

PART B

Scientific Council Meeting, 6-18 September 1998

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SCIENTIFIC COUNCIL MEETING, 6-18 SEPTEMBER 1998

Participants:

Back Row: H. P. Cornus, A. Avila de Melo, H. Siegstad, D. Pierre, M. Stein, L. Motos, D. Cross, M. Henrard, P. A. Koeller, D. B. Atkinson, D. G. Parsons, R. Alpoim, O. R. Godø, V. N. Shibanov
Front Row: A. Vazquez, A. Nicolajsen, U. Skúladóttir, E. de Cárdenas, S. Kawahara, F. M. Serchuk, S. Junquera, D. Rivard, R. K. Mayo, W. R. Bowering, D. Briand, C. M. Jones



REPORT OF SCIENTIFIC COUNCIL

Annual Meeting, 6-18 September 1998

Chairman: H. P. Cornus

Rapporteur: T. Amaratunga

I. PLENARY SESSIONS

The Scientific Council met at the Hotel Altis, Lisbon, Portugal, during 6-18 September 1998. Representatives attended from Canada, Denmark (in respect of Faroe Islands and Greenland), Estonia, European Union (France, Germany, Portugal and Spain), Iceland, Japan, Norway, Russian Federation and the United States of America. The Assistant Executive Secretary was in attendance.

The Executive Committee met briefly before the opening to discuss the plan of work.

The opening session of the Council was called to order in the Lisboa Room at 0900 hr on 6 September 1998.

The Chairman welcomed everyone to Portugal, and to this 20th Annual Meeting of NAFO. The Assistant Executive Secretary was appointed rapporteur.

At its opening the Council noted that the meeting during 6-8 September 1998 would be devoted to considerations of shrimp in Div. 3M and the special request from the Fisheries Commission on Div. 3LNO shrimp (see Agenda II, Annex 1, item 8 in Part D, this volume). STACFIS would carry out the assessment and the Council would then develop and adopt the advice and recommendations before adjourning for the Special Session of 9-11 September 1998.

During 6-8 September 1998, the Council conducted the work on shrimp in Div. 3M and in Div. 3LNO, and during 9-11 September 1998 the Scientific Council hosted the Special Session, the Symposium on "Variations in Maturation, Growth, Condition and Spawning Stock Biomass Production in Groundfish" (see Annex 1).

The Council reconvened at 0900 hours on 14 September 1998.

In considering the Agenda, the Council noted all other agenda items as listed in the Provisional Agenda would be undertaken during the 14-18 September 1998 sessions. The Chairman noted there were intersessional activities that the Council needed to address, and suggested two new agenda items (X.2 and 3 under Other Matters). The modified agenda was accordingly **adopted** (see Agenda II in Part D, this volume).

The Council was informed by the Assistant Executive Secretary that U. N. Wijkström, Chief Fishery Development Planning Service, FAO, was invited as an observer to present an update on the forthcoming "FAO Consultation on the Management of Fishery Capacity, Shark Fisheries and Incidental Catch of Seabirds in Longline Fisheries" of 26-30 October 1998.

The Council also noted H. P. Cornus (EU-Germany) is the ICES observer at this 20th Annual Meeting.

Noting that the Council sessions would be subject to the schedule of the Fisheries Commission, the Chairman's proposed revised work plan was accepted. The Council noted that some matters referred to the Standing Committees may in fact be addressed at plenary sessions.

The Chairman then proceeded with his update on intersessional activities. Particularly, reference to the Executive Committee Meeting immediately after the June 1998 Meeting of the Scientific Council was made, and the progress made in accordance with some of the Scientific Council recommendations were noted (see Section X.2).

The Council made special note that the Chairman had been in contact with the STACTIC Chairman regarding the protocol for data collection by NAFO Pilot Observer Program (see FC Working Paper 97/8), and that this would be further discussed between the STACTIC Chairman and the Council Chairman (see Section X.2 and 4).

It was also noted the Scientific Council had been invited to the Fisheries Commission Meeting to discuss further developments on the Precautionary Approach and the proposed joint meeting between the Scientific Council and the Fisheries Commission. It was agreed the Council would prepare a proposal and terms of reference for the joint meeting (see Section VII).

Having also discussed matters regarding the proposed intersessional activities, progress on the Working Group on storing biological data, the NAFO website, and the working procedures for the Scientific Council (see Section X), the session was adjourned at 1900 hours. The following sessions of the Council were called as required through 16 and 17 September 1998 to address outstanding items in the Agenda.

The concluding session was called to order at 0930 hours on 18 September 1998. The Council had at its session on 17 September 1998 considered and **adopted** the Reports of the Standing Committees STACFEN, STACFIS, STACREC and STACPUB. The Council on 18 September 1998 then **adopted** the Scientific Council Report of this meeting.

The meeting was adjourned at 1100 hours on 18 September 1998.

The reports of the Standing Committees are appended as follows: Appendix I – Report of Standing Committee on Fisheries Environment (STACFEN), Appendix II – Report of Standing Committee on Fishery Science (STACFIS), Appendix III – Report of Standing Committee on Research and Coordination (STACREC), and Appendix IV – Report of Standing Committee on Publications (STACPUB). The report of the 1998 Symposium on "Variations in Maturation, Growth, Condition and Spawning Stock Biomass Production in Groundfish" is presented at Annex 1 of the Scientific Council Report.

Brief summaries of the Standing Committee Reports and other matters considered by the Scientific Council are given below in Section II-X. The Agenda, List of Research (SCR) and Summary (SCS) Documents, and the List of Participants of this meeting are given in Part D, this volume.

II. FISHERIES ENVIRONMENT

The Council adopted Report of the Standing Committee on Fisheries Environment (STACFEN) is given at Appendix I.

III. FISHERY SCIENCE

The Council adopted Report of Standing Committee on Fishery Science (STACFIS) is given at Appendix II. The Council agreed summary sheet and conclusions on shrimp in Div. 3M and shrimp in Div. 3LNO are presented in Section VI.a and b, respectively, of this report. The recommendations with respect to stock advice appear therein.

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

Several recommendations with respect to shrimp in Div. 3M made during the September 1997 Meeting had not been addressed and are repeated below:

- *Age composition of the EU survey results should be estimated to provide insights into mortality and year-class strengths.*
- *Contracting Parties contribute to the catch and effort dataset according to the format specified in SCS Doc. 96/19.*
- *Estimates of overpack should be obtained for all nations fishing for shrimp in Div. 3M and these estimates be included in the catch statistics.*

At this meeting STACFIS **recommended** that, for shrimp in Div. 3M:

- *A refinement of the standardized CPUE index in relation to the appropriate analytical methods and addressing the changes in fishing technology over time be conducted.*
- *The implications of the change in the relative efficiency of the different codend mesh sizes used during the 1998 EU groundfish survey be evaluated.*
- *Relationships between shrimp in Div. 3M and those in adjacent areas in Div. 3LN and farther north in Div. 2J and 3K should be investigated.*

Because the 1997 and 1998 Faroese surveys do not address the problem of providing a recruitment index, the 1996 **recommendation** was repeated:

A directed research survey for shrimp on Flemish Cap should be initiated with the primary goal of obtaining a reliable recruitment index, given that the EU-survey does not provide reliable estimates of shrimp at age two. The survey would also provide extensive data on the distribution and demography of the shrimp stock throughout the area. Hydrographic information should be collected, including data on currents, in conjunction with the survey.

IV. RESEARCH COORDINATION

The Council adopted Report of the Standing Committee on Research Coordination (STACREC) is given at Appendix III.

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

the Working Group on Biological Information Database proceed forward to develop a data exchange protocol and data format for a candidate stock based on the structure of the biological information files mentioned (in the STACREC Report). The work is to be undertaken by correspondence under the direction of the Chairman (E. De Cárdenas, EU Spain) and progress be reported at the June 1999 Meeting.

The **recommendation** reiterated by STACREC and **endorsed** by the Scientific Council as relevant to the Fisheries Commission is as follows:

an expanded list of individually identified species of elasmobranchs be included in the STATLANT 21 A questionnaire and that the national authorities be requested to submit catch statistics with a maximum degree of detail.

V. PUBLICATIONS

The Council adopted Report of the Standing Committee on Publications (STACPUB) is given at Appendix IV.

The **recommendations** made by STACPUB and **endorsed** by the Scientific Council as relevant to the General Council are as follows:

- *the Scientific Council report on the 1998 Symposium be placed on the NAFO website.*
- *the Scientific Council advice given in 1998 for various stocks should be placed on the NAFO website.*

VI. MANAGEMENT ADVICE AND RESPONSES TO SPECIAL REQUESTS

1. Fisheries Commission

Further to the scientific advice and recommendation provided by the Council during its 3-18 June 1998 Meeting, the Council had agreed to conduct the assessment of shrimp in Div. 3M and respond to the special request from the Fisheries Commission on shrimp in Div. 3LNO, during this meeting.

a) **Advice for 1999, Shrimp in Division 3M**

The agreed Council recommendations for shrimp in Div. 3M are presented in the following summary.

Shrimp (Pandalus borealis) in Division 3M

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

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

| Year | Catch ¹ (‘000 tons) | TAC | |
|-------------------------------|-----------------------------------|-------------|--------|
| | | Recommended | Agreed |
| 1993 | 28 | na | - |
| 1994 | 24 | tm | tm |
| 1995 | 33 | tm | tm |
| 1996 | 49 | ndf | er |
| 1997 | 27 | lpl | er |
| 1998 (to August) ² | 19 | lpl | er |

¹ STACFIS estimates.

² STACFIS estimate to end of 1998 is about 30 000 tons.

na No advice.

tm Technical measures.

ndf No directed fishery.

er Effort regulations.

lpl Lowest possible level.

The proportion of males in the catches increased such that they dominated the catches since 1994.

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

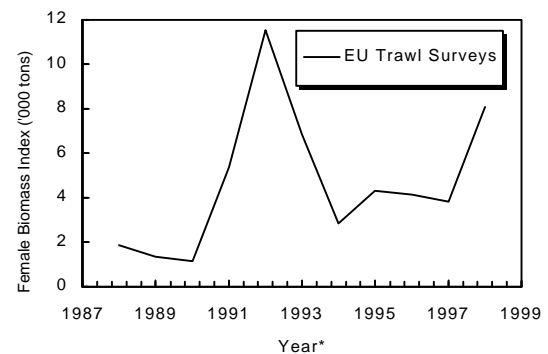
Data: Catch, effort and biological sampling data were available from the trawlers of several nations. A time series of biomass estimates was produced from catches of shrimp taken in EU groundfish surveys in Div. 3M from 1988 to 1998. One survey was conducted by Canada in 1996 and directed surveys for shrimp were conducted by Faroe Islands in 1997 and 1998. Biological samples of shrimp were obtained during all surveys. Oceanographic data were obtained from Canadian surveys on Flemish Cap in the summers of 1993, and 1995 through 1998.

