

## PART C: SCIENTIFIC COUNCIL MEETING 19-23 SEPTEMBER 2011

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Scientific Council Meeting Participants September 2011

Back room (left to right): Antonio Vázquez, Carsten Hvingel, Don Stansbury, Bill Brodie, Joanne Morgan, Mariano Koen-Alonso, Estelle Couture, Neil Campbell, Herlé Goraguer, Enrique de Cardenas, Ilya Skryabin, Ivan Tretiakov, Alexander Fomin, Vladimir Babayan, Javier Murillo, Barb Marshall

Front Row: Janice Ryan, Kathy Sosebee, Dave Orr, Jean-Claude Mahé, Diana Gonzalez-Troncoso, Fernando Gonzalez, Mar Sacau, Silver Sirp, Vladimir Rikhter, Ricardo Alpoim



Joanne Morgan (STACFIS Chair), Carsten Hvingel (STACREC Chair), Ricardo Alpoim (SC Chair), Vladimir Rikhter, Neil Campbell (SC Coordinator)

## REPORT OF SCIENTIFIC COUNCIL MEETING

**19-23 September 2011**

Chair: Ricardo Alpoim

Rapporteur: Neil Campbell

### I. PLENARY SESSIONS

The Scientific Council met at the Westin Hotel, Halifax, Nova Scotia, Canada, during 19-23 September 2011, to consider the various matters in its Agenda. Representatives attended from Canada, European Union (Estonia, France, Portugal and Spain), France (with respect to St. Pierre et Miquelon), Norway, Russian Federation and USA. The Executive Secretary and Scientific Council Coordinator were in attendance.

The Executive Committee met prior to the opening session of the Council to discuss the provisional agenda and plan of work.

The opening session of the Council was called to order at 0900 hours on 19 September 2011.

The Chair welcomed participants to the 33<sup>rd</sup> Annual Meeting.

The Provisional Agenda was adopted with minor additions. The Council appointed Neil Campbell, the Scientific Council Coordinator, as rapporteur.

The Chair welcomed the Ecology Action Centre, the International Coalition of Fisheries Associations, the Atlantic Canada Chapter, Sierra Club Canada, and the World Wildlife Fund, as observers to this annual meeting.

The Council and its Standing Committees met through 19-23 September 2011 to address various items in its agenda. The Council considered and adopted the reports of the STACFIS and STACREC Standing Committees on 23 September 2011. The final session was called to order at 0915 hours on 23 September 2011. The Scientific Council then considered and adopted its report of this meeting. The meeting was adjourned at 0930 hours on 23 September 2011.

The Reports of the Standing Committees as adopted by the Council are appended as follows: Appendix I - Report of Standing Committee on Research Coordination (STACREC), and Appendix II - Report of Standing Committee on Fisheries Science (STACFIS).

The Agenda, List of Research (SCR) and Summary (SCS) Documents, and the List of Representatives, Advisers and Experts, are given in Appendices III, IV, and VI, respectively.

### II. REVIEW OF SCIENTIFIC COUNCIL RECOMMENDATIONS

**From Scientific Council Meeting, 3-16 June 2010**

#### VII. Other Matters

##### 1.d.v. Management measures for blue whiting

*b) In line with conservation and management measures in force in the NEAFC Regulatory Area, adoption of a minimum mesh size for pelagic and semi-pelagic trawls which would include in paragraph 1 of Article 13 – Gear Requirements the following:*

- g) 35 mm for blue whiting in the fishery using pelagic trawls in Subarea 2 and Divisions 1F, 3K and 3M.

The Scientific Council responded:

Besides the introduction (first paragraph) of the Fisheries Commission request 11 refers to NRA Division 1F, subarea 2 and Division 3K, item b) of the request refers to Subarea 2 and Divisions 1F, 3K and 3M. Scientific Council **recommended** that *Division 3M should not be considered for a possible mesh size change*.

STATUS: This recommendation was presented to Fisheries Commission by the Scientific Council Chair.

### III. RESEARCH COORDINATION

The Council adopted the Report of the Standing Committee on Research Coordination (STACREC) as presented by the Chair, Carsten Hvingel. The full report of STACREC is at Appendix I.

### IV. FISHERIES SCIENCE

The Council adopted the Report of the Standing Committee on Fisheries Science (STACFIS) as presented by the Chair, Joanne Morgan. The full report of STACFIS is in Appendix II.

### V. SPECIAL REQUESTS FROM THE FISHERIES COMMISSION

#### 1. *Ad hoc* Requests from Current Meeting

The following requests were received during the current meeting. Scientific Council noted that these responses are only for the clarification of the advice and do not in any way alter or change the advice published in the previous reports of the Scientific Council.

##### Question 1

Is the advice for shrimp in Div. 3M and Div. 3L based on single stock considerations or does it also take into account the ecosystem bearing in mind increasing abundance of shrimp predator species.

##### Response:

At the present time, we do not have models that explicitly incorporate ecosystem interactions affecting shrimp stocks, although efforts are being made in that direction. However, the current advice for shrimp in Div. 3M and Div. 3L is based on empirical indices of stock status, and hence, they implicitly capture the effects of ecosystem processes on the trajectories of shrimp stocks.

##### Question 2

Can the Scientific Council comment on the fact that the biomass of shrimp Div. 3M has declined to levels before  $B_{lim}$  following the closure of the fishery this year. What measures would the Scientific Council recommend in order to restore shrimp Div. 3M and Div. 3L stocks to MSY level by 2015 (Johannesburg commitment).

##### Response:

In the absence of a fishery, the fluctuations in a stock depend alone on the balance between recruitment and natural mortality. Recruitment in Div. 3M shrimp has varied at a low level since 2004 and such variation alone could result in the variations observed in the stock. Natural mortality – although not quantified – is considered to vary over time and would therefore also contribute to this variability. It is also important to bear in mind that, given the fact that both Div. 3M and Div. 3LNO shrimp stock trajectories are assessed using survey indices, any impact of a Div. 3M moratorium on recruitment, if occurs, will only be expected to be seen four years after its implementation. Also, changes in survey indices should only be interpreted in the context of the trend that they define; a single high or low value in a given year by itself is not sufficient to secure any conclusion. Regarding measures that would restore shrimp stocks to MSY levels, two things can be highlighted. First, the only variable affecting shrimp stocks that we can actually manage is the fishery, therefore, the recommendation would be to keep the Div. 3M moratorium in place and maintain catches in Div. 3LNO to the level recommended by the scientific advice. Secondly, we do not have models for these stocks, and hence, we cannot calculate MSY.

**Question 3**

Scientific Council has estimated TAC overruns of more than 60% for 2010 catches of Div. 3M cod and SA 2 + Div. 3KLMNO Greenland halibut. This is of concern, and we would like to know if there have been any recent changes in the Scientific Council estimation procedure?

**Response:**

Scientific Council employed the same methods for catch estimation in 2011 as in recent years. An *ad hoc* working group deliberated on catch estimates before the meeting, thereby enabling finfish catch estimates by stock, Division and Contracting Party to be available before the June Scientific Council meeting commenced. This working group considered various sources of information including reported catches. The accuracy of officially reported provisional statistics remains questionable.

**Question 4**

With respect to Div. 3M cod, Scientific Council is requested provide short term projection (2012-2014) of spawning biomass, fishing mortality and yield for four alternative scenarios of total removals in 2012: 11 000 t, 12 000 t, 13 000 t and 14 000 t and with constant fishing mortality ( $F$  of 2012) afterwards. Provide also a risk analysis with associated probabilities of spawning biomass falling below  $B_{lim}$ , fishing mortality increasing above  $F_{max}$  (proxy of  $F_{lim}$ ) and probability of reaching  $B_{msy}$  in 2012-2014.

