery areas and exclusion zones where fishing would not be permitted, with the aim of reducing the impact on the groundfish stocks which are under moratorium, particularly juveniles;
- g) Determination of the appropriate level of research that would be required to monitor the status of this resource on an ongoing basis with the aim of providing catch options that could be used in the context of management by Total Allowable Catch (TAC); and
- h) Information on the size composition in the current catches and comment on these sizes in relation to the size at sexual maturity.

ATTACHMENT 3. DENMARK (GREENLAND) REQUEST FOR SCIENTIFIC ADVICE ON MANAGEMENT IN 2003 OF CERTAIN STOCKS IN SUBAREAS 0 AND 1

1. In the Scientific Council report of 2001 scientific advice on management of redfish (*Sebastes* spp.) and other finfish in Subarea 1 was given for 2002 and 2003. Denmark on behalf of Greenland, requests the Scientific Council to continue to monitor the status of these stocks annually and, should significant change in stock status be observed (e.g. from surveys), the Scientific Council is requested to provide updated advice as appropriate.
2. 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 in advance of the 2002 Annual Meeting, provide advice on the scientific basis for the management of Roundnose grenadier in Subarea 1 for 2003, 2004 and 2005.
3. 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.

4. Denmark, on behalf of Greenland, further requests the Scientific Council of NAFO before December 2002 to provide advice on the scientific basis for management of Northern shrimp (*Pandalus borealis*) in Subareas 0 and 1 in 2003, and as many years forward as data allow.

Further, the Council is requested to advise, in co-operation 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 2003, and as many years forward as data allow.

SYMPOSIUM ON ELASMOBRANCH FISHERIES: MANAGING FOR SUSTAINABLE USE AND BIODIVERSITY CONSERVATION

(Hosted by the NAFO Scientific Council, 11-13 September 2002)

The **Symposium** *Elasmobranch Fisheries: Managing for Sustainable Use and Biodiversity Conservation*, was held at the Galicia Congress and Exhibition, Santiago de Compostela, Spain, and was co-convened by D. W. Kulka (DFO, NAFO), J. A. Musick (VIMS, co-chair, IUCN Elasmobranch Species Specialist Group), M. Pawson (CEFAS) and T. Walker (MAFRI) during 11-13 September 2002. It was attended by 119 participants from Argentina, Australia, Brazil, Canada, Faroe Islands, France, Germany, Ireland, Italy, Mauritania, Mexico, Namibia, New Zealand, Portugal, Russia, Scotland, South Africa, Spain, Sweden, The Netherlands, United Kingdom, and United States of America.

The increased public awareness of the vulnerability of elasmobranch stocks and the impact of fishing over the past decade has led to a significant increase in the national and international fisheries management instruments directed toward this component. The recent history of international shark conservation and management initiatives and action plans for delivering conservation and sustainable use of elasmobranchs, particularly FAO's International Plan of Action (IPOA)-Sharks, was reviewed. Despite these initiatives, landing of and international trade in elasmobranchs has increased during the past decade. It was concluded that progress and commitment in all but a few fishing states has been less than adequate.

The Symposium considered current research, advances and impacts of elasmobranch fisheries in many different locations around the world in the context of four themes: Life History and Demographic Analysis; Stock Identity; Stock Assessment and Harvest Strategies and Biodiversity Maintenance. Three invited speakers addressed specific issues within the four sessions. In addition to the invited papers, the program comprised 53 oral presentations and 30 posters.

LIFE HISTORY AND DEMOGRAPHIC ANALYSIS

This session comprised 16 presentations: 8 focused on sharks, 4 on batoids, 2 on Chimaeras, and 2 were of a general nature concerning comparative life histories of elasmobranchs. Of the posters, 6 described life history aspects of batoids, 2 on sharks. The invited paper by J. A. Musick elaborated on the inherent vulnerability of elasmobranch fishes to over-harvesting and ultimately stock collapse because of their life history characteristics: slow growth, long lifespan, late maturation and low fecundity. These demographic parameters lead to low intrinsic rates of population increase, which in turn minimizes the rate of sustainable fishing mortality (F). Indeed, some species may be so constrained that even low levels of F may lead to negative population trajectories: exceptions are smaller species, which live in temperate or tropical environments.

A wide variety of subject matter was contained in the remaining session presentations. Among the papers presented was one on the application of life table models to Portuguese dogfish (*Centroscymnus coelolepis*). The author pointed out that matrix models in many instances might offer more insight into sustainable management of elasmobranch stocks than traditional assessment models.

The life history of the rabbitfish (*Chimaera monstrosa*) was documented. This species constitutes up to 15% of the discarded by-catch in deepwater trawl fisheries off Ireland.

Aspects of the reproductive biology of the thorny skate (*Amblyraja radiata*) was described in NAFO Division 3N. This large species apparently has slow growth and late maturity and limited

fecundity. Age, growth and reproduction in the lesser-spotted dogfish (*Scyliorhinus canicula*) were described off Ireland.

Density dependent compensation was investigated in the sharpnose shark (*Rhizoprionodon terraenovae*) in the Gulf of Mexico. This species is a small subtropical shark with relatively fast growth. The author found that growth rate increased and length and age at maturity decreased in response to increased fishing mortality.

Both fishery dependent and independent data sets were used to determine demographics and status of the dusky shark (*Carcharhinus obscurus*) in the western North Atlantic. The species takes 21 years to mature and has a 3-year reproductive cycle during which it produces around 8-10 young. This species has declined by 80-90%, and demographic modeling suggests that population recovery is in question even though the species is protected by recent fishing regulations.

Data from the literature were used to create stage-based population models with subsequent elasticity analysis to determine how mortality (M) and fertility (F) influence population growth rates (r) in elasmobranchs. The author found a negative association between species size and elasticity of fecundity and a positive relationship between size and elasticity of adult and juvenile stages. Information from similar analyses might be useful in determining management strategies.

Sonic telemetry was used with fixed receivers in a small bay in Florida to obtain direct estimates of natural and fishing mortality in neonate blacktip sharks (*Carcharhinus limbatus*). Both natural and fishing mortality were found to be very high (60-90%) for the first 15 weeks of life after which survivorship increased drastically.

In the ensuing discussion, several relevant points were raised:

1. Breeding age of elasmobranchs should be defined as the age at which females actually bear young or lay eggs, and not when ova begin to mature. This is especially relevant to demographic modeling.
2. Size selectivity of fishing gear may affect the growth curves that result from sampling the catch and may not actually represent growth in the general population.
3. More research is needed on the effect of density-dependent compensation on vital rates in elasmobranchs.
4. More research is needed to provide empirical estimates of natural mortality by age.
5. More research is needed on demographics, stock structure, habitat utilization and both ontogenetic and seasonal migrations in deepwater elasmobranchs.
6. Managers need to pay closer attention to life history differences among species taken in mixed species fisheries. In mixed fisheries, different life history characteristics among the catch components can be problematic. Large, slow growing, long-lived elasmobranchs may be depleted or locally extirpated while more productive fishes continue to drive the fisheries.

