

PART D

Miscellaneous

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AGENDA I

SCIENTIFIC COUNCIL MEETING, 1-15 JUNE 2006

- I. Opening (Scientific Council Chair: Antonio Vazquez)
 1. Appointment of Rapporteur
 2. Adoption of Agenda
 3. Attendance of Observers
 4. Plan of Work
 5. Report of Proxy Votes (by Executive Secretary)
 6. Housekeeping Issues
- II. Review of Scientific Council Recommendations in 2005
- III. Fisheries Environment (STACFEN Chair: Eugene Colbourne)
 1. Opening
 - a) Introduction and Administrative Matters
 - b) Appointment of Rapporteur
 2. Invited speaker- (Dr. Philip C. Reid, Director, Sir Alister Hardy Foundation for Ocean Science, Plymouth, UK "Climate impacts on North Atlantic ecosystems: the relevance of plankton monitoring to NAFO").
 3. Marine Environmental Data Service (MEDS) Report for 2005
 4. Review of the physical, biological and chemical environment in the NAFO Convention Area during 2005
 5. Interdisciplinary studies
 6. An update of the on-line annual ocean climate status summary for the NAFO Convention Area
 7. Environmental indices (implementation in the assessment process)
 8. Formulation of recommendations based on environmental conditions during 2005
 9. National Representatives
 10. Other Matters
 11. Adjournment
- IV. Publications (STACPUB Chair: Manfred Stein)
 1. Opening
 - a) Appointment of Rapporteur
 2. Review of Recommendations in 2005
 3. Review of Publications
 - a) Journal of Northwest Atlantic Fishery Science
 - b) NAFO Scientific Council Studies
 - c) NAFO Statistical Bulletin
 - d) NAFO Scientific Council Reports
 - e) Index and List of Titles
 - f) Book by M. P. Fahay
 - g) Others
 4. NAFO Website
 - a) Web statistics
 - b) Presentation of new structure of Public NAFO Website
 5. Journal of Northwest Atlantic Fishery Science
 - a) Review of the format of Journal of Northwest Atlantic Fishery Science
 - b) Journal Copyright
 6. Promotion and Distribution of Scientific Publications
 - a) Invitational papers
 - b) New initiatives for publications

7. Editorial Matters Regarding Scientific Publications
 - a) Review of Editorial Board
 - i) Proposal for general editor for JNAFS
 - ii) Journal article reprints
 - iii) Nomination of Associate Editor
 - b) Progress report of publication of Vol. 36, Journal issue of Miscellaneous Papers
 - c) Progress report of publication of Vol. 37, Symposium "The Ecosystem of the Flemish Cap"
 - d) Progress report of publication of book by Michael P. Fahay on "Early Stages of Fishes in the Western North Atlantic Ocean North of 35°N and West of 40°W"
 8. Papers for Possible Publication
 9. Other Matters
 - a) Science Citation Index
 - b) Closing
- V. Research Coordination (STACREC Chair: Konstantin Gorchinsky)
1. Opening
 - a) Appointment of Rapporteur
 2. Review of Previous Recommendations
 3. Fishery Statistics
 - a) Progress report on Secretariat activities in 2005/2006
 - i) Acquisition of STATLANT 21A and 21B reports for recent years
 - b) Report of the Intersessional Coordinating Working Party on Fishery Statistics (CWP), Madrid, Spain, 15-16 February 2006
 - c) Various matters (FISHSTAT Plus, NAFO-FAO statistical data discrepancies)
 4. Research Activities
 - a) Biological sampling
 - i) Report on activities in 2005/2006
 - 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 2005 (by National Representatives and Designated Experts)
 - ii) Surveys planned for 2006 and early-2007
 - c) Stock assessment spreadsheets - update
 - d) Greenland halibut ageing workshop
 - e) Selectivity studies
 - f) Introduction of OMEGA gauge
 5. FAO Cooperation
 - a) Report of the Fisheries Resources Monitoring System (FIRMS) Steering Committee (FSC) Meeting, Madrid, Spain 13-15 February 2006
 - b) Participation at ICES/FAO WG on Fishing Technology and Fish Behaviour – Steve Walsh
 6. Review of SCR and SCS Documents
 7. Other Matters
 - a) Tagging activities
 - b) Research activities
 - c) Other business

VI. Fisheries Science (STACFIS Chair: Don Power)

1. Opening
2. General Review
 - a) Review of Recommendations in 2005
 - 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 States (Annex 1) (Northern shrimp in Div. 3M and Div. 3LNO (Item 1) will be undertaken during Scientific Council Meeting October/November, 2006):
 - i) Thoroughly assessed stocks:
 - Cod in Div. 3M
 - American plaice in Div. 3M
 - Witch flounder in Div. 3NO
 - Yellowtail flounder (Div. 3LNO)
 - Northern shortfin squid in Subareas 3 and 4
 - Greenland halibut (Subarea 2 and Div. 3KLMNO)
 - Thorny skate (Div. 3LNO)
 - ii) Monitored stocks. These should be provided in the format agreed in June 2005 (NAFO Sci. Coun. Rep., 2005, Part A, Appendix IV, 2.i):
 - Cod in Div. 3NO
 - Redfish in Div. 3LN; Div. 3M; Div. 3O
 - American plaice in Div. 3LNO
 - Witch flounder in Div. 2J and 3KL
 - Capelin in Div. 3NO
 - White hake in Div. 3NO
 - b) Stocks Within the 200-mile Fishery Zone in Subareas 0 to 4, as Requested by Canada (Annex 2):
 - Greenland halibut in Subarea 2 and Div. 3KLMNO (Item 3)
 - c) Stocks requested by Denmark (Greenland) (Annex 3) (Northern shrimp in Denmark Strait and east of southern Greenland (Item 4) will be undertaken during Scientific Council Meeting October/November, 2006):
 - Roundnose grenadier in Subareas 0 and 1 (Item 1)
 - Demersal redfish and other finfish in Subarea 1 (Item 2)
 - Greenland halibut in Div. 1A inshore (Item 3)
 - d) 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 (Annex 2, Item 1 and Annex 3, Item 4) will be undertaken during Scientific Council Meeting October/November, 2006):
 - Greenland halibut (Subareas 0 + Division 1A Offshore and Divisions 1B-1F) (Annex 2, Items 1 and 2; Annex 3, Item 3)
 - e) Other stocks:
 - Roughhead grenadier in Subareas 2 and 3 (monitor)

