

Northwest Atlantic



Fisheries Organization

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**SCIENTIFIC COUNCIL MEETING - NOVEMBER 1993**

**Report of Scientific Council, 19-23 November 1993 Meeting**

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SC 19-23 Nov

## REPORT OF SCIENTIFIC COUNCIL

Scientific Council Meeting, 19-23 November 1993

Chairman: H. Lassen

Rapporteur: T. Amaratunga

### I. PLENARY SESSIONS

The Scientific Council met at NAFO Headquarters, Dartmouth, Nova Scotia, Canada, during 19-23 November 1993. Representatives attended from Canada, Denmark (in respect of the Faroe Islands and Greenland), European Economic Community (Denmark, Germany), Iceland, Japan and the Russian Federation. The Assistant Executive Secretary was in attendance.

The opening meeting was called to order on 19 November 1993 at 0935 hr.

The Chairman welcomed representatives to this meeting primarily to conduct assessments on shrimp in Subareas 0 and 1, and Denmark Strait, and considerations on mesh size in the redfish fishery in the Regulatory Area and minimum fish size for witch, redfish and Greenland halibut. The Assistant Executive Secretary was appointed rapporteur.

The plan of work was reviewed, and the scientific considerations were assigned to STACFIS.

The Chairman noted that the STACFIS Chairman, H. P. Cornus (EEC-Germany) was due to arrive on 20 November 1993, and the Council agreed the Council Chairman should chair the STACFIS Meeting until he arrived. It was also agreed that since the Chairman was required to leave for Brussels on 21 November 1993, the STACFIS Chairman will act as Chairman of the Council on 22 and 23 November 1993.

The provisional Agenda (Appendix II) was **adopted**, and the session was adjourned at 0950 hr.

The Council reconvened from 1600 hr to 1700 hr on 22 November 1993 to consider and adopt the shrimp assessment reports prepared by STACFIS. The concluding session was convened at 1130 hr on 23 November 1993. The Council then considered and adopted the outstanding sections of the STACFIS report. Having addressed the two requests from the Fisheries Commission and all outstanding matters, the Council considered and **adopted** the Report of the Scientific Council of the 19-23 November 1993 Meeting.

The meeting was adjourned at 1200 hr.

Brief summaries of the STACFIS Report and other matters considered by the Scientific Council are given below in Sections II-V. The Agenda, the Lists of Research (SCR) and Summary (SCS) Documents and List of Participants of this meeting are given in Appendix II, III and IV, respectively.

### II. FISHERY SCIENCE (see STACFIS report, App. I)

#### 1. Stock Assessments

##### a) Shrimp in Subareas 0 and 1

Catch rate indices from the commercial fishery indicated a stable biomass from 1989 to 1993. Research survey indices from 1988 to 1993 varied around a level of 180 000 tons. Biological samples from both the fishery and research surveys showed that the stability in biomass was maintained by the strong 1985 year-class, which began recruiting to the fishery in 1990, and in 1993 also by the 1987 year-class. Survey data also indicated relatively good abundance of the 1988 and 1989 year-classes.

The Council noted that in light of the 1989-93 stability in catch rates, good prospects for recruitment and apparent stability in biomass estimates, STACFIS considered that the 1994 fishery will be similar to 1992 and 1993. The Scientific Council endorsed the STACFIS advice that the TAC in 1994 be set at 50 000 tons. The summary of the assessment is as follows:

**SUMMARY SHEET - Shrimp in Subareas 0 and 1**

Source of information: SCR Doc. 93/128, 129, 130, 132

Year	1986	1987	1988	1989	1990 <sup>1</sup>	1991 <sup>1</sup>	1992 <sup>1</sup>	1993 <sup>1</sup>
<b>Offshore SA 0+1 (south of 71°N)</b>								
Recommended TAC	36	36	36	44	50	50	50	50
Agreed TAC <sup>2</sup>	40.4	40.1	40.1	45.2	45.2	46.2	44.2	40.6 <sup>3</sup>
Actual landings	44.6	46.2	43.6	49.9	52.6	57.1	63.4	<sup>6</sup>
<b>Offshore SA 1 (north of 71°N)</b>								
Recommended TAC	-	-	-	-	-	2.5	-	-
Agreed TAC	-	11.6	11.5	8	6.8 <sup>4</sup>	6.8 <sup>4</sup>	6.4 <sup>4</sup>	8.3 <sup>5</sup>
Actual landings	11	10.7	6.7	2.5	2.1	1.1	2.6	<sup>6</sup>
<b>SA 0+1 total (including inshore SA 1)</b>								
Actual landings	63.1	63.8	60.5	65.7	70.1	76.1	87.2	<sup>6</sup>

<sup>1</sup> Provisional landings.

Weights in '000 tons

<sup>2</sup> Not including catches of vessels <75 GRT.<sup>3</sup> SA 1 offshore, south of 68°N + Div. 0A.<sup>4</sup> Including the area from 69°30'N to 71°N, west of 58°W.<sup>5</sup> SA 1 offshore, north of 68°N.<sup>6</sup> Not yet available.

**Catches:** Increased to about 50 000 tons in 1976, decreased to about 45 000 tons in 1980-84, then gradually increased to 87 000 tons in 1992. Figures include catches outside the TAC area.