STOCK IDENTITY

This session comprised 13 papers and 5 posters covering approaches to stock identification in relation to assessment and management; movement patterns and spatial structure; distribution and related population biology; population genetics; and a fisherman's perspective on fishery developments. These papers indicated that, even in fisheries with a long history of exploitation and management, there is often a lack of information on the relationship between stock structure and those parts of a species' population that are subject to exploitation.

It was claimed in the paper introducing this session, that tagging studies, especially those providing information on scale and rate of dispersal and migrations and some ability to interpret why these are taking place, currently provide most of our knowledge on stock identity of elasmobranchs. This was borne out in the final paper, which stressed the complications that philopatry introduced both to knowledge of stock units and to our ability to interpret population trends and status from data representing only part of a self-supporting stock unit. Clearly, this provides a less than solid basis upon which to develop management actions, though development of spatial models that recognize these features in population structure, and in the patterns and evolution of fisheries, is a promising solution.

STOCK ASSESSMENT

Fourteen papers, presented orally, described fisheries and monitoring (4 papers) and highlighted a variety of assessment techniques applied to elasmobranch stocks (10 papers). The latter focused mainly on innovative modeling and assessment methodologies. Of the posters, 1 described biomass dynamics/catch effort trend analysis and 8 provided descriptions of fisheries or described development of elasmobranch assessment techniques.

Elasmobranchs often make up a significant component in fisheries directed for other species, particularly those prosecuted in deep water. This was illustrated in a study of the deep-water fisheries off Portugal. Portuguese dogfish (*Centroscymnus coelolepis*) and Leaf-scale Gulper shark (*Centrophorus squamosus*) made up the major part of total annual elasmobranch landings although a great deal of variation was observed among areas fished and fleets. Socio-economic implications were also discussed in the context of conservation vs. exploitation. Elasmobranch trawl fisheries in the Sicily Strait were also described. A monitoring program identified a complex catch including 26 species of elasmobranchs belonging to 11 families. *Raja batis* and several other unusual species (for the area) were reported to be common in the catches. Landings and discard amounts were estimated (more than half discarded) and depth relationships were given. Two fisheries for blue shark (*Prionace glauca*) were also described. Developments in a long-standing fishery off Baja California Mexico (dating back to the 1880's), namely new markets led to expansion of the fleet to larger vessels. Small vessels captured mainly juveniles while the larger vessels took larger fish. Moderate downward trends were observed. A recommendation for a new management unit was described. In the Bay of Biscay the value of careful monitoring practices was illustrated in a presentation describing a recently initiated experimental artisanal fishery. Fishery observers there recorded very detailed information on fishing locations and times, gears, species compositions and size and sex distributions in the catches. A dramatic drop in the CPUE over a short period (3 years) was observed.

In the ensuing discussion at the end of the session, it was stressed that elasmobranchs exhibit life history traits such as slow growth, low fecundity and extended gestation period. Further, it was suggested that deep water sharks are even more vulnerable to exploitation than orange roughy, a deepwater teleost well known to decline rapidly soon after the implementation of fisheries. Thus, stocks often declined before proper assessments could be conducted (i.e. availability of appropriate time series). Problems in assessing elasmobranchs related mainly to the non-availability of appropriate input data in addition to the rate at which these species decline once they are exploited. Combining species and gears was recognized as less than appropriate, yet in many cases, only aggregated data were available. It was suggested that a more pre-emptive management approach is required for elasmobranchs in the form of conservative measures (management plans that include immediate implementation of quotas and restrictions). The main issue is not the methods (generally quite sophisticated) used to assess elasmobranchs but rather data deficiencies and less than adequate management measures derived from the advice given (and the political will to implement same). The first key step is to improve the data through

enhanced monitoring programs, including ones that involve the fishers or employ independent observers.

HARVEST STRATEGIES AND BIODIVERSITY MAINTENANCE

Thirteen papers were presented relating to sustainable use, biodiversity conservation, and maintenance of ecosystem structure and function.

Sustainable use

Several papers were presented on the shark fishery of southern Australia. Together, they provided examples of fisheries where there is a long history of monitoring, biological research, stock assessment, and management. The invited speaker indicated that harvest strategies could be evaluated using deterministic models to capture the biology of the species taken and the dynamics of the fishery. Harvest strategies are evaluated in terms of performance measures that relate to average catches, catch variability, and resource conservation. The need for risk assessment as part of the assessment of fishery and good consultative processes engaging fishery managers, scientists, fishermen, and other stakeholders were emphasized. The fishery of southern Australia demonstrates that, with the one important exception of the school shark (*Galeorhinus galeus*), the target, by-product, and by-catch of chondrichthyan catches by gillnets and longlines in the fishery are sustainable. School shark was identified as having very low productivity and in need of tight fisheries management.

Attention was drawn to the need to give special protection to both pre-recruits and breeding animals in a harvested population. It was demonstrated that the mesh size used in a fishery could be tuned to minimize the impact on small sharks and large sharks. Choice of mesh size is a balance between the efficient take of target species and minimizing by-catch. It was also argued that closed areas are probably the only available method of conserving of some species. One paper drew attention to the value of fin trade data in Hong Kong. Whereas the data appear to be incomplete, careful application of raising factors to available numbers of fins in batches of known weight for known species (recorded by traders or determined from genetic testing) make it possible to estimate number of sharks killed.

Biodiversity conservation

Around the world, much of the chondrichthyan catch is reported as 'unspecified species' or is not reported at all. Several papers reported progress on evaluation of by-catch and by-product species through on-board observers during normal commercial fishing operations. Other papers reported progress on catch evaluation from fishery-independent trawl, longline, and gillnet surveys, or experimental fishing. Data were presented that indicate by catch of chondrichthyans can be reduced by the application of Turtle Exclusion Devices and other by-catch Reduction Devices.

There is an awareness that it is not feasible to undertake a detailed assessment of every species and that there is a need to apply rapid assessment techniques to identify those species at high risk and in need of special management or protection. Application of this approach was presented for northern Australia where species were compared on the basis of biological productivity and catch susceptibility. Biological productivity and catch susceptibility were quantified on the basis of various biological attributes (e.g. longevity, fecundity, proportion breeding, distribution in relation to the fisheries, position in water column in relation to the fishing gear).