**Response:**

Scientific Council strongly reiterates its advice that catches in 2012 should not exceed the level of  $F_{0.1}$  (9 280 t).

Scientific Council has made the projections suggested by the Fisheries Commission and the results are shown in the Table below. These results are based on the same assumptions presented in the June 2011 Scientific Council report, in particular that in 2011 the catch will be equal to the approved TAC (10 000 t) and that the biological parameters observed will be the same as those in the period 2008-2010. In the case that these assumptions will not be met, results could be different. If the TAC in 2011 is overshoot and/or the mean weights decrease, the resulting  $F$  will be higher than the presented ones.

<b>Yield 2012 = 11 000 t</b>												
	<b>Total Biomass</b>			<b>SSB</b>			<b>F<sub>bar</sub></b>			<b>Yield</b>		
	<b>5%</b>	<b>50%</b>	<b>95%</b>	<b>5%</b>	<b>50%</b>	<b>95%</b>	<b>5%</b>	<b>50%</b>	<b>95%</b>	<b>5%</b>	<b>50%</b>	<b>95%</b>
<b>2012</b>	64733	95662	143429	46331	65072	90765	0.0854	0.1548	0.2738	11000		
<b>2013</b>	74606	120741	201974	62378	92439	143147	0.0854	0.1548	0.2738	8133	14966	28036
<b>2014</b>	82794	149395	274971	69986	117041	209580	0.0854	0.1548	0.2738	8064	16893	36080
<b>Yield 2012 = 12 000 t</b>												
	<b>Total Biomass</b>			<b>SSB</b>			<b>F<sub>bar</sub></b>			<b>Yield</b>		
	<b>5%</b>	<b>50%</b>	<b>95%</b>	<b>5%</b>	<b>50%</b>	<b>95%</b>	<b>5%</b>	<b>50%</b>	<b>95%</b>	<b>5%</b>	<b>50%</b>	<b>95%</b>
<b>2012</b>	64113	95556	143663	46185	65162	90602	0.0932	0.1702	0.3064	12000		
<b>2013</b>	73160	119010	200998	61254	91080	143337	0.0932	0.1702	0.3064	8840	16128	30741
<b>2014</b>	80211	145211	273239	67176	113945	205480	0.0932	0.1702	0.3064	8639	17777	38306
<b>Yield 2012 = 13 000 t</b>												
	<b>Total Biomass</b>			<b>SSB</b>			<b>F<sub>bar</sub></b>			<b>Yield</b>		
	<b>5%</b>	<b>50%</b>	<b>95%</b>	<b>5%</b>	<b>50%</b>	<b>95%</b>	<b>5%</b>	<b>50%</b>	<b>95%</b>	<b>5%</b>	<b>50%</b>	<b>95%</b>
<b>2012</b>	64342	94714	145919	46239	65021	91510	0.1004	0.1847	0.3338	13000		
<b>2013</b>	72226	117075	202179	60433	89376	140723	0.1004	0.1847	0.3338	9416	16919	32601
<b>2014</b>	77187	143439	268284	64944	109709	200940	0.1004	0.1847	0.3338	9049	18763	40706
<b>Yield 2012 = 14 000 t</b>												
	<b>Total Biomass</b>			<b>SSB</b>			<b>F<sub>bar</sub></b>			<b>Yield</b>		
	<b>5%</b>	<b>50%</b>	<b>95%</b>	<b>5%</b>	<b>50%</b>	<b>95%</b>	<b>5%</b>	<b>50%</b>	<b>95%</b>	<b>5%</b>	<b>50%</b>	<b>95%</b>
<b>2012</b>	64588	95355	142588	46420	65010	90914	0.1103	0.2006	0.3617	14000		
<b>2013</b>	70968	116081	196972	59458	88283	139989	0.1103	0.2006	0.3617	9884	18159	34383
<b>2014</b>	75440	140013	257859	62601	107600	193208	0.1103	0.2006	0.3617	9517	19824	41617

The results of these projections were used by Scientific Council to estimate the probabilities requested by the Fisheries Commission and are shown in the Table below.

TAC2012								
	11 000		12 000		13 000		14 000	
	P( $F_{\text{bar}} > F_{\text{max}}$ )	P(SSB < $B_{\text{lim}}$ )	P( $F_{\text{bar}} > F_{\text{max}}$ )	P(SSB < $B_{\text{lim}}$ )	P( $F_{\text{bar}} > F_{\text{max}}$ )	P(SSB < $B_{\text{lim}}$ )	P( $F_{\text{bar}} > F_{\text{max}}$ )	P(SSB < $B_{\text{lim}}$ )
<b>2012</b>	0.1870	<0.05	0.2782	<0.05	0.3614	<0.05	0.4494	<0.05
<b>2013</b>	0.1870	<0.05	0.2782	<0.05	0.3614	<0.05	0.4494	<0.05
<b>2014</b>	0.1870	<0.05	0.2782	<0.05	0.3614	<0.05	0.4494	<0.05

It was not possible to calculate  $B_{\text{msy}}$  during this meeting, so Scientific Council is unable to answer the final part of this request at present.

## VI. MEETING REPORTS

### 1. Fisheries Commission WGFMS-CPRS

This Fisheries Commission Working Group met at the Cambridge Suites Hotel, Halifax, Canada, during 26-28 June 2011, was chaired by Jean-Claude Mahé (EU-France) and vice-chaired by Morley Knight (Canada). The Scientific Council was advised of progress in this group by the Chair in his presentation of the report to Fisheries Commission.

### 2. Fisheries Commission WGFMS-VME

This Fisheries Commission Working Group met at the Cambridge Suites Hotel, Halifax, Canada, during 29-30 June 2011, and was chaired by Bill Brodie (Canada). The Scientific Council was advised of progress in this group during the Chair's presentation of the report to Fisheries Commission.

### 3. Fisheries Commission WGMSE

This Fisheries Commission Working Group met by Webex on 7 September 2011, co-chaired by Sylvie Lapointe (Canada) and Antonio Vázquez (EU-Spain). The Scientific Council was notified of developments in this group during the Co-Chair's presentation of the report to Fisheries Commission.

### 4. WGHARP

The ICES/NAFO Working Group on Harp and Hooded Seals (WGHARP) met during 15-19 August 2011 at the British Sea Mammal Research Unit (SMRU) at the Scottish Oceanographic Institute, University of St. Andrews, Scotland. The WG received presentations related to catch (mortality) estimates, abundance estimates, and biological parameters of White Sea/Barents Sea, Greenland Sea and Northwest Atlantic Ocean harp and hooded seal stocks, and provided updated catch options for northeast Atlantic harp and hooded seals in response to a September 2010 request from Norway. The WG also responded to a request from NAFO to consider the impacts of the increasing northwest Atlantic harp seals on the number of seals near Greenland. The WG then acted on requests from the ICES Directorate and the EU to consider issues related to Ecosystem Based Management and Marine Spatial Planning. The WG concluded their meeting on 19 August. In attendance were scientists representing Canada (2), Greenland (1), Norway (3), Russia (2), and United States (1), as well as the SMRU (3).

A survey of the White Sea/Barents Sea harp seal stock during 20-23 March 2010, and resulted in an estimate of 163 032 pups (SE = 33 342). The WG agreed that the survey appeared to have been carried out very well. The WG discussed several hypotheses to explain the reduced pup production since 2004 including unobserved mortality of adults ca. 2004, high mortality of neonates prior to the aerial surveys, or declines in fecundity (i.e. pup production). The most parsimonious explanation for the continued low count of pups in surveys in both good and bad ice years appears to be a decline in fecundity given the lack of evidence for a significant adult mortality event. This is significant because fecundity can be explored as part of the population modelling effort. The existing NE model

could not account for the precipitous decline in pup production after 2003 with a fixed fecundity and maturity. Because of this, the NE model was considered inappropriate to provide catch options (as in the WG's 2009 meeting). A revised NE model with time-varying maturity and condition varying fecundity (i.e., as animal conditions improves, fecundity improves) provided a good fit to the observed pup counts. However, this model was considered preliminary and not ready at this time to be applied. A modified version of the existing NE model with time-varying maturity and fecundity provided a transitional model form, and was considered to be an appropriate temporary analytic tool. This model provided a 2011 population estimate of 1 364 700 total animals (SE = 68 503). Using this approach, the WG estimated that the sustainable catch for the White Sea/Barents Sea harp seal stock should be 26 535 seals (including 19 795 pups and 6 740 1+ animals) or 15 827 1+animals (with no harvest of pups).