**Data and Assessment:** Catch rates, research survey indices and biological sampling data.

**Fishing Mortality:** No information available.

**Recruitment:** Good recruitment of 1988 and 1989 year-class.

**State of Stock:** Catch-rate and research survey indices indicated that the stock is stable since 1989.

**Forecast for 1994:** Not available.

Option Basis	Predicted catch (1994)	Predicted SSB (1.1.1995)
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F<sub>0.1</sub> =F<sub>92</sub> =F<sub>max</sub> =

No information available.

**Recommendations:** TAC for 1994 be set at 50 000 tons for Div. 0A and Subarea 1 offshore south of 71°N.

**Special Comments:** Concern is expressed over the steady increase in catches in recent years.

**b) Shrimp In Denmark Strait**

New data were available on catch effort and CPUE for 1992 and 1993. It was agreed that these data confirmed Scientific Council opinion from the June 1993 Meeting that the shrimp stock in Denmark Strait is still at a low level of abundance and that the advice provided at the June 1993 Meeting (TAC of 5 000 tons in 1994) remains valid.

**2. Mesh Size In the Redfish Fishery In the Regulatory Area**

The Council received a request from the Fisheries Commission (see Annex 2 of Agenda) to consider the proposal by the Russian Federation to conduct a scientific/commercial project in 1994 in respect to minimum mesh size for certain redfish fisheries in the Regulatory Area. The Fisheries Commission requested the Council to consider this matter at this special meeting. The Council reviewed the STACFIS discussions on this subject and endorsed the following:

STACFIS reviewed the proposal by the Russian delegation to conduct a scientific/commercial project in the Regulatory Area of Div. 3NO in order to evaluate optimum utilization of redfish stocks using pelagic trawls with a mesh size of 90 mm. The Committee welcomed the proposal in principle as there have been very few studies conducted historically that evaluated the selectivity properties of different mesh sizes in the codend of pelagic trawls. During discussion of the details of the proposal, STACFIS considered that data collected utilizing only 90 mm mesh codends would be of limited value as it would not provide a comparison to the regulated minimum codend mesh size of 130 mm and the current exemptions from that. In consideration of this situation, STACFIS supports a selectivity study be conducted by Russia under the following provisions:

- a) Main Objective: Evaluation of pelagic trawl codend mesh sizes for the redfish fishery in the Regulatory Area of Div. 3NO to assess the effect on the exploitation pattern by reducing codend mesh size to 90 mm.
- b) Scope of Work and Methods:
  - i) The project be conducted and evaluated as a selectivity experiment.
  - ii) The experiment be conducted with codend mesh sizes of 90 mm, 120 mm and 130 mm, utilizing an appropriate cover over the codend and employing pelagic trawls that are currently used in the commercial fishery by the Russian fleet.
  - iii) The investigations be conducted on the same vessel to provide a controlling measure or standardization.
  - iv) Biological sampling for size and age composition, and estimation of a maturity ogive be conducted using NAFO standards and techniques.

Referring to the advice given in June 1993 concerning the stock status in Div. 3LN, which is considered to be at a low level, and an uncertain status of the stock in Div. 3O, the catches obtained from this experiment should be counted as part of the total allowable catch (TAC).

**3. Minimum Fish Size for Witch, Redfish and Greenland Halibut**

The Council received a request from the Fisheries Commission (see Annex 3 of Agenda) to consider the possible alternatives to current measures in respect of minimum fish size for witch, redfish and Greenland halibut. The Council received no data for consideration at this meeting.

**III. OTHER MATTERS**

**1. Shrimp In Division 3M**

The assessments of shrimp in Div. 3M was discussed in relation to availability of data and timing of meetings. It was agreed, that although the item would likely appear on the Agenda for the June 1994 Meeting, sufficient data to complete the assessment would not be available until later in the year. Given this situation, it was further agreed that the assessment should be deferred to the Annual Meeting in September 1994.

**2. November Shrimp Meeting**

The Council agreed that the present mid-term meeting for the assessment of shrimp in Subareas 0 and 1, and Denmark Strait was productive and efficient. Especially useful were the survey results and current-year fishery data for Subareas 0 and 1. It was noted that a survey will be conducted in Denmark Strait in 1994, thus making November meetings more useful for that area.

**IV. ADJOURNMENT**

There being no further business, the acting Chairman extended a special thanks to the Executive Secretary, the Assistant Executive Secretary and the staff of the Secretariat for their efficiency and support during the meeting. Thanks were extended to the participants for their valuable contributions. The acting Chairman then adjourned the meeting.



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

Chairman: H. P. Cornus

Rapporteur: Various

The Committee met at NAFO Headquarters, Dartmouth, Nova Scotia, Canada during November 19-23 November 1993 to review the status of the shrimp stock in Subareas 0 and 1, and Denmark Strait and other various matters referred to it by the Scientific Council (see Appendix I). Representatives attended from Canada, Denmark (in respect of Faroe Islands and Greenland), EEC (Denmark, Germany), Iceland, Japan and the Russian Federation.