Ecosystem structure and function

It was shown that most trawl, longline, and gillnet fisheries catch large numbers of chondrichthyan species and the number of animals taken varies greatly between species. In general, a small number of species dominate the catch. Chondrichthyans are clearly important in the ecosystem and some are apex predators. It also appears, in some regions at least, that the biggest animals in the ecosystem tend to be chondrichthyans.

Surveys of catches from the artisan fisheries of the coastline from Sierra Leone to Ghana indicate that the assemblages of the chondrichthyan fauna change from inshore across the continental shelf and down the continental slope. Another survey with trawl and longlines off the eastern and western coasts of Ireland indicate that dogfishes form the dominant species on the slope and that the predominance of dogfishes on the slope increases with increasing depth. Similarly, as indicated by a poster presentation, the dogfishes were much more significant in the fish communities of the deeply submerged seamounts than those of the more shallowly submerged seamounts of the Sierra Leone Rise in the Gulf of Guinea.

An ecosystem model for the Cantabrian Sea using ECOPATH was presented that incorporates fish biomass estimates, biological parameters, stomach contents data, and catches and discards. The model also includes the trophodynamics of phytoplankton, zooplankton, benthos, and demersal and pelagic communities. The model was used for evaluating the effects of various fishing gears and closed areas on chondrichthyan populations and catches. Other papers highlighted the complex spatial, temporal, and depth effects of stomach contents of sharks.

CONCLUSION

Considerable attention has been focused on elasmobranchs and their exploitation in recent years in various parts of the world. The Council was introduced to some general issues generated from the discussions at the symposium:

1. Elasmobranchs are generally more vulnerable to exploitation and are slower to recover than other fish species due to life history characteristics such as slow growth and low fecundity. Deep-water sharks are particularly vulnerable.
2. Of particular concern in the catch of elasmobranchs with low intrinsic rates of increase in the mixed species fisheries driven by other fish species which are more productive. In some cases, the less common elasmobranchs may be extirpated while the target fishery remains viable.
3. Information for the management of elasmobranch stocks needs to be greatly improved. Unrestricted fishing with less than effective monitoring, management and controls is typical for many of the world fisheries.
4. Increased public awareness of the vulnerability of elasmobranch stocks and the impact of fishing over the past decade has led to a significant increase in the national and international fisheries management instruments directed toward this group, although many remain poorly implemented.

Many of these points were reiterated throughout the various theme sessions. In addition, participants at the 2002 NAFO Symposium on Elasmobranch Fisheries call for:

- NAFO to establish effective management measures for thorny skate and direct the NAFO Scientific Council to investigate the status and management needs of other elasmobranchs in NAFO waters;

- Fishing nations, regional fishery management organizations, and FAO to increase investment in elasmobranch biological and fishery research and management;
- NAFO and all fishing nations, even in the absence of complete fishery data, to implement precautionary quotas and measures to reduce by-catch for particularly vulnerable species;
- All shark-fishing nations, but especially the major fishing nations, to produce a National Plan of Action for their elasmobranchs;
- FAO and developed countries to provide the technical expertise to assist developing nations in the preparation of their National Plan of Action and the assessment and management of fisheries taking sharks.

Scientific Council Annual Meeting

Santiago de Compostela, Spain, 16-20 September

Chairman: W. B. Brodie (Canada)

Rapporteur: T. Amaratunga, Assistant Executive Secretary

The Scientific Council met at the Galicia Congress and Exhibition Centre in Santiago de Compostela, Spain, during 16-19 September 2002. Representatives attended from Canada, Denmark (in respect of Faroe Islands and Greenland), Estonia, European Union (France, Germany, Portugal and Spain), Iceland, Japan, Russian Federation and United States of America (Annex 1).

The Provisional Agenda was adopted as presented, noting some additional items will be addressed by Standing Committees (Annex 2).

FISHERIES SCIENCE

Presentation of Age-aggregated Survey Indices of Abundance and Biomass in STACFIS Reports

STACFIS considered the issue of how to present indices of abundance from surveys in a standard manner in its reports. Currently, these data are presented in a number of different ways. Forms of presentation are histograms and line graphs, population measures are abundance and biomass, and computational methods are swept area estimates, mean per tow, and model results.

STACFIS agreed that mean number or weight per tow was preferred over swept area estimates. Presenting the latter as indices in numbers of fish or biomass in tons has caused confusion between these measures and population estimates from models such as sequential population analysis. The calculation of actual area swept by the trawl is a key parameter in the swept area method, and it is not clear for some survey trawls whether door spread or wingspread should be the measure used. For some stocks, indices of abundance and biomass from surveys are several times larger than population estimates from SPA. It was noted that mean per tow indices, particularly when a stock area consists of more than one NAFO Division, are not currently presented in many assessments, and will require some work to calculate and compile. Whenever possible, indices should continue to be presented in SCR Documents as series disaggregated by Division.

Review of SCR and SCS Documents

STACFIS reviewed a paper on "Biomass Partitioning and Catch History Summary". The paper provided considerable information on distribution with respect to the 200-mile limit, and catch histories. However, it was noted that there was insufficient time to deal adequately with material presented.

It was requested that a revised version of the paper be presented to the STACFIS Meeting of June 2003 and that the new version include a time series of the biomass proportion estimates and that seasonal patterns be examined comparing spring and autumn surveys. Also, it was suggested to remove NAFO Subdiv. 3Ps from all the calculations and provide a Table of maximum depth surveyed in each year. Concern was expressed about the utility of this work if distribution of the stock extends beyond Div. 3LNO.

RESPONSE TO SPECIAL REQUEST FROM FISHERIES COMMISSION

Distribution of Shrimp in Division 3M

The Fisheries Commission had submitted to the Council: *for shrimp in Div. 3M, including the area in footnote 1 of Part I, G of the Conservation and Enforcement Measures (the Div. 3L 'box'), Scientific Council if requested, in advance of the annual NAFO meeting in September 2002, to provide information on the monthly distribution of shrimp by size as taken in the commercial fishery and to comment on these distributions in relation to the closed area of Div. 3M as defined by coordinates in footnote 2 of Part I, G of the Conservation and Enforcement Measures and the consequences to the stock of the following scenarios: a closure of the area during June 1 through December 31, and b) no closure at any time.*

The Council at this meeting responded:

In 1999 the Fisheries Commission requested Scientific Council to evaluate whether closure of the shallow part of the Flemish Cap for shrimp fisheries (approximately delineated by the 140 fathom depth contour) would be a precautionary-based measure. The Fisheries Commission agreed in September 2000 to endorse a closure for June- September in 2001. The Scientific Council was unable to assess the effect of the area closure with respect to the Precautionary Approach but on the issue of the appropriateness of the area and timing Scientific Council recommended a whole year closure at the meeting of November 2000.

