

## PART D

### Miscellaneous

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**AGENDA I****SCIENTIFIC COUNCIL MEETING, 6-20 JUNE 2002**

- I. Opening (Chair: 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) Overviews 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 Seas
    - 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
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 Communications, 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) Inter-agency data harmonization
    - b) CWP Sessions 2002/2003
      - i) Report on CWP Intersessional Meeting, Rome, 21-22 March 2002
      - ii) CWP 20<sup>th</sup> 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 v.s. GT in recording effort data
    - f) 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 (Annex 1) (Northern 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 Annex 1, Item 7); Div. 3NO)

- Yellowtail flounder (Div. 3LNO)
  - Northern shortfin squid (Subareas 3 and 4) (see also Annex 1, Item 6)
  - Greenland halibut (Subareas 2 and 3)
  - Capelin (Div. 3NO)
- b) Analyses pertaining to other Fisheries Commission requests (Annex 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 (Annex 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) (Annex 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) (Annexes 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) (Annex 2, Item 1; Annex 3, Item 3)

#### 4. Other Matters

- a) New Designated Experts
- b) Other business

### VII. Management Advice and Responses to Special Requests

#### 1. Fisheries Commission (Annex 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 (Annex 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 (Annex 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 Consultation 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



**ANNEX 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.
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**ANNEX 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.

P. S. Chamut  
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**ANNEX 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 advice, 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.

On behalf of  
The Ministry for Fisheries, Hunting & Settlements  
Sincerely  
Gedion Jeremiassen  
Director

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**AGENDA II****SCIENTIFIC COUNCIL ANNUAL MEETING, 16-20 SEPTEMBER 2002**

- 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. Fisheries 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:
    - 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

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\* 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."



**AGENDA III****SCIENTIFIC COUNCIL MEETING, 6-13 NOVEMBER 2002**

- 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
  2. Scientific Council Meeting on Northern shrimp, November 2003
  3. Scientific Council Meeting on Northern shrimp, November 2004
  
- V. Adoption of Reports
  
- VI. Adjournment



**LIST OF RESEARCH AND SUMMARY DOCUMENTS, 2002**

**RESEARCH DOCUMENTS (SCR)**

<b>SCR No.</b>	<b>Ser. No.</b>	<b>Author(s) and Title</b>
02/1 <sup>a</sup>	N4596	RIKHTER, V. A. On the reasons of correlation between recruitment dynamics of some commercial fish populations in the Northwestern Atlantic Ocean (NAFO Subareas 24) and probability of forecasting the trends in dynamics of their biomass for several years ahead. (12 pages)
02/2 <sup>a</sup>	N4600	GONZÁLEZ TRONCOSO, D., X. PAZ and E. ROMÁN. Abundance, biomass and population structure for American plaice from the surveys conducted by Spain in the NAFO Regulatory Area of Divisions 3NO, 1995-2001. (14 pages)
02/3 <sup>a</sup>	N4601	PAZ, X., D. GONZÁLEZ TRONCOSO and E. ROMÁN. Yellowtail flounder data from the surveys conducted by Spain in the NAFO Regulatory Area of Divisions 3NO, 1995-2001. (12 pages)
02/4 <sup>a</sup>	N4602	GONZÁLEZ TRONCOSO, D., E. ROMÁN and X. PAZ. Results for the Greenland halibut in the Spanish spring survey in the NAFO Regulatory Area of Divisions 3NO, 1996-2001: abundance, biomass and population structure. (12 pages)
02/5 <sup>a</sup>	N4603	PAZ, X., D. GONZÁLEZ TRONCOSO and P. DURÁN MUÑOZ. Comparative exercise of efficiency between C/V <i>Playa de Menduñña</i> and R/V <i>Vizconde de Ezain</i> in the NAFO Divisions 3NO in May 2001. (25 pages)
02/6 <sup>a</sup>	N4607	ORR, D. C., D. KULKA and J. FIRTH. Groundfish by-catch in the Canadian small (<500 tons; LOA< 100') and large (=>500 tons) vessel Division 3L shrimp fishery, during 2000 and 2001. (6 pages)
02/7 <sup>a</sup>	N4608	STEIN, M. and V. A. BOROVKOV. Eighth Report of Joint Russian/German Project "assessment of short-time climatic variations in the Labrador Sea". (2 pages)
02/8 <sup>a</sup>	N4609	STEIN, M. Climatic overview NAFO Subarea 1 – 1991-2000. <sup>1</sup> (19 pages)
02/9 <sup>a</sup>	N4610	VASKOV, A. A. Assessment of redfish stock on the Flemish Cap based on data from the Russian trawl survey in 2001. (16 pages)
02/10 <sup>a</sup>	N4611	BAKAY, Yu. I. and S. P. MELNIKOVA. Vertical structure of <i>Sebastes mentella</i> concentrations in the pelagic open part of the Irminger Sea. (21 pages)
02/11 <sup>a</sup>	N4612	VINNICHENKO, V. I., V. N. MASHKOV and V. N. KHLIVNOY. Brief results of Russian investigations and fishery for thorny skate ( <i>Raja radiata</i> ) in NAFO Regulatory Area in 2000-2001. (9 pages)
02/12 <sup>a</sup>	N4613	VAZQUEZ, A. Results from bottom trawl survey on Flemish Cap of July 2001. (43 pages)

<sup>a</sup> Scientific Council Meeting, 6-20 June 2002.

<sup>1</sup> SCR Documents for Mini Symposium on "Environmental Conditions in the NAFO Water of the Northwest Atlantic during the Decade of the 1990s".

SCR #	Serial #	Author(s) and Title
02/13 <sup>a</sup>	N4614	BAKEY, Yu. I. and I. V. BAKAY. Ecological and geographical description of parasite fauna of Acadian redfish <i>Sebastes fasciatus</i> Storer. (16 pages)
02/14 <sup>a</sup>	N4615	PAVLOV, V. A. By-catches of snow crab <i>Chionoecetes opilio</i> in Russian bottom trawl fishery in Divisions 3NO in 2001. (5 pages)
02/15 <sup>a</sup>	N4616	MELNIKOV, S. P. and Yu. I. BAKAY. Spatial structure of pelagic concentrations of <i>Sebastes mentella</i> of the Irminger Sea and adjacent waters. (22 pages)
02/16 <sup>a</sup>	N4617	BUCH, E., M. H. NIELSEN and S. A. PEDERSEN. Ecosystem variability and regime shift in West Greenland waters. <sup>1</sup> (19 pages)
02/17 <sup>a</sup>	N4618	BUCH, E. and M. H. NIELSEN. Oceanographic investigations off West Greenland 2001. (17 pages)
02/18 <sup>a</sup>	N4619	MURUA, H. A review of roughhead grenadier ( <i>Macrourus berglax</i> ) biology and population structure on Flemish Cap (NAFO Division 3M), 1991-2001, based on Flemish Cap survey data. (18 pages)
02/19 <sup>a</sup>	N4621	VASKOV, A., S.MELNIKOV and V. SHIBANOV. Russian investigations and fishery of beaked redfish <i>Sebastes mentella</i> in the Labrador and Irminger Seas. (10 pages)
02/20 <sup>a</sup>	N4622	SHIBANOV, V. N., K. V. GORCHINSKY and V. S. MAMYLOV. An attempt to estimate dynamics of capelin stock on the Grand Bank using trawlable biomass data from Canadian bottom trawl surveys, spring 1990-2001. (10 pages)
02/21 <sup>a</sup>	N4625	HEALEY, B. P., N. G. CADIGAN and W. B. BRODIE. Analysis of pre-recruit data from surveys for Greenland halibut in NAFO Subarea 2 and Divisions 3KLMNO. (15 pages)
02/22 <sup>a</sup>	N4626	RÄTZ, H.-J. and C. STRANSKY. Stock status update for other finfish in NAFO Subarea 1. (5 pages).
02/23 <sup>a</sup>	N4627	RÄTZ, H.-J. and C. STRANSKY. Stock status update for demersal redfish in NAFO Subarea 1. (8 pages)
02/24 <sup>a</sup>	N4630	BOWERING, W. R. Greenland halibut ( <i>Reinhardtius hippoglossoides</i> ) in NAFO Subarea 2 and Divisions 3KLMNO: stock trends based on Canadian research vessel survey results during 1978-2001. (40 pages)
02/25 <sup>a</sup>	N4631	CABANAS, J. M. Hydrographic conditions on Flemish Cap in July 2001. (10 pages)
02/26 <sup>a</sup>	N4632	STRANSKY, C., S. GUÐMUNDSDÓTTIR, Þ. SIGURÐSSON, SV. LEMVIG and K. NEDREAAS. Age readings of <i>Sebastes mentella</i> otoliths: bias and precision between readers. (11 pages)

<sup>a</sup> Scientific Council Meeting, 6-20 June 2002.