Assessment: No analytical assessment was possible and the fishing mortality is unknown. Commercial fishery data (catch, effort and catch rates), research biomass indices and biological data from both sources were examined.

Commercial CPUE: The CPUE data are difficult to interpret as an index of abundance due to major changes in fishing patterns between years and developing technology. Standardized catch rates indicate a substantial decline between 1993 and 1994 but no clear trend thereafter.

Recruitment: Evaluation of recruitment strength can presently only be inferred retrospectively from the relative importance of year-classes in the fishery. The 1988, 1993 and possibly the 1994 year-classes appear to be stronger than others. With currently available data no prediction of recruitment is possible.

Biomass: Indices of female biomass from the EU-surveys were relatively stable from 1995 to 1997. Although a large increase is indicated in 1998, the results of the survey were not comparable to the previous years because of different codend mesh size used in 1998 resulting from the loss of the standard gear during the survey. The Faroese surveys showed an increase in total biomass from 1997 to 1998, however, confidence intervals for the estimates were not available.



(*Values for 1994 and 1998 are not comparable because of different codend mesh size.)

State of the Stock: Scientific Council is not able to predict the biomass of the 1994 and 1995 year-classes, which will remain in 1999. Scientific Council also is unable to estimate the size of subsequent year-classes or predict possible recruitment. Although CPUE information has been used previously as an indicator of stock size, there are concerns about these data due to the technological changes which have occurred in the fishery but are not accounted for in the present model. It is therefore not possible for Scientific Council to provide any estimate of current or future stock size.

Recommendation: Scientific Council is unable to determine the absolute size of the stock. However, available data suggest the size of the stock is relatively stable or possibly showing an increase in biomass in 1998. The perception is now more optimistic than in 1997, although the Scientific Council is still concerned about the high proportion of males in the commercial catches. The average catch reported during the apparent period of stability was about 30000 tons, and the Scientific Council recommends that the catch in 1999 should not exceed 30 000 tons.

Special Comments: Scientific Council considers it important to recognize that its ability to assess the resource will not improve until a time series of research surveys directed for shrimp is developed which can allow for the prediction of recruitment.

Sources of information: SCR Doc. 98/29, 80, 81, 82, 83, 85, 87, 88, 89, 90, 91, 92.

b) **Other Requests for Management Advice**

Shrimp in Divisions 3LNO

The Scientific Council was requested by the Fisheries Commission to: *provide information on the shrimp stock in 3LNO with regards to catches in recent years, by-catches of groundfish in such fisheries, abundance indices and the distribution of the stock.* The Scientific Council was also requested to: *provide the information on annual yield potential for this stock.*

The following is the Scientific Council response:

Distribution: In Div. 3LNO northern shrimp occur mainly along the slope of the Grand Bank, primarily in depths between 150 and 500 m. Research vessel surveys showed that the distribution was widespread with densities greatest in Div. 3L. Occasional large catches occurred in Div. 3N, and few shrimp were caught in Div. 3O.

Catches: Catches of shrimp in Div. 3L from the Faroese experimental fishery totaled 355 tons in 1994, 83 tons in 1996, 482 tons in 1997, and 336 tons to date in 1998. Catches of shrimp in Div. 3LNO from other sources are negligible.

By-catches: By-catches of groundfish were estimated from the Faroese fishery in 1996 and 1997. The following table illustrates results, in kg of by-catch per ton of shrimp:

| | Greenland halibut | Redfish | American plaice | Cod |
|------------------|-------------------|---------|-----------------|------|
| With no grate | 203.9 | 42.0 | No data | 25.6 |
| With 22 mm grate | 24.2 | 1.2 | 2.1 | 0.01 |

The data collected from trawls using a grate represented an average of 4 periods from November 1996 to August 1997, while the data collected from trawls without a grate came from November 1996. Scientific Council notes that these data were collected only in a portion of the NAFO Regulatory Area (NRA) in Div. 3L, and that results from other areas in Div. 3LNO could be very different, given the different distributions of juvenile groundfish on the Grand Bank. It was also noted that the abundance of redfish, American plaice and cod in Div. 3LNO is presently low relative to historic levels, making it difficult to judge the effectiveness of grates in reducing by-catch during periods of higher fish abundance.

Biomass Indices: Biomass indices from Canadian autumn surveys in 1995-97 indicated that more than 90% of the resource was located in Div. 3L. The biomass index increased substantially over this period from about 6 300 tons in 1995 to 47 000 tons in 1997.

Biomass indices from Faroese surveys in spring 1997 and 1998 in a portion of the NRA (180-500 m) in Div. 3L were 3 300 tons in 1997 and 4 600 tons in 1998. However, these are not directly comparable due to differences in the trawls used in the two years.

Yield Potential: The shrimp resource in areas north of the Grand Bank (Div. 2J and 3K) expanded greatly in recent years and it is likely that the increase in the shrimp abundance on the adjacent Grand Bank is connected with this expansion. The production and recruitment of several strong year-classes of the late-1980s and early-1990s accounts for the increase, but the dynamics are not fully understood. Until the stock relationship is properly elucidated, it will not be possible to determine estimates of sustainable yield or to evaluate appropriate reference points.

2. **Special Requests from Concurrent Fisheries Commission Meeting**

There were no requests.

VII. DEVELOPMENT OF PRECAUTIONARY APPROACH

1. Dates and Place of Spring 1999 Meeting (see also Section VIII.2)

The Council (on 14 September 1998) noted the dates of the Scientific Council Meeting of Spring 1999 will be subject to the Fisheries Commission decisions during this Annual Meeting. The Council proposed that the duration be 5 working days, and that the meeting should be held at a time suitable for the Fisheries Commission representatives. Scientific Council noted there was an invitation to hold the meeting in San Sebastian, Spain.

2. Terms of Reference for Spring 1999 Meeting

After considerable debate on the needs and objectives of the Scientific Council, and the coordination of these with the interests of the Fisheries Commission, it was proposed that, in accordance with the agreements at the June 1998 Meeting of the Scientific Council, the Scientific Council will meet in Spring 1999 to further address issues on the Precautionary Approach (PA). Recognizing the need to coordinate the outcome of this meeting with the views of the Fisheries Commission on the PA, Scientific Council agreed to the following Terms of Reference for the work during 5 days:

- 1) Hands-on with software implementation of methods relevant to PA.
- 2) Progress on development of reference points for NAFO stocks.
- 3) Address recommendations from May 1998 Meeting of the Joint Scientific Council and Fisheries Commission Working Group.
- 4) Case specific studies:
 - a) Stock with closed fishery (cod in Div. 3NO)
 - b) Stock with open fishery (yellowtail flounder Div. 3LNO)
 - c) Stock for which qualitative methods are required (shrimp in Div.3M)
- 5) Preparation for joint Scientific Council and Fisheries Commission Working Group on the PA (to be held immediately after the 5-day meeting).

It is proposed the meeting will first be limited to Scientific Council members, and the outcome of these deliberations be forwarded by a select group of the Scientific Council members to the Fisheries Commission members.

3. Joint Meeting with Fisheries Commission on Precautionary Approach (see also Section VIII.3)

In accordance with the proposed Spring 1999 Meeting Terms of Reference (given above), the Scientific Council proposed that a Joint Scientific Council and Fisheries Commission Working Group Meeting on the Precautionary Approach be held in advance of the June 1999 Scientific Council Meeting.

It was proposed that the duration be 2 days, (**note**: the Fisheries Commission decision of 18 September 1998 **revised this to 3 days**), and the Scientific Council be represented at this meeting by a subgroup of members who participated in the meeting mentioned above (Sections 1 and 2).

Terms of Reference:

- 1) Development of options for decision rules (management strategies) for each case-specific study:
 - a) Stock with closed fishery (cod in Div. 3NO)
 - b) Stock with open fishery (yellowtail flounder in Div. 3LNO)
 - c) Stock for which only limited data are available (shrimp in Div. 3M)

VIII. REVIEW OF FUTURE MEETING ARRANGEMENTS

1. Scientific Council Meeting on Northern Shrimp, November 1998

The Council reconfirmed that the meeting on northern shrimp for the assessments of shrimp in Subareas 0 and 1 and shrimp in Denmark Strait, will be held during 6-10 November 1998 at Greenland Home Rule Government, Denmark Office, Pilestræde 51, Copenhagen, Denmark.

The Council noted that the provisional agenda was circulated to Contracting Parties in accordance with Scientific Council Rules of Procedure, during this Annual Meeting.

2. **Scientific Council Meeting on Precautionary Approach, Spring 1999**

The Council agreed to meet during 27 April to 1 May 1999 to address the Terms of Reference as outlined above (see Section VII.2). The meeting will be held in San Sebastian, Spain.

It was noted this meeting immediately precedes the Joint Scientific Council and Fisheries Commission Working Group on the Precautionary Approach Meeting. (see Section below)

3. **Joint Meeting with Fisheries Commission on Precautionary Approach**

The Joint Scientific Council and Fisheries Commission Working Group on the Precautionary Approach will meet 3-5 May 1999 to address the Terms of Reference as outlined above (see Section VII.3). The meeting will be immediately after the Scientific Council Meeting of 27 April to 1 May 1999, in San Sebastian, Spain.

4. **Scientific Council Meeting, June 1999**

The Council agreed to reschedule this meeting for 3-16 June 1999, which would be 2 days less than the 1998 June Meeting duration (**note also**: this is 2 days less than the previously announced dates of 2-17 June 1999). The meeting will thus begin on a Thursday and end on a Wednesday. The meeting is tentatively planned to be held at the Ramada Renaissance Hotel, Dartmouth, Nova Scotia, Canada.

5. **Special Session and Annual Meeting, September 1999**

The Council noted it would meet during the Annual Meeting scheduled for 13-17 September 1999. This would be preceded by the Scientific Council hosted Symposium on '*Pandalid Shrimp Fisheries – Science and Management at the Millennium*', during 8-10 September 1999. The Council noted these meetings will be held in Nova Scotia, Canada. It was noted that further to Fisheries Commission decision at this Annual Meeting, the timing of the assessment of shrimp in Div. 3M will be changed to coincide with the Scientific Council Meeting in November (see Section X.1), when other shrimp assessments are done.

The Council also noted that no assessment of shrimp in Div. 3M will be necessary in 1999 in advance of the Symposium (8-10 September 1999) and the Annual Scientific Council Meeting (13-17 September 1999).

6. **Scientific Council Meeting, June 2000**

The Council at its Meeting of 3-18 June 1998 set tentative dates of 7-22 June 2000 for this meeting. The Council agreed the dates for the June 2000 Meeting will be subject to the Fisheries Commission decision on providing advice on some stocks biannually and the experience of the Council Meeting of June 1999 (see Section X.1).

IX. FUTURE SPECIAL SESSIONS

1. **Progress Report on Symposium in 1999**

The Council was pleased to note considerable progress in the plans for the Symposium '*Pandalid Shrimp Fisheries – Science and Management at the Millennium*', during September 1999.