Monthly distributions of shrimp by size from the Icelandic fishery have now been analyzed. Small shrimp (two year olds) were generally more abundant in shallow water (<140 fm) in all months of the year. On average the proportion of two year olds in catches were twice as large in the shallow water compared to deeper water. The multiparous females were more abundant in deeper water (>140 fm) in all months except March and April (around hatching time) when they were more abundant in shallow water.

As the two year olds grow, within the year catchability increases and the proportion of two year olds in the catch doubles or triples from the period January to May to the period June to December. Historically catches in shallow water were larger in the period January-May (13.4%) compared to June-December (5.5%).

Therefore, if the area were closed, 12.4% of two year olds would be saved in January- May as compared to only 2.9% in June-December. However, in the event of targeting good year-classes of small shrimp a closure would save a larger proportion of the two year olds.

RESEARCH COORDINATION

Russian Research Programme 2003-2004

The following schedule of proposed Russian research activities in the NAFO Regulatory Area (NRA) in 2003 and 2004 was presented. STACREC noted that a part of the Russian national quota would need to be allocated in order for these research surveys to be conducted.

Inventory of Russian research activities proposed in the NRA in 2003-2004

Period/Months	Research Program	Number of vessels	Area
April-May	Random-stratified multi-species demersal fish trawl survey	1	3M
March-August	Random-stratified bottom trawl shrimp survey and assessment of juvenile fish by-catches in the shrimp fishery	1	3M
April-June	Random-stratified Greenland halibut bottom trawl survey in NAFO Regulatory Area	1	3LMNO
June-July (2003 only)	Trawl-acoustic survey of pelagic Redfish in NAFO Regulatory Area (in frames of ICES international TAS)	1	1F, 2+3K
March-September	Selectivity of fishing gears for demersal Redfish	1	3M
July-November	Selectivity of fishing gears and investigation of biology and seasonal distribution of pelagic Redfish	5	1F, 2+3K
January-December	Selectivity of fishing gears for Greenland halibut	1	3LMNO

Fisheries Statistics

Acquisition of STATLANT 21A and 21B Reports for recent years

The Assistant Executive Secretary outlined the status of the STATLANT data submissions. Since the June 2002 meeting of STACREC, STATLANT 21A data for 2001 were received from E/DEU, and STATLANT 21 B data were received from EST, E/DNK, E/DEU, E/PRT, POL, and RUS. Greenland was added to the list of countries that have not submitted STATLANT 21A or 21B data for 2001.

Publication of statistical information

STACREC noted that the FISHSTAT Plus program issued by FAO for STATLANT 21 data, and now available on the NAFO website, cannot be used at present to access data for 2001 as well as some data for 2000. The EUROSTAT representative reported that there were some problems with the user support provided by FAO for this software.

Review of FAO Fisheries Global Information System (FIGIS)

STACREC reviewed a draft partnership agreement concerning development and maintenance of the Fisheries Resources Monitoring System (FIRMS) within FAO's Fisheries Global Information System (FIGIS). FIRMS is a web-based collection of data on global fishery resource status and trends, including areas covered by regional fishery bodies (RFBs) such as NAFO. It is proposed that RFBs provide the necessary data for this system. STACREC noted several concerns with this approach, including workload issues for the Secretariat as well as Scientific Council, questions on maintenance of data and preserving the wording of scientific advice, possible involvement of some national agencies, and level of support provided by FAO. This system is being developed by FAO

and further discussion will be required in STACREC as well as in other Committees within NAFO before specific recommendations concerning this project can be made.

FUTURE MEETING ARRANGEMENTS

Scientific Council Meeting on Shrimp, November 2002

The Council noted its meeting on northern shrimp will be held 6-13 November 2002 in Nuuk, Greenland. The Provisional Agenda, meeting dates and site were circulated to Contracting Parties in accordance with the Scientific Council Rules of Procedure, on 6 September 2002.

Scientific Council Meeting, June 2003

The Council was informed that the Alderney Gate venue in Dartmouth has informed the Secretariat of other commitments during the period 28 May to 2 June 2003. This conflict with the Scientific Council Meeting dates of 29 May to 12 June 2003 that the Council had agreed to earlier. Recognizing the suitability of venue, the Council discussed and agreed to re-schedule the meeting to 5 June to 19 June 2003. The meeting will now be held at the Alderney Landing, 2 Ochterloney Street, Dartmouth, during 5-19 June 2003.

Precautionary Approach Workshop, Spring 2003

The Council agreed to conduct a Workshop on the Precautionary Approach during 31 March to 4 April 2003 in St. John's, Newfoundland, Canada.

Special Session and Annual Meeting, September 2003

The Council noted that the Annual Meeting will be held during 15-19 September 2003, and the Scientific Council Special Session, the Workshop on Geostatistics Methods is scheduled for 10-12 September 2003. The meetings will be held in Dartmouth, Nova Scotia, Canada.

Scientific Council Meeting on Shrimp, November 2003

The Council noted the meeting on northern shrimp would be held during 5-12 November 2003. The venue will be determined during the November 2002 Meeting.

Scientific Council Meeting, June 2004

The Council agreed to the date 3-17 June 2004 for this meeting to be held at the Alderney Landing, Dartmouth, Nova Scotia, Canada.

SCIENTIFIC COUNCIL WORKING PROCEDURES AND PROTOCOLS

Timetable and Frequency of Assessments

The following schedule of Scientific Council assessments reflects decisions that some stocks should be reviewed on a multi-year basis, with monitoring during the interim years. The basis for the monitoring evaluation varies among stocks. Scientific Council has not yet determined a consistent analytical basis for an interim monitoring evaluation of the stocks under multi-year schedules. A formal delineation of the basis will be discussed at the June 2003 Scientific Council Meeting.

Since 1999, the Scientific Council has agreed to the following overall schedule (+ is assessment year, *i* is interim monitor, 0 no assessments) subject to the Fisheries Commission requests for advice and concurrence:

Stock	1999	2000	2001	2002	2003	2004	2005
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Current schedule

Multi-year Assessments

American plaice in Div. 3LNO	+	<i>i</i>	+	+	+	<i>i</i>	+
Cod in Div. 3NO	+	<i>i</i>	+	<i>i</i>	+	<i>i</i>	+
Redfish in Div. 3LN	+	<i>i</i>	+	<i>i</i>	+	<i>i</i>	+
Witch flounder in Div. 2J3KL	+	+	+	<i>i</i>	+	<i>i</i>	+
Redfish in Div. 3M	+	+	+	+	+	<i>i</i>	+
Roughhead grenadier in SA 2+3	+	+	<i>i</i>	0	+	<i>i</i>	+
Redfish in SA 1	+	<i>i</i>	+	<i>i</i>	+	<i>i</i>	+
Other finfish in SA 1	+	<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>
Yellowtail flounder in Div. 3LNO	+	+	+	+	<i>i</i>	+	<i>i</i>
Squid <i>Illex</i> in Subareas 3 and 4	+	+	+	+	<i>i</i>	+	<i>i</i>
Roundnose grenadier in SA 0+1	+	<i>i</i>	<i>i</i>	+	<i>i</i>	<i>i</i>	+