<sup>1</sup> SCR Documents for Mini Symposium on "Environmental Conditions in the NAFO Water of the Northwest Atlantic during the Decade of the 1990s".

SCR #	Serial #	Author(s) and Title
02/27 <sup>a</sup>	N4633	IGASHOV, T. M. Assessment of Greenland halibut ( <i>Reinhardtius hippoglossoides</i> ) Stock on the Flemish Cap (Division 3M) by data of the Russian trawl survey of 2001. (9 pages)
02/28 <sup>a</sup>	N4635	GAGNON, J. Marine Environmental Data Service Report for 2001. (36 pages)
02/29 <sup>a</sup>	N4636	LISOVSKY, S., A. PAVLENKO and YU. KONDRATYUK. The analysis of the results from the investigation into selectivity of trawl codends with 120-150 mm mesh size in the fishery of Greenland halibut in the NAFO Regulatory Area. (17 pages)
02/30 <sup>a</sup>	N4637	JØRGENSEN, O. A. Survey for Greenland halibut in NAFO Divisions 1A-1D, 2001. (31 pages)
02/31 <sup>a</sup>	N4642	POWER, D. Standardized catch rate index for Greenland halibut in SA2+3KLMNO. (7 pages)
02/32 <sup>a</sup>	N4643	McCALLUM, B. and S. J. WALSH. An update on the performance of the Campelen 1800 during bottom trawl surveys in Subareas 2 and 3 in 2001. (16 pages)
02/33 <sup>a</sup>	N4644	COLBOURNE, E. B. Decadal changes in the ocean climate in Newfoundland waters from the 1950s to the 1990s. <sup>1</sup> (22 pages)
02/34 <sup>a</sup>	N4645	E. B. COLBOURNE, E. G. DAWE, D. G. PARSONS, E. F. MURPHY, W. R. BOWERING, E. L. DALLEY, J. T. ANDERSON, J. B. DEMPSON, D. ORR, D. E. STANSBURY and G. P. ENNIS. A preliminary review of environmental-stock relationships for some species of marine organisms in NAFO waters of the Northwest Atlantic. (21 pages, revised)
02/35 <sup>a</sup>	N4646	STRANSKY, C. Otolith shape analysis of Irminger Sea redfish ( <i>Sebastes mentella</i> ): preliminary results. (7 pages)
02/36 <sup>a</sup>	N4647	BRODIE, W. B. American plaice <i>Hippoglossoides platessoides</i> on the Grand Bank (NAFO Divisions 3LNO) – a review of stock structure in relation to assessment of the stock. (19 pages)
02/37 <sup>a</sup>	N4648	GIL, J., R SÁNCHEZ, S. CERVIÑO and D. GARABANA. Geostrophic circulation and heat flux across the Flemish Cap, 1988-2000. (26 pages)
02/38 <sup>a</sup>	N4649	SIMONSEN, C. S. and A. C. GUNDERSEN. Maturity of Greenland halibut ( <i>Reinhardtius hippoglossoides</i> ) in the fjords of northwest Greenland. (12 pages)
02/39 <sup>a</sup>	N4650	BRODIE, W. B. and D. POWER. The Canadian fishery for Greenland halibut in Subarea 2 + Divisions 3KLMNO, with emphasis on 2001. (12 pages)
02/40 <sup>a</sup>	N4651	DAWE, E. G., L. C. HENDRICKSON, E. B. COLBOURNE, M. A. SHOWELL, K. F. DRINKWATER, D. D. JONES, and D. A. METHVEN. Environmental regulation of the relative abundance of two squid species in the Northwest Atlantic Ocean, <i>Illex illecebrosus</i> and <i>Loligo pealei</i> . (16 pages)

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<sup>a</sup> Scientific Council Meeting, 6-20 June 2002.

<sup>1</sup> SCR Documents for Mini Symposium on "Environmental Conditions in the NAFO Water of the Northwest Atlantic during the Decade of the 1990s".

SCR #	Serial #	Author(s) and Title
02/41 <sup>a</sup>	N5652	COLBOURNE, E. B. and C. FITZPATRICK. Physical oceanographic conditions in NAFO Subareas 2 and 3 on the Newfoundland and Labrador Shelf during 2001. (27 pages)
02/42 <sup>a</sup>	N4653	DRINKWATER, K. F., B. PETRIE and P. C. SMITH. Hydrographic variability on the Scotian Shelf during the 1990s. <sup>1</sup> (16 pages)
02/43 <sup>a</sup>	N4654	WALSH, S. J., M. F. VEITCH, W. B. BRODIE and W. R. BOWERING. The distribution and abundance of yellowtail flounder ( <i>Limanda ferruginea</i> ) from the Canadian annual bottom trawl surveys of the Grand Bank, in NAFO Divisions 3LNO, from 1984-2001. (51 pages)
02/44 <sup>a</sup>	N4655	MADDOCK PARSONS, D., W. B. BRODIE and K. DWYER. Update on cooperative surveys of yellowtail flounder in NAFO Divisions 3NO, 1996-2001, including expanded grid surveys in Divisions 3LNO in 2000 and 2001. (33 pages)
02/45 <sup>a</sup>	N4656	MOUNTAIN, D. G. Oceanography variability in NAFO Subareas 5 and 6 during the 1990s. <sup>1</sup> (13 pages)
02/46 <sup>a</sup>	N4658	TREBLE, M. A. and R. BOWERING. The Greenland halibut ( <i>Reinhardtius hippoglossoides</i> ) fishery in NAFO Division 0A. (10 pages)
02/47 <sup>a</sup>	N4659	TREBLE, M. A. Analysis of data from the 2001 trawl surveys in NAFO Subarea 0. (28 pages)
02/48 <sup>a</sup>	N4660	ENGELSTOFT, J. J. and O. A. JØRGENSEN. Biomass and abundance of demersal fish stocks off West Greenland estimated from the Greenland shrimp survey, 1988-2001. (24 pages)
02/49 <sup>a</sup>	N4661	DRINKWATER, K. F. and B. PETRIE. An overview of meteorological, sea ice and sea-surface temperature conditions off eastern Canada during 2001. (30 pages)
02/50 <sup>a</sup>	N4662	BRODIE, W. B. and D. POWER. Update of data from the offshore Canadian commercial fishery for Greenland halibut in Division 0B. (7 pages)
02/51 <sup>a</sup>	N4663	YASHAYAEV, I. Oceanographic conditions in the Labrador Sea in the 1990s and in the context of interdecadal variability. <sup>1</sup> (Abstract only - 1 page)
02/52 <sup>a</sup>	N4664	BOWERING, W. R. Witch flounder in Divisions 2J, 3K and 3L: a stock status update. (15 pages)
02/53 <sup>a</sup>	N4665	BOWERING, W. R. Population trends of witch flounder in NAFO Divisions 3NO from Canadian surveys. (21 pages)
02/54 <sup>a</sup>	N4666	ÁVILA DE MELO, A., R. ALPOIM and F. SABORIDO-REY. The present status of beaked redfish ( <i>S. mentella</i> and <i>S. fasciatus</i> ) in NAFO Division 3M and medium term projections under a low commercial catch/high shrimp fishery by-catch regime. (60 pages)
02/55 <sup>a</sup>	N4667	SIMONSEN, C. S. An assessment of the Greenland halibut stock component in NAFO Division 1A inshore. (23 pages)

<sup>a</sup> Scientific Council Meeting, 6-20 June 2002.