4. Other Requests

- a) Review of information on stock structure, relative biomass, distribution and life history characteristics of spiny dogfish (*Squalus acanthias*) and black dogfish (*Centroscyllium fabricii*) occurring within the NRA (Annex 1, Item 8).
- b) Evaluation of the consequences of a mesh size reduction to 90-100 mm in the directed redfish fishery in Div. 3O (Annex 1, Item 12)

5. Other Matters

- a) Other Business

VII. Management Advice and Responses to Special Requests

1. Fisheries Commission (Annex 1, Northern shrimp in Div. 3M and Div. 3LNO (item 1) will be undertaken during Scientific Council Meeting October/November, 2006)
 - a) Request for advice on TACs and other management measures for the Year 2007
 - i) Greenland halibut in Subarea 2 and Div. 3KLMNO
 - b) Request for advice on TACs and other management measures for the Years 2007 and 2008
 - i) Cod in Div. 3M
 - ii) American plaice in Div. 3M
 - iii) Witch flounder in Div. 3NO
 - iv) Yellowtail flounder in Div. 3LNO
 - v) Thorny skate in Div. 3LNO
 - vi) Northern shortfin squid in SA 3 & 4
 - c) Special requests for management advice
 - i) The precautionary approach (Item 4-5)
 - ii) Evaluation of recovery plans (Items 6)
 - iii) Pelagic *S. mentella* (redfish) in Subareas 1-3 and adjacent ICES area (Item 7)
 - iv) Spiny dogfish and Black dogfish (Item 8)
 - v) Deepwater habitats (Item 9)
 - vi) Seals (item 10)
 - vii) Scientific Observer Program (Item 11)
 - viii) Mesh size reductions for Div. 3O redfish fishery (Item 12)
 - d) Monitoring of stocks for which multi-year advice was provided in 2005
 - i) Cod in Div. 3NO
 - ii) American plaice in Div. 3LNO
 - iii) Witch flounder in Div. 2J + 3KL
 - iv) Redfish in Div. 3M
 - v) Redfish in Div. 3LN
 - vi) Redfish in Div. 3O
 - vii) Capelin in Div. 3NO
 - viii) White hake in Div. 3NOPs
2. Coastal States
 - a) Request by Canada for advice (Annex 2)
 - i) TAC for Greenland halibut in Subarea 2 and Div. 3K and in Div. 3LMNO (Item 3)
 - b) Request by Denmark (Greenland) for advice (Annex 3)
 - i) Roundnose grenadier in Subareas 0 and 1 (monitor) (Item 1)
 - ii) Demersal redfish and other finfish in Subarea 1 (monitor) (Item 2)
 - iii) Greenland halibut in Div. 1A inshore (Item 3)

- c) Request by Canada and Denmark (Greenland) for advice on TACs and other management measures (Annexes 2 and 3)
 - i) Greenland halibut in Subarea 0 + Division 1A Offshore and Divisions 1B-F

VIII. Future Scientific Council Meetings 2006 and 2007

- 1. Scientific Council Meeting, September 2006, Dartmouth, NS, Canada
- 2. Joint Scientific Council/ICES WGPAND Meeting, October/November 2006 (assessment of shrimp stocks) Copenhagen, Denmark
- 3. Scientific Council Meeting, June 2007
- 4. Scientific Council Meeting and Special Session, September 2007
- 5. Scientific Council Meeting, November 2007 (assessment of shrimp stocks)

IX. Arrangements for Special Sessions

- 1. Progress Report on Special Session in 2006: Environmental and Ecosystem Histories in the Northwest Atlantic - What Influences Living Marine Resources?
- 2. Progress Report on Special Session in 2007: Reproductive Potential
- 3. Topics for future Special Sessions
- 4. Further Discussion

X. Reports of Working Groups

- 1. Working Group on Reproductive Potential (Chair: E. A. Trippel)

XI. Review of Scientific Council Working Procedures/Protocol

- 1. NAFO Scientific Council Observership at ICES ACFM Meetings
- 2. General Plan of Work for Annual Meeting in September
- 3. Facilities, Technological and General Secretariat Support
- 4. Review of Frequency of Assessments
- 5. Other

XII. Other Matters

- 1. Proposal of a Study Group on deep-water habitats in the NAFO area
- 2. Report of CWP Intersessional Meeting, Madrid, Spain
- 3. Report from the FIRMS Steering Committee (FSC) Meeting of February 2006
- 4. Meeting Highlights for NAFO Website
- 5. NAFO reform
- 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

AGENDA II**SCIENTIFIC COUNCIL MEETING, 18-22 SEPTEMBER 2006**

- I. Opening (Chair: Antonio Vázquez)
 1. Appointment of Rapporteur
 2. Adoption of Agenda
 3. Attendance of Observers
 4. Plan of Work
- II. Review of Scientific Council Recommendations from June 2006
- III. Fisheries Science (STACFIS Chair: Don Power)
 1. Opening
 2. Nomination of Designated Experts
 3. Other Matters
 - a) Review of SCR and SCS Documents (if necessary)
 - b) Other Business
- IV. Research Coordination (STACREC Chair: Konstantin Gorchinsky)
 1. Opening
 2. Fisheries Statistics
 - a) Progress Reports on Secretariat Activities
 - i) Acquisition of STATLANT 21 data
 - ii) Publication of statistical information
 3. Research Activities
 - a) Surveys Planned for 2006 and Early-2007
 - b) Consideration of a revisited edition of the Manual of Groundfish Surveys in the Northwest Atlantic (Doubleday, 1981)
 4. Stock Assessment Database
 - a) Evaluation of the Assessment Data Submission Procedure
 5. Other Matters
 - a) Review of SCR and SCS documents
 - b) Other Business
- V. Publications (STACPUB Chairman: M. Stein)
 1. Opening
 2. Review of Recommendations from June 2006
 3. Status of Scientific Publications
 - a) Papers from June 2006 Meeting
 - b) Status of the Fahay Publication
 - c) Other Publications
 4. Editorial Matters e-JNAFS Vols 34-37 (Conversion to new format)
 5. Other Matters
- VI. Special Requests from Fisheries Commission
 1. Update on Advice for Northern Shrimp in Div. 3M
 2. Update on Advice for Northern Shrimp in Div. 3LNO

- VII. Review of Future Meeting Arrangements
 - 1. Scientific Council Meeting on Shrimp, October/November 2006
 - 2. Scientific Council Meeting, June 2007
 - 3. Annual Meeting, September 2007
 - 4. Scientific Council Meeting on Shrimp, 2007
 - 5. Scientific Council Meeting, June 2008

- VIII. Future Special Sessions
 - 1. Progress Report on Special Session in 2007: Reproductive Potential
 - 2. Topics for future Special Sessions

- IX. Scientific Council Working Procedures and Protocol
 - 1. Timetable and Frequency of Assessments
 - 2. Coral identification keys and collection protocols.