Annual Assessments

Greenland halibut in SA2 and Div. 3KLMNO	+	+	+	+	+	+	+
Northern Shrimp in Div. 3M	+	+	+	+	+	+	+
Northern Shrimp in Div. 3LNO	+	+	+	+	+	+	+
Northern Shrimp in SA 0+1	+	+	+	+	+	+	+
Northern Shrimp in Denmark Strait	+	+	+	+	+	+	+

Scientific Council's Additional Schedule

Capelin in Div. 3NO	+	+	+	+	+	<i>i</i>	+
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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. However, the Fisheries Commission requested that a full assessment of American plaice in Div. 3LNO be conducted in 2002.

Based on its life history, capelin in Div. 3NO should be assessed on an annual basis. However, the Council concluded that insufficient data exist to reliably determine annual changes in abundance. Until sufficient data are available the stock will be assessed on a multi-year basis.

Cooperation with ICES

1. The Scientific Council considered a proposal presented by the Executive Secretary to develop a Memorandum of Understanding (MoU) with ICES and referred to it by General Council.

Scientific Council noted that it has had a long-standing working relationship with ICES in many scientific activities of mutual interest. The Council at present continues to work effectively with ICES, e.g. Scientific Council nominees attending ACFM Meetings of ICES, a Joint NAFO/ICES Working Group on Harp and Hooded Seals, conducting co-sponsored Symposia, etc. Under the circumstances Scientific Council is unclear as to the incremental benefits that would accrue through a formal document such as a MoU. It was accordingly decided there is not any need for a formal MoU at this stage. Scientific Council, however, agreed this matter could be considered at a later date based on any additional documentation that may be prepared outlining, in more detail, the benefits and advantages of any MoU.

2. ICES is expected to hold 2 meetings on the Precautionary Approach in the upcoming year. The Study Group on the Further Development of the Precautionary Approach to Fishery Management (SGPA) is scheduled to meet during 2-6 December 2002 to complete technical guidelines for revision of PA reference points. Following this meeting, a Study Group on Precautionary Reference Points for Advice on Fishery Management will meet during 24-28 February 2003 to propose revisions of the reference points currently in use by ACFM based on the guidelines developed at the 2-6 December 2002 SGPA meeting. Both meetings will take place at ICES headquarters.

ICES has invited NAFO to send an observer to each meeting. After careful consideration of the focus of each meeting, the Scientific Council selected Jean-Claude Mahé (EU) to represent the Scientific Council at the 2-6 December 2002 SGPA Meeting, and Ray Bowering (Canada) to represent Scientific Council at the 24-28 February 2003 Meeting.

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NAFO SECRETARIAT AT THE ANNUAL MEETING

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

Annex 2. Agenda

- I. Opening (Chair: R.K. Mayo)
 - 1. Appointment of rapporteur
 - 2. Adoption of agenda
 - 3. Attendance of observers
 - 4. Plan of work (Annex 1)
- II. Review of Scientific Council Recommendations from June 2002
- III. Fishery Science (STACFIS Chair: D.E. Stansbury)
 - 1. Opening
 - 2. Nomination of Designated Experts
 - 3. STACFIS Working Procedures
 - 4. Other Matters
 - a) Review of SCR and SCS documents (if necessary)
 - b) Other business
- IV. Research Coordination (STACREC Chair: M.J. Morgan)
 - 1. Opening
 - 2. Fisheries Statistics
 - a) Progress reports on Secretariat activities
 - i) Acquisition of STATLANT 21 data
 - ii) Publication of statistical information
 - 3. Review of FAO Fisheries Global Information System (FIGIS)
 - 4. NAFO Observer Program Protocols
 - 5. Fleet Based Approaches to Data Collection
 - 6. Review of Survey Activities in 2003 and 2004
 - 7. Other Matters
 - a) Review of SCR and SCS documents (if necessary)
 - b) Other business
- V. Publications (STACPUB Chair: M. Stein)
 - 1. Opening
 - 2. Review of recommendations from June 2002
 - 3. Review of Scientific Publications
 - a) Papers from June 2002 meeting
 - b) Status of the 2001 "Deep Sea Fisheries" Symposium proceedings
 - c) Information from the 2002 Elasmobranch Symposium
 - d) Status of invitational papers (Journal/Studies)
 - e) Other Reviews
 - 4. Consideration of NAFO Website
 - a) Status of implementation of Journal and Scientific Council Studies on website
 - b) "Restricted site" for Scientific Council
 - 5. Editorial Matters Regarding Scientific Publications

6. Other Matters
- VI. Response to Special Requests from Fisheries Commission
 1. Distribution of shrimp in Div. 3M (note: Scientific Council at its 6-20 June 2002 Meeting deferred this item) *
- VII. Review of Future Meeting Arrangements
 1. Scientific Council Meeting on shrimp, November 2002
 2. Scientific Council Meeting, June 2003
 3. Precautionary Approach Workshop, Spring 2003
 4. Special Session and Annual Meeting, September 2003
 5. Scientific Council Meeting on shrimp, November 2003
 6. Scientific Council Meeting, June 2004
- VIII. Future Special Sessions
 1. Progress Report on Geostatistics Workshop, September 2003
 2. Proposal for Special Session 2004
- IX. NAFO Working Groups or Workshops
 1. Update on activities of NAFO WG on Reproductive Potential
 2. Precautionary Approach Workshop, 2003
 - List of stocks to be examined
 - Development of Terms of Reference
 - Meeting Venue and Dates
- X. Scientific Council Working Procedures and Protocol
 1. Timetable and frequency of assessments for the following stocks:
 - Capelin in Div. 3NO
 - Roundnose grenadier in Subareas 2 and 3
- XI. Other Matters
 1. Consideration of MoU with ICES
 2. Participation at ICES Precautionary Approach Meetings
 3. Other business
- XII. Adoption of Reports
 1. Consideration of Report of the Symposium on Elasmobranch Fisheries, 11-13 September 2002
 2. Committee Reports STACFIS, STACREC, STACPUB
 3. Report of Scientific Council
- XIII. Adjournment

* The Fisheries Commission (SCS Doc. 02/1) requested the Scientific Council to provide advice on the scientific basis for management in 2003 of Shrimp in Div. 3M, and additionally,

(Item 3g): "For shrimp in Div. 3M, including the area in footnote 1 of Part I, G of the Conservation and Enforcement Measures (the 3L 'box'), Scientific Council is requested, in advance of the annual NAFO Meeting of September 2002, to provide information on the monthly distribution of shrimp by size as taken in the commercial fishery and to comment on these distributions in relation to the closed area of Div. 3M as defined by co-ordinates in footnote 2 of Part I, G of the Conservation and Enforcement Measures and the consequences to the stock of the following scenarios: a) closure of the area during June 1 through December 31, and b) no closure at any time."