<sup>1</sup> SCR Documents for Mini Symposium on "Environmental Conditions in the NAFO Water of the Northwest Atlantic during the Decade of the 1990s".

SCR #	Serial #	Author(s) and Title
02/56 <sup>a</sup>	N4668	HENDRICKSON, L. C., E. G. DAWE and M. A. SHOWELL. Assessment of northern shortfin squid ( <i>Illex illecebrosus</i> ) in Subareas 3+4 for 2001. (17 pages)
02/57 <sup>a</sup>	N4669	HEALEY, B. P., D. E. STANSBURY, E. F. MURPHY and P. A. SHELTON. An update on the status of the cod stock in NAFO Divisions 3NO. (15 pages)
02/58 <sup>a</sup>	N4670	VÁZQUEZ, A., and S. CERVIÑO. An assessment of the cod stock in NAFO Division 3M. (16 pages)
02/59 <sup>a</sup>	N4671	DARBY, C. An integrated catch-at-age analysis of the American plaice in NAFO Division 3M. (13 pages)
02/60 <sup>a</sup>	N4672	TREBLE, M. A. and O. A. JØRGENSEN. Summary of results for Greenland halibut from trawl surveys conducted in NAFO Subareas 0 and 1 from 61°N to 74°N in 2001. (8 pages)
02/61 <sup>a</sup>	N4673	ORR, D. C., P. VEITCH and D. SULLIVAN. Information pertaining to the distribution of northern shrimp ( <i>Pandalus borealis</i> , Krøyer) in NAFO Divisions 3LNO. (72 pages)
02/62 <sup>a</sup>	N4674	ALPOIM, R., C. DARBY and A. Á VILA DE MELO. An assessment of American plaice ( <i>Hippoglossoides platessoides</i> ) in NAFO Division 3M. (37 pages)
02/63 <sup>a</sup>	N4675	DRINKWATER, K. F. A review of the atmospheric and sea-ice conditions in the Northwest Atlantic during the decade, 1991-2000. <sup>1</sup> (18 pages)
02/64 <sup>a</sup>	N4676	KULKA, D. W. Reporting wolfish by species in the NAFO Regulatory Area. (1 page)
02/65 <sup>a</sup>	N4677	DWYER, K. S., W. B. BRODIE and M. J. MORGAN. Comparison of Canadian and Spanish survey results from the NAFO Regulatory Area in Divisions 3NO. (10 pages)
02/66 <sup>a</sup>	N4678	SHELTON, P. A., G. R. LILLY, J. BRATTEY, N. G. CADIGAN, B. P. HEALEY, E. F. MURPHY and D. E. STANSBURY. Northern (2J+3KL) cod stock status update. (9 pages)
02/67 <sup>a</sup>	N4679	JØRGENSEN, O. A. Assessment of the Greenland halibut stock component in NAFO Subarea 0 + Division 1A offshore + Divisions 1B-1F. (16 pages)
02/68 <sup>a</sup>	N4680	DARBY, C. and O. A. JØRGENSEN. An extended survivors analysis (XSA) of the Greenland halibut in NAFO SA 0+1. (12 pages)
02/69 <sup>a</sup>	N4682	DRINKWATER, K. F., and B. PETRIE. Physical oceanographic conditions on the Scotian Shelf and in the Gulf of Maine during 2001. (40 pages)
02/70 <sup>a</sup>	N4683	MORGAN, M. J., W. B. BRODIE, B. P. HEALEY, D. MADDOCK PARSONS, K. DWYER, and D. POWER. An assessment of American plaice in NAFO Divisions 3LNO. (68 pages)

<sup>a</sup> Scientific Council Meeting, 6-20 June 2002.

<sup>1</sup> SCR Documents for Mini Symposium on "Environmental Conditions in the NAFO Water of the Northwest Atlantic during the Decade of the 1990s".

SCR #	Serial #	Author(s) and Title
02/71 <sup>a</sup>	N4684	STEPHEN J. WALSH, S. J., W. B. BRODIE, M. J. MORGAN, D. POWER, K. S. DWYER and C. DARBY. Stock assessment and management of the Grand Bank yellowtail flounder stock. (54 pages)
02/72 <sup>a</sup>	N4685	ALPOIM, R., A. ÁVILA DE MELO, R. BAÑÓN, M. CASAS, S. CERVIÑO, S. JUNQUERA, I. MARTÍN, H. MURUA, X. PAZ, G. PÉREZ-GÁNDARAS, J. L. DEL RÍO, E. RODRÍGUEZ-MARÍN, F. SABORIDO-REY, E. J. DOS SANTOS and A. VÁZQUEZ. Distribution and main characteristic of fish species on Flemish Cap based on the 1988-2001 EU-surveys in July. (73 pages)
02/73 <sup>a</sup>	N4686	KULKA, D. W. Description of the 2001 yellowtail flounder fishery on the Grand Banks with a comparison to past years. (34 pages)
02/74 <sup>a</sup>	N4688	VÁZQUEZ, A. Catchability comparison between Lofoten and Campelen gears. (9 pages)
02/75 <sup>a</sup>	N4689	BOWERING, W. R. and A. VÁZQUEZ. Distribution and abundance of witch flounder on Flemish Cap and in Flemish Pass based on Canadian and EU research survey data. (17 pages)
02/76 <sup>a</sup>	N4690	CERVIÑO, S. Bootstrap estimate of catch-sampling variability for indices of abundance-at-age. (12 pages)
02/77 <sup>a</sup>	N4691	SKULADOTTIR, U. and A NICOLAJSEN. The impact of closure of the shallow water area of Flemish Cap (Division 3M) on young shrimp ( <i>Pandalus borealis</i> ) in two periods of the year. (17 pages, revised)
02/78 <sup>a</sup>	N4692	MAHÉ, J.-C. and W. R. BOWERING. An assessment of stock status of the Greenland halibut resource in NAFO Subarea 2 and Divisions 3KLMNO based on extended survivors analysis. (22 pages)
02/79 <sup>a</sup>	N4693	POWER, D. and D. ORR. Information relevant to the Canadian request to the Scientific Council with respect to the redfish stock in Division 3O. (22 pages)
02/80 <sup>a</sup>	N4695	DARBY, C. Exploratory Extended Survivors Analysis (XSA) model fits to the assessment data set for American plaice in NAFO Divisions 3L, 3N and 3O. (23 pages)
02/81 <sup>a</sup>	N4696	DARBY, C., R. BOWERING and J. C. MAHE. Bullet points on the results of the assessment results for Greenland halibut in Subarea 2 and Divisions 3KLMNO. (4 pages)
02/82 <sup>b</sup>	N4700	STOBUTZKI, I., M. MILLER, D. HEALES and D. BREWER. Assessing the sustainability of elasmobranch by-catch in a prawn trawl fishery: a method for dealing with high diversity and limited information. (Symposium Poster) (13 pages)
02/83 <sup>b</sup>	N4702	CLÒ, S., M. DALÙ, R. DANOVARO and M. VACCHI. Segregation of the Mediterranean population of <i>Centroscyrnus coelolepis</i> (Chondrichthyes: Squalidae): a description and survey. (Symposium Poster) (3 pages)