With respect to the Greenland Sea harp seal stock, no new data have been collected since 2009, but the recent series of catch and reproductive data leads the WG to still consider the stock to be data rich with abundance greater than  $N_{70}$ . Therefore, it is appropriate to use a population model to estimate abundance and evaluate catch options. All model runs seem to indicate a substantial increase in the population abundance from the 1970s to the present. All model predictions indicate an increase in the abundance of 1+ animals on a 10 year scale, ranging from an increase of 31% - 49%, assuming no hunt. Using the NE model with time varying reproductive parameters, a 2011 abundance of 553 100 1+ animals and 96 470 pups are obtained. A 95% confidence interval for the 1+ population is (286 480 – 819 720). Total 2011 abundance of harp seals in the Greenland Sea is estimated to be 649 570 (379 031 – 920 101). The estimate provided by the modified model is lower than estimates provided by the original NE model. Based on the modified model's results, the WG suggests that sustainable catches are 25,410 animals (of which 63.4% are pups) or 16,737 (100% 1+ animals). An annual catch level of 35,000 (assuming 63.4% pups) or 25 000 (assuming 100% 1+ animals) would reduce the population to 70% of current level with 80% probability over a 10-year period.

The March-April 2007 Norwegian survey of hooded seal pup production in the Greenland Sea produced an estimate of 16 140 pups (SE = 2 140). This estimate is not significantly different from the estimate obtained with comparable methodology in the Greenland Sea in 2005, but is considerably lower than the 1997 estimate. The model developed for the 2011 assessment is similar to the model assessing the abundance of the Barents Sea / White Sea harp seal population, modified to incorporate historical maturity curves and historical pregnancy rates. The available historical data on pregnancy rates were considered unreliable. Hence, the model was run for a range of pregnancy rates, in addition to a run using the original model assuming constant reproductive data. All model runs indicate a population currently well below  $N_{30}$  (30% of largest observed population size). Following the Precautionary harvest strategy previously developed by WGHARP, catches should not occur for populations below  $N_{30}$ . Therefore, WGHARP suggests no catches are sustainable from the Greenland Sea hooded seal stock.

Historically the abundance of seals in Greenland waters was positively associated with increases in the harp seal population. Since 2000, it appears that ecological and hydrographical changes may have changed this relationship, and possibly led to decreases in the local abundance of harp seals in some areas. As a result, the positively correlated relationship between increases in the NWA harp seal population and the proportion of seals summering off Greenland no longer appear to exist. There are insufficient data available at this time to determine the reason for the change in the relationship.

At the request of the Marine Strategy Directive Framework Steering Group (MSFD SG) and the Strategic Initiative on Area Based Science and Management (SIASM), the WGHARP identified and described the work streams of relevance to the European Commission's eleven descriptors with particular emphasis on linkages that between living marine resources (rather than fish stocks alone) and ecosystem/environmental monitoring and assessments.

The WG noted that that many of the principles identified in the European Commission's request for advice on the Descriptors should be extended to all upper trophic level marine species, including harp and hooded seals. Other marine taxa including other marine mammals, marine birds and marine turtles should also be considered as part of this exercise. An almost singular advantage of harp and hooded seals is that their population abundance, catch history, distribution, condition (including life history parameters), and ecological relationships are better understood than most other North Atlantic Ocean upper trophic level taxa. Similar data are also available for a few other species (e.g., United Kingdom grey seals, Baltic Sea/North Sea harbour seals). As key components of their ecosystems, it is important to consider these species, particularly because they can provide excellent indicators of ecosystem status.

The SIASM report identifies a number of spatial planning and data needs that can be supported by data available on harp and hooded seals including abundance, changes in reproductive parameters, change in growth rates and condition, changes in distribution, and changes in diets. Data are also available on several of the other themes of information requested.

Finally, WGHARP members suggest that ICES and its WGs are structured to provide advice that is easily incorporated into the policy or planning advice, therefore the WG does not understand the intent of statements within the report suggesting the contrary. WGHARP also felt that it was not the role of scientists to advocate for particular outcomes. It is the role of managers and stakeholders to identify clear objectives and questions, and for scientists to provide an analysis of the likely outcomes. Managers and stakeholders will then be able to make decisions based on the best available analyses. It is also the role of scientists to identify the uncertainty, but managers must take into account this uncertainty and its implications when making decisions.

The report of this group is available on the ICES website. This will be presented in full at the Scientific Council meeting, June 2012.

## **5. Meetings Attended by the Secretariat**

### **a) Aquatic Sciences and Fisheries Abstract (ASFA) Board Meeting**

The ASFA Board Meeting, Guayaquil, Ecuador, 5-9 September 2011 was attended by Alexis Pacey, Publications Manager, NAFO Secretariat. Scientific Council noted the report of the meeting provided by Alexis and deferred the matter for consideration at the next STACPUB meeting. Scientific Council voiced its support for the continued existence of ASFA and the involvement of NAFO in the organization.

### **b) Fifth International Symposium on GIS/Spatial Analyses in Fishery and Aquatic Sciences**

George Campanis attended the Fifth International Symposium on GIS/Spatial Analyses in Fishery and Aquatic Sciences in Wellington, New Zealand, 22-26 August. George presented information on the use of VMS data to support management decisions in the NAFO Regulatory Area. Due to unforeseen circumstances George was unable to present his report to Scientific Council and this will be deferred to the October meeting.

### **c) ICES Study Group on Vessel Monitoring System Data (SGVMS)**

At its June meeting, Scientific Council noted the invitation from the Chair to participate in the ICES Study Group on VMS Data, and recommended that the Scientific Council Coordinator attend this meeting. Due to the scheduling of the *ad hoc* Shrimp advice correspondence/Webex meeting, attendance of the SC Coordinator was not possible. The report of the study group will be available in due course. The next meeting of the group will be in Aberdeen, UK, in September 2012.

### **d) UN Workshop on the implementation of United Nations General Assembly (UNGA) Resolutions 61/105 and 64/7**

The NAFO Executive Secretary, Vladimir Shibanov, attended the UN Workshop on the implementation of UNGA Resolutions 61/105 and 64/7, 15-16 September 2011, New York, USA. He was invited to represent NAFO on two panels, "Panel 3: Experience of RFMOs in addressing the impacts of bottom fisheries on vulnerable marine ecosystems and the long-term sustainability of deep-sea fish stocks", and "Panel 4: Actions taken by States and RFMOs to implement paragraphs 84 and 87 of resolution 61/105 and paragraphs 122 and 123 of resolution 64/72.". He presented information on NAFOs activities to protect VMEs, and a made a presentation and information paper on the "Experiences of NAFO in collection, exchange and dissemination of scientific and technical data and information".

The main issue arising from this meeting was that of impact assessments and fishing plans, which have been submitted to NAFO and reviewed by Scientific Council as far as they were able, at a number of meetings. NAFO has considered these documents from Contracting Parties to be confidential and only required for exploratory fisheries, however non-governmental organizations took the view that these documents should be made publically available and the exercise carried out for existing fisheries as well.