Scientific Council Meeting Nuuk, Greenland, 6-13 November

Chairman: R. K. Mayo (USA)

Rapporteur: T. Amaratunga, Assistant Executive Secretary

The Scientific Council met at Greenland Institute of Natural Resources, Nuuk, Greenland, during 6-13 November 2002. Representatives attended from Canada, Denmark (in respect of Faroe Islands and Greenland), Iceland, Russian Federation and United States of America (Annex 1).

The Provisional Agenda was adopted (Annex 2).

FISHERIES SCIENCE

Northern Shrimp (Pandalus borealis) in Division 3M

The shrimp fishery in Div. 3M began in late-April 1993. Initial catch rates were favourable and, shortly thereafter, vessels from several nations joined. Since 1993 the number of vessels ranged from 46-110, and in 2002 there were approximately 40 vessels fishing shrimp in Div. 3M.

Year	Catch ('000 tons)		TAC ('000 tons)	
	STACFIS	21A	Recommended	Agreed
1999	43	42	30	er
2000	50	49 ¹	30	er
2001	54	39 ¹	30	er
2002	51 ²	38 ¹	45	er

¹ Provisional.

² Projected to end of 2002.

er Effort regulations.

No analytical assessment is available and fishing mortality is unknown. Evaluation of stock status is based upon interpretation of commercial fishery and research survey data.

Scientific Council was unable to estimate absolute stock size. Stock size indicators have been fluctuating without a trend since 1998 at a higher level compared to 1994-97. The 1997 year-class was above average in 2002, but its contribution to the fishery will diminish after 2003. The 1999 year-class is above average and will be contributing to the fishery in 2003 and 2004. However the 1998 and 2000 year-classes appear to be weaker.

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 strength of the 1997 year-class and the re-evaluation of the strength of the 1999 year-class in the current assessment to above average and that the 1999 year-class is expected to be the main contributor to the catch biomass in 2003 and 2004, the Scientific Council advises a catch of 45 000 tons for 2003 and 2004. Advice for the 2004 fishery will be reviewed at the September 2003 Scientific Council Meeting, when results from the 2003 summer surveys will be available.

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.

Year	Catch ('000 tons)		TAC ('000 tons)	
	STACFIS	21A	Recommended	Agreed
1999	1	1		
2000	5	5 ¹	6	6
2001	11	5 ¹	6	6
2002	NA	NA	6	6

¹ Provisional.
na Not available.

No analytical assessment is available. Evaluation of the status of the stock is based on interpretation of research survey indices and biological data.

The 1998 and 1999 year-classes are the two largest year-classes in the short time series.

No estimates of fishing mortality were available. An exploitation index was around 2-3% in 1998-99 and increased to 11-13% in 2000-2001.

There was a significant increase in total biomass between 1995 and 1997, a period of stability between 1997 and 1999 and a significant increase thereafter.

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 have increased significantly since 1999 and at present are the highest observed. In addition the stock appears to be well represented by a broad range of size groups, and exploitation is low.

For the Div. 3K to southern Div. 2J stock, the ratio of TAC to lower 95% confidence interval on biomass has remained around 11-15%, and there was a steady increase in biomass and TACs during the late-1990s. Scientific Council noted that there have been significant increases in biomass and recruitment in the Div. 3LNO stock since 1999. Applying a 15% exploitation rate to the lower 95% confidence interval of the biomass estimates, averaged over the last four surveys (autumn 2000-2001, spring 2001-2002), results in a catch of about 13 000 tons. Scientific Council considered that this was a prudent approach to advising an increased TAC, and therefore recommends that the TAC for shrimp in Div. 3LNO in 2003 and 2004 should not exceed 13 000 tons.

Scientific Council reiterates its recommendations that the fishery be restricted to Div. 3L and that the use of a sorting grate with a maximum bar spacing of 22 mm be mandatory for all vessels in the fishery. Advice for the 2004 fishery will be reviewed at the September 2003 Scientific Council Meeting, when results from the 2002 autumn survey will be available.

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.

Recent catches from the stock are as follows:

Year	Catch ('000 tons)		TAC ('000 tons)	
	STACFIS	21A	Recom.	Autonomous
1999	76.0	76.0	65.0	80.3
2000	79.9	79.9 ¹	65.0	80.3
2001	85.0	85.0 ¹	65.0	91.3
2002	99.0 ²		65.0	103.2

¹ Provisional.

² Projected to the end of 2002.

An analytical assessment framework using a stochastic version of a surplus-production model that included an explicit term for predation by cod (*Gadus morhua*) was applied for the first time in 2002.

The stock biomass has increased since the early-1990s and reached its highest level recorded in 2002. Biomass is well above B_{msy} and mortality by fishery and cod predation is well below Z_{msy} . In addition a large 1999 year-class is expected to contribute to the fishery in 2003.

If catches exceed 100 000 tons in 2003, there is a greater than 10% risk of exceeding a mortality that is considered to be a limit reference point. Scientific Council therefore recommends that total catch of shrimp in Div. 0A and SA 1 in 2003 should not exceed 100 000 tons.

Given the high probabilities of the stock being considerably above B_{msy} , risk of stock biomass falling below this optimum level within a one-year period is low.

Risk associated with five optional catch levels for 2003 are as follows:

Catch option ('000 tons)	80	90	100	110	120
Risk of falling below B_{MSY}	<1%	<1%	<1%	<1%	1%
Risk of exceeding Z_{MSY}	1%	3%	10%	20%	34%

Special Comments: Predation by cod can have a major impact on shrimp stock size. If the cod stock were to increase rapidly above the current level, as seen in the late-1980s, consumption could reach the same level as the current catches within a 3-4 year period. Such an event should, however, be detected early by routine survey programs and management options can then be evaluated.

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.

Recent catches and recommended TACs are as follows:

	Catch ('000 tons)			TAC ('000 tons)
	North	South	Total	Recommended
1999	4.0	5.5	9.5	9.6
2000	3.5	6.1	9.6 ¹	9.6
2001	1.8	9.3	11.0 ¹	9.6
2002			11.0 ²	9.6

¹ Provisional catches.

² Projected to the end of 2002.

No analytical assessment was available and fishing mortality is unknown. Evaluation of the status of the stock is based on interpretation of commercial fishery data and biological data.