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02/84 <sup>b</sup>	N4703	SOLDAT, V. T. Spiny dogfish ( <i>Squalus acanthias</i> L.) of the Northwest Atlantic Ocean (NWA). (Symposium Oral) (33 pages)
02/85 <sup>b</sup>	N4706	MASSUTÍ, E. and J. MORANTA. Demersal assemblages and depth distribution of elasmobranchs from the continental shelf and slope trawling grounds off the Balearic Islands (western Mediterranean). (Symposium Poster) (20 pages)
02/86 <sup>b</sup>	N4707	PAWSON, M. G. and J. R. ELLIS. Stock identity of elasmobranchs in the North-east Atlantic in relation to assessment and management. (Symposium Oral) (10 pages)
02/87 <sup>b</sup>	N4708	SCACCO, U., F. ANDARLORO, S. CAMPAGNUOLO, L. CASTRIOTA and M. VACCHI. Cartilaginous fish as a component of trawl discard in Strait of Sicily. (Symposium Oral) (13 pages)
02/88 <sup>b</sup>	N4709	CRUZ-MARTÍNEZ, A., X. CHIAPPA-CARRARA and V. ARENAS-FUENTES. Age and growth of the bull shark <i>Carcharhinus leucas</i> from the southern Gulf of Mexico. (Symposium Oral) (11 pages)
02/89 <sup>b</sup>	N4710	COELHO, R., L. BENTES, C. CORREIA, J. M. S. GONÇALVES, P. G. LINO, P. MONTEIRO, J. RIBEIRO and K. ERZINI. Fisheries biology of the undulate ray, <i>Raja undulata</i> , in the Algarve (southern Portugal). (Symposium Poster) (9 pages)
02/90 <sup>b</sup>	N4711	ERZINI, K, L. BENTES, R. COELHO, C. CORREIA, P. G. LINO, P. MONTEIRO, J. RIBEIRO, and J. M. S. GONÇALVES. Semi pelagic longline and trammel net elasmobranch catches in the Algarve (southern Portugal): catch composition, catch rates and discards. (Symposium Poster) (8 pages)
02/91 <sup>b</sup>	N4712	STENBERG, C. Life history of the piked dogfish ( <i>Squalus acanthias</i> L.) in Swedish waters. (Symposium Poster) (13 pages)
02/92 <sup>b</sup>	N4713	DOLGOV, A. V., K. V. DREVETNYAK and E. V. GUSEV. Status of skate stocks in the Barents Sea. (Symposium Poster) (17 pages)
02/93 <sup>b</sup>	N4714	DOLGOV, A.V. Feeding and food consumption by the Barents Sea skates. (Symposium Poster) (10 pages)
02/94 <sup>b</sup>	N4715	DRAKE, S. C., J. A. DRAKE and M. L. JOHNSON. 2000 + UK shark tagging programme: an angler led shark-tagging initiative in UK coastal waters. (Symposium Oral) (14 pages)
02/95 <sup>b</sup>	N4716	ABELLA, A. J. and F. SERENA. Comparison of elasmobranch catches of trawl surveys and commercial landings of the Port of Viareggio (North Tyrrhenian-South Ligurian Sea, Italy) in the last decade. (Symposium Poster) (13 pages)
02/96 <sup>b</sup>	N4717	REY, J., E. MASSUTÍ and L. GIL DE SOLA. Distribution and biology of the blackmouth catshark, <i>Galeus melastomus</i> , in the Alboran Sea (south-western Mediterranean). (Symposium Oral) (12 pages)

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02/97 <sup>b</sup>	N4718	KYNE, P. M., A. J. COURTNEY, M. J. CAMPBELL, K. E. CHILCOTT, S. W. GADDES, C. T. TURNBULL, C. C. VAN DER GEEST and M. B. BENNETT. An overview of the elasmobranch by-catch of the Queensland east coast trawl fishery (Australia). (Symposium Oral) (11 pages)
02/98 <sup>b</sup>	N4719	ENDICOTT, M. and D. AGNEW. Conserving rajid populations in the Antarctic. (Symposium Poster) (6 pages)
02/99 <sup>b</sup>	N4720	DOLGOV, A. V., A. A. GREKOV, I. P. SHESTOPAL and K. M. SOKOLOV. By-catch of skates in trawl and long-line fisheries in the Barents Sea. (Symposium Poster) (11 pages)
02/100 <sup>b</sup>	N4721	SHESTOPAL, I. P., O. V. SMIRNOV and A. A. GREKOV. Bottom long-line fishing for deepwater sharks on sea-mounts in the international waters of the North Atlantic. (Symposium Poster) (5 pages)
02/101 <sup>b</sup>	N4722	ELLIS, J. R., A. CRUZ, B. B. RACKHAM and S. I. ROGERS. The distribution of chondrichthyan fishes around the British Isles and implications for conservation. (Symposium Oral) (7 pages)
02/102 <sup>b</sup>	N4723	HAMMOND, T. R. and J. R. ELLIS. Bayesian assessment of NE Atlantic spurdog using a stock production model, with prior for maximum population growth rate set by demographic methods. (Symposium Oral) (17 pages)
02/103 <sup>b</sup>	N4724	PASTOORS, M. A. Stock assessments of elasmobranchs in North-East Atlantic: making the most of the data. (Symposium Oral) (16 pages)
02/104 <sup>b</sup>	N4725	HEUPEL, M. R., C. A. SIMPFENDORFER and R. E. HUETER. Estimation of mortality of juvenile blacktip sharks, <i>Carcharhinus limbatus</i> , within a nursery area using telemetry data. (Symposium Oral) (5 pages)
02/105 <sup>b</sup>	N4726	ELÍAS, I., A. RODRÍGUEZ, R. AMOROSO, E. HASAN and M. V. REYNA. First observation of the tope shark, <i>Galeorhinus galeus</i> , in the northern Patagonian Gulfs of Argentina. (Symposium Poster) (7 pages)
02/106 <sup>b</sup>	N4727	DEL RÍO, J. L., E. ROMÁN and S. CERVIÑO. Abundance and distribution of elasmobranchs in NAFO Regulatory Area (Divisions 3MNO). (Symposium Oral) (24 pages)
02/107 <sup>b</sup>	N4728	PUNT, A. E., F. PRIBAC, B. L. TAYLOR and T. I. WALKER. Harvest strategy evaluation for school and gummy shark. (Symposium Oral) (22 pages)
02/108 <sup>b</sup>	N4729	CLARKE, S., M. McALLISTER and C. MICHIESENS. Estimates of shark species composition and numbers associated with the Shark Fin Trade based on Hong Kong auction data. (Symposium Oral) (11 pages)
02/109 <sup>b</sup>	N4730	PRIBAC, F., A. E. PUNT, B. L. TAYLOR and T. I. WALKER. The value of length, age and tagging data in a stock assessment of a length selective fishery for gummy shark ( <i>Mustelus antarcticus</i> ). (Symposium Oral) (28 pages)

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02/110 <sup>b</sup>	N4731	PÉREZ-JIMÉNEZ, J. C., O. SOSA-NISHIZAKI, E. FURLONG-ESTRADA and D. CORRO-ESPINOSA. Artisanal shark fishery at Tres Marias and Isabel Islands, Nayarit, México. (Symposium Poster) (17 pages)
02/111 <sup>b</sup>	N4732	FRISK, M. G., N. DULVY and T. J. MILLER. Using elasticity, perturbation analysis, demographics and elasmobranch species phylogenetic relationships as indicators of vulnerability to exploitation. (Symposium Oral) (18 pages)
02/112 <sup>b</sup>	N4733	HEESSEN, H. J. L. Development of elasmobranch assessments (DELASS). (Symposium Poster) (4 pages)
02/113 <sup>b</sup>	N4734	HEESSEN, H., G. RINK and S. VERVER. By-catch of rays in the Dutch flatfish fishery. (Symposium Poster) (5 pages)
02/114 <sup>b</sup>	N4735	WALKER, T. I., R. J. HUDSON and A. S. GASON. Catch evaluation of target, by-product and by-catch species taken by gillnets and longlines in the shark fishery of south-eastern Australia. (Symposium Oral) (30 pages)
02/115 <sup>b</sup>	N4736	FERNÁNDEZ, C. RODRIGUEZ-CABELLO, R. GANCEDO, A. PUNZÓN, I. OLASO, F. SÁNCHEZ and O. CENDRERO. Overview of Continental Shelf elasmobranch fisheries in the Cantabrian Sea. (Symposium Poster) (13 pages)
02/116 <sup>b</sup>	N4737	SIMPENDORFER, C. A. and G. BURGESS. Assessment of the status of the Atlantic sharpnose shark ( <i>Rhizoprionodon terraenovae</i> ) using an age-structured population model. (Symposium Oral) (10 pages, revised)
02/117 <sup>b</sup>	N4738	RODRIGUEZ-CABELLO, C., F. SÁNCHEZ and F. VELASCO. Growth of the lesser spotted dogfish ( <i>Scyliorhinus canicula</i> (L., 1758)) in the Cantabrian Sea, based on tag-return data. (Symposium Poster) (13 pages)
02/118 <sup>b</sup>	N4739	DEL RÍO IGLESIAS, J. L. Some aspects of the thorny skate, <i>Amblyraja radiata</i> , reproductive biology in NAFO Division 3N. (Symposium Oral) (14 pages)
02/119 <sup>b</sup>	N4740	SACHSE, M. L. and G. R. RICHARDSON. Moving from input controls to output controls using the partnership approach in Australia's Southern Shark Fishery. (Symposium Oral) (12 pages)
02/120 <sup>b</sup>	N4742	SOSEBEE, K. A. Are Density-dependent effects on elasmobranch maturity possible? (Symposium Oral) (12 pages)
02/121 <sup>b</sup>	N4743	KULKA, D. W., M. R. SIMPSON and D. POWER. Allocation criteria: analysis of biomass distribution and catch history for species of commercial interest in waters adjacent to Atlantic Canada, inside (Canadian waters) versus outside (Regulatory Area) 200 miles. (60 pages)
02/122 <sup>b</sup>	N4744	HUETER, R. E., M. R. HEUPEL, E. J. HEIST and D. B. KEENEY. The implications of philopatry in sharks for the management of shark fisheries. (Symposium Oral) (9 pages)