The co-convenor, P. A. Koeller (Canada), informed the Council that all pertinent information has been in the website since the Symposium was announced, and it is updated as necessary. There were so far about 12 identified papers, including invited speakers.

2. **Review of Proposal for Special Session 2000**

The Council reviewed a proposal by O. Godø (Norway), M. Stein (EU-Germany) and S. J. Walsh (Canada), titled '*Managing Marine Ecosystem Instability: a Century of Experience*'. While the proposal was somewhat broad, the Council saw its merit. The Council agreed that the authors be requested to consider a narrower theme more directed to the Northwest Atlantic and to the needs of the Scientific Council's work, and present a revised proposal to the June 1999 Meeting.

X. OTHER MATTERS

1. Scientific Council Working Procedures

The Council's discussions were initiated as a result of the very difficult time schedules and the heavy workloads especially during the annual assessment meetings in June.

The Chairman identified a fundamental difficulty that papers to be considered at the meeting are often not submitted in advance of the meeting. In addition, it was noted that a considerable amount of time is spent on review of papers, even though their contents with respect to the assessments may not be important. It was also noted that scientists, and particularly Designated Experts, may spend considerable time away from the Council Sessions during the meetings in order to complete their assessment reports. These and other incidental delays place a significant time constraint on the work of the Council, and consequently may affect the quality and review process of the Council report.

The Council had extensive discussion on this matter and attempted to find methods of improving the working procedures.

Having considered various methods, such as splitting the stocks to be considered into geographic areas or separating similar stocks for consideration at different meetings, the Council agreed on the following:

- a) A more rigid approach be taken regarding the deadlines for submission of papers to the Council.

In this regard, it was agreed that papers should be submitted to the Secretariat and relevant Designated Experts, at least 10 days before the beginning of the meetings. However, it was noted that some papers, for example preliminary assessments papers and papers being submitted to STACFEN, may not be available within these time frames.

The Council also noted that the timing and data availability from research surveys conducted particularly in the spring and in mid/late summer would present difficulties in preparing scientific reports in advance of the meeting.

- b) It was agreed that a proposal be presented to the Fisheries Commission to consider the assessment of some stocks on a bi-annual or multi-annual basis.

The Council proposed that beginning in 1999 a schedule for providing bi-annual (every two years) advice be initiated. The Council prepared and submitted a complete schedule to the Fisheries Commission (FC Working Paper 98/7) for six stocks as follows:

"American plaice in Div. 3LNO, cod in Div. 3NO, witch flounder in Div. 3NO, redbfish in Div. 3LN, American plaice in Div. 3M and cod in Div. 3M. These stocks are under moratoria or, in the case of cod in Div. 3M, the Scientific Council advice for 1999 is "no directed fishing". The Scientific Council does not expect a significant change in the state of these stocks in the near future and, therefore, proposes to provide advice every two years. The Scientific Council expects that this approach would result in a significant reduction in the duration of its June meetings (currently 17 days).

For these stocks, the Scientific Council will monitor their status annually. Should a significant change be observed in stock status (e.g. from surveys), the Scientific Council will evaluate this change and provide the appropriate advice.

To implement this system, the Scientific Council proposes to conduct the assessment of these six stocks on an alternating year basis as follows:

- In 1999, all six stocks will be assessed. The assessment advice, however, will pertain to different time periods to allow the introduction of the new scheme over the next three years.
- In 1999, advice will be provided for 2000 and 2001 for American plaice in Div. 3LNO, cod in Div. 3NO and redbfish in Div. 3LN. The next assessment of these stocks will thus be conducted in 2001.
- In 1999, advice will be provided for 2000 for cod in Div. 3M, American plaice in Div. 3M and witch in Div. 3NO. The next assessment of these stocks will be conducted in 2000 with advice provided for 2001 and 2002. These stocks will then next be assessed in 2002.

The time horizon for the assessments are depicted in the Table below (check marks identify the year of the assessments):

| Stock | 1999 | 2000 | 2001 | 2002 | 2003 |
|------------------------|------|------|------|------|------|
| A. plaice in Div. 3LNO | ✓ | | ✓ | | ✓ |
| Cod in Div. 3NO | ✓ | | ✓ | | ✓ |
| Redfish in Div. 3LN | ✓ | | ✓ | | ✓ |
| Cod in Div. 3M | ✓ | ✓ | | ✓ | |
| A. plaice in Div. 3M | ✓ | ✓ | | ✓ | |
| Witch in Div. 3NO | ✓ | ✓ | | ✓ | |

For several years, the Scientific Council was not in a position to provide advice for Capelin in Div. 3NO due to the absence of data. The Scientific Council proposes that it will give no advice until appropriate data are available."

The Council noted the Fisheries Commission, during its meeting on 18 September 1998, accepted the above proposed schedule.

Particularly with respect to the assessment of shrimp in Div. 3M, the Council noted there were many difficulties concerning the present September schedule. The major difficulties expressed were:

- The meeting length of the Scientific Council during the Annual Meeting is extended considerably,
- The data from research surveys conducted in July/August are often incompletely analyzed,
- The catch data from the current year is incomplete, noting that the fisheries proceed well into September and October.

Considering additionally that there are more advantages in postponing the assessment to November when other shrimp stocks are also assessed by the Scientific Council, the Council presented the following proposal (see FC Working Paper 98/9) to the Fisheries Commission:

"Scientific Council proposes to move the assessment of shrimp in Div. 3M to November when the assessments for shrimp in the Denmark Strait and shrimp in SA 0+1 are conducted. A meeting in November 1999 would deliver advice to the Annual Meeting in September 2000, for the year 2001 and annually thereafter. The Scientific Council does not expect that advice for the year 2000 will differ from that provided for 1999.

However, if continued monitoring during 1999-2000 detects a significant change of this stock, Scientific Council would provide intersessional advice."

The Council noted the Fisheries Commission, during its meeting on 18 September 1998, accepted the proposed schedule for assessment of shrimp in Div. 3M.

2. Chairman's Report on Intersessional Activities

The Chairman informed the Council that immediately after the June 1998 Meeting, the Executive Committee met at the Executive Secretary's office. The Committee addressed the Council's concerns expressed during its sessions and requested the Executive Secretary to act on the following matters:

- a) The Council considered the meeting conditions and quality for the June Meeting at Keddy's Dartmouth Inn were not suitable, and an alternative meeting space needed to be arranged for the June 1999 Meeting.

The Executive Secretary agreed to this, and the Assistant Executive Secretary informed this meeting that the Ramada Renaissance Hotel at 240 Brownlow Ave., Burnside Park, Dartmouth, was provisionally booked for the June 1999 Meeting. The available Halifax/Dartmouth properties were checked by the Secretariat for appropriate space and availability in this consideration.

- b) The computer facilities provided for Scientific Council work at the June 1999 Meeting needs to be upgraded to include a local area network (LAN). A proposal was submitted to the Executive Secretary. The Assistant Executive Secretary confirmed that the document was attached to the Agenda of this 1998 Annual Meeting for consideration by STACFAD.

Considering other intersessional activities:

- The Chairman also informed the Council that he had written a letter to the Chairman of STACTIC regarding their request for protocol for data collection by NAFO Pilot Observer program. The Chairman had conveyed the Council's surprise, that the forwarded information (FC Working Paper 97/8) had not been recognized, and that there was a need for better communications between the different bodies of NAFO.
- With regards to Precautionary Approach, the Chairman had been in consultation with the Chairman of Fisheries Commission during the intersessional period. As per Section VII above, Scientific Council made its proposals for a joint meeting.
- In general, the Chairman noted that his intersessional communications to the Council members requesting ideas on making changes to the June meeting and developing Terms of References for the Precautionary Approach meetings, had poor or no responses.
- The Council considered all the recommendations made during the June 1998 Meeting regarding computer requirements for its work and the NAFO website development. The Council was concerned that many of these recommendations were not being seen by other NAFO bodies. It was therefore agreed that all recommendations relevant to the General Council and the Fisheries Commission would be listed from the Scientific Council as a General Council Working Paper (GC Working Paper 98/9) and Fisheries Commission Working Paper (FC Working Paper 98/14), respectively.

3. Review of Proposed Intersessional Activities

- The Chairman noted the Council will act on any response from STACTIC Chairman regarding developing better communications between the Council and STACTIC.
- The Council noted the recent catch data of elasmobranchs in the NAFO area had been summarized by the Secretariat for this meeting. It was noted in this preliminary tabulation only two elasmobranchs were identified on the species level.
- It was noted that steps needed to be taken to develop training programs in identification of elasmobranchs. The Council was pleased the Chairman had brought an identification key which could be printed for this purpose. This publication needed funding, and the Chairman proposed he would solicit this during this Annual Meeting.
- The Council was informed that progress was made by the Chairman, E. de Cárdenas (EU-Spain) of the *Ad hoc* Working Group on Biological Information Database as reported in the Report of STACREC. Noting this approach will permit the use of computerized common datasets, rather than individual datasets, the Council thanked the Chairman and the Working Group for the valuable work and encouraged further work by the Working Group.

4. Other Business

Several items were discussed.

- The Council noted that the ICES/NAFO Working Group on Harp and Hooded Seals would be meeting in Tromsø, Norway, during 29 September-2 October 1998, and the Terms of Reference for that meeting was announced at this Council meeting. The Council reaffirmed that the report of the Working Group would be presented to the Scientific Council during the June 1999 Meeting by the Chairman of the Working Group.
- The Scientific Council welcomed U. Wijkström, FAO, Rome, the Chairman of the "FAO Consultation on the Management of Fishery Capacity, Shark Fisheries and Incidental Catch of Seabirds in Longline Fisheries". He presented a brief history of progress made to date and the objectives of the 26-30 October 1998 FAO Meeting. The Council noted that at this stage the meeting is not for technical proposals but for policy development. The Council reiterated its views that NAFO should be represented at this meeting in Rome, and noted an appropriate nominee may be announced by the Fisheries Commission.
- Further to the June 1998 comments by the Council, the Council reiterated the importance of NAFO participating in the FAO and non-FAO Regional Fisheries Bodies Meeting at FAO Headquarters, Rome, during 11-12 February 1999. The Council particularly noted that the Chairman of this FAO meeting had been asked by the NAFO Scientific Council to include an agenda item to discuss the harmonization of

nomenclature/abbreviations/definitions in the Precautionary Approach as requested by the Joint Scientific Council/Fisheries Commission Working Group On Precautionary Approach in May 1998. The Assistant Executive Secretary noted this would be addressed by the Chairman of the FAO meeting. Accordingly, it was agreed that the Scientific Council Chairman should attend the meeting to represent NAFO on this specific agenda item if the request of the NAFO Scientific Council is accepted by the Chairman of the FAO and non-FAO Regional Fisheries Bodies Meeting.

- At its session on 17 September 1998, the Council reviewed the report of STACFAD regarding the proposed budgets for 1999 and 2000. The Council expressed serious concern that the Council's requests for funding for both website development and meeting computer requirements were not adequately addressed in the budget considerations.