- X. Other Matters
 - 1. Classification of Stocks (FIRMS)
 - 2. Initiatives for approaching the Ecosystem Approach to Fisheries
 - 3. Other Business

- XI. Adoption of Reports
 - 1. Committee Reports STACFIS, STACREC, STACPUB
 - 2. Report of Scientific Council

- XII. Adjournment

AGENDA III**SCIENTIFIC COUNCIL MEETING, 25 OCTOBER-2 NOVEMBER 2006**

- I. Opening (Chair: Antonio Vázquez)
 1. Appointment of Rapporteur
 2. Adoption of Agenda
 3. Attendance of Observers
 4. Plan of Work
- II. Review of Recommendations in 2005 and in 2006 (to include outcome of Scientific Council Meeting of 18-22 September 2006)
- III. NAFO/ICES Pandalus Assessment Group
- IV. Formulation of Advice (see Annexes 1, 2 and 3)
 1. Request from Fisheries Commission (to include outcome of Annual Meeting of 18-22 September 2006)
 - a) Northern shrimp (Div. 3M)
 - b) Northern shrimp (Div. 3LNO)
 2. Requests from Coastal States
 - a) Northern shrimp (Subareas 0 and 1)
 - b) Northern shrimp (in Denmark Strait and off East Greenland)
- V. Other Matters
 1. Meeting of October/November 2007
 2. Meeting of October/November 2008
 3. Coordination with ICES Working Groups on Shrimp Stock Assessments
 4. Other Business
- V. Adoption of Scientific Council and NIPAG Reports
- VI. Adjournment

AGENDA IV

NAFO/ICES PANDALUS ASSESSMENT GROUP

(held at ICES Headquarters, Copenhagen, Denmark on 25 October-2 November 2006)

I. Opening (Co-chairs: Don Power and Michaela Aschan)

1. Appointment of Rapporteur
2. Adoption of Agenda
3. Plan of Work

II. General Review

1. Review of Recommendations in 2005 and in 2006
2. Review of Catches

III. Stock Assessments

- Northern shrimp (Division 3M)
- Northern Shrimp (Divisions 3LNO)
- Northern shrimp (Subareas 0 and 1)
- Northern shrimp (in Denmark Strait and off East Greenland)
- Northern shrimp in Skagerrak and Norwegian Deep (ICES Divisions IIIa and IVa East)
- Northern shrimp in Fladen Ground (ICES Division IVa)
- Northern Shrimp in Barents Sea and Svalbard area (ICES Sub-areas I & II)

IV. Other Business

V. Adjournment

**ANNEX 1. FISHERIES COMMISSION'S REQUEST FOR SCIENTIFIC ADVICE ON MANAGEMENT
IN 2007 OF CERTAIN STOCKS IN SUBAREAS 2, 3 AND 4**

1. The Fisheries Commission with the concurrence of the Coastal State as regards the stocks below which occur within its jurisdiction, requests that the Scientific Council, at a meeting in advance of the 2006 Annual Meeting, provide advice on the scientific basis for the management of the following fish and invertebrate stocks or groups of stocks in 2007:

Northern shrimp (Div. 3M, 3LNO)
Greenland halibut (Subarea 2 and Div. 3KLMNO)

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 2006 Annual Meeting, provide advice on the scientific basis for the management of the following fish stocks on an alternating year basis:

Cod (Div. 3NO; Div. 3M)
Redfish (Div. 3M; Div. 3LN; Div. 3O)
Yellowtail flounder (Div. 3LNO)
American plaice (Div. 3LNO; Div. 3M)
Witch flounder (Div. 2J3KL; Div. 3NO)
Skates (Div. 3LNO)
White hake (Div. 3NO)
Capelin (Div. 3NO)
Northern shortfin squid (Subareas 3 and 4)

- In 2005, advice was provided for 2006 and 2007 for cod in 3NO, American plaice in 3LNO, witch flounder in 2J3KL, redfish in 3M, redfish in 3LN, redfish in 3O, white hake in 3NO and capelin in 3NO. These stocks will next be assessed in 2007.
- In 2006, advice will be provided for 2007 and 2008 for cod in 3M, American plaice in 3M, yellowtail flounder in 3LNO, witch flounder in 3NO, thorny skate in 3LNO and northern shortfin squid in SA 3&4. These stocks will next be assessed in 2008.

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_{2005} in 2007 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 level of fishing effort or fishing mortality (F) required to take two-thirds MSY catch in the long term should be calculated.
 - d) For those resources for which only general biological and/or catch data are available, few standard criteria exist on which to base advice. The stock status should be evaluated in the context of management

requirements for long-term sustainability and the advice provided should be consistent with the precautionary approach.

- e) Spawning stock biomass levels considered necessary for maintenance of sustained recruitment should be recommended for each stock. In those cases where present spawning stock size is a matter of scientific concern in relation to the continuing reproductive potential of the stock, management options should be offered that specifically respond to such concerns.
- f) Information should be provided on stock size, spawning stock sizes, recruitment prospects, fishing mortality, catch rates and TACs implied by these management strategies for the short and the long term in the following format:
 - I. For stocks for which analytical-type assessments are possible, graphs should be provided of all of the following for the longest time-period possible:
 - historical yield and fishing mortality;
 - spawning stock biomass and recruitment levels;
 - catch options for the year 2007 and subsequent years over a range of fishing mortality rates
 - (F) at least from $F_{0.1}$ to F_{max} ;
 - spawning stock biomass corresponding to each catch option;
 - yield-per-recruit and spawning stock per recruit values for a range of fishing mortalities.
 - II. For stocks for which advice is based on general production models, the relevant graph of production as a function of fishing mortality rate or fishing effort should be provided. Age aggregated assessments should also provide graphs of all of the following for the longest time period possible:
 - exploitable biomass (both absolute and relative to B_{MSY})
 - yield/biomass ratio as a proxy for fishing mortality (both absolute and relative to F_{MSY})
 - estimates of recruitment from surveys, if available.
 - III. Where analytical methods are not attempted, the following graphs should be presented, for one or several surveys, for the longest time-period possible:
 - time trends of survey abundance estimates, over:
 - an age or size range chosen to represent the spawning population
 - an age or size-range chosen to represent the exploited population
 - recruitment proxy or index for an age or size-range chosen to represent the recruiting population.
 - fishing mortality proxy, such as the ratio of reported commercial catches to a measure of the exploited population.