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02/123 <sup>b</sup>	N4745	OLASO, I., F. VELASCO, F. SÁNCHEZ, A. SERRANO, C. RODRÍGUEZ-CABELLO and O. CENDRERO. Trophic relations of lesser spotted dogfish ( <i>Scyliorhinus canicula</i> ) and black mouth dogfish ( <i>Galeus melastomus</i> ) in the benthic and demersal communities of the Cantabrian Sea. (Symposium Oral) (14 pages)
02/124 <sup>b</sup>	N4746	DUDLEY, S. F. J. Shark catch trends and effort reduction in the beach protection program, KwaZulu-Natal, South Africa. (Symposium Oral) (21 pages)
02/125 <sup>b</sup>	N4747	FIGUEIREDO, I., L. S. GORDO and P. B. MACHADO. Deep-water sharks fisheries from off the Portuguese continental coast. (Symposium Oral) (8 pages)
02/126 <sup>b</sup>	N4748	SÁNCHEZ, F., C. RODRIGUEZ-CABELLO and I. OLASO. The role of elasmobranchs in the Cantabrian Sea shelf ecosystem and impact of the fisheries on them. (Symposium Oral) (16 pages)
02/127 <sup>b</sup>	N4749	CLARKE, M., L. BORGES, R. OFFICER and D. STOKES. Comparisons of trawl and longline catches of deepwater elasmobranchs west and north of Ireland. (Symposium Oral) (17 pages)
02/128 <sup>b</sup>	N4750	CARLSON, J. K. and I. BAREMORE. Changes in biological parameters of Atlantic sharpnose shark, <i>Rhizoprionodon terraenovae</i> , in the Gulf of Mexico: evidence for density-dependent regulation? (Symposium Oral) (8 pages)
02/129 <sup>b</sup>	N4751	WAKEFORD, R. C., D. A. J. MIDDLETON, D. J. AGNEW, J. H. W. POMPERT and V. V. LAPTIKHOVSKY. Management of the Falkland Islands multispecies ray fishery: addressing sustainability and diversity. (Symposium Oral) (23 pages)
02/130 <sup>b</sup>	N4752	GALLAGHER, M. J., C. P. NOLAN and F. JEAL. The structure and growth processes of caudal thorns. (Symposium Poster) (7 pages)
02/131 <sup>b</sup>	N4753	NOLAN, C. P., M. J. GALLAGHER, D. FOLEY, J. DEANE and F. JEAL. Gonadal maturity in rajids. (Symposium Poster) (5 pages)
02/132 <sup>b</sup>	N4754	MACHADO, P. B., M. R. PINHO and P. N. DUARTE. Finding trends on the fishery and abundance of kitefin shark, <i>Dalatias licha</i> (Bonaterre, 1788), from off Azores, throughout a GIS spatial analysis. (Symposium Oral) (16 pages)
02/133 <sup>b</sup>	N4755	APOSTOLAKI, P., E. A. BABCOCK and M. MCALLISTER. Providing advice for the sustainable exploitation of the sandbar shark ( <i>Carcharhinus plumbeus</i> ) off the U.S. east coast. Application of a fleet-disaggregated, age-structured model. (Symposium Oral) (15 pages)
02/134 <sup>b</sup>	N4756	SOSEBEE, K. A. Maturity of skates in Northeast United States waters. (Symposium Poster) (17 pages)

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02/135 <sup>b</sup>	N4757	HOLTZHAUSEN, J. A. Trans-boundary bronze whaler ( <i>Carcharhinus brachyurus</i> ) tagging program between Namibia and Angola. (Symposium Poster) (4 pages)
02/136 <sup>b</sup>	N4758	CLARKE, M., M. GIRARD, N.-R. HAREIDE, P. LORANCE and R. OFFICER. Approaches to assessment of deepwater sharks in the Northeast Atlantic. (Symposium Poster) (16 Pages)
02/137 <sup>b</sup>	N4759	DE LA SERNA, J. M., J. VALEIRAS, J. M. ORTIZ, and D. MACÍAS. Large pelagic sharks as by-catch in the Mediterranean swordfish longline fishery: Some biological aspects. (Symposium Poster) (8 pages)
02/138 <sup>b</sup>	N4760	FIGUEIREDO, I., L. CARVALHO, M. QUARESMA, and M. CLARKE. First approach to the application of life table models to Portuguese dogfish ( <i>Centroscymnus coelolepis</i> , Bocage and Capello, 1864). (Symposium Oral) (11 pages)
02/139 <sup>b</sup>	N4761	PRINCE, J. D. Gauntlet fisheries for elasmobranchs – the secret of sustainable shark fisheries. (Symposium Oral) (16 pages)
02/140 <sup>b</sup>	N4762	SOSA -NISHIZAKI, O., E. FURLONG-ESTRADA, J. A. REYES-GONZÁLEZ and, J. C. PÉREZ-JIMÉNEZ. Blue shark ( <i>Prionace glauca</i> ) fishery in Baja California, Mexico: an example of artisanal and middle scale fisheries interaction. (Symposium Oral) (6 pages)
02/141 <sup>b</sup>	N4763	ALPOIM, R., E. ROMAN, B. GREENE, R. BURRY and W. R. BOWERING. Greenland halibut ( <i>Reinhardtius hippoglossoides</i> ) otolith exchange between Spain, Canada and Portugal. (14 pages)
02/142 <sup>c</sup>	N4771	CASAS, J. M. and J. L. DEL RÍO. The Spanish shrimp fishery on Flemish Cap (NAFO Division 3M) in 2001. (4 pages)
02/143 <sup>c</sup>	N4772	DIAZ, P., T. PATROCINIO and X. PAZ. Increased catches of northern shrimp ( <i>Pandalus borealis</i> , Kroyer) in a 2002 Spanish bottom trawl survey in NAFO Division 3N. (11 pages)
02/144 <sup>c</sup>	N4773	WIELAND, K. A new length-weight relationship for northern shrimp ( <i>Pandalus borealis</i> ) off West Greenland (NAFO Subareas 0+1). (4 pages)
02/145 <sup>c</sup>	N4774	WIELAND, K. The use of fine-meshed bags for sampling juvenile northern shrimp ( <i>Pandalus borealis</i> ) in the West Greenland bottom trawl survey. (11 pages)
02/146 <sup>c</sup>	N4775	WIELAND, K. Abundance indices for juvenile (age 1 and 2) northern shrimp ( <i>Pandalus borealis</i> ) off West Greenland (NAFO Subareas 0+1), 1993-2002. (20 pages)
02/147 <sup>c</sup>	N4776	HVINGEL, C. Data for the assessment of the shrimp ( <i>Pandalus borealis</i> ) stock in Denmark Strait/off East Greenland, 2002. (26 pages)
02/148 <sup>c</sup>	N4777	KANNEWORFF, P. and K. WIELAND. Stratified-random trawl survey for northern shrimp ( <i>Pandalus borealis</i> ) in NAFO Subareas 0+1 in 2002. (25 pages)