## I. STOCK ASSESSMENTS

### 1. Shrimp in Subareas 0 and 1 (SCR Doc. 93/128, 129, 130, 132)

#### a) Introduction

The nominal catch of shrimp in the offshore areas of Subarea 1 south of 71°N and the adjacent part of Subarea 0 (Div. 0A) increased from less than 1 000 tons before 1972 to almost 43 000 tons in 1976, fluctuated thereafter, but stabilized around a level of 44 000 tons during 1985-88. Preliminary statistics for 1993 (January to September) show total catches of about 41 500 tons (compared to 45 500 tons in the same months in 1992). The fishery has been regulated by TAC since 1977 (Table 1, Fig. 1).

Table 1. Shrimp in Div. 0A and Subarea 1: nominal catch and TAC (tons) included in TAC advice.

	1983	1984	1985	1986	1987	1988	1989	1990 <sup>1</sup>	1991 <sup>1</sup>	1992 <sup>1</sup>	1993 <sup>1</sup>
Div. 0A Total	5 413	2 142	2 640	2 995	6 140	6 087	7 235	6 177	6 788	7 493	4 882 <sup>6</sup>
SA 1 offshore, south of 71°N											
Total	33 854	33 741	39 547	41 589	40 020	37 559	42 676	46 424	50 316	55 864	36 515 <sup>7</sup>
0+1 offshore catch <sup>2</sup>	39 267	35 883	42 187	44 584	46 160	43 646	49 911	52 601	57 104	63 357	41 397
0+1 advised TAC <sup>3</sup>	29 500	29 500	36 000	36 000	36 000	36 000	44 000	50 000	50 000	50 000	50 000
0+1 effective TAC <sup>3,4</sup>	34 625	34 925	42 120	40 420	40 120	40 120	45 245	45 245	46 225	44 200	40 600 <sup>5</sup>

<sup>1</sup> Provisional.

<sup>2</sup> January - November 1993.

<sup>3</sup> January to end of September 1993.

<sup>4</sup> Offshore south of 71°N.

<sup>5</sup> Including TAC in Div. 0A: 1983-84 - 5 000 tons, 1985-88 - 6 120 tons, 1989-90 - 7 520 tons, 1991-92 - 8 500 tons.

<sup>6</sup> Not including catches from vessels <75 GRT.

<sup>7</sup> SA 1 offshore south of 68°N + Div. 0A.

During the history of this fishery, the fishing grounds in Div. 1B have been the most important. Since 1987, however, there have been increasing catches in Divisions south of 1B.

The fishery in Div. 0A usually takes place from July to November. In Subarea 1 the fishery occurs in all months of the year, however, early in the year it is often confined to the fishing grounds in Div. 1C, 1D and 1E due to ice coverage in Div. 1A and 1B. In 1993 exceptional ice coverage hampered the access to some fishing grounds till the end of August.

An offshore fishery north of 71°N, outside the fishing areas in Subareas 0 and 1 for which TACs have been advised, began in 1985 and yielded about 4 300 tons that year. In 1986 and 1987 catches increased to about 11 000 tons, decreased steadily to about 1 000 tons in 1991, increased to 2 647 tons in 1992 and decreased again in 1993 (Table 2). This fishery normally occurs from June to November.

The effort in Subarea 1 decreased from 1992 to 1993 because a significant part of the fleet participated in the shrimp fishery on the Flemish Cap (Div. 3M). Also, the Greenland fishery was in 1993 affected by a legal application of a 55 mm mesh size in the cod-end from April to July.

The West Greenland inshore shrimp fishery was relatively stable from 1972 to 1987 with estimated catches of 7 000-8 000 tons annually (except for 10 000 tons in 1974). Catches in recent years have increased to over 21 000 tons in 1992. Preliminary data for 1993 indicate a decrease (10 500 tons taken by the end of September compared to about 14 700 tons in the same period in 1992), reflecting a shift from inshore to offshore areas of the small vessel fishery.

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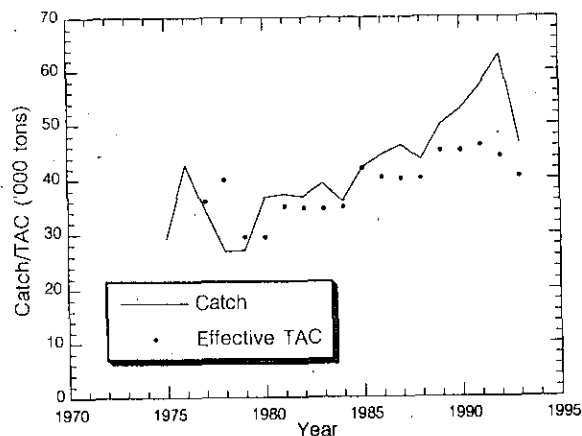


Fig. 1. Shrimp in Subareas 0 and 1: catches and TACs.

Total catches (tons) for all Subarea 1 are shown in Table 2.

Table 2. Shrimp in Subarea 1: total nominal catches.