For age-structured assessments, yield-per-recruit graphs and associated estimates of yield-per-recruit based reference points should be provided. In particular, the three reference points, actual F, $F_{0.1}$ and F_{max} should be shown.

4. Noting the Precautionary Approach Framework as endorsed by Fisheries Commission, the Fisheries Commission requests that the Scientific Council provide the following information for the 2006 Annual Meeting of the Fisheries Commission for all stocks under its responsibility requiring advice for 2007:
 - a) the limit and precautionary reference points as described in Annex II of the UN Fisheries Agreement indicating areas of uncertainty (for those stocks for which precautionary reference points cannot be determined directly, proxies should be provided);
 - b) the stock biomass and fishing mortality trajectory over time overlaid on a plot of the proposed PA Framework (for those stocks where biomass and/or fishing mortality cannot be determined directly, proxies should be used);

- c) information regarding the current Zone the stock is within as well as proposals regarding possible harvest strategies to move the resource to (or maintain it in) the Safe Zone including medium term considerations and associated risk or probabilities which will assist the Commission in developing the management strategies described in paragraphs 4 and 5 of Annex II in the Agreement.
5. The following elements should be taken into account by the Scientific Council when considering the Precautionary Approach Framework:
- a) 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 associated with crossing the reference point such as recruitment overfishing, impaired recruitment, etc.
 - c) When a buffer reference point is proposed in the absence of a risk evaluation 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.
 - 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 maintaining the stock within, or moving it to, the Safe Zone. Whenever possible, this information should be cast in terms of risk assessments relating fishing mortality rates to the trends in biomass (or spawning biomass), 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} , and F_{lim} and target F reference points selected by managers.
6. Many of the stocks in the NAFO Regulatory Area are well below any reasonable level of B_{lim} or B_{buf} . For these stocks, the most important task for the Scientific Council is to inform on how to rebuild the stocks. In this context and building on previous work of the Scientific Council in this area, the Scientific Council is requested to evaluate various scenarios corresponding to recovery plans with timeframes of 5 to 10 years, or longer as appropriate. This evaluation should provide the information necessary for the Fisheries Commission to consider the balance between risks and yield levels, including information on the consequences and risks of no action at all.
- a) information on the research and monitoring required to more fully 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;
 - b) 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; and
 - c) propose criteria and harvest strategies for new and developing fisheries so as to ensure they are maintained within the Safe Zone.

7. 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.
8. In accord with the recommendation from the 2002 NAFO Symposium on Elasmobranch Fisheries that “*the NAFO Scientific Council [be directed] to investigate the status and management needs of elasmobranchs in NAFO waters*”, the Scientific Council is requested to review all available information from both research vessel surveys and commercial catches on the stock structure, relative biomass, geographic distribution, life history, and size/age/sex composition of spiny dogfish (*Squalus acanthias*) occurring within the NAFO Regulatory Area. The Council is also requested to provide similar information on black dogfish (*Centroscyllium fabricii*) in the NRA and update the information on this species previously provided by the Scientific Council in 2001. For both species, the Council is requested to provide historical and recent information on catches and by-catches, and to identify those fisheries in which either of the two species are taken as bycatch.
9. In order to assist the Fisheries Commission in prioritizing the areas of ecological and biological significance and determining appropriate management measures to conserve vulnerable deep water habitats and sensitive areas, the following request is submitted to the Scientific Council:
 - a) Regarding the conservation of vulnerable deep-water habitats, the NAFO Scientific Council is requested to:
 - i. Develop criteria for determining areas of marine ecological and biological significance, in particular areas associated with seamounts, hydrothermal vents, and cold-water corals in the NRA.
 - ii. Provide information on the distribution of cold-water corals, hydrothermal vents, and seamounts in the NAFO Regulatory area. To the extent that information allows, differentiate among
 - Areas where there is information on which to evaluate the occurrence of corals;
 - Areas where concentrations of corals (soft/hard) are known to occur; and
 - Areas where concentrations of corals are unlikely to occur.
 - iii. Recognizing the unique character and relatively easy identification of seamounts, develop a data collection protocol for any survey, exploratory, or commercial fishing activity on seamounts in the NRA, to enhance scientific council’s knowledge of these areas.
 - b) With view to assisting the Scientific Council’s work, the Secretariat will be asked to provide information to Scientific Council on historic and recent fishing effort in areas identified in a), b) and c) in a summary fashion, based on VMS and observer data. This information should then be evaluated by Scientific Council to determine levels of fishing activity in these areas, and its potential impact on these areas.
10. Noting the desire of NAFO to apply ecosystem considerations in the conservation and management of fish stocks in the NAFO area, the Scientific Council is requested to provide the Fisheries Commission at its next annual meeting in 2006 with an overview of present knowledge related to role of seals in the marine ecosystem of the Northwest Atlantic and their impact on fish stocks in the NAFO area, taking into account the work of other relevant organizations, including ICES and NAMMCO.
11. The Fisheries Commission requests advice from the Scientific Council as to the utility of introducing a scientific observer programme run by NAFO and aimed at enhancing the collection of data on the status of stocks. In this respect, a scientific observer programme is understood as meaning that the observer be tasked only to collect data/information for stock assessment to be used by the Scientific Council. Scientific observers will not conduct any activity related to control/enforcement and compliance. The Scientific Council is specifically asked to provide advice on the possible structure and coverage of such a programme. The Scientific Council should in this respect take into account the scientific observer programme which is being run by CCAMLR and assess if a similar system could be implemented in NAFO.