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02/149 <sup>c</sup>	N4778	SIEGSTAD, H. The Greenland fishery for northern shrimp ( <i>Pandalus borealis</i> ) on Flemish Cap, NAFO Division 3M in 2002. (4 pages)
02/150 <sup>c</sup>	N4779	DEL RIO, J. L., J. M. CASAS and T. PATROCINIO. Northern shrimp ( <i>Pandalus borealis</i> ) on Flemish Cap in July 2002. (21 pages)
02/151 <sup>c</sup>	N4780	HVINGEL, C. The fishery for northern shrimp ( <i>Pandalus borealis</i> ) off West Greenland, 1970-2002. (19 pages)
02/152 <sup>c</sup>	N4781	COLBOURNE, E. Oceanographic conditions on the Flemish Cap in NAFO Division 3M during the summer of 2002. (14 pages)
02/153 <sup>c</sup>	N4782	COLBOURNE, E. and D. C. ORR. The distribution and abundance of northern shrimp ( <i>Pandalus borealis</i> ) in relation to bottom temperatures in NAFO Divisions 3LNO based on multi-species surveys from 1995-2002. (14 pages)
02/154 <sup>c</sup>	N4783	SKÚLADÓTTIR, U. The Icelandic shrimp fishery ( <i>Pandalus borealis</i> ) in the Denmark Strait in 2002. (5 pages)
02/155 <sup>c</sup>	N4784	SKÚLADÓTTIR, U. The Icelandic shrimp fishery ( <i>Pandalus borealis</i> Kr.) at Flemish Cap in 1993-2002. (33 pages)
02/156 <sup>c</sup>	N4785	NICOLAJSSEN, Á. Biomass estimate, growth, length and age distribution of the northern shrimp ( <i>Pandalus borealis</i> ) stock on Flemish Cap (NAFO Division 3M) in June 2002. (20 pages)
02/157 <sup>c</sup>	N4786	HVINGEL, C. Assessment, prediction and risk analysis of stock development: shrimp off West Greenland, 2002. (10 pages)
02/158 <sup>c</sup>	N4787	HVINGEL, C. and M. C. S. KINGSLEY. A framework for the development of management advice on a shrimp stock using a Bayesian approach. (28 pages)
02/159 <sup>c</sup>	N4788	BAKANEV, S. V. Russian fishery for northern shrimp ( <i>Pandalus borealis</i> ) on Flemish Cap Bank, NAFO Division 3M and Grand Bank, Division 3L, in 2001 and January-September 2002. (9 pages)
02/160 <sup>c</sup>	N4789	ORR, D. C., P. VEITCH and D. SULLIVAN. An update of information pertaining to northern shrimp ( <i>Pandalus borealis</i> Krøyer) and groundfish in NAFO Divisions 3LNO. (55 pages)
02/161 <sup>c</sup>	N4790	NICOLAJSSEN, Á. and S. BRYNJOLFSSON. Young northern shrimp ( <i>Pandalus borealis</i> ) index for Flemish Cap (Division 3M) 2002. (4 pages)
02/162 <sup>c</sup>	N4791	WIELAND, K. and P. KANNEWORFF. Bottom temperature on West Greenland shrimp fishing grounds in 1991 to 2002. (5 pages)

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02/163 <sup>c</sup>	N4793	SKÚLADÓTTIR, U. and D. ORR. The assessment of the international fishery for shrimp ( <i>Pandalus borealis</i> ) in Division 3M (Flemish Cap), 1993-2002. (17 pages)

#### SUMMARY DOCUMENTS (SCS)

SCS No.	Ser. No.	Author(s) and Title
02/1 <sup>a</sup>	N4594	FISHERIES COMMISSION. Fisheries Commission's request for scientific advice on management in 2003 of certain stocks in Subareas 3 and 4. (4 pages)
02/2 <sup>a</sup>	N4595	JEREMIASSEN, G. Denmark (Greenland) request for scientific advice on management in 2003 of certain stocks in Subareas 0 and 1. (1 page)
02/3 <sup>a</sup>	N4598	CHAMUT, P. S. Canadian request for scientific advice on management in 2003 of certain stocks in Subareas 0 to 4. (2 pages)
02/4 <sup>a</sup>	N4597	RIKHTER, V. A., I. K. SIGAEV, VASKOV, A. A., K. V. GORCHINSKY, T. M. IGASHOV, V. M. KISELEVA, S. E. LOBODENKO and S. P. MELNIKOV. Russian research report for 2001. (25 pages)
02/5 <sup>a</sup>	N4599	MARSHALL, B. Provisional index and list of titles of research and summary documents of 2001. (43 pages)
02/6 <sup>a</sup>	N4604	ALPOIM, R., J. VARGAS, E. SANTOS and A. M. ÁVILA DE MELO. Portuguese research report for 2001. (49 pages)
02/7 <sup>a</sup>	N4623	DEL RIO, J. L., P. DURÁN MUÑOZ, A VÁZQUEZ, H. MURUA, E. ROMÁN and F. GONZALEZ. Spanish research report for 2001. (26 pages)
02/8 <sup>a</sup>	N4620	NAFO SECRETARIAT. List of biological sampling data for 2001. (24 pages)
02/9 <sup>a</sup>	N4628	RÄTZ, H.-J., M. STEIN and C. STRANSKY. German research report for 2001. (5 pages)
02/10 <sup>a</sup>	N4629	TREBLE, M., S. COSENS and D. PARMITER-RICHARDS. Canadian research report for 2001. (24 pages)
02/11 <sup>a</sup>	N4634	NAFO SECRETARIAT. Report of the Inter-Sessional Meeting of the Coordinating Working Party on Fishery Statistics, 21-22 March 2002, Rome, Italy. (9 pages)
02/12 <sup>a</sup>	N4638	NAFO SECRETARIAT. Report of the Coordinating Working Party on Fishery Statistics (CWP). (73 pages)
02/13 <sup>a</sup>	N4639	NAFO SECRETARIAT. Historical nominal catches for selected stocks. (7 pages)
02/14 <sup>a</sup>	N4640	NAFO SECRETARIAT. Notes on acquisition and publications of statistics since June 2001 (2 pages).

<sup>a</sup> Scientific Council Meeting, 6-20 June 2002.

<sup>c</sup> Scientific Council Meeting, 6-13 November 2002.

<b>SCS No.</b>	<b>Ser. No.</b>	<b>Author(s) and Title</b>
02/15 <sup>a</sup>	N4641	SOSEBEE, K. A. and W. L. GABRIEL. United States research report for 2001. (17 pages)
02/16 <sup>a</sup>	N4657	SIEGSTAD, H. Denmark/Greenland research report for 2001. (9 pages)
02/17 <sup>a</sup>	N4681	NAFO SECRETARIAT. Tagging activities reported for the Northwest Atlantic in 2001 and early-2002. (19 pages)
02/18 <sup>a</sup>	N4694	GONZALEZ, F. and D. POWER. A report on the deliberations of the North-Western Working Group as it pertains to stock structure, distribution and state of the <i>Sebastes mentella</i> in ICES Sub-areas V, XII and XIV and the NAFO Convention area. (10 pages)
02/19 <sup>a</sup>	N4698	NAFO. Report of Scientific Council Meeting, 6-20 June 2002. (195 pages)
02/20 <sup>b</sup>	N4764	NAFO. Report of Scientific Council Meeting, 16-20 September 2002. (55 pages)
02/21 <sup>b</sup>	N4770	DESIGNATED EXPERTS. Collection of Working Papers for the Scientific Council Precautionary Approach Workshop of 2003. (32 pages)
02/22 <sup>c</sup>	N4794	NAFO. Scientific Council Meeting Report, 6-13 November 2002. (56 pages)
02/23 <sup>c</sup>	N4796	NAFO SECRETARIAT. A compilation of research vessel surveys on a stock-by-stock basis. (23 pages)

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<sup>a</sup> Scientific Council Meeting, 6-20 June 2002.