**e) Environmental, Biological Significant Areas Workshop: NE Atlantic (Oslo Paris Convention/North East Atlantic Fisheries Commission/Convention on Biological Diversity)**

NAFO was invited to attend the OSPAR/NEAFC/CBD Workshop on Identification of Environmental, Biological Significant Areas (EBSAs), Port-Cros, France, 8-9 September 2011. The Chair of Scientific Council together with the Executive Secretary considered it important for NAFO to have a view of this workshop, however it fell at a busy time for the NAFO Secretariat and it was suggested that a member of Scientific Council attend as an NAFO SC Observer. Dr Andrew Kenny was due to be attending a meeting in France around this time and the decision was taken by the Scientific Council Executive Committee to support his travel and subsistence costs so that he could change his travel plans and represent Scientific Council at this meeting.

Background material on the Convention on Biological Diversity (CBD) process was presented, specifically progress towards delivering the COP10 objectives. COP10 Target 11, which relates to establishing a network of Marine Protected Areas (MPAs), should be implemented in the high seas by 2012. It was noted, however, that progress has been slow in designating high seas MPAs. By contrast EBSA designation is a scientific and technical exercise which makes it distinct from MPA designations. EBSA designation requires a repository of information supported by training manuals to be established, this will utilize a new prototype information system (see <http://ebsa.cbd.int/>). These regional workshops, of which the NE Atlantic is the first, will collate evidence on EBSAs and submit to UN via COP Process for formal adoption of candidate EBSAs. The NE Atlantic is a test case region, to be followed by south Pacific and the south Atlantic. Other global regions then expected to follow.

Odd Aksel (Norway) made a presentation on behalf of NEAFC whose mandate is to manage most fisheries outside EEZ in the NEAFC regulatory area, except for large pelagic species which are assessed by ICCAT. The RFMO regulatory areas are large, however the fishing areas (waters shallower than 2000m) are relatively small. There has been a steady transition in the NEAFC Regulatory Area from the pre-1970's unregulated fisheries, to the present day regulation of fishing activities. NEAFC also recognizes that fish stocks are significant functional element of ecosystems and therefore all aspects of marine ecosystems are of interest to NEAFC activities. NEAFC relies heavily on ICES for scientific advice. They have introduced effort restrictions, TACs, VMS monitoring, a gillnet ban in waters greater than 200m depth, and the red-listing of species. Motivation for all of these measures is to reduce the incentive to fish unsustainably. There are a further 3 measures providing ecosystem protection, **i** closed areas, **ii**. VME encounter protocols within existing fishing areas which can trigger a move-on rule, **iii**. moving into new fishing areas (for this it requires exploratory fishing plan with observers). The existing fishing footprint is only part of the potential fishing area in NEAFC. Existing fishing areas south of Iceland cover only 0.9% of total regulatory area of which 7.3% is MPA. The IUCN MPA *categories list* is being applied, which defines a hierarchy of protection. Existing NEAFC closures satisfy EBSA criteria, but NEAFC has not discussed putting forward MPA as EBSAs and some OSPAR MPAs were not closed by NEAFC (e.g. Josephine Sea Mount). NEAFC welcomes the science based proposals being tabled, but ICES should have a role in reviewing the proposals.

A series of presentations on the candidate EBSAs were then made.

**Josephine Seamount Complex EBSA.** The first ever seamount discovered by a science expedition in 1869 is located between Portugal and Madeira. It is one of the Lusitanian horseshoe chain of seamounts which occur between 170m to 3 700m in depth. The seamount chain acts as stepping stone for coastal fishes and sea turtles migrating between the Atlantic and Mediterranean and is an important area for corals and deepwater sharks, which are already subjected to significant fishing. In 2009 it was designated part of the Portuguese extended continental shelf. It was designated an MPA on 12 April 2011. CBD EBSA Criteria assessed the presence of VME species and habitats (high), biological productivity (high), diversity (some), representativeness (high). Not all criteria come out as high, but it was still designated MPA and is being considered as an EBSA.

**Bird Life International IBA candidate EBSA** This presentation detailed four candidate EBSA areas as important bird areas (IBAs) and a further five candidate EBSAs, two of which have their western boundary at the limit of the OSPAR/NEAFC area (in the Labrador and Newfoundland Basins). These areas include several IUCN Red list species whose presence is an important criteria for the site designations.

**Rockall and Hatton Bank EBSA.** The banks and basin have large habitat heterogeneity. Type and abundance of life changes with depth, food availability changes with depth, the organisms adapt to this limitation by growing

more slowly have reduced metabolism and are not resilient as populations. General acceptance of proposal, but discussions and some disagreement about the shape and area of the proposed EBSA – this was a general issue, not just specific to Hatton Bank EBSA. What defines the boundaries of EBSAs this was not at all clear, but one suggestion which seemed to have some support from OSPAR was to set a bathymetric limit of 3 000m within the original Hatton EBSA proposal. This was examined and was considered to be appropriate with the North and Eastern limits defined by the limits of the EEZ. The resulting polygon has a more realistic appearance.

**Charlie Gibbs North (fracture zone) and Sub Polar Front.** Representativeness (high), productivity (high), biogeographic importance (high), deep water sponge and coral communities including deep water sharks, high proportion of VME species. Habitat structural complexity (high). There is a large amount of evidence obtained from MARECO project. The definition of the area should be driven by location of sub-polar front mixing zone – so propose three areas along MAR, south and north of mixing zone and then the area of the fracture zone where mixing takes place between N and S.

**Arctic High Seas and Arctic Domain EBSAs.** 2 proposals, North and South of Svalbard, respectively. Productivity (high), significant area for deepwater formation and hence supports vital ocean processes, it brings in pelagic features into an EBSA. The Arctic High Seas area is fully covered by winter sea ice, but this is expected to change significantly due to loss of summer sea ice conditions and therefore it requires special consideration and future assessment.

Jake Rice documented the historical development of VME & EBSAs. It was noted that under CBD criteria Annex 1 COP XI/20 the focus is on protecting the habitats which support associated vulnerable and endangered species, so it is not the species *per se* which are protected, but their habitats. Jake made a useful comparison of the FAO (VME) and CBD (EBSA) criteria, noting that the FAO approach appealed to the fisheries management community, whereas the CBD approach appealed to the conservation biology community. Overall though the criteria are very similar, although there is more emphasis in the FAO VME criteria on habitat structure forming species. The fact that both sets of criteria are similar is to be expected since they have common roots in their development arising from the WSSD in 2002. However, the implementation route taken by each policy is different. For example, the FAO pathway (under UNGA 61/105) has moved the focus from the comprehensive application of the Ecosystem Approach to Fisheries, to that of identifying and protecting VMEs as a component of implementing EAF. There has been some difficulty in interpreting “significant concentrations” of vulnerable species which has impeded progress on the identification of VMEs in many RFMOs. It was also noted that a process of coordination is required between the CBD and FAO ‘special area’ designations and that this would be the main subject of a forthcoming joint FAO and CBD GEF proposal.

It is envisaged that the evidence in support of EBSA nomination will be made available in order to feed into a number of NEAFC, CBD and OSPAR meetings later in 2011. A final report of proposed Candidate EBSAs for the NE Atlantic will be provided in January 2012.

Scientific Council welcomed the report and thanked Andrew for representing them at this meeting. It was noted that much of the work required to categorize an area as an EBSA may have already been completed in previous exercises and that if such an initiative was enacted within the NAFO Regulatory Area proper attention should be paid to avoiding the duplication of efforts. Scientific Council noted their continued interest in this process and asked the Secretariat to monitor the situation and advise the Council of any further developments.

## VII. REVIEW OF FUTURE MEETING ARRANGEMENTS

### 1. Scientific Council, October 2011

The Scientific Council agreed that the dates and venue of the next Scientific Council /NIPAG meeting will be held from 19-26 October 2011 at the NAFO Secretariat Headquarters, Dartmouth, NS, Canada.