12. Taking into account that a reduction of mesh size in different type of trawls is an important element of harmonization of mesh size within and outside of 200-mile limit of the Canadian Zone in the target redfish fishery in Div. 3O, the Fisheries Commission requests the Scientific Council to evaluate possible biological consequences of a reduction of mesh size to 90-100 mm, such as:

- Impact on other stocks in the vicinity of redfish
- Merits of a minimum fish size
- Effect on size composition of redfish catches
- Catch efficiency of different size groups

and provide an advice on the appropriateness of mesh size reduction.

ANNEX 2. CANADIAN REQUEST FOR SCIENTIFIC ADVICE ON MANAGEMENT IN 2007 OF CERTAIN STOCKS IN SUBAREAS 0 TO 4

1. Canada requests that the Scientific Council, at its meeting in advance of the 2006 Annual Meeting of NAFO, subject to the concurrence of Denmark (on behalf of Greenland), provide advice on the scientific basis for management in 2007 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 2007, and to specifically:

- a) advise on appropriate TAC levels for 2007, separately, for Greenland halibut in the offshore area of Divisions OA+1 AB and Divisions OB+1 C-F. The Scientific Council is also asked to advise on any other management measures it deems appropriate to ensure the sustainability of these resources.
 - b) 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_{2005} in 2007 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 the precautionary approach 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 F_{lim} (F_{buf}), as per the NAFO Precautionary Approach Framework.

- 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 NAFO Precautionary Approach Framework.
- c) For those resources for which only general biological advice 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 NAFO Precautionary Approach 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. The biomass graph should indicate the stock trajectory compared to B_{lim}
 - Graphs and tables of catch options for the year 2007 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. As well, Scientific Council should provide the limit and precautionary reference points as described in the NAFO Precautionary Approach Framework, indicating areas of uncertainty (when reference points cannot be determined directly, proxies should be provided).

3. Regarding Greenland halibut in Subarea 2 + Divisions 3KLMNO, Canada requests the Scientific Council:
- 1) to advise on appropriate TAC levels for 2007, based on biomass distribution, for Greenland halibut in these areas separately: SA 2+Division 3K and Divisions 3LMNO.
 - 2) to provide information on the status of Greenland halibut in SA 2+ Divs. 3KLMNO in relation to the Greenland Halibut Rebuilding Plan and Strategy, including commentary on progress in relation to the targets described in the Strategy. In particular Scientific Council is requested to advise:
 - I. whether the 5+ biomass projected for Jan 1 2008 in its 2006 assessment is larger or smaller than this value from Scientific Council's 2005 assessment.
 - II. whether the 5+ biomass projected for Jan 1 2008 in its 2006 assessment is larger or smaller than the 5+ biomass estimated for Jan 1 2003 in its 2006 assessment.
 - III. the probabilities that the 5+ biomass target of 140,000 tonnes will be achieved by the years 2010, 2015, and 2020. SC should assume that the Rebuilding Plan TAC's will be followed in 2006 and 2007, and that various fishing mortality strategies, at least but not restricted to the following, are to be examined for 2008-2019: $F_{0.1}$, F_{max} , and F_{2005} .

Yours sincerely,
 David Bevan
 Assistant Deputy Minister
 Fisheries and Aquaculture Management
 DFO
 Ottawa, Canada

**ANNEX 3. DENMARK'S (GREENLAND) REQUEST FOR SCIENTIFIC ADVICE ON MANAGEMENT
IN 2007 OF CERTAIN STOCKS IN SUBAREA 0 AND 1**

1. In the Scientific Council report of 2005, scientific advice on management of Roundnose grenadier in Subarea 0+1 was given as a 3-year advice (for 2006, 2007 and 2008). Denmark, on behalf of Greenland, requests the Scientific Council to continue to monitor the status of Roundnose grenadier in Subarea 0+1 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 redfish (*Sebastes spp.*) and other finfish in Subarea 1 was in 2005 given for 2006 and 2007. Denmark, on behalf of Greenland, requests the Scientific Council to continue to monitor the status of redfish (*Sebastes spp.*) and other finfish in Subarea 0+1 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.

Furthermore Denmark, on behalf of Greenland, request the Scientific Council to consider if a 3-year advice for redfish (*Sebastes spp.*) and other finfish in Subarea 1 would be appropriate.

3. Subject to the concurrence of Canada as regards Subarea 0, the Scientific Council is requested to provide advice on the scientific basis for the management of Greenland halibut in the offshore area in Subarea 0 + Division 1A Offshore and Divisions 1B-1F in 2007 and as many years ahead as data allow.

Further, for Subarea 1A inshore, the Council is asked to provide advice on allocation of TACs distributed in the areas of Illulissat, Uummannaq and Upernavik, respectively. Also Denmark, on behalf of Greenland, request the Scientific Council to consider if 2-year advice for inshore areas would be appropriate.

4. Subject to the concurrence of Canada as regards Subarea 0, Denmark, on behalf of Greenland, requests the Scientific Council of NAFO before December 2006 to provide advice on the scientific basis for management of Northern shrimp (*Pandalus borealis*) in Subarea 0 and 1 in 2007, and as many years ahead as data allow.

Further, the Council is requested to advise, in co-operation with ICES, on the scientific basis for management of Northern shrimp (*Pandalus borealis*) in the Denmark Strait and adjacent areas east of southern Greenland in 2007, and as many years forward as data allow.