The Executive Secretary was then specifically invited to the Council Meeting (17 September 1998 session) for clarifications on the concerns.

- With respect to the requests for budget line funds for the NAFO website development, the Executive Secretary explained that STACFAD had dismissed Scientific Council request on the grounds that it did not contain adequate details. However, the Executive Secretary confirmed that the necessary funds will be allocated to the development of the NAFO website with full consideration to the Scientific Council needs and the need of developing the website to meet current international standards. It was also agreed that the necessary computer technical training aspects will be addressed.
- With respect to computer facilities needed for conducting Scientific Council meetings, as described in the Scientific Council paper which was an annex to the STACFAD Agenda, the Executive Secretary reported that this paper appeared to have been inadvertently neglected during STACFAD deliberations. On this matter too, the Executive Secretary assured that the necessary computer facilities would be supplied for the June 1999 Meeting. The Council's interest in having a local area network (LAN) will also be addressed by the Executive Secretary as the meeting preparations were being developed.
- In general, the Council expressed its concerns to the Executive Secretary that the Scientific Council recommendations and needs were not being adequately recognized by the other NAFO bodies. In this regard the Executive Secretary saw no difficulty in Scientific Council representatives attending the STACFAD Meetings. It was also noted that the Council had at this meeting developed better communications particularly with the Fisheries Commission and STACTIC.

With regards to STACTIC discussion on data collection in the Pilot Observer Program, the Council was pleased to send representatives to the STACTIC meeting on the 17 September 1998. This was particularly to exchange views of how best the Fisheries Commission Pilot Observer Program data collection can address the data needs of the Scientific Council. Resulting from the exchange of information at the STACTIC Meeting, the Scientific Council will outline the specific data it would need. It was agreed that data collected by the Pilot Observer Program should be in a format harmonized among Contracting Parties, and that the pertinent data should be submitted to the Scientific Council *via* the Secretariat, in an electronic form. The Council noted that the data needed for scientific work did not require confidential information such as country and vessel name. In conclusion, it was agreed the Chairman of the Council will prepare a submission outlining the data needs to STACTIC.

XI. ADOPTION OF REPORTS

1. Consideration of Report from the Symposium of 9-11 September 1998

The Scientific Council Special Session, the Symposium on "Variations in Maturation, Growth, Condition and Spawning Stock Biomass Production in Groundfish", with E. Aro (Finland), J. Burnett (USA) and M. J. Morgan (Canada) as co-convenors, held at the Hotel Altis, Lisbon, Portugal, was well attended with 77 participants, and generated stimulating thoughts toward the future. The Council endorsed the **recommendations** made during the Symposium as stated in the Symposium Report given in Annex 1 of this Report. As recommended by STACPUB in June 1998, the Council noted that the Symposium proceedings will be published in the Journal, within a short time frame.

The Council reviewed and **adopted** the Report of the Symposium as presented (Annex 1).

2. **Committee Reports of Present Meeting**

The Council at its session on 17 September 1998 considered and **adopted** the reports of its Standing Committees STACFEN, STACFIS, STACREC and STACPUB. These reports are given in Appendix I, II, III and IV, respectively.

3. **Report of Scientific Council**

The Council at its concluding session on 18 September 1998 considered and **adopted** its own Report of this 6-18 September 1998 Meeting.

XII. ADJOURNMENT

The Chairman expressed his thanks to the participants for the good cooperation during this meeting, noting some great steps forward, particularly in long discussions about the working procedures of Scientific Council and STACFIS, getting better communications with other bodies of NAFO such as the Fisheries Commission and STACTIC, and forwarding recommendations to the Fisheries Commission and General Council. He thanked Chairmen of Standing Committees and extended a special thanks to the representatives of Portugal for the great hospitality. The Chairman especially thanked the NAFO Secretariat for the efforts in supporting the Scientific Council work. There being no further business, he closed the meeting wishing everyone a safe trip home.



Symposium Co-conveners: J. Burnett, M. J. Morgan and E. Aro.



NAFO 1998 Symposium, in sessions at Hotel Altis, Lisbon.

ANNEX 1. REPORT OF THE SYMPOSIUM

Variations in Maturation, Growth, Condition and Spawning Stock Biomass Production in Groundfish

Hosted by the Scientific Council of the Northwest Atlantic Fisheries Organization (NAFO)
9-11 September 1998

Co-convenors by E. Aro (Finland), J. Burnett (USA) and J. Morgan (Canada)
Organized by the NAFO Secretariat, Hotel Altis, Lisbon, Portugal.

THE SYMPOSIUM

The Symposium on "Variations in Maturation, Growth, Condition and Spawning Stock Biomass Production in Groundfish" was held during 9-11 September 1998 at Hotel Altis, Lisbon, Portugal, with E. Aro (Finland), J. Burnett (USA) and M. J. Morgan (Canada) as co-convenors. There were 77 participants from Brazil, Canada, Denmark, Faroe Islands, Finland, France, Federal Republic of Germany, Greenland, Iceland, Japan, Norway, Portugal, Russian Federation, Spain, Turkey, United Kingdom and the United States of America.

The Symposium was opened by H. P. Cornus (EU-Germany), Chairman of Scientific Council, who on behalf of the Scientific Council welcomed participants to Lisbon. In a brief presentation, the Chairman described the NAFO structure and the general objectives of the Symposium.

INTRODUCTION

Changes in maturation, growth and condition, duration of spawning season and the spatial distribution of spawning stock have been observed in several groundfish stocks, particularly in the North Atlantic. These variations have direct implications for spawner biomass production per recruit and management strategies that incorporate these parameters. The purpose of this Symposium was to discuss the causes and consequences of such variations, including evidence of environmental, density-dependent, predation or size-selective fishing effects and consequences for spawner biomass per recruit and population growth rate, as well as implications for management strategies.

Thematic presentations were made by 3 invited keynote speakers, to introduce different sessions of the Symposium, and an invited keynote presentation was made by two speakers to introduce the concluding discussions. These were 35 contributed papers, 28 of which were oral presentations and 7 were posters.

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

I. General Conclusions

The following general points could be drawn from the Symposium:

- Realized fecundity (number of eggs spawned) is a function of energetic status of fish; 1st year of life may define fecundity.
- Size and condition of spawning female affect quality and viability of eggs - and hence net reproductive output.
- Egg and larval mortality is significantly lower in 2nd time spawners than first time spawners.
- Determination of maturity should be accomplished (or at least verified) by microscopic means, not macroscopically.

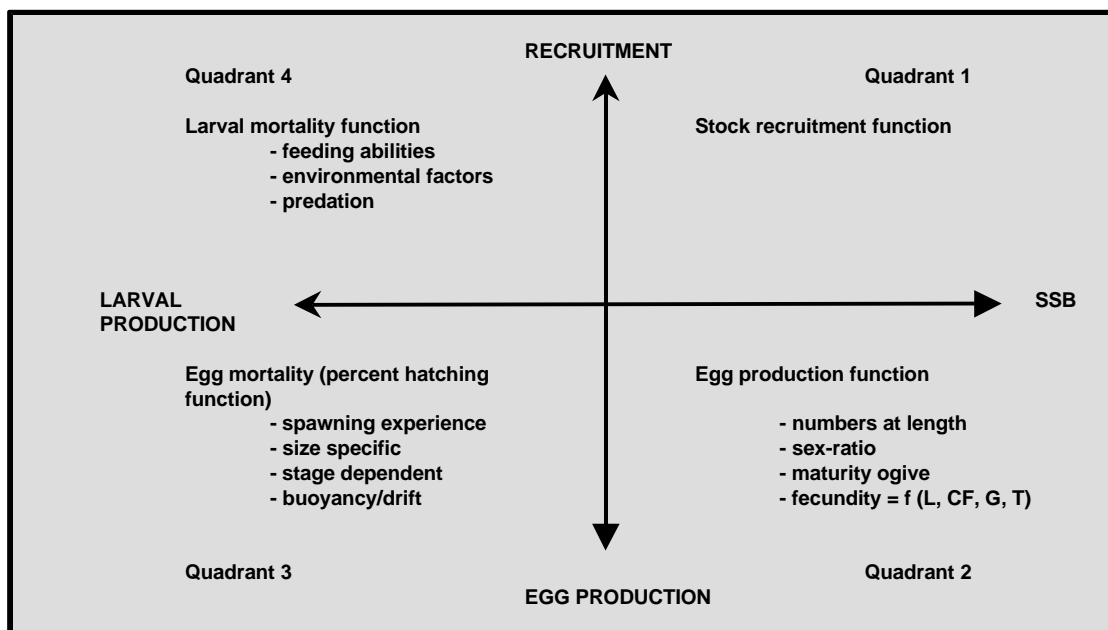
- Temporal and spatial fishing patterns may alter age/size at maturity, fecundity, egg size and growth rates - thereby affecting stock-recruitment relationships and biological reference points.
- Stock density can influence maturation rates.
- Intensive fisheries favor early maturing sub-cohorts resulting in observed declines in maturity at age.
- Properly measuring and including parent-progeny relationships into stock assessments and scientific advice is essential for the proper management of fishery resources.
- Spawning stock biomass (SSB) as such may not be the best estimate for stock reproduction potential.
- Large fish produce larger and more viable eggs and larvae than smaller fish; large fish produce more batches of eggs per spawning and spawn over a longer period of time than smaller fish.
- The proportion of fish mature at age is a function of weight. Annual population egg production rates are more sensitive to variations in fecundity than variations in sex ratio or female maturity ogives.
- Periodicity in recruitment and stock abundance may be caused by cyclical patterns of climate variability.
- Onset of maturity occurs only when fish accumulate enough energy, or have sufficient energetic reserves, to undertake spawning and migration in the following year.
- Not all mature fish participate in spawning.
- Accounting for unequal sex ratios is important in calculating SSB, particularly when male fish often mature earlier than females and do not live as long (perhaps due to spawning mortality).
- Fish are more susceptible to capture just after spawning - because of their condition - than at other times.
- Productivity of cold water stocks can differ substantially from warm water stocks due to slower growth and reduced condition.
- Variations in annual growth rates can have a significant impact on calculations of biomass and SSB. However, predicting these changes can be very difficult.
- Liver condition (HSI) may be a good barometer of stock reproductive potential.
- Reproduction has very significant energetic costs and consequences.

II. Implications for Assessment and Management

For the management of fish stocks, changes in demographic parameters and vital rates of fish stocks can profoundly affect the assessment and management of these resources. Changes in these parameters have implications for all areas of stock assessment, including short-term projections, equilibrium calculations, retrospective analyses, and rebuilding strategies. The nature of the variability observed for these parameters (i.e. high or low frequency, trended, predictability) may dictate which methodological approaches to assessment calculations should be undertaken (e.g. running averages, annual estimates, predictive models).