### 2. Scientific Council, June 2012

Scientific Council agreed that its June meeting will be held on 1-14 June 2012 at the Alderney Landing, Dartmouth, NS, Canada.

### **3. Scientific Council, September 2012**

Scientific Council noted that the Annual Meeting will be held on 17-21 September 2012. The meeting will be in St. Petersburg, Russia.

### **4. Scientific Council, October 2012**

Scientific Council noted that the Scientific Council/NIPAG meeting will be held in October 2012. The meeting will be in Tromsø, Norway. The dates will be decided at the 2011 meeting.

### **5. Scientific Council, June 2013**

Scientific Council agreed that its June meeting will be held during 7-20 June 2013 with the meeting venue being the Alderney Landing, Dartmouth, Nova Scotia, Canada, or as decided at the 2012 meeting.

### **6. Scientific Council Working Groups**

#### **a) WGEAFM, December 2011**

WGEAFM will meet at the NAFO Secretariat, Dartmouth, Canada, during 30 November-9 December 2011.

### **7. ICES/NAFO Joint Groups**

#### **a) NIPAG, October 2011**

The Scientific Council agreed that the dates and venue of the next Scientific Council /NIPAG meeting will be held between 19-26 October 2011 at the NAFO Secretariat Headquarters, Dartmouth, NS, Canada.

#### **b) WGDEC, March 2012**

The Working Group on Deep-water Ecology will meet at ICES, Copenhagen, Denmark, during 26-30 March 2012.

#### **c) NIPAG, October 2012**

The dates and venue of this NIPAG meeting will be decided at the October 2011 meeting.

#### **d) WGHARP, August 2013**

The Working Group on Harp and Hooded Seals (WGHARP) (Chair: Mike Hammill) will meet for 4-5 days during August 2013 at a venue to be decided at a later date.

## **VIII. FUTURE SPECIAL SESSIONS**

### **1. Topics for Future Special Sessions**

Scientific Council was made aware of two possible future special sessions. Both of these would be held in 2013.

a) *Gadoid Fisheries: Biology, Ecology and Management*. Gadoids remain one of the key groups of demersal fishes in the North Atlantic. Recently marked improvements in population sizes have occurred in a number of gadoid stocks spanning their geographic distributions. These include cod in the Northeast Atlantic, Baltic Sea, NAFO Div. 3M and haddock of Georges Bank and SW Nova Scotia. Many other stocks remain depleted. Given the commercial value of these fishes, a symposium is proposed that would bring together scientists to present empirical data and theories to explain the varied recovery rates of gadoid stocks, the efficacy of recovery actions and discuss management strategies under and after rebuilding. This event would be held in late June 2013, in St. Andrews, Canada.

b) *Strategic Initiative on Stock Assessment Methods (SISAM)*. NAFO has been involved with the ICES Strategic Initiative on Stock Assessment Methods since its inception in 2010, and supported the attendance of Brian Healey at

a workshop organized under this initiative. The NAFO Secretariat has been informed of developments by the chair of the Steering Committee. The current plan is to hold a conference on stock assessment methods in Boston, USA, in early 2013.

Scientific Council noted this and asked the Secretariat to monitor the situation and inform Scientific Council of any further information which is received.

## IX. OTHER MATTERS

### **1. Review and comment on the scientific aspects of Annex 4 and Annex 5 of NAFO/FC Doc. 11/4 (Report of the Fisheries Commission Working Group of Fishery Managers and Scientists on Conservation Plans and Rebuilding Strategies (WGFMS-CPRS))**

Scientific Council was pleased to be informed of the work of the Fisheries Commission WG of Fisheries Managers and Scientists on Conservation Plans and Rebuilding Strategies (WGFMS-CPRS). Council noted that the interim rebuilding plans for Div. 3NO cod and Div. 3LNO American plaice produced by this WG were a step forward. However, Council also noted that there are still some issues with these plans, particularly that they are not fully specified. Council would be pleased to be engaged in improving these rebuilding plans.

### **2. Matters arising from Fisheries Commission Working Group on Management Strategy Evaluation for Greenland Halibut**

At previous meetings Scientific Council has voiced its concerns that it is unable to adequately evaluate whether exceptional circumstances were occurring, due to issues with availability of results of one suite of models used. Two working papers were presented to Scientific Council to frame discussion on the scope of the “Exceptional Circumstances” provisions. The secondary indicators of stock status (exploitable biomass, fishing mortality and recruitment) are derived from the models. Primary indicators (catches and survey trends) are independent of models and should be used to determine whether exceptional circumstances are in effect in the first instance. It was proposed that an *ad hoc* working group be established to collect the required data and provide further guidance on how to determine if exceptional circumstances are in effect. This group should report to Scientific Council by 1 April 2012, would be coordinated by Peter Shelton and tentative membership would include Brian Healey, Fernando Gonzalez, Ricardo Alpoim, Jean-Claude Mahé and Carsten Hvingel.

### **3. Coastal State Request by Greenland on Harp seals (deferred from September 2010)**

In response to a request from Greenland, the NAFO Scientific Council requested that the Joint ICES/NAFO Working Group on Harp and Hooded Seals (WGHARP) “*Evaluate how a projected increase in the total population of Northwest Atlantic harp seals might affect the proportion of animals summering in Greenland*” during their biennial meeting held in August 2011. The response from WGHARP is contained in their report (ICES 2011).

Harp seals from both the Northwest Atlantic and Greenland Sea populations are found along the coast of Greenland. Because of their much larger population and migration patterns, the vast majority of seals that occur in Greenland waters are from the Northwest Atlantic population (NWA). Seals from this population are seasonal migrants, giving birth on the pack ice off southern Labrador and in the Gulf of St. Lawrence each spring. During the summer, NWA harp seals feed in the eastern Canadian archipelago and along the coast from west and southwest Greenland. Some harp seals remain in the Arctic throughout the year.

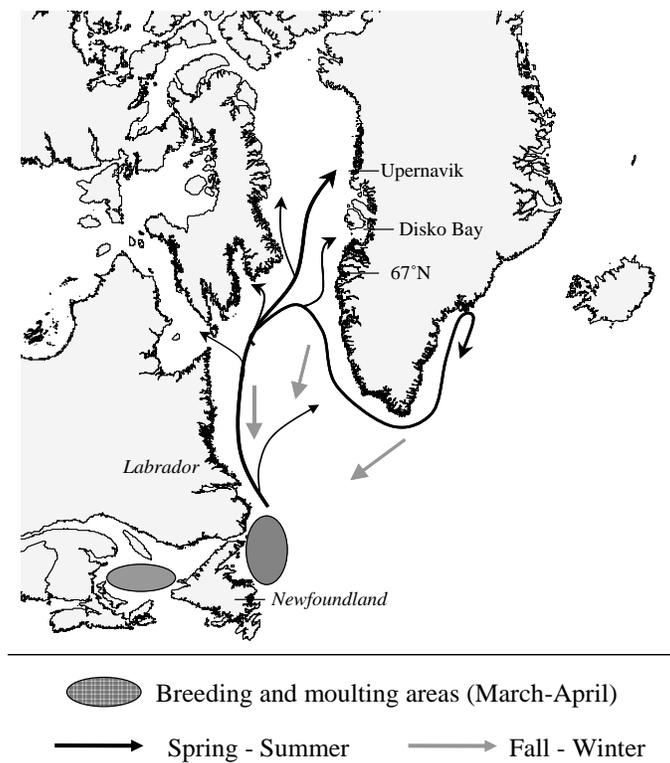


Figure 1. Distribution of Northwest Atlantic harp seals.