	1983	1984	1985	1986	1987	1988	1989	1990 <sup>1</sup>	1991 <sup>1</sup>	1992 <sup>1</sup>	1993 <sup>1</sup>
SA 1 offshore (south of 71°N)	33 854	33 741	39 547	41 589	40 020	37 559	42 676	46 424	50 316	55 864	36 515 <sup>2</sup>
Greenland (N of 71°N)	-	-	4 349	11 045	10 700	6 660	2 522	2 121	1 077	2 647	378 <sup>2</sup>
Greenland (inshore <sup>3</sup> )	7 500	7 500	7 500	7 500	6 921	10 233	13 224	15 386	17 891	21 148	10 490 <sup>2</sup>
SA1 Total	41 354	41 241	51 396	60 134	57 641	54 452	58 422	63 931	69 284	79 659	47 383

<sup>1</sup> Provisional.

<sup>2</sup> January to the end of September 1993.

<sup>3</sup> Inside 3-mile limit. Inshore component of total catch is estimated.

## b) Input Data

### i) Commercial fishery data

**Fishing effort and CPUE (Fig. 2).** Catch and effort data from the shrimp fishery in 1993 were available from Canadian vessel records for Div. 0A and from Greenland logbooks for Subarea 1.

An overall increase in effort was observed from 1987 to 1991, followed by a decrease in 1992 and 1993.

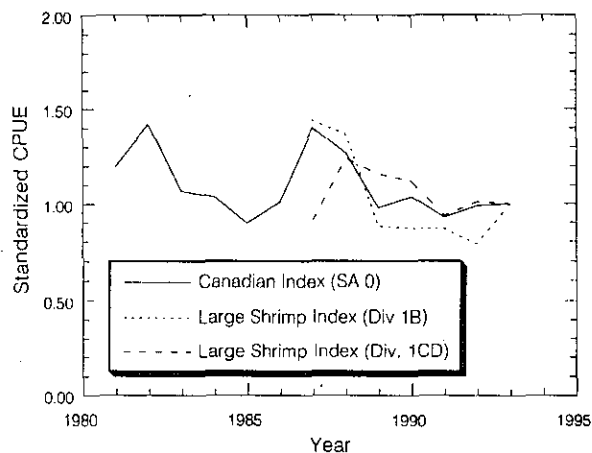


Fig. 2. Shrimp in Subareas 0 and 1: standardized CPUE indices from Div. 0A, Div. 1B and 1CD compared to nominal offshore catches (excluding catches north of 71°N in Subarea 1).



Unstandardized yearly catch rates were calculated using Canadian vessel logbook data from Div. 0A from 1981 to 1993. Because of seasonality in the catch rates and changes in the fleet over time, the same data were analyzed using a multiplicative model to produce standardized yearly catch rates. The series shows two periods of stable catch rates (1983-86 and 1989-93), separated by significantly higher level in 1987-88.

From 1987, logbook data from 27 Greenland trawlers, which record the shrimp catch by size category in the logbook, were used in a multiplicative model to establish a CPUE index for large shrimp >8.5 g (mainly females), for which discard is supposedly at a low level. Hereby the uncertainty in interpretation of catch rates caused by possible changes in discarding procedures should be minimized. The index in Div. 1B showed a decrease from 1987 to 1989 followed by stability from 1989 to 1992, and an increase in 1993. The index in Div. 1CD increased from 1987 to 1988, decreased to 1991, and has remained stable thereafter.

**Length and age composition.** Length frequency distributions obtained by observers were available from the commercial fishery in Div. 0A from 1981 to 1993 and in Subarea 1 from 1990 to 1993. The relative importance of the 1985 year-class was evident in 1990 as it recruited to the fishery, and in 1991, when it clearly dominated the catches. This year-class was expected to change sex to females between 1991 and 1992, but data from the 1992 and 1993 fishery showed that the sex inversion took place over two years. In 1993 this year-class still accounted for a substantial part of the catches.

The data from Div. 0A (separated by age) showed that the trend in catch rates series is due to the female component (age 7+).

**Shrimp discards.** In Div. 0A, the percentages of shrimp discard estimated by observers declined in recent years from a high of 6.5% in 1991 to 1.9% in 1993, the lowest level achieved during the 1981 to 1993 period.

No new information on discard was available from Subarea 1. The discard rate in 1993 is expected to be lower than in previous years due increased observer coverage.

## ii) Research vessel surveys

**Abundance estimates.** Compared to previous surveys in Subarea 0+1 the mesh size in the cod-end was changed in 1993 from 44 mm to 20 mm, but this small mesh cod-end does not appear to have a significant influence on biomass estimates or overall length frequencies. Data from 30 sets of hauls with alternating cod-ends showed no significant changes in catch rates between the two mesh sizes.

Offshore: In July-August 1993, a stratified-random trawl survey was carried out in the main area of shrimp distribution in Div. 1A to 1F and the adjacent part of Div. 0A. The area surveyed extended further south than in previous years by inclusion of Div. 1F. Because commercial fishery data suggest that shrimp densities in these southern areas were very low for the earlier years, the estimates from all six surveys were considered to be comparable.

The trawlable biomass estimates are as follows:

Biomass ('000 tons)	1988	1989	1990	1991	1992	1993
South of 69°30'N	150	181	163	113	158	216
North of 69°30'N	22	11	12	6	21	9
Total	172	192	175	119	179	225

The recent increasing trends in biomass in the southern areas south of 65°N was continued.