Yours sincerely,
Emanuel Rosing
Assistant Deputy Minister

LIST OF RESEARCH AND SUMMARY DOCUMENTS, 2006**RESEARCH DOCUMENTS (SCR)**

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06/1 ^a	N5210	RIBERGAARD, M. H. Oceanographic investigations off West Greenland 2005. (24 pages)
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06/4 ^a	N5214	VASKOV, A. On including golden redfish (<i>Sebastes marinus</i>) into the calculations to estimate redfish stocks on the Flemish Cap. (10 pages)
06/5 ^a	N5216	MORGAN, M. J., and M. A. TREBLE. A first look at maturity data for Greenland halibut from trawl surveys of NAFO Subarea 0. (10 pages)
06/6 ^a	N5217	GOLOVANOV, S. E., and K. V. GORCHINSKY. Updated state of capelin stock in NAFO Divisions 3NO based on data from trawl surveys. (6 pages)
06/7 ^a	N5219	MURUA, H., and F. GÓNZALEZ. A review on roughhead grenadier (<i>Macrourus berglax</i>) biology and population structure on Flemish Cap (NAFO Division 3M) 1991-2005 based upon EU Flemish Cap bottom survey data. (18 pages)
06/8 ^a	N5220	VASKOV, A. Maturity of golden redfish <i>Sebastes marinus</i> on the Flemish Cap. (7 pages)
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06/10 ^a	N5225	HENDRY, R. M. Environmental conditions in the Labrador Sea in 2005. (13 pages)
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06/12 ^a	N5227	GONZÁLEZ-TRONCOSO, D., E. ROMÁN, and X. PAZ. Results for Greenland halibut and American plaice of the Spanish survey in NAFO Divisions 3NO: biomass, length distribution and age distribution for the period 1997-2005. (43 pages)
06/13 ^a	N5228	GONZÁLEZ-TRONCOSO, D., C. GONZÁLEZ, and X. PAZ. Atlantic cod and yellowtail flounder indices from the Spanish survey conducted in Divisions 3NO of the NAFO Regulatory Area. (26 pages)
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06/15 ^a	N5230	GORCHINSKY, K. V. Provisional results of the Russian fishery for Greenland halibut in the area of West Greenland in 2005. (5 pages)

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06/20 ^a	N5237	KULKA, D. W. Abundance and distribution of demersal sharks on the Grand Banks with particular reference to the NAFO Regulatory Data. (36 pages)
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06/23 ^a	N5241	COLBOURNE, E. B., and S. J. WALSH. The distribution and abundance of yellowtail flounder (<i>Limanda ferruginea</i>) in relation to bottom temperatures in NAFO Divisions 3LNO based on multi-species surveys from 1990-2005. (14 pages)
06/24 ^a	N5242	PETRIE, B., R. G. PETTIPAS, and W. M. PETRIE. An overview of meteorological, sea ice and sea-surface temperature conditions off Eastern Canada during 2005. (28 pages)
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06/31 ^a	N5251	GONZÁLEZ, C., X. PAZ, E. ROMÁN, and M. HERMIDA. Feeding habits of fish species distributed on the Grand Bank (NAFO Divisions 3NO, 2002-2005). (22 pages)

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06/33 ^a	N5254	KULKA, D., C. M. MIRI, and M. R. SIMPSON. Update of the status of white hake (<i>Urophycis tenuis</i> , Mitchill 1815) in NAFO Divisions 3L, 3N, 3O and Subdivision 3Ps. (28 pages)
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06/35 ^a	N5258	LYBERTH, B., and J. BOJE. An assessment of the Greenland halibut stock component in NAFO Division 1A inshore. (55 pages)
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06/39 ^a	N5262	JØRGENSEN, O. Assessment of the Greenland halibut stock component in NAFO Subarea 0 + Division 1A offshore + Divisions 1B-1F. (21 pages)
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06/41 ^a	N5264	WALSH, S. J., M. F. VEITCH, W. B. BRODIE, and E. COLBOURNE. Distribution and abundance of yellowtail flounder (<i>Limanda ferruginea</i>) on the Grand Bank, NAFO Divisions 3LNO, from Canadian bottom trawl survey estimates from 1984-2005.
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06/47 ^a	N5273	BRODIE, W. B., and D. POWER. The Canadian fishery for Greenland halibut in Subarea 2 + Divisions 3LKMNO, with emphasis on 2005. (19 pages)

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^a Scientific Council Meeting, 1-15 June 2006

^b Scientific Council Meeting, 18-22 September 2006

^c NAFO/ICES WG Pandalus Meeting, 25 October-2 November 2006

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06/66 ^c	N5316	CASAS, J. M. Northern shrimp (<i>Pandalus borealis</i>) on Flemish Cap surveys 2006. (24 pages)
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06/81 ^c	N5331	MUNCH-PETERSEN, S., G. SØVIK, and M. ULMESTRAND. The <i>Pandalus</i> stock in Skagerrak and the Norwegian Deep (Divisions IIIa and IVa east). (17 pages)
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06/15 ^a	N5256	NAFO SECRETARIAT. Discussion paper on the future format of the Journal of Northwest Atlantic Fishery Science. (5 pages)
06/16 ^a	N5268	TRIPPEL, E. (CHAIR). Report of the NAFO Working Group on Reproductive Potential. 3 pages)
06/17 ^a	N5267	RÄTZ, H.-J., C. STRANSKY, M. STEIN and H. FOCK. German research report for 2005. (6 pages)
06/18 ^a	N5272	STACPUB CHAIR. Minutes of the pre-STACPUB Meeting. (2 pages)
06/19 ^a	N5275	STENSON, G., R. MERRICK, and T. HAUG. Proposal for the publication of papers presented at the Joint ICES/NAFO Workshop on the Status of Hooded Seal Research in the North Atlantic as a single volume of JNWAFS. (4 pages)
06/20 ^a	N5278	NAFO SECRETARIAT. Electronic Observer Reports. (5 pages)
06/21 ^a	N5279	SC. Revisions by the ad hoc SC WG to the "Chair's NAFO Reform Working Paper"
06/22 ^a	N5282	NAFO. Report of Scientific Council Meeting, 1-15 June 2006.
06/23 ^a	N5287	NAFO. Available data from the commercial fisheries related to stock assessment (2005) and inventory of biological surveys conducted in the NAFO Area in 2005 and biological surveys planned for 2006 and early-2007.
06/24 ^b	N5304	NAFO. Report of Scientific Council Meeting, 18-22 September 2006.
06/25 ^c	N5333	NAFO. Report of Scientific Council Meeting, 25 October-2 November 2006.
06/26 ^c	N5334	NAFO SECRETARIAT. A compilation of research vessel surveys on a stock-by-stock basis.
06/27 ^c	N5336	NAFO/ICES. Report of the NAFO/ICES Pandalus Assessment Group.

^a Scientific Council Meeting, 1-15 June 2006

^b Scientific Council Meeting, 18-22 September 2006

^c Scientific Council Meeting, 25 October – 2 November 2006

LIST OF REPRESENTATIVES AND ADVISERS/EXPERTS, 2006

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- A Scientific Council Meeting, 1-5 June 2006.
- B Scientific Council Annual Meeting, 18-22 September 2006.
- C NAFO Scientific Council and ICES WGPAND Joint Shrimp Meeting, 25 October-2 November 2006.

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LIST OF RECOMMENDATIONS IN 2006

The following are the specific **recommendations made by the Scientific Council** at its meetings through 2006 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.