In Greenland waters there are no direct measurements of harp seal abundance, or of the proportion of the total population that occurs there. However, there are catch statistics from an unrestricted seal hunt which may reflect abundance along the Greenland coast.

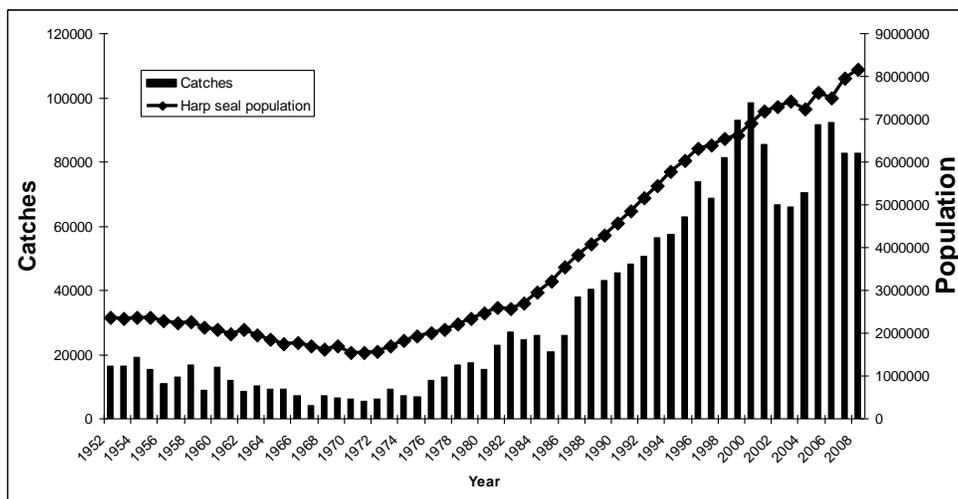


Figure 2. Estimated abundance of Northwest Atlantic harp seals and catches of NWA harp seals in Greenland.

The data show a strong correlation between estimates of total population size and Greenland catches until approximately the year 2000 (Fig 2, 3 top). After 2000, however, the relationship between catches and abundance broke down (Fig 3 bottom). This suggests that fairly precise predictions of seal abundance (using catch numbers as a proxy) could have been calculated from the total population size prior to 2000. After 2000, however, additional

variables (e.g. changes in sea ice extent) may have affected the distribution and local abundance of harps in Greenland waters. The change in this relationship is particularly obvious in catches that occurred south of 67° N. However, it is also possible that changes in hunting effort during the latest decade may also have contributed to the perception of a decline in Greenland waters.

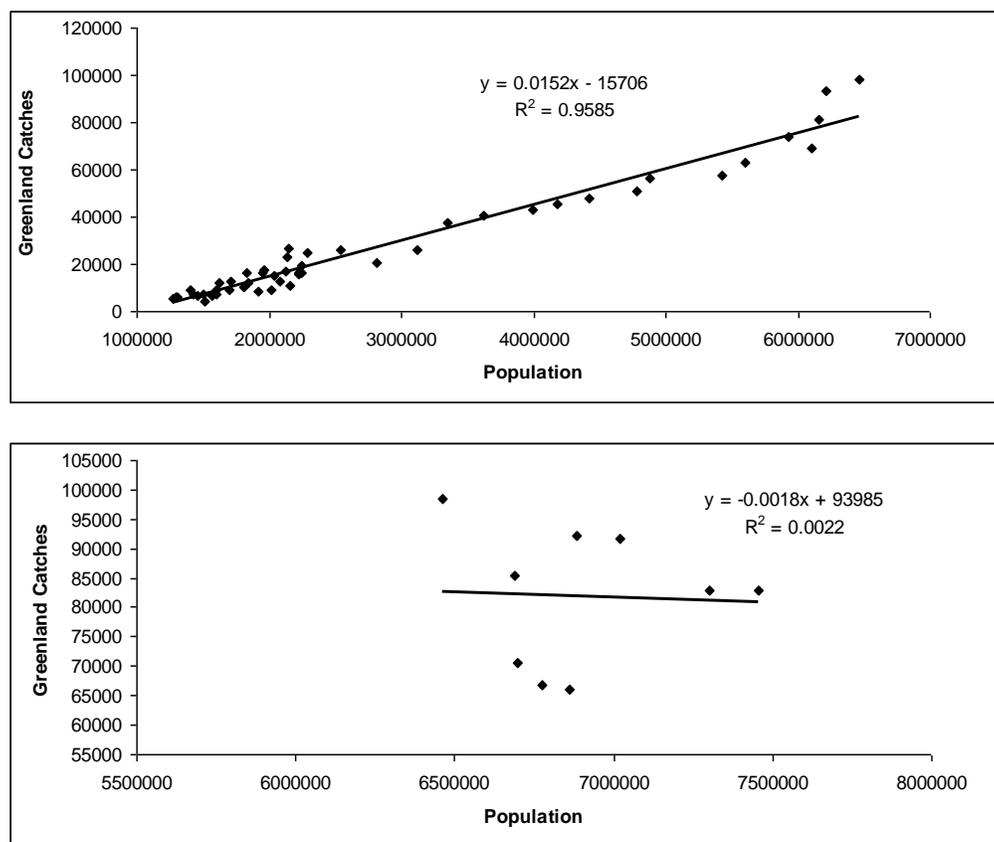


Figure 3. Relationship between estimates of NWA harp seal abundance and catches in Greenland from 1952 – 2000 (top) and from 2000-2008 (bottom).

Appropriate estimates of abundance in Greenland need to be developed to discriminate between actual and perceived changes in abundance. A time-series of surveys on seal abundance in Greenland waters would be one possibility. Seals will have to be surveyed at various times a year for a number of years. Such a model will, however, not be reliable to describe the period before the time-series began. The NWA harp seal population is believed to be approaching carrying capacity and it is uncertain whether the distribution of the seals in the years to come is predictable based on hind-cast analysis. Such analyses will, however, be important to describe how distribution patterns change as the population and the environment change.

Alternatively, a proxy of relative seal abundance (does abundance increase or decrease) might be found by selecting catch data from settlements where changes in hunting effort are likely to have been relatively small.

Ultimately, the historical abundance of seals in Greenland waters was positively associated with increases in the total (NWA) harp seal population. Since 2000, it appears that ecological and hydrographical changes may have changed this relationship, and possibly led to local changes in abundance, particularly in southwest Greenland. However, there are insufficient data available at this time to adequately analyze the latter.

#### References:

ICES, 2011. Report of the Working group on Harp and Hooded Seals (WGHARP), 15-19 August 2011, St. Andrews, Scotland, UK. ICES CM 2011/ACOM:22. 68 pp.

#### 4. Future Research on Mesh Sizes for Redfish in Div. 3LN

Scientific Council received a presentation on observations made by a PINRO observer onboard a Russian pelagic side-trawler fishing for pelagic Redfish in Div. 3LN with a cod-end mesh size of 130mm.

The net was fitted with a catch sensor which triggered the hauling of the net when the weight of fish in the net reached 50 t, the catch was then pumped aboard from the cod-end. Large losses were observed through the meshes of the net as it was hauled in and whilst it was being pumped. Eventually, 18 t were pumped on board, the rest being lost. Mean size in the catch was 23.1 cm. The conclusion was made that two-thirds of the pelagic redfish entering the net are lost, and that fish escaping in this manner are dead or dying. Scientific Council were informed of plan to continue further research at PINRO to prevent catch losses by researching trawl selectivity using a 90mm mesh for this fishery in Div. 3LN.

Scientific Council asked if the total weight in the net is an issue in determining the rate of catch loss; noted the alternative methods available to prevent small fish entering the net in the first place and suggested the use of a twin trawl or randomizing the choice of mesh size used for each tow to obtain the most valuable data possible. The Scientific Council Chair thanked the presenter and suggested that it would be useful to receive comprehensive information on length frequency of the catch and any information on by-catch species when these results are presented in full.