III. Recommendations

In recent decades, stock assessment and management has taken into account Quadrant 1 and some factors in Quadrant 2 in the Figure below. However, it is evident that more research is needed to fill the gaps in Quadrant 3 and 4 as well as in Quadrant 2 such as age/size at maturity.



The Symposium **recommended** that *the NAFO Scientific Council should establish a Working Group in order to:*

- *Explore and review availability of information and existing data on reproduction potential by areas and species*
- *Explore possibilities to develop standard internationally coordinated research protocols to estimate egg and larval production*
- *Explore and evaluate alternative methods to estimate reproductive potential annually as part of routine in monitoring and sampling schemes (such as HSI)*
- *Review possibilities to develop methods and applications to estimate stock's reproductive potential for assessment and management*

The Working Group should work by correspondence in 1998-1999 and make a proposal for the June Scientific Council meeting in 1999.

The Symposium also **recommended** that *whenever possible, stock assessments should take into account the following points and information when evaluating a stock's reproductive potential:*

- *Age and length at maturity*
- *Changes in mean weights-at-age*
- *The use of annual maturity ogives rather than "knife-edge" ogive for all years to estimate SSB*
- *Estimation of SSB*
- *Stock-Recruitment relationship plot*
- *Condition factor data - trends if possible*
- *Age and sex specific condition factors*
- *Fecundity estimates*
- *Egg quality (size, viability), in relation to reproductive history and/or condition*
- *Apply maturity, fecundity, condition and egg quality data to compile stock reproductive potential*
- *Establish minimum safe threshold level of stock reproductive potential (conservation threshold)*

TIMETABLE OF THE SYMPOSIUM

WEDNESDAY, 9 SEPTEMBER 1998

CHAIRPERSON: M. J. MORGAN

- 0900-0930 **Opening** Welcome (Scientific Council Chairman H.-P. Cornus)
Introductory remarks
- 0930-1030 **KEYNOTE ADDRESS:** O. S. KJESBU. Reproductive investment in Atlantic cod (*Gadus morhua* L.): comparisons between two different stocks and wild, captive and artificially reared specimens.
- 1030-1050 Break
- 1050-1110 OUELLETT, P., I. BERUBE, and Y. LAMBERT. Cod egg characteristics and viability related to maternal size and nutritional condition.
- 1110-1130 SOLEMDAL, P., O. S. KJESBU, and M. FONN. Long-term studies on reproduction in cod: egg and early larvae mortality related to the batch spawning and the effect of multiple spawning.
- 1130-1150 AJIAD, A., O. NAKKEN, and T. JAKOBSEN. Sexual difference in maturation of Northeast Arctic cod.
- 1150-1330 Lunch break
- CHAIRPERSON: E. ARO**
- 1330-1350 SABORIDO-REY, F., O. S. KJESBU, and A. THORSEN. Buoyancy of Atlantic cod (*Gadus morhua*) larvae in relation to spawning experience: first and second time spawners.
- 1350-1410 JUNQUERA, S., E. ROMAN, and X. PAZ. Changes in Greenland halibut growth, condition and fecundity in Flemish Cap - Flemish Pass area.
- 1410-1430 GUNDERSEN, A. C., O. S. KJESBU, A. STENE, and K. H. NEDREAAS. Fecundity of Northeast Arctic Greenland halibut (*Reinhardtius hippoglossoides*).
- 1430-1450 KORSBREKKE, K. Variations in maturity of haddock in the Barents Sea in relation to year-class strength, age, size, sex and area.
- 1450-1510 ROCHET, M.-J. Fishing effects on maturity and fecundity in teleosts: their consequences for stock-recruitment relationships and spawning biomass per recruit.
- 1510-1530 Break
- 1530-1550 O'BRIEN, L. Factors influencing rates of maturation in the Georges Bank and Gulf of Maine Atlantic cod stocks.
- 1550-1610 MURAWSKI, S.A., P. J. RAGO, and E. A. TRIPPEL. Why are western Atlantic groundfish maturing younger?
- 1610-1630 WALSH, S. J., and M. J. MORGAN. Variation in maturation of yellowtail flounder (*Pleuronectes ferruginea*) on the Grand Bank.

THURSDAY, 10 SEPTEMBER 1998**CHAIRPERSON: J. BURNETT**

- 0900-1000 **KEYNOTE ADDRESS:** TRIPPEL, E. A. Parent-progeny relationships: challenges to Groundfish Stock Assessments.
- 1000-1020 SABORIDO-REY, F., G. PEREZ-GANDARAS, and S. JUNQUERA. Spawning biomass variation in Atlantic cod (*Gadus morhua*) in relation with changes in growth and maturation in Flemish Cap.
- 1000-1020 Break
- 1040-1100 COOK, R. and P. KUNZLIK. Growth and maturity for North Sea cod.
- 1100-1120 MACKENZIE, B. R., J. TOMKIEWICZ, F. KOSTER, and A. NISSLING. Quantifying and disaggregating the 'spawner' effect: incorporating stock structure, spatial distribution and female influences into estimates of annual population egg production.
- 1120-1140 MARTEINSDOTTIR, G., A. GUNDMUNSDOTTIR, V. THORSTEINSSON, and G. STEFFANSON. Spatial variation in abundance, size composition and viable egg production of spawning cod (*Gadus morhua* L.) in Icelandic waters.
- 1140-1200 RIKHTER, V. A. On interpretation of plots of 'stock recruitment' relation of silver hake (*Merluccius bilinearis*) near the North-western Atlantic.
- 1200-1330 Lunch break

CHAIRPERSON: E. ARO

- 1330-1350 TAYLOR, L., and G. STEFANSSON. Growth and maturation of haddock in Icelandic waters.
- 1350-1410 GODØ, O.R., and T. HAUG. Growth rate and sexual maturity in cod (*Gadus morhua*) and Atlantic halibut (*Hippoglossus hippoglossus*).
- 1410-1430 BURTON, M. B. M. Potential errors in measuring spawning stock biomass: determining the effects of non-participatory adults for some Atlantic groundfish species.
- 1430-1450 AJIAD, A., and T. JAKOBSEN. Management implications from sexual differences in maturation and spawning mortality of Northeast Arctic cod.
- 1450-1530 Poster viewing and Break
- 1530-1550 OZBILGIN, H., R. S. T. FERRO, and J. R. HUTCHEON. Seasonal variation in the biological condition and trawl codend selectivity of North Sea haddock, *Melanogrammus aeglefinus*.
- 1550-1610 WIGLEY, S. E., J. BURNETT, and P. J. RAGO. An evaluation of maturity estimates derived from two sampling schemes: are the observed maturation changes fact or artifact?
- 1610-1630 MORGAN, M. J. The effect of a change in perception of length distribution of a population on maturity-at-age, weight-at-age and spawning stock biomass.

FRIDAY, 11 SEPTEMBER 1998**CHAIRPERSON: J. BURNETT**

- 0900-1000 **KEYNOTE ADDRESS:** DUTIL, J.-D., M. CASTONGUAY, Y. LAMBERT, and D. GILBERT. Growth, condition and mortality relationships in Atlantic cod: should we factor in latitudinal and temporal variations in stock productivity?
- 1000-1020 SHELTON, P. A., G. R. LILLY, and E. COLBOURNE. Patterns in annual growth of 2J3KL cod and possible prediction for stock projections.
- 1020-1040 Break
- 1040-1100 RÄTZ, H.-J., M. STEIN, and J. LLORET. Variation in growth and recruitment of Atlantic cod (*Gadus morhua*) off Greenland during the second half of the 20th century.
- 1100-1120 YARAGINA, N. A., and C. T. MARSHALL. Trophic influences on seasonal and interannual variation in the hepatosomatic index of Northeast Arctic cod.
- 1120-1140 MARSHALL, C. T., and N. A. YARAGINA. Consequences of variation in the liver condition for recruitment dynamics of Northeast Arctic cod.
- 1140-1200 LAMBERT, Y., and J.-D. DUTIL. Energetic consequences of reproduction in Atlantic cod (*Gadus morhua*) in relation to pre-spawning level of energy reserve.
- 1200-1330 Lunch break

CHAIRPERSON: M. J. MORGAN

- 1330-1430 **KEYNOTE ADDRESS:** F. M. SERCHUK, and S. MURAWSKI. Implications variations in maturation, growth, condition and spawning stock biomass production on groundfish management strategies: some real world examples.
- 1430-1600 Discussion and Summing up Symposium

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APPENDIX I. REPORT OF STANDING COMMITTEE ON FISHERIES ENVIRONMENT (STACFEN)

Chairman: M. Stein

Rapporteur: C. Jones

The Committee met at the Hotel Altis, Lisbon, Portugal on 15 September 1998, to consider environment-related topics referred to it by the Scientific Council. Scientists attended from Canada, Denmark (in respect of Faroe Islands and Greenland), Estonia, European Union (France, Germany, Portugal and Spain), Iceland, Japan, Norway, Russian Federation and the United States of America.

The Committee reviewed the following documents: SCR Doc. 98/79, 109.

1. Chairman's Introduction

The Chairman welcomed the members to the September 1998 Meeting of STACFEN. He informed the Committee that he had made contact with R. Dickson, Centre for Environmental, Fisheries and Aquaculture Science (CEFAS), United Kingdom, to give an invited lecture during the June 1999 STACFEN Meeting. He will talk about the most recent scientific findings concerning the North Atlantic Oscillation (NAO). Resources concerning the funding are still to be explored by STACFEN Chairman.

2. Review of Oceanographic Information from Shrimp Meeting (6 to 8 September 1998)

The Chairman informed the Committee that there had been oceanographic information given during the 6-8 September 1998 of the Council meeting dealing with shrimp assessments, and that this was completely dealt with during that meeting (see STACFIS Report).

3. Review of Research Documents

Attention was drawn to a paper by Mason, Petrie and Topliss (SCR Doc. 98/79). This paper is a data report containing the sea surface temperatures in the NAFO area.

4. Russian/German Data Evaluation (Report on Workshop in Murmansk, 24 to 31 August 1998)

The results of the workshop funded by the Federal Republic of Germany and the Russian Federation were presented. At the workshop, scientists were able to perform geostrophic computations from the World Ocean Atlas dataset. From 1948-73, the United States Coast Guard collected data from July in most years to determine ice flow. These data which were sampled along the Seal Island-Cape Farewell Standard Oceanographic Section were used to calculate current speeds referenced to the 3 000 m level. Data showed periodic changes in current speeds in the NAFO area. When strong water mass gradients were present, strong geostrophic currents resulted.

Comparison with recruitment data from West Greenland cod revealed close, significant correlation during the 1950s and 1960s when strong recruitment paralleled high current speeds in the West Greenland Current System.

5. Other Matters

There being no other matters, the Chairman thanked the participants and the Secretariat and closed the meeting.