<sup>b</sup> Scientific Council Annual Meeting, 16-20 September 2002.

<sup>c</sup> Scientific Council Meeting, 6-13 November 2002.



## APPENDIX VII. LIST OF REPRESENTATIVES AND ADVISERS/EXPERTS, 2002

Meetings\*

## CANADA

## Representatives:

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## Meetings\*

- A Scientific Council Meeting, 6-20 June 2002
- B Scientific Council Annual Meeting, 16-20 September 2002 (Note: Symposium participants are listed with its report).
- C Scientific Council Meeting, 6-13 November 2002.

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

## Meetings\*

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## Meetings\*

- A Scientific Council Meeting, 6-20 June 2002  
 B Scientific Council Annual Meeting, 16-20 September 2002 (Note: Symposium participants are listed with its report).  
 C Scientific Council Meeting, 6-13 November 2002.

## Meetings\*

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## Meetings\*

- A Scientific Council Meeting, 6-20 June 2002
- B Scientific Council Annual Meeting, 16-20 September 2002 (Note: Symposium participants are listed with its report).
- C Scientific Council Meeting, 6-13 November 2002.

## Meetings\*

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## Meetings\*

- A Scientific Council Meeting, 6-20 June 2002  
 B Scientific Council Annual Meeting, 16-20 September 2002 (Note: Symposium participants are listed with its report).  
 C Scientific Council Meeting, 6-13 November 2002.

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

**Meetings\*****NAFO SECRETARIAT**

T. Amaratunga, Assistant Executive Secretary	A	B	C
D. C. A. Auby, Secretary	A	B	C
G. Moulton, Statistical/Conservation Measures Officer	A	B	
B. L. Marshall, Statistical Clerk	A		
C. L. Kerr, Statistical/Reception Clerk	A		
F. D. Keating, Administrative Assistant		B	
S. Goodick, Accounting Officer		B	

**SECRETARIAT ASSISTANTS FROM HOST COUNTRY**

Gisela Diaz López		B	
Tegra Barreiro Martinez		B	
Ana Maria Castro Fernández		B	
Yolanda di Giacovo		B	
Paloma Gonzalez Fontanais		B	
Isabel Tembra Iglesias		B	
José Antonio Lourido Santiago		B	
David Fragio Agra		B	
Alberto Puga de Jesús		B	

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**Meetings\***

- A Scientific Council Meeting, 6-20 June 2002
- B Scientific Council Annual Meeting, 16-20 September 2002 (Note: Symposium participants are listed with its report).
- C Scientific Council Meeting, 6-13 November 2002.



## LIST OF RECOMMENDATIONS IN 2002

The following are the specific **recommendations made by the Scientific Council** at its meetings through 2002 besides those made with respect to scientific advice on stocks considered. The recommendations with respect to stock advice appear in the stock-by-stock Summary Sheets presented in this publication. Recommendations listed under the Standing Committees were **endorsed** by the Scientific Council.

All recommendations listed here were **adopted** by the Scientific Council and are presented as they appear in this publication under the relevant sections and pages mentioned.

### Scientific Council Meeting, 6-20 June 2002

#### SCIENTIFIC COUNCIL

**NOTE:** All 6-20 June 2002 recommendations pertaining to the work of the Scientific Council, except those related to stocks under STACFIS, were listed in Part A, Sections III, IV and V. These and other recommendations pertaining to all Constituent Bodies of NAFO are presented below under the relevant section and subject headings.

## XI. REVIEW OF SCIENTIFIC COUNCIL WORKING PROCEDURES/PROTOCOL

### 1. Implementation of Precautionary Approach

#### b) Further Development of PA Methodology (page 49)

- *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.*
- *\$5 000 be requested to fund travel costs for 2 invited experts to participate in a 2003 Workshop.*

## XII. OTHER MATTERS

### 3. Participation in FAO Committee on Fisheries (COFI) (Page 51)

- *the Assistant Executive Secretary attend the Twenty-fifth Session of the Committee on Fisheries (COFI) to be held in Rome, Italy during 24-28 February 2003, and the meeting of the Regional Fishery Bodies to be held immediately after the COFI Meeting.*

### 4. Report on NAFO Intersessional Meetings (page 51)

- *Fisheries Commission and General Council take the necessary steps to ensure that Contracting Parties adhere to the protocols for collecting data for scientific purposes as adopted by the Fisheries Commission, and that provisions be made to allow the Secretariat to develop a database to facilitate access and analysis of these data by Scientific Council.*

### 6. Other Business

#### b) Multi-species Fisheries Considerations (page 52)

- *the issue of fleet-based approaches to data collection and collation be included as an agenda item for discussion by Scientific Council during the September 2002 Meeting, and that during the summer, representatives of Contracting Parties should consider what analyses may be required and prepare any documentation considered appropriate to aid in the September discussions.*

**FISHERIES ENVIRONMENT (STACFEN)****4. Mini-Symposium on Hydrographic Variability in NAFO Waters, 1991-2000** (page 59)

- *the proceedings of the mini-Symposium on "Hydrographic Variability in NAFO Waters for the Decade 1991-2000 in Relation to Past Decades" be published in a special issue of the Journal of the Northwest Atlantic Fisheries Science.*

**6. Long-term Environmental Indicators****b) Formulation of Recommendations Based on Environmental Conditions** (page 64)

- *further studies be conducted attempting to link climate and fisheries and to bring forward such studies for review at STACFEN.*
- *the STACFEN Chair, or designate, be included in the presentation of scientific advice from the Scientific Council to the Fisheries Commission at its September 2002 meeting, and further that such presentations be made every 5 years or more frequently if significantly large changes in the environment are observed.*

**9. The Production of a NAFO Annual Ocean Climate Status Summary** (page 66)

- *an annual climate status report beginning in 2003 to describe environmental conditions during the previous year be produced, that this be compiled prior to the annual June Meeting and posted prominently on the NAFO website.*

**PUBLICATIONS (STACPUB)****3. Review of Scientific Publications****b) Review of Mailing Lists and Continuation of Printed Copies** (page 72)

- *the Secretariat provide a copy of the mailing list to each delegation's representatives. Representatives are requested to review the list and provide a list of names that are no longer involved with NAFO and that should be removed from the list.*

**5. Electronic Communications, Including NAFO Website****a) Public Access Areas of Website** (page 72)

- *the Secretariat maintain the restricted website area for specific Scientific Council business, and that the restricted website name be changed on an annual basis in order to maintain restricted access.*

**6. Promotion and Distribution of Scientific Publications****b) NAFO Website** (page 72)

- *STACFEN's annual climate status summary report on essential climatic conditions in the NAFO Convention Area be published on the website.*
- *"Informational bulletins" of interest to NAFO Contracting Parties, such as location of mooring of ocean current meters in the Flemish Pass, should also be published on the website.*



9. **Funding of Future NAFO Symposia** (page 74)

- *Secretariat asks the host country to fund a social event during the Elasmobranch Symposium.*

**RESEARCH COORDINATION (STACREC)**

3. **Fishery Statistics**

b) **CWP Sessions 2002/2003**

ii) **CWP 20<sup>th</sup> Session, January 2003** (page 77)

- *the Assistant Executive Secretary attend the CWP 20<sup>th</sup> Session to be held in the Seychelles during 21-24 January 2003.*
- *the Rules of Procedure of the Scientific Council be modified to include participation at CWP sessions in the functions of the Vice-Chair who is also the Chair of STACREC and that the Scientific Council Chair address the budgetary aspect of this to the Executive Secretary with respect to the attendance at the 20<sup>th</sup> CWP Session and subsequent sessions.*

c) **Reporting of Catch Statistics in Scientific Council Summary Sheets** (page 77)

- *STACFIS Tables and the Scientific Council Summary Sheets should include both the catch data used by STACFIS in the stock assessments and the officially reported STATLANT 21A data.*

5. **NAFO Observer Protocol** (page 86 and 87)

- *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.*
- *the development of a training and operation manual for the collection of scientific data in the Observer Program and Satellite Tracking continue, and that the Scientific Council be represented at the September 2002 STACTIC Meeting to further pursue this issue.*
- *the Observer Program Access database developed by Canada be adapted by the NAFO Secretariat to capture data collected under the NAFO Program for Observers and Satellite Tracking, with highest priority given to inclusion of current data and secondary priority given to capturing the historic data.*
- *the Secretariat conduct a trial converting 2002 fishery data from the Observer Program to the Access electronic database with a view to establishing a budget for further conversion of observer data.*

7. **Other Matters**

d) **Research Activities** (page 90)

- *in future years the Secretariat compile the reports of research activities as a working document for the June Meeting, and that it then be presented to STACREC as a SCS document at its September Meeting.*

f) **Other Business** (page 90)

- *Contracting Parties report the catches of wolffish by species, and the STATLANT questionnaires be modified to distinguish between the spotted wolffish (*Anarhichas minor*), Northern wolffish (*A.**

*denticulatus*) and the striped or Atlantic wolffish (*A. lupus*) and that the Secretariat inform Contracting Parties of this request (including all necessary information) as soon as possible.