#### 5. FAO VME Database Meeting, December 2011

NAFO was approached regarding participation in an upcoming FAO Workshop for the development of a database for vulnerable marine ecosystems (VMEs).

The need for a global database on VMEs is underlined in the FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas, and the database concept was presented during the 2010 FAO Workshop on the Implementation of the International Guidelines for the Management of Deep-sea Fisheries in the High Seas - Challenges and Ways Forward, held in Busan, Republic of Korea from 10-12 May 2010.

NAFO was asked to appoint appropriate persons to attend and contribute to the workshop. The Chair noted that there are a number of NAFO Secretariat Staff members who are involved into the processes related to VMEs, and who would be in Rome at a meeting concurrent with this one, but felt that Scientific Council would benefit from involvement in this initiative in its own right. A number of scientists connected to NAFO work were included on the distribution list for this invitation and it was decided that they would be approached by the Secretariat and invited to observe the meeting on behalf of Scientific Council if they plan to attend.

#### 6. Access to VMS data

Data access issues were brought forward to Scientific Council by the WGEAFM co-chair. These issues arose when WGEAFM scientists requested access to VMS data held at the NAFO Secretariat. Even though NAFO Secretariat staff and WGEAFM scientists achieved an agreement on how the data should be handled to prevent any disclosure of confidential information to the scientific team, the constraints imposed by the current CEM provisions pertaining VMS data requires that any data released by the Secretariat should be linked to an explicit request by Fisheries Commission, and can only be provided in a summary form.

Modern technologies, like VMS, have emerged as powerful tools for improving management and enforcement practices, but they also provide an important source of information that, as recent work by WGEAFM and Scientific Council has shown, can be used for scientific analyses that can improve the advice that Scientific Council gives to Fisheries Commission. In this context, and in full consideration of the privacy and confidentiality requirements associated with the use of VMS and other types of data that may be available via the NAFO Secretariat, Scientific Council **recommended** *Fisheries Commission to modify the language contained in the current CEM so to allow the NAFO Secretariat to release these types of data to Scientific Council, with the provision that the data must be completely anonymized before its release to Scientific Council, and that it should only be used for analyses pertaining questions posed by NAFO constituent bodies.*

## **7. Items arising from the NAFO Performance Assessment report**

Scientific Council considered the recommendations forwarded from General Council. The Executive Committee will reflect on these and agree how best to implement any recommendations in advance of the June meeting. The Secretariat will assist with this process by extracting the background information upon which each recommendation has been made from the body of the Performance Assessment report. Scientific Council noted the recommendations which will be addressed by the General Council Working Group.

## **8. Change in NAFO Representation at WGDEC**

Dr Ellen Kenchington (Canada) has represented NAFO Scientific Council at the ICES/NAFO Working Group on Deepwater Ecology (WGDEC) since its establishment in 2007. Dr Kenchington has asked to be replaced in this role. The Chair of Scientific Council thanked Ellen for the excellent job she had performed. These thoughts were echoed by members of Scientific Council, who noted the important work carried out by this group, which has been picked up and incorporated in to other NAFO groups. Scientific Council felt that it was important to have continuing representation in this working group, and a decision was made that the Secretariat would approach Odd Aksel Bergstad (Norway) to inquire as to whether he would be willing to take up this role.

## **9. Presentation of Scientific Merit Award to Dr V. Rikhter**

At its June 2011 meeting, Scientific Council endorsed the award of a Scientific Merit Award to Dr. Vladimir Rikhter in recognition of his extensive career studying the fishery resources of the Northwestern Atlantic Ocean and the leadership he displayed within NAFO, acting as Chair of both STACPUB and Scientific Council.

Dr Rikhter made a presentation on the history of fisheries research in the northwest Atlantic carried out by his institute the text of which can be found in Annex 1. Dr Rikhter humbly praised the many colleagues he worked with over the years at both ICNAF and NAFO who he believed also deserved recognition, and highlighted that such research is still ongoing by a current generation of researchers.

Dr Rikhter was presented with his certificate and a bound volume of over eighty papers which he had published via NAFO by the Chair of Scientific Council, who wished him a long and happy retirement.

## **10. Awards to Outgoing Chairs**

The Chair of Scientific Council thanked the outgoing chairs, Carsten Hvingel (STACREC) and Joanne Morgan (STACFIS) for all their hard work over the past years and wished them the best of luck in their future and presented them with Scientific Council Merit Awards. Scientific Council also recognized Ricardo Alpoim for the guidance and leadership displayed during the course of his tenure as Chair. Ricardo was presented with a Merit Award by the Scientific Council Coordinator, on behalf of the NAFO Scientific Council, President and Executive Secretary.

# **X. ADOPTION OF REPORTS**

## **1. Committee Reports of STACREC and STACFIS**

The Council reviewed and adopted the Reports of the Standing Committees (STACREC and STACFIS).

## **2. Report of Scientific Council**

The Council at its concluding session on 23 September 2011 considered and adopted its own report.

# **XII. ADJOURNMENT**

There being no other business, the meeting was adjourned at 0930 hours on 23 September 2011.

**ANNEX 1. VALEDICTORY SPEECH BY DR V. RIKHTER: A BRIEF OVERVIEW OF RESEARCH ACTIVITIES CONDUCTED BY ATLANTNIRO IN THE NORTHWEST ATLANTIC.**



First of all, I would like to thank NAFO research community for appreciating so highly my contribution to the activities of this Organization and for their kind invitation to participate in the present meeting and to share with you my inevitably nostalgic and at times subjective memories and impressions of the previous work. I would also like to express my opinion, in this case an objective one, that there are many more scientists among ICNAF-NAFO veterans who deserve such kind of reward probably even more than your humble servant. I hope this opinion will be accepted by the Scientific Council.

Let me now move on to the memories. The history of research conducted by AtlantNIRO in the Northwest Atlantic (NWA) began in 1959, when a relevant laboratory hadn't been founded at the institute yet. However, considering a rapidly growing interest to this area on the part of foreign, as well as Soviet, fishermen, a decision was made to start studying fishery resources there by

arranging the first research and exploratory expedition. Search for commercial fish aggregations was carried out in the waters of West Greenland and Canada from the northern part of Davis Strait to the southern point of Grand Banks in October-November 1959. The search resulted in locating aggregations of cod, redfish, haddock, flatfish, and some other species. A vast body of data was collected on their biology and distribution. Later on, by decision of the Ministry of Fisheries of the USSR, the northern areas of NWA (waters of Greenland, Labrador, Newfoundland, Flemish Cap Bank) had been excluded from the AtlantNIRO scope of activity and their research had been transferred to the authority of the Polar Institute (PINRO). This means that colleagues of mine from the North also have a lot to say about research activity of their Institute in this area.

In subsequent years the intensity of AtlantNIRO research in close co-operation with Fishing Scouting Service carried out on the Nova Scotia shelf, Georges Bank and the USA shelf up to approximately 35°N (north latitude), had been snowballing. In 1960 two expeditions were organized which resulted in locating of considerable aggregations of Atlantic herring on Browns Bank, Georges Bank and on Banquereau Bank. A new form of collecting biological material started to be introduced, when the data was collected by scientific observers, as they are called today, on fishing vessels. In February-March 1960, I had to familiarize myself with this kind of job being part of a group of 3 members from AtlantNIRO on a vessel, carrying out fishing of cod in divisions 2J3K1.

In 1961 a momentous event took place at the Institute. A laboratory of Northwest Atlantic was founded under the direction of Dr. Noskov. Already in the first years of the laboratory's work he began to put into practice the idea of an ecosystem approach to studies of living resources of the Northwest Atlantic, being perhaps ahead of his time. In line with this idea the laboratory was divided into sector of stock assessment and sector of ecological research. Anticipating the sequence of events, one could say that the appropriateness of such a structure was well-founded, and that was confirmed later on, when we started co-operating with scientists from the U.S.