APPENDIX II. REPORT OF STANDING COMMITTEE ON FISHERY SCIENCE (STACFIS)

Chairman: R. K. Mayo

Rapporteurs: Various

The Committee met at the Hotel Altis, Lisbon, Portugal, at various times during 6-18 September, 1998 to consider and report on matters referred to it by the Scientific Council, particularly those pertaining to the provision of scientific advice on shrimp in Div. 3M. Representatives attended from Canada, Denmark (in respect of Faroe Islands and Greenland), Estonia, European Union (France, Germany, Portugal and Spain), Iceland, Japan, Norway, Russian Federation and United States of America. The Assistant Executive Secretary was in attendance.

I. OPENING

The Chairman opened the meeting by welcoming the participants. The agenda was adopted and the plan of work developed for the meeting.

II. STOCK ASSESSMENTS

1. Shrimp (*Pandalus borealis*) in Division 3M (SCR Doc. 98/29, 80, 81, 82, 83, 85, 86, 87, 88, 89, 90, 91, 92)

a) Introduction

The shrimp fishery in Div. 3M began in late-April, 1993, when two Canadian offshore vessels were granted exploratory permits to fish in the area. Initial catch rates were favourable and, shortly thereafter, vessels from several Scandinavian countries joined. Fishing activity (monitored by Canada) increased to include about 50 vessels in early-July but subsequently declined over the remainder of 1993. Only 4 vessels were reported fishing shrimp at the end of December. Fishing continued into 1994 at low intensity. Activity increased over winter to include 17 vessels by late-February and remained near that level until late-March, decreasing thereafter. From early-April to mid-June, the number of vessels increased from 7 to 47 and then decreased steadily to 3 at the end of 1994.

This pattern of increasing activity to June-July followed by a decrease to the end of the year continued in subsequent years. The maximum number of vessels observed was 71 in July 1995, 91 in July 1996, 35 in June-July 1997 and 33 in June 1998.

STACFIS estimated catches (preliminary) were approximately 28 000 tons in 1993, 24 000 tons in 1994, 33 000 tons in 1995, 49 000 tons in 1996 and 27 000 tons in 1997. Catch statistics to August 1998 indicate removals of about 19 000 tons. This likely will result in a total catch of about 30 000 tons by the end of the year. Vessels from as many as 15 nations have participated since 1993.

It was acknowledged that overpack (i.e. actual weight > nominal package weight) has likely existed in the shrimp fishery on Flemish Cap, since its beginning in 1993. Estimates of the overpack vary with product type but are believed to range between 10 and 20%. Most catches in the table below are, therefore, underestimates. No new estimates of the overpack were provided. STACFIS estimates of preliminary catches (tons) by nation and year are given below.

| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 ¹ |
|---------------|---------------|---------------|---------------|---------------|---------------|-------------------|
| Canada | 3 724 | 1 041 | 970 | 906 | 807 | 426 |
| EU/Denmark | 800 | 400 | 200 | | | |
| EU/Portugal | 300 | | 150 | | 170 | 203 |
| EU/Spain | 240 | 300 | 158 | 50 | 421 | 243 |
| Estonia | | 1 081 | 2 092 | 1 900 | 3 240 | 3129 |
| Faroe Islands | 8 545 | 6 567 | 5 987 | 8 677 | 7 387 | 6 866 |
| Greenland | 3 788 | 2 275 | 2 400 | 1 107 | 105 | 853 |
| Iceland | 2 243 | 2 300 | 7 623 | 21 077 | 6 483 | 4 072 |
| Latvia | | 300 | 350 | 1 940 | 997 | 675 |
| Lithuania | | 1 225 | 675 | 2 900 | 1 785 | 1707 |
| Norway | 7 183 | 8 460 | 9 534 | 5 595 | 3 663 | 983 |
| Poland | | | | | 288 | |
| Russia | | 300 | 2 838 | 4 444 | 1 090 | |
| Honduras | 1 265 | | | | | |
| St. Vincent | | 75 | | | 150 | |
| Total | 28 088 | 24 324 | 32 977 | 48 596 | 26 586 | 19 157 |

¹ STACFIS estimate to August not including joint-venture arrangements.

b) Input Data

i) Commercial fishery data (SCR Doc. 98/80, 82, 85, 87, 89, 90, 92)

Information from the fleets of several nations showed that the spatial distribution of effort differed among years. Fishing effort shifted to the west and southwest portions of the Flemish Cap in 1994 and 1995, compared to 1993 but returned to the eastern slope in 1996. In 1998 data from several fleets showed a concentration of effort in the north.. Further, fishing effort occurred in much shallower depths in both 1995 and 1996. In 1997, the Icelandic fleet showed an overall shift in effort back to the deeper water.

A data set was constructed from the logbooks of Canadian, Greenlandic, Icelandic and Norwegian vessels and was used to monitor trends in CPUE. For the calculation of standardized CPUE, the data were selected for single trawls only and Norwegian data were omitted due to lack of geographical information.

Standardized CPUEs from the integrated data set, addressing differences due to seasonality, area and fishing power, showed a large decrease from 1993 to 1994 and thereafter have remained stable. STACFIS noted that the standardization model requires further investigation, particularly addressing the technological changes that have taken place in the fishery.

The composition of the shrimp catch has also changed over time. The percentage of males (numbers) increased from about 44% in 1993 to 72% in 1995, decreased to 57% in 1997 and increased slightly to 62% in 1998. In 1996, 59% of the catch in numbers was due to males of the 1993 year-class which was also heavily fished in 1995. In 1997, about 56% of shrimp caught were males of the 1993 and 1994 year-classes and in 1998 57% were males of the 1994 and 1995 year-classes. The large females caught in 1994 were the remains of the 1988 year-class, which did not contribute significantly to the fishery in subsequent years.

Data on shrimp discarding from the Canadian and Greenlandic shrimp fisheries in 1998 showed that discard levels remained low as in previous years, indicating that shrimp of all sizes were being kept.

Data on catch composition from Canada, Norway and Iceland showed that redfish (*Sebastes* spp.) occurred most frequently as by-catch. Species such as cod and Greenland halibut were taken only in small quantities. In 1993 and 1994 redfish by-catch was high but has since declined to negligible levels (<1%).

Although redfish by-catch was much lower during the 1995-98 period, it is not clear whether this was due to the reduction of maximum bar spacing from 28 mm in 1994 to 22 mm in 1995 or to the absence of strong redfish recruitment.

ii) **Research survey data**

Environmental data (SCR Doc. 98/86). The water mass over the Flemish Cap is a mixture of Labrador Current and North Atlantic Current waters. Oceanographic data from the summer of 1998 on the Flemish Cap were presented and compared to the long-term (1961-90) average, and to conditions during the summer of 1997. The cold near-surface temperatures (0.5 to 2.0°C below normal) experienced over the Cap during 1993, 1995 and 1996 had warmed 0.5 to 1.5°C above normal in July of 1997 and increased to 2°C above normal by the summer of 1998. Bottom temperatures over the Cap were slightly below normal during 1997 but up to 0.5°C above normal during 1998. Upper layer (top 100 m) salinities were above the long-term mean (by 0.2-0.5 PSU) during both 1997 and 1998, otherwise about normal. In general the colder than normal temperatures experienced over the continental shelf and on the Flemish Cap from the late-1980s up to 1995 moderated by the summer of 1996 and continued above normal up to July of 1998. As in previous years, summer chlorophyll levels in the upper 100-m of the water column over the Cap were higher compared to the adjacent Grand Bank. Dissolved oxygen levels were about normal for the region. Both the measured currents and the geostrophic estimates, while showing considerable differences and variability between years, indicate a general anticyclonic circulation around the Flemish Cap.

EU surveys (SCR Doc. 98/81). EU groundfish surveys were conducted on Flemish Cap in July from 1988 to 1998. Minimum trawlable biomass estimates of shrimp were calculated (see text Table below) from the catches obtained using a groundfish bottom trawl. Relative shrimp biomass from 1991 to 1993 was substantially higher than during the 1988-90 and 1994-97 periods. The 1994 estimate is likely biased downward due to a larger mesh liner in the codend of the trawl. The 1998 estimates, which showed increases for both male and female components, cannot be compared to earlier years due to a change in codend mesh size resulting from the loss of the standard gear during the survey.

| Year | Biomass Index (tons) | Average catch per mile (kg) | Standard Error | Female Biomass Index (tons) |
|-------|-------------------------|-----------------------------------|----------------|-----------------------------------|
| 1988 | 2 164 | 1.54 | ± 0.28 | 1 874 |
| 1989 | 1 923 | 1.37 | ± 0.24 | 1 340 |
| 1990 | 2 139 | 1.53 | ± 0.21 | 1 132 |
| 1991 | 8 211 | 5.83 | ± 0.71 | 5 362 |
| 1992 | 16 531 | 11.75 | ± 1.86 | 11 509 |
| 1993 | 9 256 | 6.57 | ± 1.04 | 6 839 |
| 1994* | 3 337 | 2.37 | ± 0.35 | 2 823 |
| 1995 | 5 413 | 3.85 | ± 0.44 | 4 286 |
| 1996 | 6 502 | 4.62 | ± 0.34 | 4 149 |
| 1997 | 5 096 | 3.62 | ± 0.25 | 3 807 |
| 1998* | 16 620 | 11.81 | ± 0.80 | 8 091 |

* not comparable to others years because of different codend mesh size.

The surveys also showed that biomass in most years was highest in the western, northern and northeastern parts of the Flemish Cap, and in depths ranging from about 250 to 550 m. In 1994 and 1995, proportionately more biomass was found in western and south-western areas while catch-per-tow in some eastern strata declined substantially, consistent with the westward shift in commercial fishing effort. Fishing effort by some fleets in 1996 returned to the eastern slopes where the survey showed an improvement of shrimp catch rates over the previous two years. In 1997, a large area of low density was observed in the north, which was more extensive than in previous years. High concentrations were present in the southwestern and southeastern areas in 1998, but little commercial activity occurred in these areas.

Age interpretation of the size distributions from the 1988 to 1994 surveys and the 1993 and 1994 commercial fishery samples identified the 1988 year-class as strong. This year-class contributed substantially to the fishery in 1993 and 1994 but was less important in 1994. The recruitment of the 1991 year-class helped maintain catch rates in the 1994 fishery. By 1995, the 1988 year-class was no longer important to the fishery and, although catch numbers were dominated by the 1992 and 1993 year-classes, the latter was not well represented in the 1995 survey. The 1993 year-class was dominant throughout the area surveyed in 1996 and in commercial fishery catches during the first half of that year. The 1996 survey did not detect the 1994 year-class, which appeared in the fishery and a Canadian survey during the second half of 1996. In 1997, samples from the EU survey showed the same size/age groups of males and females that were evident in the fishery. Survey samples in 1998 were dominated by males at age two and three, but were not comparable to previous years due to the changes in mesh size mentioned above. The magnitude of the impact of this change will be evaluated and reported to STACFIS at the June 1999 meeting.