The estimated numbers of shrimp in the total areas surveyed are shown in the following table by sexual stage and year:

No. of shrimp (billions)	1988	1989	1990	1991	1992	1993
Males (age < 7)	18.1	31.9	21.9	12.2	20.9	31.8
Females (age 7+)	7.7	6.0	8.0	4.4	5.5	7.9
Total	25.9	37.8	29.8	16.6	26.5	39.7

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Analysis of the research length frequency data showed the predominance of the 1985 year-class in 1989, 1990 and 1991 throughout the offshore area. In 1989, abundance was highest in shallower water, most animals being males of the 1985 year-class. In subsequent years, abundance was higher to the north and in deeper water, reflecting the growth and behaviour of this strong year-class. In 1992 and 1993 recruitment of new year-classes is indicated. The increase in number of males in these years is due to recruitment of especially the 1987 year-class, but also the 1988 and 1989 year-classes contributed significantly to the male group in 1993. In 1992 the 1985 year-class was expected to change sex. Data from the 1992 and 1993 fishery, however, showed that the sex inversion took place over two years.

Inshore: In August 1993 a stratified-random trawl survey was conducted in the inshore areas in Disko Bay and Vaigat (Div. 1A). Biomass was estimated at 32 000 tons, lower than the estimates around 47 000 tons in 1991 and 1992.

The overall size compositions of shrimp from the inshore surveys were similar to those for the offshore in relation to the occurrence of modes. The observed decrease in the inshore biomass in 1993 compared to the previous years is due to a decrease in number of male shrimp, while the number of females remained stable. The overall size distribution, however, still shows the presence of a wide range of male year-classes.

c) **Assessment Results**

Indices from the commercial fishery showed that the biomass in 1989-93 was stable but lower than the high 1987-88 level. The stability since 1989 was maintained by the strong 1985 year-class and in 1993 also by the 1987 year-class.

The research survey index from 1988 to 1993 varied around a level of 180 000 tons.

The strong 1985 year-class recruited to the fishery in 1990 and maintained catch rates in 1991, 1992 and 1993. It changed sex over two years (1992 and 1993).

Survey data from 1993 indicated relatively good abundance of the 1988 and 1989 year-classes.

d) **Prognosis**

In light of the 1989-93 stability in catch rates, good prospects for recruitment, and apparent stability in biomass estimates STACFIS considered that the 1994 fishery will be similar to 1992 and 1993. STACFIS, therefore, reiterates its advice and the concern expressed in the 1993 June Meeting, specifically that the TAC in 1994 be set at 50 000 tons.

Available commercial and survey samples from Div. 0A and Subarea 1 both north and south of 71°N and inshore in Div. 1A showed the occurrence of similar modes in the length distributions, prominence of the 1985 year-class in all areas, and recruitment of the same new year-classes in all areas. Although differences were observed in the abundance of size groups between areas, it was agreed that the areas might constitute parts of a single population. STACFIS, therefore, **recommends** that *the entire shrimp stock in Div. 0A, and Subarea 1 both north and south of 71°N, and inshore in Div. 1A in the future be assessed as one single population.*

2. **Shrimp in Denmark Strait (SCR Doc. 93/131, 133, 134)**

At the 1993 June Meeting, STACFIS concluded that the shrimp stock in Denmark Strait was still at a low level of abundance and advised a TAC for 1994 of 5 000 tons. New information for the present meeting included updated catch, effort and CPUE data from all fleets for 1992 and preliminary figures for 1993 up to the end of October 1993. Also, length frequency distributions from samples taken in the Greenlandic fishery on the west side of the Midline were available. Updated catch statistics for 1992 indicated a total catch of 7 199 tons - 1 432 tons east of the Midline and 5 767 tons to the west. Preliminary catch estimates up to October 1993 were 7 319 tons - 2 586 east and 4 733 west. The Greenlandic fishery data also showed that effort in 1993 extended south of 65°N into several areas which previously were not fished or fished only occasionally. In these areas 909 tons were caught. Catches sampled in the traditional area north of 65°N were composed primarily of large shrimp with a modal length of 26-27 mm CL. Samples taken from the area just south of 65°N showed the occurrence of a broad size range whereas those taken between 62° and 63°N contained shrimp with modal length of 22-23 mm. Unstandardized catch rates for all fleets showed continued stability since 1989. Further, the standardized CPUE for Greenland and the unstandardized for Norway and Iceland in 1993, as estimated from the preliminary data, were similar to the 1992 values. It was agreed that the data confirmed the STACFIS opinion of the June 1993 Meeting that the shrimp stock in Denmark Strait is still at a low level of abundance and, therefore, the advice provided at the 1993 June Meeting remains valid. STACFIS also noted that a research survey will be conducted in the area in 1994 during which the distribution and stock structure of shrimp throughout the Denmark Strait can be investigated further.

3. **Mesh Size in the Redfish Fishery in the Regulatory Area**

Information was available from a Russian study (SCR Doc. 93/100) on the selectivity of bottom trawls during the 1993 fishery on the Flemish Cap. Selectivity experiments were conducted on 126 mm and 137 mm codend mesh sizes utilizing trawls used in the Russian bottom trawl fishery. Selection factors and 50% retention lengths were comparable to results of selectivity experiments conducted by Germany in East Greenland waters in 1990 (Dahm, 1991)<sup>1</sup> and ICNAF data from 1961 (ICNAF 1961 Doc. No. 40). STACFIS noted the selection curves presented for the Russian experiment were derived from an exponential function rather than the standard logistic function. However, the selection range derived by fitting data graphically from the Russian experiment was at most 60% of the range obtained from the estimated selectivity curves from German studies for comparable codend mesh sizes.