Scientific Council Meeting, 1-15 June 2006

SCIENTIFIC COUNCIL

NOTE: All 1-15 June 2006 recommendations pertaining to the work of the Scientific Council, except those related to stocks under STACFIS, were listed in Part A, Sections III, IV, V and VI. These and other recommendations pertaining to all Constituent Bodies of NAFO are presented below under the relevant section and subject headings.

VII. MANAGEMENT ADVICE AND RESPONSES TO SPECIAL REQUESTS

1. Fisheries Commission

a) Request for Advice on TACs and Other Management Measures for the Year 2006

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

Scientific Council strongly **recommended** that *Fisheries Commission take steps to ensure that any bycatches of other species during the Greenland halibut fishery are true and unavoidable bycatches.*

c) Special Requests for Management Advice

v) Deep-water Habitats

Scientific Council **recommended** that

- *criteria are developed for identifying sensitive areas,*
- *the collection of biological information important for safeguarding habitats from CP fishing surveys be incorporated as a standard routine in the surveys in the area, and further studies on bycatch be undertaken,*
- *fishing in sensitive areas, for example on and around sea mounts, be monitored, possibly by the provision of summary information based on VMS, and*
- *Contracting Parties identify the expertise necessary to allow Scientific Council to address issues relating to safeguarding habitats.*

vi) Seals

Scientific Council **recommended** that *the proposal made by NAMMCO to formally join the ICES-NAFO Harp and Hooded Seals Working Group be rejected.*

vii) Scientific Observer Program

Scientific Council **recommended** that *scientific sampling by the NAFO Scientific Observer Programme should manage to cover sampling catches of those Contracting Parties that did not have their own programmes, and that the electronic recording forms designed by the Secretariat be adopted for use by in the NAFO Observer Programme for that purpose.*

IX. ARRANGEMENTS FOR SPECIAL SESSIONS

2. Progress Report on Special Session in 2007: Reproductive Potential

NAFO Scientific Council approved the approach of having PICES and ICES as co-convenors and **recommended** that *each of the organizations provide financial contributions towards the Symposium. It is anticipated that the Symposium will have a broad appeal and be well attended.*

XII. OTHER MATTERS

5. NAFO Reform (SCS Doc. 06/21)

Scientific Council notes the following:

3. Scientific Council noted that the boundary definition of Division 3M does not include the south-western deeper part of the Flemish Cap. Certain deep-water species living on the south-western corner of the Flemish Cap are currently recorded under Division 3L. An exception has been made for shrimp by recording catches from the rectangular portion of 3L as 3M (see CEM 2006, Annex 12, Fig. 1, p. 1-8). Scientific Council **recommended** that *boundaries of Divisions 3M and 3L be re-defined so that 3M includes that small rectangle currently in 3L.*

FISHERIES ENVIRONMENT (STACFEN)

STACFEN made no formal recommendations during this 2006 meeting.

PUBLICATIONS (STACPUB)

The recommendations made by STACPUB for the work of the Scientific Council as **endorsed** by the Council, are as follows:

1. *accept the format changes and the single citation for the Journal as proposed by the Secretariat.*
2. *adopt the Creative Commons license for the Journal and Studies as proposed by the Secretariat.*
3. *adopt the Author/Owner consent form for the Journal and Studies as proposed by the Secretariat.*
4. *the distribution of both the free reprints and the reprints at cost be discontinued for manuscripts submitted after 15 June 2006.*

RESEARCH COORDINATION (STACREC)

The recommendations made by STACREC for the work of the Scientific Council as **endorsed** by the Council, are as follows:

1. *the deadline of 1 May for the acquisition of STATLANT 21A data be maintained but that the deadline for STATLANT 21B be changed to August 31.*
2. *approval be sought from the Fisheries Commission for the Secretariat to make catch and effort data (days at sea) from VMS available to Scientific Council.*
3. *designated Experts be reminded by the Secretariat following each June Scientific Council meeting to fill in the assessment data spreadsheets.*
4. *the new mesh gauge OMEGA be adopted as the standard for scientific purposes.*

FISHERIES SCIENCE (STACFIS)

The Council **endorsed** recommendations specific to stock considerations and they are highlighted under the relevant stock considerations in the STACFIS Report in Appendix IV.

2. General Review of Catches and Fishing Activity

A **recommendation** made by STACFIS for the work of the Scientific Council as endorsed by the Council, is as follows: *all Contracting Parties take measures to improve the accuracy of their catch estimates and present them in advance of future June Meetings.*

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

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 2006.*

STACFIS **recommended** that *the catch-at-age for Greenland halibut from SA0 should be updated and the location and distribution of the catches be provided.*

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

It was noted that in 2001 an annual gillnet survey with small mesh net was started in the Disko Bay in order to estimate relative year-class strength of pre-recruits to the fishery. STACFIS **recommended** that *the study to calibrate the gillnet surveys, in relation to previous year's longline surveys, should be continued in order to allow use of the whole time series for Greenland halibut in Disko Bay.*

STACFIS **recommended** that *investigations of bycatch 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.*

Redfish (*Sebastes mentella* and *Sebastes fasciatus*) in Divisions 3M

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

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

Average F in recent years has been very low relative to M . Therefore STACFIS **recommended** that *the utility of the XSA must be re-evaluated and the use of alternative methods (for e.g. survey based models, stock production models) be attempted in the next assessment of Div. 3M American plaice.*

Cod (*Gadus morhua*) in NAFO Division 3NO

In 2005 STACFIS noted the poor model fit in the SPA to the Canadian juvenile survey series and considered that an improvement may be realized by excluding the index from the ADAPT, accordingly, STACFIS **recommended** that *a sensitivity analysis be conducted to investigate the impact of excluding the Canadian juvenile survey index from the SPA.*

In addition to the survey indices currently used to tune the SPA, there is available a survey conducted by EU-Spain in the regulatory area of 3NO. STACFIS noted the availability of the converted Spanish spring survey data from the NRA area of Div. 3NO and **recommended** that *the utility of the converted mean per tow at length data from the spring survey series conducted by EU-Spain in the NRA of 3NO since 1997 be explored as an additional index in the SPA calibration.*

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

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

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

STACFIS noted that the cohort model for relative year-class strength was not updated in 2006 due to uncertainty in the modeling the age data and **recommended** that further exploration of the cohort model continue and results will be presented in 2007.