Faroese survey (SCR Doc. 98/83). Stratified-random surveys were conducted in June 1997 and in July 1998 by a Faroese shrimp trawler. Single and twin Angmassalik 3000 shrimp trawls with 40 mm codend mesh size were used in 1997 and results were standardized for area swept. In 1998 only single trawls were used. Ages 1 through 6 were present in the length frequency data in both years. The minimum trawlable biomass, estimated by areal expansion, was about 16 000 tons in 1997 and 22 800 tons in 1998 but the uncertainty in the estimates has not been quantified. Any real increase in biomass would likely be due to the continued growth and recruitment of the 1994 and 1995 year-classes.

iii) **Fecundity study** (SCR Doc. 98/88)

A study designed to investigate individual potential fecundity of *Pandalus borealis* showed that maturation of shrimp from Flemish Cap was similar to that observed in the Barents Sea and that there was no significant egg loss during spawning. Average fecundity was similar to that observed in Barents Sea but lower than in Sptizbergen.

c) **Assessment Results**

Commercial CPUE. The CPUE data are difficult to interpret as an index of abundance due to major changes in fishing patterns between years (e.g. targeting small shrimp in shallow water or larger in deeper water and the dominance of twin trawling in recent years). Standardized catch rates indicate a substantial decline between 1993 and 1994 but no clear trend thereafter (Fig. 1.1).

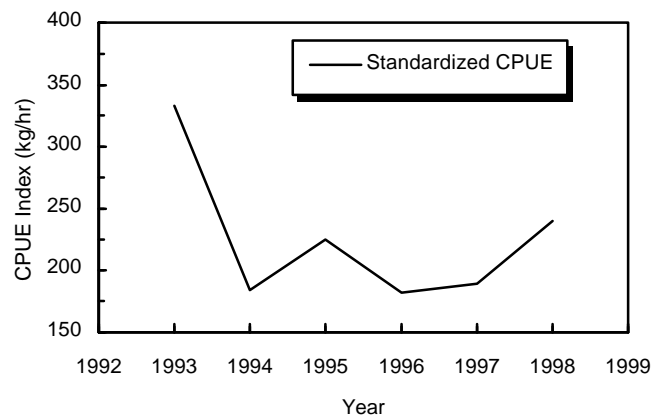


Fig. 1.1. Shrimp in Div. 3M: Standardized CPUE index.

Recruitment. Evaluation of recruitment strength can presently only be inferred retrospectively from the relative importance of year classes in the fishery. The 1988, 1993 and possibly the 1994 year-classes appear to be stronger than others. With currently available data, no prediction of recruitment is possible.

Biomass. Indices of female biomass from the EU-surveys were relatively stable from 1995 to 1997 (Fig. 1.2). Although a large increase is indicated in 1998, the results of the survey were not comparable to the previous years (see section b.ii). The Faroese surveys showed an increase in total biomass from 1997 to 1998, however, confidence intervals for the estimates were not available.

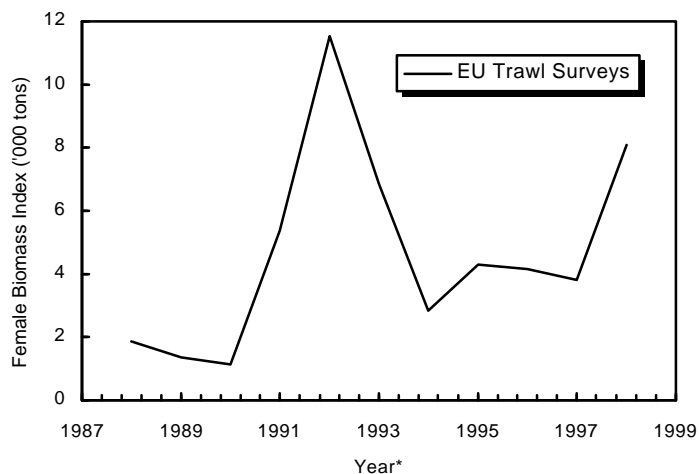


Fig. 1.2. Shrimp in Div. 3M: female biomass index from EU trawl surveys, 1988-98. Values for 1994 and 1998 are not comparable to other years because of different codend mesh size.

State of the Stock. STACFIS is not able to predict the biomass of the 1994 and 1995 year-classes which will remain in 1999. Further, as noted above, STACFIS is unable to estimate the size of subsequent year-classes or predict possible recruitment. Although CPUE information has been used previously as an indicator of stock size, there are concerns about these data due to the technological changes which have occurred in the fishery but are not accounted for in the present model. It is therefore not possible for STACFIS to provide any estimate of current or future stock size.

STACFIS noted, however, that there are indications of increases in biomass between 1997 and 1998 in both commercial and research data although interpretation of this is uncertain.

STACFIS considers it important to recognize that its ability to assess the resource will not improve until a time series of research surveys directed for shrimp is developed which can allow for the prediction of recruitment.

d) Reference Points

The precautionary, qualitative "Traffic Light" checklist proposed by Caddy (SCR Doc. 98/8), was viewed positively as a first step to applying the Precautionary Approach to shrimp in Div. 3M and, possibly, to other stocks which can be described as data poor (time series and/or quality). The method has the potential for incorporating data on stock composition, distribution, environment, predators, etc.

e) Research Recommendations

Progress was made on some of the research recommendations from 1997. Stomach content data from the 10 main groundfish species on Flemish Cap are being investigated for consumption of shrimp, and the possible development of a recruitment index and a report on progress should be available in 1999. A standardized database for biological samples was prepared for two nations, but more information is necessary.

Several **recommendations** from the September 1997 Meeting were not addressed and are repeated below:

- *Age composition of the EU survey results should be estimated to provide insights into mortality and year-class strengths.*
- *Contracting Parties contribute to the catch and effort dataset according to the format specified in SCS Doc. 96/19.*
- *Estimates of overpack should be obtained for all nations fishing for shrimp in Div. 3M and these estimates be included in the catch statistics.*

At this meeting STACFIS **recommended** that, for shrimp in Div. 3M:

- *A refinement of the standardized CPUE index in relation to the appropriate analytical methods and addressing the changes in fishing technology over time be conducted.*
- *The implications of the change in the relative efficiency of the different codend mesh sizes used during the 1998 EU groundfish survey be evaluated.*
- *Relationships between shrimp in Div. 3M and those in adjacent areas in Div. 3LN and farther north in Div. 2J and 3K should be investigated.*

Because the 1997 and 1998 Faroes surveys do not address the problem of providing a recruitment index, the 1996 **recommendation** was repeated. "A directed research survey for shrimp on Flemish Cap should be initiated with the primary goal of obtaining a reliable recruitment index, given that the EU-survey does not provide reliable estimates of shrimp at age two. The survey would also provide extensive data on the distribution and demography of the shrimp stock throughout the area. Hydrographic information should be collected, including data on currents, in conjunction with the survey."

2. Shrimp in Divisions 3LNO

STACFIS noted that the Scientific Council will provide information on shrimp in Div. 3LNO as requested by the Fisheries Commission (see Annex 1, item 8).

III. ARRANGEMENTS FOR CONDUCTING STOCK ASSESSMENTS IN 1999

1. Update List of Designated Experts

The list of Designated Experts for 1998 was reviewed and the following were tentatively identified for the 1999 assessments:

- From the Science Branch, Northwest Atlantic Fisheries Centre, Department of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1, Canada
[Telefax: +1-709 772-4188 - Tel. No.: see list of participants - E-mail: Surname@athena.nwafc.nf.ca]

| | | |
|-----|---|----------------|
| for | Cod in Div. 3NO | D. Stansbury |
| | Redfish in Div. 3LN | D. Power |
| | American plaice in Div. 3LNO | M. J. Morgan |
| | Witch flounder in Div. 3NO | W. R. Bowering |
| | Yellowtail flounder in Div. 3LNO | S. J. Walsh |
| | Greenland halibut in SA 2 + Div. 3KLMNO | W. B. Brodie |
| | Roundnose grenadier in SA 2+3 | D. B. Atkinson |
| | Squid in SA 3+4 | E. G. Dawe |
| | Shrimp in Div. 3LNO | D. Parsons |

- From the Instituto de Investigaciones Marinas, Eduardo Cabello, 6, 36208 Vigo, Spain
[Telefax: +34 9 86 292762 - Tel No.: +34 9 86 231930 - E-mail: avazquez@iim.csic.es]

| | | |
|-----|----------------|------------|
| for | Cod in Div. 3M | A. Vazquez |
|-----|----------------|------------|

2. Protocol for Compiling Assessment Reports

STACFIS reviewed several proposals to modify existing protocol for reviewing assessment results as well as modifications to the structure of the STACFIS report. In general it was agreed that greater integration of basic fishery and survey data in advance of the Scientific Council meeting would be enable STACFIS to devote more attention to assessment analyses rather than the review of background data. This approach depends on timely exchange of data for each stock among experts and adherence to deadlines for submission of documentation and data (10 days before the begin of June meeting) by the Designated Expert as required by the Scientific Council. STACFIS also noted the progress of the ad-hoc Working Group on Biological Information Data Base on developing means of electronic exchange and archival of basic assessment data, and encouraged further work in this area. It is intended that data be exchanged at the summary level only, leaving quality assurance and summarization of the data in the hands of experts from each country who are most familiar with the collection and processing of the data. The advantages of this approach become more evident in subsequent years as data formats become standardized, leading to an archive for all summary data on a given stock.

As a second step in the process of revising STACFIS protocol, the order of presentation of the assessments would be changed to reflect an area-based approach. While this approach is presently in place to some degree, the present order of presentation often reflects the availability of documentation rather than a prescribed order. The structure of the STACFIS report would also be revised to reflect this area-based approach. For example, all assessments from the Flemish Cap would be presented in sequence in the report, preceded by an overview of the area which would incorporate brief discussions of overall trends in the fishery (i.e. catch and effort) and in the stock as determined from fishery-independent means. The overview section would also contain a brief description of the environment if available. STACFIS suggests at least 3 distinct areas: Div. 3M, Div. 3LNO, and Subareas 0 and 1. An additional section, containing results for the widely distributed stocks such as Greenland halibut in Subareas 2 and 3 and *Illex* in Subareas 3 and 4 would complete the STACFIS report.

STACFIS will review these matters in further detail at the June 1999 Scientific Council meeting.

IV. OTHER MATTERS

1. Review of SCR and SCS Documents

STACFIS noted that there were no additional SCR and SCS documents to be reviewed.

2. Other Business

a) Acknowledgments

There being no other business, the Chairman thanked the participants and the Secretariat for their work during the meeting, and adjourned the meeting.

APPENDIX III. REPORT OF STANDING COMMITTEE ON RESEARCH COORDINATION (STACREC)

Chairman: V. N. Shibanov

Rapporteur: L. Motos

The Committee met at the Hotel Altis, Lisbon, Portugal, during 16 September, to discuss various matters pertaining to statistics and fisheries research, as referred to it by the Scientific Council. Representatives attended from Canada, Denmark (in respect of Faroe Islands and Greenland), Estonia, European Union (France, Germany, Portugal and Spain), Iceland, Japan, Norway, Russian Federation and United States of America.