STACFIS reviewed the proposal by the Russian delegation to conduct a scientific/commercial project in the Regulatory Area of Div. 3NO in order to evaluate optimum utilization of redfish stocks using pelagic trawls with a mesh size of 90 mm. The Committee welcomed the proposal in principle as there have been very few studies conducted historically that evaluated the selectivity properties of different mesh sizes in the codend of pelagic trawls. During discussion of the details of the proposal, STACFIS considered that data collected utilizing only 90 mm mesh codends would be of limited value as it would not provide a comparison to the regulated minimum codend mesh size of 130 mm and the current exemptions from that. In consideration of this situation, STACFIS supports a selectivity study be conducted by Russia under the following provisions:

- a) Main Objective: Evaluation of pelagic trawl codend mesh sizes for the redfish fishery in the Regulatory Area of Div. 3NO to assess the effect on the exploitation pattern by reducing codend mesh size to 90 mm.
- b) Scope of Work and Methods:
  - i) The project be conducted and evaluated as a selectivity experiment.
  - ii) The experiment be conducted with codend mesh sizes of 90 mm, 120 mm and 130 mm, utilizing an appropriate cover over the codend and employing pelagic trawls that are currently used in the commercial fishery by the Russian fleet.
  - iii) The investigations be conducted on the same vessel to provide a controlling measure or standardization.
  - iv) Biological sampling for size and age composition, and estimation of a maturity ogive be conducted using NAFO standards and techniques.

Referring to the advice given in June 1993 concerning the stock status in Div. 3LN, which is considered to be at a low level, and an uncertain status of the stock in Div. 3O, the catches obtained from this experiment should be counted as part of the total allowable catch (TAC).

4. **Minimum Fish Size for Wlitch, Redfish and Greenland Halibut**

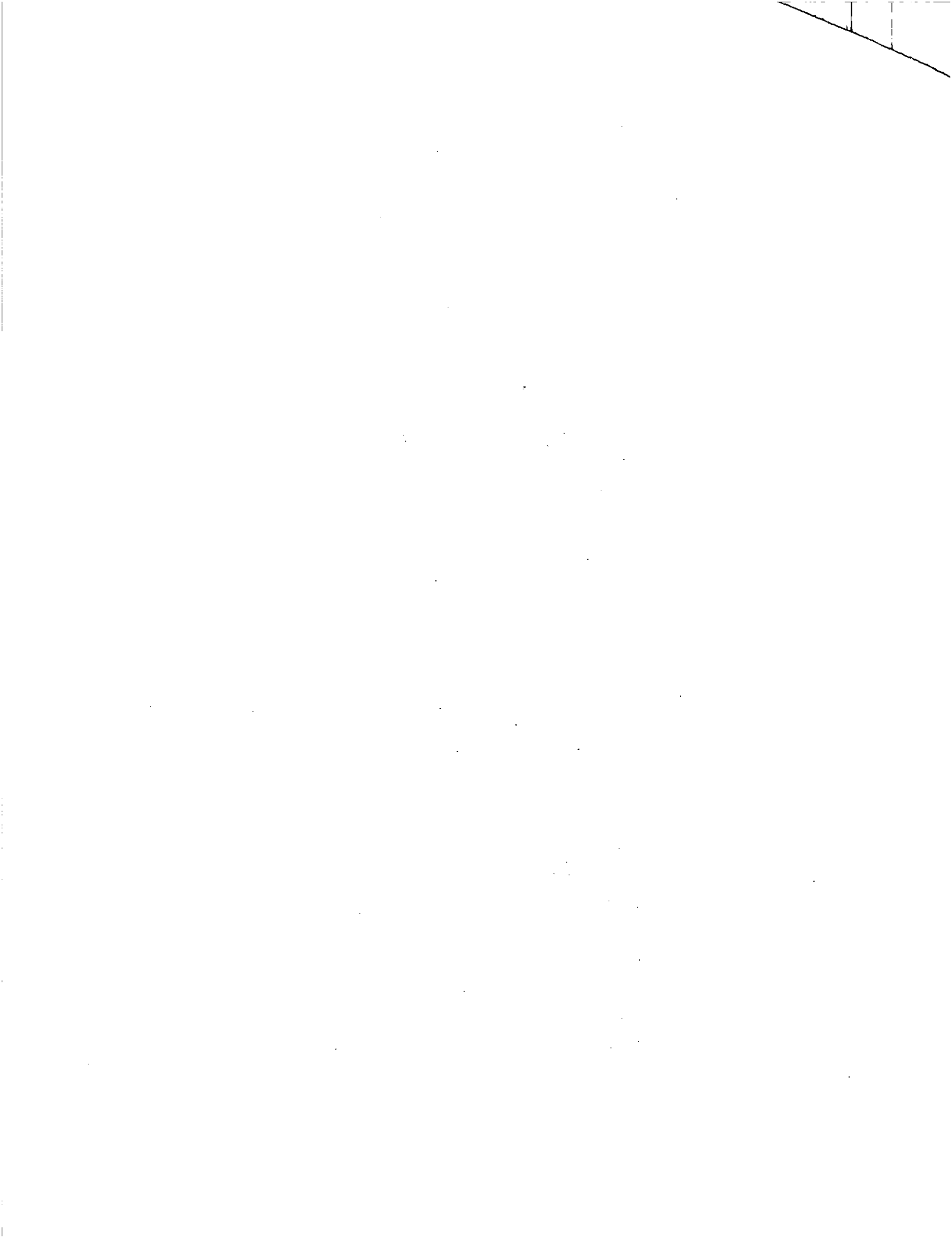
STACFIS was not provided with data for consideration at this meeting.