### **FISHERIES SCIENCE (STACFIS)**

#### **A. STOCKS OFF GREENLAND AND IN DAVIS STRAIT**

##### **Greenland Halibut (*Reinhardtius hippoglossoides*) in Subarea 0 and Division 1A Offshore and Divisions 1B-1F**

###### **Research Recommendations** (page 97)

STACFIS **recommended** that *the investigations of the by-catch of Greenland halibut in the shrimp fishery in Subareas 0 and 1 should be continued and the results should be made available before the assessment in 2003.*

##### **Greenland Halibut (*Reinhardtius hippoglossoides*) in Division 1A Inshore**

###### **Research Recommendations** (page 103)

Voluntary logbooks were introduced in 1999 but have only covered a small proportion of the landings due to poor return rates. STACFIS therefore **recommended** that *authorities consider means to ensure a higher return rate of logbooks in the Greenland halibut commercial fishery in Div. 1A.*

STACFIS **recommended** that *studies of the longline survey in Div. 1A be continued to investigate if the observed variation in CPUE is caused by natural behaviour of the Greenland halibut or if it is due to survey design.*

STACFIS **recommended** that *investigations of by-catch of juvenile Greenland halibut in the commercial shrimp fishery in Subareas 0+1 be continued.*

STACFIS **recommended** that *the discard rate of 'small Greenland halibut' in Div. 1A be investigated.*

##### **Demersal Redfish (*Sebastes* spp.) in Subarea 1**

###### **Research Recommendation** (page 107)

STACFIS **recommended** that *studies on maturation and reproduction of demersal redfish in Subarea 1 should be carried out.*

##### **Other Finfish in Subarea 1**

###### **Research Recommendations** (page 108)

STACFIS **recommended** that *for Subarea 1, the length disaggregated abundance and biomass data for American plaice, Atlantic wolffish, spotted wolffish and thorny skate, derived from the Greenland shrimp/groundfish survey, should be split by recruits and SSB, respectively.*

STACFIS **recommended** that *the species composition and quantity of other finfish discarded in the shrimp fishery in Subarea 1 be quantified if possible.*

#### **B. STOCKS ON THE FLEMISH CAP**

##### **Redfish (*Sebastes mentella* and *Sebastes fasciatus*) in Division 3M**

###### **Assessment Results** (page 122)

STACFIS noted that measures should be taken to reduce significantly the actual proportion of very small

redfish (<12 cm) in the by-catch of the Div. 3M shrimp fishery. In order to assist in developing possible approaches to achieve this, STACFIS **recommended** that *information on the distribution on shrimp and small redfish (<12 cm) be compiled for review during the June 2003 meeting of Scientific Council.*

STACFIS **recommended** that *an update of the Div. 3M redfish by-catch information be compiled on a annual basis, including the estimated weights and numbers of redfish caught annually in the Div. 3M shrimp fishery as well as tables showing their size distribution.*

#### **American Plaice (*Hippoglossoides platessoides*) in Division 3M**

##### **Future Studies** (page 127)

STACFIS **recommended** that *for American plaice in Division 3M current initiatives aiming at reconciling age determinations from different age readers be continued.*

#### **C. STOCKS ON THE GRAND BANK**

##### **Redfish (*Sebastes mentella* and *Sebastes fasciatus*) in Divisions 3L and 3N**

##### **Current and Future Studies** (page 134)

STACFIS **recommended** that *further studies be carried out to further clarify stock structure of redfish stock of interest to NAFO.*

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

##### **Research survey data** (page 147)

STACFIS **recommended** that *these comparative trials between Canada and EU-Spain be continued and that an analysis of the 2001 and 2002 comparative fishing trials results be presented in June 2003.*

##### **Estimation of Parameters** (page 152)

STACFIS **recommended** that *further exploration of the ASPIC model with yellowtail flounder data be conducted for 2003, including sensitivity of the model to various indices and to convergence criteria.*

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

##### **Research Recommendation** (page 161)

STACFIS **recommended** that *initial investigations to evaluate the status of capelin in Div. 3NO utilize trawl acoustic surveys to allow comparison with the historical time series.*

#### **D. Widely Distributed Stocks**

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

##### **Research Recommendation** (page 179)

For northern shortfin squid in Subareas 3+4, STACFIS **recommended** that *survey abundance and biomass indices for Subarea 3 be developed from a subset of strata in the Canadian multi-species bottom trawl survey that occurs during September-December.*

**Scientific Council Meeting, 16-20 September 2002**

***PUBLICATIONS (STACPUB)***

**3. Review of Scientific Publications**

**b) Status of the 2001 "Deep Sea Fisheries" Symposium Proceedings** (page 226)

- STACPUB noted that nearly half of the manuscripts from the Deep-sea Fisheries Symposium are not ready for publication. STACPUB **recommended** that *conveners of the Deep-sea Fisheries Symposium be asked to remind reviewers and authors of manuscripts to complete their work as soon as possible.*

**c) Information from the 2002 Elasmobranch Symposium** (page 226)

- STACPUB **recommended** that *a summary of the Elasmobranch Symposium and a PowerPoint presentation summarizing the symposium be published on the NAFO website.*

**6. Other Matters** (page 227)

- STACPUB **recommended** that *an additional agenda item for the 2003 June Meeting should be introduced to review the current requirement of submitting both research document and a manuscript for publication in Symposium Proceedings.*

**Scientific Council Meeting, 6-13 November 2002**

***FISHERIES SCIENCE (STACFIS)***

**III. STOCK ASSESSMENTS**

**1. Northern Shrimp (*Pandalus borealis*) in Division 3M**

**d) Research Recommendations** (page 254)

STACIS **recommended** that, for shrimp in Div. 3M:

- *work on age structured population models should be continued.*
- *biological and CPUE data from all fleets fishing for shrimp in the area, be submitted in advance of the 2003 Scientific Council Meeting on shrimp .*
- *a thorough investigation into the methods used to derive a CPUE index for shrimp be conducted and submitted in advance of the 2003 Scientific Council Meeting on shrimp.*

**2. Northern Shrimp (*Pandalus borealis*) in Divisions 3L, 3N and 3O**

**d) Research Recommendations** (page 260)

STACFIS **recommended** that, for shrimp in Div. 3LNO:

- *biological and CPUE data from all fleets fishing for shrimp in the area, be submitted in advance of the 2003 Scientific Council Meeting on shrimp.*

3. **Northern Shrimp (*Pandalus borealis*) in Subareas 0 and 1**

g) **Research Recommendations** (page 273)

For shrimp in Div. 0A and Subarea 1, STACFIS **recommended** that:

- *sampling of catches by observers – essential for assessing stock age, size and sex composition – be re-established.*
- *annual length-weight relationships be constructed as routine part of survey data analyses.*

4. **Northern Shrimp (*Pandalus borealis*) in Denmark Strait and off East Greenland**

c) **Research Recommendations** (page 278)

For shrimp in Denmark Strait and off East Greenland, STACFIS **recommended** that:

- *a survey be conducted, to provide fishery independent data of the stock throughout its range.*
- *sampling of catches by observers – essential for assessing stock age, size and sex composition – be re-established.*