1. Opening

The Chairman opened the meeting by welcoming participants. L. Motos (EU Spain) was appointed rapporteur. In the review of the Provisional Agenda, the Chairman proposed additional items will be incorporated under Other Matters. The Committee then adopted the agenda.

2. Fisheries Statistics**a) Progress Report on Secretariat Activities in 1998****i) Acquisition of STATLANT 21 data**

The Assistant Executive Secretary presented the updated table of STATLANT 21A and 21B data received to 14 September 1998.

| Country | STATLANT 21A (deadline 15 May) | | | STATLANT 21B (deadline 30 June) | | |
|---------|--------------------------------|------------|------------|---------------------------------|------------|-----------|
| | 1995 | 1996 | 1997 | 1995 | 1996 | 1997 |
| BGR | - | - | - | - | - | - |
| CAN-M | 04 Jul 96 | 20 May 97 | 22 Jun 98 | 26 Feb 96 | 04 Mar 98 | - |
| CAN-N | 31 May 96 | 16 May 97 | 02 Jun 98 | 21 Apr 97 | - | - |
| CAN-Q | 14 May 96 | 20 Jun 97 | 12 May 98 | 02 July 97 | 26 Aug 97 | 02 Sep 98 |
| CUB | 30 May 97 | 30 May 97 | 27 May 98 | 30 May 97 | 30 May 97 | - |
| EST | 16 Sep 97 | 17 Sep 97 | - | 16 Sep 97 | 17 Sep 97 | 27 May 98 |
| E/DNK | 15 Aug 96 | - | - | 15 Aug 96 | - | - |
| E/FRA-M | - | - | - | - | - | - |
| E/DEU | No fishing | 04 Jun 97 | 23 Mar 98 | No fishing | 24 Jun 97 | 18 Mar 98 |
| E/NLD | No fishing | No fishing | - | No fishing | No fishing | - |
| E/PRT | 12 May 96 | 14 May 97 | 24 Apr 98 | 04 Sep 96 | 04 Sep 97 | - |
| E/ESP | 05 Sep 96 | 04 Jun 97 | 14 Sep 98 | 11 Sep 96 | 14 Sep 98 | 14 Sep 98 |
| E/GBR | No fishing | 16 July 97 | - | No fishing | - | - |
| FRO | 24 Oct 97 | 24 Oct 97 | - | - | - | - |
| GRL | 20 Aug 96 | 06 Jun 97 | 28 May 98 | 09 Oct 96 | - | - |
| ISL | 27 May 96 | 16 May 97 | 24 July 98 | - | 12 Jun 97 | - |
| JPN | 02 Apr 96 | 14 Apr 97 | 14 Apr 98 | 02 Apr 96 | 24 Apr 97 | 14 Apr 98 |
| KOR | No fishing | - | - | No fishing | - | - |
| LVA | 21 May 96 | 17 Apr 97 | 22 Apr 98 | 21 May 96 | 17 Apr 97 | 04 Jun 98 |
| LTU | 17 Feb 98 | 17 Feb 98 | 17 Feb 98 | 17 Feb 98 | 17 Feb 98 | - |
| NOR | 31 May 96 | 22 May 97 | - | 27 Jun 96 | - | - |
| POL | No fishing | - | - | No fishing | - | - |
| ROM | - | - | - | - | - | - |
| RUS | 23 May 96 | 22 July 97 | 03 Apr 98 | 14 Jul 96 | 08 Jul 98 | - |
| USA | - | - | - | - | - | - |
| FRA-SP | 18 Jul 96 | 06 Mar 97 | - | 12 Sep 96 | 06 Mar 97 | - |
| HND* | - | - | - | - | - | - |
| VEN* | - | - | - | - | - | - |

* Non-Contracting Party.

ii) **Publication of Statistical Information**

There were no statistical publications since June 1998.

b) **Update on the Establishment of NAFO Internet Website**

STACREC was informed that this item was discussed during STACPUB and Scientific Council meetings.

3. **Review of SCR and SCS Documents**

No documents were available for presentation at the current STACREC Meeting.

4. **Other Matters**

a) **Working Group on Biological Information Database**

The Chairman, on behalf of the *ad hoc* Working Group (E. De Cárdenas, EU Spain), which was established in September 1997, presented a first approach to setting up a NAFO scientific database for transmission of fisheries data. The database was described to comprise five kinds of files in which scientific data on catch, effort, length and age compositions, mean weight-at-age, selectivity and tagging can be stored.

STACREC agreed that the implementation of such a format could improve the way to handle scientific information, which usually is very dispersed in National Research Reports. It was agreed this could be the basis to implement a scientific database compilation, which could be very useful for scientific assessment.

STACREC **recommended** that *the Working Group on Biological Information Database proceed forward to develop a data exchange protocol and data format for a candidate stock based on the structure of the biological information files mentioned above.* The work will be undertaken by correspondence under the direction of the Chairman (E. De Cárdenas, EU Spain) and it was agreed that the progress be reported at the June 1999 Meeting.

b) **Shark, Other Elasmobranchs and Non-utilized Resources**

STACREC noted that ICES has incorporated a list of species of sharks and skates into the STATLANT 27A questionnaire. It was suggested that a similar list of elasmobranch species be presented for the June 1999 Scientific Council Meeting, including all species likely to occur as by-catches in current fisheries.

STACREC reiterated the **recommendation** made at the June 1998 Meeting that *an expanded list of individually identified species of elasmobranchs be included in the STATLANT 21 A questionnaire and that the national authorities be requested to submit catch statistics with a maximum degree of detail.*

c) **Publication of Conversion Factors**

STACREC noted that as a result of joint work of EU statistical office and FAO an extensive list of conversion factors has been finalized. About 300 conversion factors from the North Atlantic have been compiled. STACREC was informed that FAO had undertaken the preparation of the publication.

d) **CWP 18th Session, July 1999 Session**

STACREC noted that the CWP 18th Session will be held in Luxembourg in July 1999, and the Scientific Council had recommended (in June 1998) that the Assistant Executive Secretary and STACREC Chairman should attend that meeting.

It was noted that the Scientific Council usually nominated a national representative to also attend. STAREC was not able to make a nomination during this meeting. STACREC requested the national representatives to consider this matter and a national nominee be presented to the Scientific Council in the near future.

e) **Data Harmonization Exercise**

At the June 1998 Meeting, the Scientific Council was informed of the STATLANT data harmonization exercise conducted between NAFO and FAO. STACREC noted that a substantial number of discrepancies had been identified between the NAFO and FAO databases, and reiterated its concern that harmonization of the data sets be continued. In order to do this, the results were given to various (4) national representatives during the June 1998 Meeting. The Secretariat reported that no reactions had been received to date. STACREC requested the national representatives to address this issue and report back to the Assistant Executive Secretary in the near future.

f) **Acknowledgements**

The Chairman expressed his thanks to the Secretariat, the rapporteur and all meeting participants for their contributions.

APPENDIX IV. REPORT OF STANDING COMMITTEE ON PUBLICATIONS (STACPUB)

Chairman: W. B. Brodie

Rapporteur: W. B. Brodie

The Committee met at Hotel Altis in Lisbon, Portugal on September 17, 1998. In attendance were W. B. Brodie (Chairman) (Canada), D. B. Atkinson (Canada) for J. Morgan (Canada), V. A. Rikhter (Russian Federation), F. M. Serchuk (U.S.A.), M. Stein (EU-Germany), A. Vazquez (EU-Spain), and the Assistant Executive Secretary (T. Amaratunga).

1. Opening

The Chairman welcomed the Committee, and the agenda was adopted.

2. Review of Scientific Publications

a) Status of Papers from 1998 Symposium

STACPUB noted that papers from the 1998 Symposium will undergo the usual peer review process for publication in a volume of the Journal of Northwest Atlantic Fisheries Science. The Symposium convenors had agreed to coordinate the review and editorial process in consultation with the Assistant Executive Secretary. Papers presented during the Symposium are due at the NAFO Secretariat by the end of September. STACPUB **recommended** that *the Scientific Council report on the 1998 Symposium be placed on the NAFO website.*

b) Other Reviews

Volume 23 of the Journal was delayed, waiting for confirmation from the author on galleys for one paper. STACPUB agreed the author will be contacted, and if the galleys are correct, the paper should be published. If the galleys are not acceptable, and not returned with corrections by 15 October 1998, the paper will be withdrawn from Volume 23.

3. Production Costs and Revenues for Scientific Council Publications

a) Review of Costs and Revenues

STACPUB noted that the dialogue on the budgetary process of NAFO, begun in June 1998, between the Executive Committee of Scientific Council and the Executive Secretary should continue. These discussions should also include costs related to the NAFO website.

4. Promotion and Distribution of Scientific Publications

a) Invitational Papers

An invitational paper on shrimp, along with 2 other manuscripts, are the only papers currently available for publication in Volume 24 of the Journal. Should this be the situation after Volume 23 is published, a decision will be taken whether to publish Volume 24 with only 3 papers, or to wait until other papers are ready for inclusion in this volume. In the meantime, efforts will be made to speed up the review and editorial process for manuscripts currently under consideration for publication, to see if they can be published in Volume 24.

b) Distribution of Abstracts from Research Documents – ASFA

The NAFO Secretariat will change forms and announcements to request abstracts for SCR Documents. The Index and Lists of Titles will be made available electronically, and ASFA will be informed. The electronic versions will be arranged in such a way as to facilitate searches, e.g. for keywords, etc.

c) **NAFO Website**

STACPUB **recommended** that *Scientific Council advice given in 1998 for various stocks should be placed on the NAFO website.*

d) **Scientific Citation Index (SCI)**

A letter was written by the Chairman of STACPUB in early September requesting inclusion of the *Journal of Northwest Atlantic Fisheries Science* in SCI.

5. **Review of Papers for Possible Publication**

a) **Papers Presented at the September 1998 Meeting**

SCR Document 98/79 was considered, and it was concluded that this paper could be placed on the NAFO website, following consultation with the authors. SCR Doc. 98/80 was also considered, and the author will be contacted with suggestions on upgrading the paper for future publication.

b) **Contributions not Considered at the 1998 June Meeting**

There were no further papers from the June 1998 Meeting recommended for publication. It was noted that any paper received since the June 1998 Meeting, which is considered for Scientific Council Studies, should receive a preliminary review by an Associate Editor, prior to the usual editorial process currently in place for such papers.

6. **Other Matters**

STACPUB examined the current report of STACFAD and noted with concern that only \$5 000 (of the requested \$16 000) had been budgeted in 1999 for the modernization and maintenance of the NAFO website. As well, no funds were allocated for staff training, or for the computer system requested by Scientific Council for its June 1999 Meeting. It was concluded that these decisions would have a negative impact on Scientific Council work in the upcoming year.

There being no other business, the Chairman thanked the participants and the NAFO Secretariat for their work, and the meeting was adjourned.