5. **Other Business**

There being no other business, the Chairman thanked the Committee members for their good cooperation and adjourned the meeting.

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<sup>1</sup> DAHM, E. 1991. Selektionsuntersuchungen an Kabeljau und Rotbarsch in grönländischen Gewässern., *Inf. Fischw.*, 38(3), 1991.



**APPENDIX II. AGENDA FOR SCIENTIFIC COUNCIL MEETING, 19-23 NOVEMBER 1993**

- I. Opening (Chairman: H. Lassen)
  1. Appointment of rapporteur
  2. Adoption of agenda
  3. Plan of work
- II. Fishery Science (STACFIS Chairman: H. P. Cornus)
  1. Stock assessments (see Annex 1)
    - Northern shrimp (Subareas 0 and 1)
    - Northern shrimp (in Denmark Strait and off East Greenland)
  2. Mesh size in the redfish fishery in the Regulatory Area (see Annex 2)
  3. Minimum fish size for witch, redfish and G. halibut (see Annex 3)
  4. Other business
- III. Other Matters\*
- IV. Adoption of Reports
- V. Adjournment

STACPUB Chairman, R. W. Bowering, will arrange a meeting if necessary to consider selection of Associate Editor for Vertebrate Fishery Science.

**ANNEX 1**

The Scientific Council at its meeting of 7-10 September 1993 considered the Data Availability for Assessment and the reinstatement of a mid-term meeting for the assessment of Northern Shrimp Stocks in Subareas 0 and 1, and Denmark Strait (NAFO SCS Doc. 93/20, Serial No. N2320). It was recommended that a meeting be held during 19-23 November 1993 at NAFO Headquarters.

**ANNEX 2**

The following request was received from the Fisheries Commission:

The Chairman of STACTIC reported that careful attention was given to the proposal by the Russian Federation to amend the NAFO Conservation and Enforcement Measures in respect of minimum mesh size for certain redfish fisheries in the Regulatory Area (see text below). He furthermore explained that the proposal should be understood only to comprise a scientific/commercial project in 1994 with the following specifications:

- maximum 5 vessels;
- maximum 250 fishing days in total;
- a team of scientists will monitor the project, circulating among the 5 vessels;
- only pelagic trawls will be used in the project;
- the scientific team will ensure that the trawls are set in such a way that catch of other groundfish is avoided.

The project is to be reviewed at the Special Scientific Council Meeting in November 1993.

Data resulting from the project should be made available as soon as it is compiled.

The project is to be decided upon at the Special Fisheries Commission Meeting in 1994.

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Relevant text from the Russian Federation proposal:

"it is proposed that, on an experimental basis for the remainder of 1993 and 1994, the Fisheries Commission consider establishing a mesh size of 90 mm when fishing for redfish with midwater trawls in Divisions 3N and 3O. Such a measure would enable Contracting Party vessels to evaluate, and report to the Fisheries Commission, observed escapement patterns for small redfish in 90 mm trawls.

It is further proposed that the Scientific Council review the results of the above-noted period (remainder of 1993 and 1994) to determine if the mesh size exemption for redfish fisheries in Divisions 3N and 3O should continue beyond 1994".

ANNEX 3

Item 3. Minimum Fish Size for Witch, Redfish and G. Halibut

The following discussions developed at the 15th Annual Meeting:

(Extract from the STACTIC Report)

7. **Minimum Sizes for Cod, Yellowtail Flounder and American Plaice - Possible Alternatives to Current Measures** (item 9 of the Agenda)

- 7.1 The Representative of Canada presented a proposal for technical discussions on adding 3 new species to the list - Witch, Redfish and Greenland halibut and three additional columns with their length equivalents.
- 7.2 The Chairman indicated the Scientific Council would have to be requested to provide information on round length for the three new species proposed but as indicated by some Contracting Parties it would be difficult for the Scientific Council to provide information on product form. Therefore, it **was agreed** that a proposal to the Fisheries Commission would be prepared that the Scientific Council be requested to look at the feasibility and desirability of establishing minimum fish size for the three additional species and to advise on the minimum round length for the three new species proposed in the Canadian paper. (Attachment 1)
- 7.3 There was continued discussion on the establishment of processed length equivalents.  
  
The Russian delegation stated it was not reasonable to establish such regulations due to technological difficulties in the procedure of this inspection, as well it would be impossible to implement and to determine conversion factors.
- 7.4 The Chairman of the Scientific Council addressed the questions raised by STACTIC and stated that the Council did not have the information to give definitive answers (Attachment 2). Since scientific advice was not available, the Committee presented its draft for the request to the Scientific Council by the Fisheries Commission.