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. The 2001 and 2002 values equal the relative high values of 1987 when the series started.

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 after 1999. Scientific Council therefore advises that catches of shrimp in Denmark Strait and off East Greenland should not exceed 9 600 tons in 2003.

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NAFO SECRETARIAT

T. Amaratunga, Assistant Executive Secretary
D. C. A. Auby, Secretary

Annex 2. Agenda

- I. Opening (Chair: R. K. Mayo)
 1. Appointment of rapporteur
 2. Adoption of agenda
 3. Plan of work
- II. Fisheries Science (STACFIS Chair: D. Stansbury)
 1. Review of Recommendations in 2001 and 2002
 2. General environmental review
 3. Stock assessments (Annexes 1, 2 and 3)
 - Northern shrimp (Div. 3M)
 - Northern Shrimp (Div. 3LNO)
 - Northern shrimp (Subareas 0 and 1)
 - Northern shrimp (in Denmark Strait and off East Greenland)
 4. Other business
- III. Formulation of Advice (see Annexes 1, 2 and 3)
 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. Formulation of advice under a Precautionary Approach framework
 3. Timing Issues Relative to Advice for Div. 3M and Div. 3LNO Shrimp stocks
- IV. Other Matters
 1. Coordination with ICES Working Groups on Shrimp Stock Assessments Meeting of November 2004
 2. Scientific Council Meeting on Northern Shrimp, November 2003
 3. Scientific Council Meeting on Northern Shrimp, November 2004
- V. Adoption of Reports
- VI. Adjournment

PART IV
(pages 227 to 240)

**Administrative and Financial Report
for the year ended 31 December 2002**

Administrative Report for the Year Ended 31 December 2002

Meetings and NAFO Secretariat Activities

Special Meeting of the General Council (including STACFAD) and the Fisheries Commission (including STACTIC), Helsingør, Denmark, 29 January – 01 February 2002.

International Fisheries Commissions Pension Society Annual Meeting, Chicago, Illinois, USA, 30 April – 02 May 2002. The NAFO Secretariat was represented by Mr. F. D. Keating and Mr. S. M. Goodick.

Meeting of the Standing Committee on International Control. (STACTIC), Copenhagen, Denmark, 6-9 May 2002.

Scientific Council and its Standing Committees, Dartmouth, N.S., Canada, 6-20 June 2002.

Working Group of Technical Experts on the Precautionary Approach (PA), Dartmouth, N.S., Canada, 20-21 June 2002.

Working Group on Management of Oceanic Redfish, Dartmouth, N.S., Canada, 24-25 June 2002.

Scientific Council "Symposium on Elasmobranch Fisheries: Managing for Sustainable Use and Biodiversity Conservation ", Santiago de Compostela, Spain, 11-13 September 2002.

24th Annual Meeting of NAFO including all constituent bodies – the General Council, the Fisheries Commission, the Scientific Council, , Santiago de Compostela, Spain, 16-20 September 2002.

Scientific Council Meeting, Nuuk, Greenland., Canada 6-13 November 2002.

STACTIC Working Group (pilot project) Meeting, 18-20 November 2002, NEAFC Headquarters, London, United Kingdom.

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 2002.

NAFO Annual Report for the year 2001 (186 pages) was distributed in April 2002.

NAFO Meeting Proceedings for the year 2001 (140 pages) was distributed in February 2002.

NAFO Scientific Council Reports for 2001 (339 pages) was distributed in January 2002.

NAFO Journal of Northwest Atlantic Fishery Science Volume 29 (99 pages) was distributed in January 2002.

NAFO Newsletter "NAFO News" was published in two (2) editions: No. 16 for January-June 2002 was issued in July 2002, and No. 17 for July-December 2002 was issued in January 2003.

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 – USA (partial); for 2001 – Cuba, Faroe Islands, Lithuania 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 – Greenland, Norway and USA. For 2001, STATLANT 21B reports have been received from Canada (M), Canada (N), EU-Denmark, EU-France (M), EU-Germany, EU-Great Britain, EU-Portugal, France (SP), Korea, Iceland, Japan, Poland, Latvia, Estonia and Russia.

Financial Report for the Year Ended 31 December 2002

An audit of the NAFO accounts for the fiscal year 2002 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, 2002 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, 2002, these enhanced benefits amounted to approximately \$30,300. Failure to record this amount as a liability in 2002 is not in accordance with the Organization's stated accounting principles. Had the liability been recorded \$30,300 would have been reflected as a prior period adjustment and the net assets at the end of the year would have been reduced by \$30,300.

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, 2002 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 28, 2003

Deloitte & Touche
Chartered Accountants

Statement of Revenue and Expenditures
(Year Ended 31 December 2002)

(Expressed in Canadian Dollars)

	Budget 2002	Actual 2002	Actual 2002
Revenue			
Contributions assessed Contracting			
Parties (Note 5).....	\$ 1,276,297	\$ 1,276,297	\$ 1,199,583
Allocation from surplus for operations	92,703	92,703	189,417
Personal income taxes			
Federal	-	123,372	109,674
Provincial.....	-	58,987	49,313
Interest	-	17,164	29,713
Sales of publications.....	-	4,483	6,766
	<u>1,369,000</u>	<u>1,573,006</u>	<u>1,584,466</u>
Expenditures			
Salaries.....	735,000	746,074	726,406
Vacation pay	1,000	17,112	5,939
Superannuation (Note 6)	81,000	72,165	74,461
Group medical and insurance plan.....	69,000	67,091	59,398
Termination benefits (Note 4).....	32,000	72,526	48,385
Travel.....	26,000	22,101	24,584
Transportation.....	1,000	627	788
Communications.....	60,000	47,842	59,765
Publications	30,000	26,619	38,062
Contractual services	48,000	50,518	44,082
Additional help	1,000	-	-
Materials	30,000	31,167	28,133
Equipment.....	5,000	4,654	4,533
Annual and Scientific Council Meetings	66,000	98,121	47,290
Inter-sessional meetings	55,000	64,470	46,761
Symposium	8,000	6,950	12,169
Computer services	48,000	52,600	34,234
Recruitment and Relocation.....	73,000	22,863	-
Automated Hail System	-	-	196,787
	<u>1,369,000</u>	<u>1,403,500</u>	<u>1,451,777</u>
Excess of revenue over expenditures before provision for uncollectible accounts	-	169,506	132,689
Provision for uncollectible accounts and write-off of contributions	<u>1,279</u>	<u>1,279</u>	<u>39,986</u>
Excess of revenue over expenditures.....	<u>\$ (1,279)</u>	<u>\$ 168,227</u>	<u>\$ 92,703</u>

Statement of Accumulated Surplus
(Year Ended 31 December 2002)