STACFIS noted that alternate formulations of the surplus production model (ASPIC) using various combination of the indices can change with the addition of new data from fishery catches and survey time series, accordingly, STACFIS **recommended** that further exploration of the ASPIC surplus production model, including sensitivity analysis on various input indices, be presented in 2007.

STACFIS noted that at present, the risk of the stock being below $B_{lim} = 30\% B_{msy}$ has not been explored. However, the estimated probability of the current (beginning of 2007) stock size being below B_{msy} is so small (less than 3%), that the probability of being below B_{lim} is negligible. STACFIS **recommended** that in future assessments of Div. 3LNO yellowtail flounder, the risk of the stock being below $B_{lim} = 30\% B_{msy}$ be expressed.

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

STACFIS **recommended** that work should continue in developing precautionary reference points, including B_{lim} , for this stock.

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

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

Redfish (*Sebastes mentella* and *Sebastes fasciatus*) in Division 3O

STACFIS noted estimates of size at maturity from various recent studies were not precise because species mixtures could be a confounding factor, accordingly, due to the importance of size at maturity for assessment purposes, STACFIS **recommended** that future studies should be continued and be analyzed by species.

Thorny Skate (*Amblyraja radiata*) in Divisions 3L, 3N, 3O and 3Ps

STACFIS **recommended** that further work be conducted for estimation of reference points.

STACFIS **recommended** that further testing and sensitivity analysis be conducted on surplus production modeling employing ASPIC 3.8 in addition to ASPIC 5.1.

STACFIS noted sampling of commercial fisheries was available for a number of years and accordingly **recommended** that an annual series of commercial catch at length be constructed if sufficient sampling exists.

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

STACFIS **recommended** that all available information on bycatch and discards of Greenland halibut in Subarea 2 and Divisions 3KLMNO be presented for consideration in future assessments.

STACFIS **recommended** that research continue on age determination for Greenland halibut in Subarea 2 and Div. 3KLMNO to improve accuracy and precision.

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

For northern shortfin squid in Subareas 3+4, STACFIS **recommended** that *abundance and biomass indices from the Canadian multi-species bottom trawl surveys conducted during spring and autumn in Div. 3LNO, beginning with 1995, be derived using the two subsets of strata listed in SCR Doc. 06/45 in order to improve the precision of the indices.*

IV. OTHER MATTERS

STACFIS Working Procedures

STACFIS agreed that for all stocks, survey indices should be subject to quality validation, prior to inclusion into any population model and, accordingly, STACFIS **recommended** that *candidate indices for inclusion in population models should be subject to analyses of their ability to indicate trends in population size and that, suggestions for appropriate analyses be presented and evaluated at the June 2007 Meeting.*

Scientific Council Annual Meeting, 18-22 September 2006

SCIENTIFIC COUNCIL

II. REVIEW OF SCIENTIFIC COUNCIL RECOMMENDATIONS FROM JUNE 2006

The Council reviewed the following recommendation made in June with the following comments:

6. Progress Report on Special Session in 2007: Reproductive Potential: NAFO Scientific Council approved the approach of having PICES and ICES as co-convenors and **recommended** that *each of the organizations provide financial contributions towards the Symposium. It is anticipated that the Symposium will have a broad appeal and be well attended.*

IX. SCIENTIFIC COUNCIL WORKING PROCEDURES/PROTOCOL

1. Timetable and Frequency of Assessments

Scientific Council **recommended** that *the period of assessment be extended to the following assessment frequency for the following stocks:*

Two year basis

American plaice in Div. 3LNO
 Capelin in Div. 3NO
 Redfish in Div. 3M
 Thorny skate in Div. 3LNOPs
 White hake in Div. 3NOPs
 Yellowtail flounder in Div. 3LNO

Three year basis

American plaice in Div. 3M
 Cod in Div. 3NO
 Cod in Div. 3M
 Northern shortfin squid in SA 3+4
 Redfish in Div 3LN
 Redfish in Div. 3O
 Witch flounder in Div. 2J+3KL
 Witch flounder in Div. 3NO

2. Initiatives for Approaching the Ecosystem Approach to Fisheries

Firstly, Scientific Council reiterated its recommendation made in June 2006 that Contracting Parties identify the expertise necessary to allow Scientific Council to address issues relating to safeguarding habitats within the Ecosystem Approach to Fisheries framework and **recommended** that *Contracting Parties take active steps to ensure that support is made available to Scientific Council.*

Scientific Council Meeting, 25 October-2 November 2006

SCIENTIFIC COUNCIL

There were recommendations made by Scientific Council during this meeting.

NAFO/ICES Pandalus Assessment Group, 25 October-2 November 2006

Research Recommendations pertaining to NAFO stocks

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

- *biological and CPUE data from all fleets fishing for shrimp in the area, be submitted to Designated Experts by 1 September 2007.*
- *the catch and effort data from other sources, for example VMS and/or Observer data, be fully investigated to validate existing CPUE data obtained from summarized logbooks or STATLANT data in order to provide a reliable standardized CPUE index.*
- *the relationship between the recruitment index and fishable biomass be investigated further.*

NIPAG **recommended** that, for shrimp in Grand Banks (NAFO Divisions 3L, 3N and 3O):

- *biological and CPUE data from all fleets fishing for shrimp in the area, be submitted to the Designated Expert, in the standardized format, by 1 September 2007.*

NIPAG **recommended** that, for shrimp off West Greenland (NAFO Subareas 0 and 1):

- *sampling of commercial catches by observers — essential for assessing age, size, sex composition, fecundity and frequency of spawning of the stock — should be re-established in Subarea 1.*
- *ways to include a flexible and comprehensive exploration of the effects of future trajectories of the cod stock on assessment predictions should be investigated and presented in 2007.*
- *methods of incorporating the spatial relationship between shrimp and cod, and its effect on predation rate, into the assessment model should be explored.*
- *the impact of other predators on the stock should also be considered for inclusion in the assessment model.*
- *recruitment indices and their relationship to subsequent fishable biomass should be considered for inclusion in the shrimp assessment model.*

NIPAG **recommended** that, for shrimp in Denmark Strait and off East Greenland:

- *a survey be conducted to provide fishery independent data of the stock*
- *the sampling of catches by observers be re-established. This is essential for assessing age, size, sex composition, fecundity and frequency of spawning of the stock.*