The Fisheries Commission adopted the STACTIC recommendations and directed its request to the Scientific Council.

**REQUEST TO THE SCIENTIFIC COUNCIL ON  
MINIMUM FISH SIZES**

**Background:**

At the 14th Annual Meeting, the Fisheries Commission adopted minimum fish size measures in an attempt to reduce or eliminate juvenile fish mortality in the Regulatory Area.

However, as currently written, the minimum fish sizes apply only to fish in the whole round state. As such, this measure can only be applied by inspectors to fish observed on the trawl deck or in the factory area.

Given that this fish represents a very small percentage on the total fish on board any vessel, STACTIC would like to consider the establishment of processed **length** equivalents for three of the major product types found in the Regulatory Area. These three product types are gutted, head-off gutted, and head-off tail off split fish.

**Request**

STACTIC recommends that the Fisheries Commission request the Scientific Council to consider and provide advice on the following questions:

1. With reasonable levels of variance, are there specific numeric values that can be established for processed fish that would be the equivalent of the current minimum fish sizes (round length).
2. Is there a reasonably consistent relationship between total body length and head and tail length that could be used by inspectors to establish if vessels are processing fish below current minimum fish sizes. If so, what would these lengths be for gutted, head-off gutted, and head-off tail-off split product forms for cod, redfish, American plaice, yellowtail, witch and Greenland halibut.

The Fisheries Commission refers the Scientific Council to NAFO SCR Doc. 82/VI/45 titled "The Shape of Cod on the Flemish Cap".

The following is the response from the Scientific Council to STACTIC with respect to Minimum Landing Size.

1. **Minimum landing size (whole fish)**

**Greenland halibut and flatfishes.** STACFIS did not have data readily available to provide STACTIC with appropriate values. Data exist in laboratories, but such data need to be reviewed and the Scientific Council will put this item on the agenda of the June 1994 Meeting.

2. **Minimum landing size (products)**

STACFIS realized that for cod some data are available, however, these data could not be produced at this meeting. These data will provide estimates of head-off and head-off/tail-off length corresponding to 41 cm standard length.

The Greenland halibut and flatfishes data are not available and need to be collected. The Scientific Council will review data in June 1994 should the Fisheries Commission so wish.





DOCUMENTS

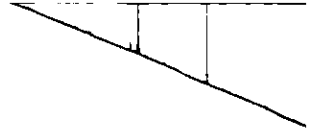
APPENDIX III. LIST OF RESEARCH AND SUMMARY DOCUMENTS

RESEARCH DOCUMENTS (SCR)

SCR #	SER. #	TITLE
93/128	N2340	<u>PARSONS, D. G., and P. J. VEITCH.</u> The Canadian fishery for northern shrimp ( <i>Pandalus borealis</i> ) in Davis Strait, 1979-1993.
93/129	N2341	<u>ANDERSEN, M., D. M. CARLSSON, and P. KANNEWORFF.</u> Stratified-random trawl survey for shrimp ( <i>Pandalus borealis</i> ) in Disko Bay, West Greenland, 1993.
93/130	N2342	<u>CARLSSON, D. M., P. KANNEWORFF, and H. SIEGSTAD.</u> The shrimp fishery in NAFO Subarea 1 January to October 1993.
93/131	N2343	<u>CARLSSON, D. M., P. KANNEWORFF, and H. SIEGSTAD.</u> The commercial shrimp fishery in Denmark Strait January to October 1993.
93/132	N2344	<u>ANDERSEN, M., D. M. CARLSSON, and P. KANNEWORFF.</u> Stratified-random trawl survey for shrimp ( <i>Pandalus borealis</i> ) offshore in NAFO Subareas 0 and 1 in 1993.
93/133	N2345	<u>SKÚLADÓTTIR, U.</u> The catch statistics of the shrimp fishery ( <i>Pandalus borealis</i> ) in the Denmark Strait in the year 1980-1993.
93/134	N2346	<u>SKÚLADÓTTIR, U., M. ANDERSEN, D. M. CARLSSON, P. KANNEWORFF, D. G. PARSONS, and H. SIEGSTAD.</u> Assessment of shrimp in the Denmark Strait.
93/135	N2347	<u>SKÚLADÓTTIR, U.</u> The Icelandic shrimp fishery ( <i>Pandalus borealis</i> ) in the Denmark Strait in 1992 and 1993.
93/136	N2349	<u>CARLSSON, D. M., M. ANDERSEN, P. KANNEWORFF, and H. SIEGSTAD.</u> Assessment of shrimp in Davis Strait (Subareas 0+1).

SUMMARY DOCUMENTS (SCS)

SCS #	SER. #	TITLE
93/17	N2257	<u>NAFO.</u> Report of Scientific Council, 2-16 June 1993.
93/20	N2320	<u>NAFO.</u> Report of Scientific Council, 7-15 September 1993.
93/21	N2348	<u>NAFO.</u> Report of Scientific Council, 19-23 November 1993.



1998

1999

2000

2001

**APPENDIX IV. LIST OF PARTICIPANTS**

**LIST OF PARTICIPANTS**

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