(Expressed in Canadian Dollars)

	2002	2001
Balance, beginning of year	\$ 167,703	\$ 264,417
Allocations		
To operations	<u>92,703</u>	<u>189,417</u>
	75,000	75,000
Excess of revenue over expenditures	<u>168,227</u>	<u>92,703</u>
Balance, end of year	<u>\$ 243,227</u>	<u>\$ 167,703</u>

Statement of Financial Position as at 31 December 2002

(Expressed in Canadian Dollars)

	2002	2001
ASSETS		
Current		
Cash and short-term deposits	\$ 156,310	\$ 166,188
Contributions receivable (Note 3)	42,620	20,993
Accounts receivable	14,735	32,116
Grant receivable-Province of Nova Scotia	58,987	49,313
Prepaid expenses	<u>9,321</u>	<u>10,549</u>
	281,973	279,159
Investments segregated for employee termination benefits	<u>404,627</u>	<u>356,303</u>
	<u>\$ 686,600</u>	<u>\$ 635,462</u>
LIABILITIES		
Current		
Accounts payable and accrued liabilities	\$ 25,132	\$ 30,131
Accrued vacation pay payable	13,729	20,166
Advance contributions	<u>158</u>	<u>-</u>
	39,019	50,297
Provision for employee termination benefits (Note 4)	<u>404,354</u>	<u>417,462</u>
	<u>443,373</u>	<u>467,759</u>
MEMBERS' NET ASSETS		
Accumulated Surplus	<u>243,227</u>	<u>167,703</u>
	<u>\$ 686,600</u>	<u>\$ 635,462</u>
Commitments (Note 7)		

Statement of Changes in Cash Flow
(Year Ended 31 December 2002)

(Expressed in Canadian Dollars)

	2002	2001
<hr/>		
Net inflow (outflow) of cash related to the following activities:		
Operating		
Excess of revenue over expenditures	\$ 168,227	\$ 92,703
Item not affecting cash		
Allocation from surplus	<u>(92,703)</u>	<u>(189,417)</u>
	75,524	(96,714)
Changes in non-cash operating working capital items (Note 9)	<u>(23,970)</u>	<u>25,428</u>
	<u>51,554</u>	<u>(71,286)</u>
Investing		
Increase in investments segregated for employee termination benefits	<u>(48,324)</u>	<u>(18,894)</u>
Financing		
(Decrease) increase in provision for employee termination benefits	<u>(13,108)</u>	<u>48,385</u>
Net cash outflow	(9,878)	(41,795)
Cash position, beginning of year	<u>166,188</u>	<u>207,983</u>
Cash position, end of year	<u>\$ 156,310</u>	<u>\$ 166,188</u>
<hr/>		

Notes to the Financial Statements
(Year Ended 31 December 2002)

(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) 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>2002</u>	<u>2001</u>
Bulgaria	-	\$ 19,993
Cuba.....	21,348	19,993
Lithuania.....	-	1,000
Romania.....	21,272	19,993
Ukraine	21,272	-
	<u>63,892</u>	<u>60,979</u>
Less: Allowance for uncollectible assessments.....	<u>21,272</u>	<u>39,986</u>
	<u>\$ 42,620</u>	<u>\$ 20,993</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, 2002, the additional liability resulting from this enhancement amounted to approximately \$30,300, 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 (Special Meetings, January/February 2002).

5. Contributions Assessed Contracting Parties

	<u>2002</u>	<u>2001</u>
Bulgaria	\$ 21,272	\$ 19,993
Canada	542,513	521,305
Cuba	21,348	19,993
Denmark (in respect of the Faroe Islands and Greenland)	147,675	120,337
Estonia	30,920	24,743
European Union	51,214	40,002
France (in respect of St. Pierre et Miquelon)	26,427	25,493
Iceland	29,389	25,679
Japan	23,875	22,584
Republic of Korea	21,272	19,993
Latvia	24,028	21,001
Lithuania	24,258	22,656
Norway	25,100	21,145
Poland	22,037	20,137
Romania	21,272	19,993
Russian Federation	26,402	22,224
Ukraine	21,272	19,993
United States of America	<u>196,023</u>	<u>212,312</u>
	<u>\$ 1,276,297</u>	<u>\$1,199,583</u>

6. Employee Benefit Asset

The Organization has a defined benefit pension plan which covers all employees. The last actuarial valuation was performed as at January 1, 2002.

Information about the organization's defined benefit plan is as follows:

	<u>Actuarial Valuation</u> <u>January 1, 2002</u>	<u>Actuarial Estimate</u> <u>December 31, 2002</u>
Fair value of plan assets	\$ 2,597,050	\$2,516,576
Benefit obligation	<u>2,858,384</u>	<u>2,532,500</u>
Funded status – plan surplus (deficit)	<u>\$ (261,334)</u>	<u>\$ (15,924)</u>

Employee Benefit Asset (continued)

Accrued benefit asset	9,354	15,518
Net expense recognized	72,165	74,461
Employer contributions	67,461	74,461
Employee contributions	39,718	32,450

The significant actuarial assumptions adopted in measuring the Organization's accrued benefit asset are as follows:

	<u>2002</u>	<u>2001</u>
Discount rate	6.5%	7.0%

7. Operating Lease Obligations

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

<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>
\$27,410	\$25,060	\$14,341	\$10,298	\$2,649

8. Services Provided Without Charge

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

9. Changes in Non-Cash Operating Working Capital Items

	<u>2002</u>	<u>2001</u>
Contributions receivable	\$ (21,627)	\$ 14,482
Accounts receivable	17,381	(26,238)
Accrued interest receivable	-	15,613
Accrued <i>ex gratia</i> grant receivable	(9,674)	7,290
Prepaid expenses	1,228	2,941
Accounts payable and accrued liabilities	(4,999)	11,801
Accrued vacation pay	(6,437)	5,939
Advance contributions	158	(6,400)
	<u>\$ (23,970)</u>	<u>\$ 25,428</u>

10. 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, 2002 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, 2002, 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>2002</u>	<u>2001</u>
Computer equipment	\$ 259,028	\$ 109,613	25%	\$ 149,415	\$ 200,108
Office furniture and equipment	<u>173,469</u>	<u>153,776</u>	10%	<u>19,693</u>	<u>26,355</u>
	<u>\$ 432,497</u>	<u>\$263,389</u>		<u>\$ 169,108</u>	<u>\$ 226,463</u>

11. Contingent Liabilities

The organization is potentially liable for costs related to the federal government legislation implementing the Canada Pay Equity Settlement. The legislation applies for the years 1985 forward.

An action has been taken by an employee to recover certain payroll deductions withheld for a number of years. Management has obtained a legal opinion that this amount is not payable to the employee.