In 1961-1966 research carried out by AtlantNIRO was aimed at studying species which were new to Soviet fisheries: these are, primarily, Atlantic herring, silver hake, red hake, Atlantic mackerel, argentine, and some other of fish. The most important tasks were to study their habitat, biology and population dynamics to provide evaluation and prognosis of stocks status as well as allowable catches of the above mentioned species for the coming years.

Since the end of the 1960s, ecosystem approach had been pivotal in studying living resources of NWA at the laboratory. Emphasis was made on studies of food and food relations of dominant species of fish and invertebrates. Attempts had been made to assess the role of sea birds in the mortality of fish from natural causes. However, those experiments were not developed further. Within the framework of ecosystem approach emphasis was placed on research whose primary goal was to study conditions for formation of commercial fish aggregations with further displacement of focus towards revealing environmental factors, determining year-class strength of the most important species.

Considerable effort was put into studying life cycle of Atlantic herring at Georges Bank. Within the program aimed at studying its reproduction, benthic surveys with a dredge was carried out. As a result, mass spawn sites at the sea

bottom as well as spawning period were established. Based on the data obtained, it became possible to assess tentatively spawning biomass of herring in the aforementioned area. Decrease in stock of this species gave a stimulus for intensification of research on other items of Soviet fisheries such as silver hake, red hake, argentine and squid.

On the whole, in the 1960s, the targets of Soviet fisheries were dozens of fish species and there is no need to innumerate all of them. However, it is worth mentioning rather an exotic for NWA species such as Atlantic saury which in 1969 became an object of joint research by both AtlantNIRO and fish scouting service. Based on the results of the first experimental expeditions at Scotian shelf and Georges Bank, commercial fishing of this species using electric light was soon organized.

At this point the description of the first stage of the AtlantNIRO research in the NWA can be completed. That was the time of the “younger years” of the Institute which coincided with the exploration of a totally new to the Soviet fisheries area of the Atlantic. At that stage there was no question about any international co-operation, but, obviously, that situation couldn't go on for a long time considering rapid development of foreign fishery in the vicinity of the U.S. and Canada shores. In 1966 ICNAF received the first documents prepared by AtlantNIRO.

However, a much more significant event was an agreement signed by the USSR and USA on joint research in the waters from Nova Scotia in the north to Cape Hatteras in the south. Within the framework of this agreement the first expedition headed by Dr. Noskov was carried out. The period of active co-operation between scientists from AtlantNIRO and North-East Fisheries Center continued from 1967 till 1980. Over this period 14 expeditions aimed at implementation of a joint program were organized on our part only. A significant achievement of both Soviet and American scientists was development of the program of ecosystem research, which was put to evaluation test at Georges Bank and in adjacent waters of the eastern coast of the USA. One could probably state that at that time, ecological surveys of such scope and at such level had not been conducted in any other area of the World Ocean.

The results obtained had made a considerable contribution to our knowledge of living resources in NWA. One can confidently state that the entire scientific international community benefited from the Soviet-American co-operation. In the opinion of Robert White, administrator of the National Oceanic and Atmospheric Administration (NOAA), the USSR-USA joint research had served as a model for developing ICNAF programs on coordinated surveys in this area. On the whole, in the course of the program over 70 scientists and technicians from AtlantNIRO took part in sea expeditions. Processing of the data collected during expeditions at sea was no less important integral part of the program. Highly qualified specialists on fish feeding and ageing, on ichthyo- and zooplankton were required. Such specialists got selected for NWA laboratory at that time, which enabled us to cope with all challenges arising in the process of bilateral co-operation and to implement the program in compliance with ecosystem focus of the laboratory's research.

The introduction of 200-mile economic zones by the USA and Canada can be rightfully regarded as the beginning of a new era in fishery and research in NWA. The USA practically closed down their zone for foreign fisheries which led first to reduction and then to almost total termination of the co-operation between AtlantNIRO and American Center in 1980. In the following years the exchange of publications still continued and a number of small-scale joint projects were carried out aimed at reconstructing the history of the Soviet fishery in the NWA and compiling electronic database including data accumulated during the stage of active co-operation. The outcome of one of such projects was the book entitled “From Cape Hatteras to Cabot Strait: the History of the Soviet Fishery on the Atlantic Continental Shelf of the United States and Canada”, written by Dr. Chuksin, scientist from AtlantNIRO.

In the 1970s, alongside with the Soviet-American co-operation, direct contacts between AtlantNIRO and ICNAF Scientific Committee (STACRES) were established and began to develop. At that time annual submission of biological data, prepared in compliance with ICNAF standards and participation of AtlantNIRO scientists in various STACRES activities (annual, special meetings, working groups) got started. That period (1973-1979) had been quite strenuous for ICNAF scientists. Beginning with 1973 a period of transition from qualitative to quantitative methods of fish stocks assessment and prospective catches began. About 50 stock units were subject to investigation. Later on the number had gone up to about 60 units. Opposing views of the parties on the issues of stock and TAC value of some principal objects of fisheries had led to lengthy discussions. To the best of my knowledge, it was Dr. Edwards who first called this opposition of views “biopolitics”. I can't help giving you a rather typical and probably the most vivid example of such a discussion related to the topic. As you know, in the first half of the 1970s, Atlantic mackerel

from subareas 4-5 and statistical area 6 was one of the main objects of fishery for a number of countries including the USSR. Before establishing a 200-mile zone by the U.S., we had the last opportunity for fishing it in 1977. A special meeting had to make a decision concerning the TAC size in that year. It should be mentioned that according to American scientists, the stocks of Atlantic mackerel had decreased by mid 1970s. Based on this data, the U.S. delegation made a suggestion to reduce TAC to zero in 1977. It should be noted that in 1976 the TAC for mackerel made up 310 thousand tons. In turn, scientists from Poland, GDR, Bulgaria and the USSR presented a joint document, where they were trying to justify the TAC size for 1977 around 200 thousand tons. At that time it was quite a normal situation that our delegation got a directive from the Ministry of Fisheries to achieve this value of TAC. Considering the persistence with which our American colleagues were trying to pass their suggestion, one could get the impression that they also had a similar directive. A heated discussion broke out. And at this point it is worth recalling an ancient wisdom, which says that the truth is always born in a dispute and is usually halfway between two extremes. And it seems that ICNAF took seriously this ancient wisdom and defined TAC for 1977 in the size of 105 thousand tons. Similar situations, though less dramatic ones, took place for some other species of fish. I'd like to point out that at the STACRES level, representatives from different countries almost always managed to reach a compromise though from time to time a special opinion had to be recorded. In my opinion, biopolitics had in some extent positive impact on scientists, making them carry out additional research and present more conclusive arguments in support of their views and position of their country.

Considerable efforts were contributed also to exploration of commercial resources on the shelf of Nova Scotia, where till 1977 the main object of Soviet fishing had been silver hake, argentine, Atlantic herring, redfish, haddock and shortfin squid. In the following years only hake and squid remained available for foreign fishing. In 1973-1979 the results of research conducted by AtlantNIRO were submitted yearly to ICNAF in the form of research documents and in the aforementioned period over 70 papers were prepared.

In 1977 a period of long-lasting co-operation between the Soviet and Canadian scientists began and it was mainly aimed at in-depth study of silver hake biology and population dynamics on the Nova Scotia shelf. From 1977 till 1991 within the framework of a joint program 17 pelagic trawl surveys of silver hake juveniles were carried out with participation of Canadian scientists on the AtlantNIRO vessels. As a result, the scientists obtained a representative series of data on distribution, numbers of juveniles and conditions affecting year-class size of the species at early development stages. As for the studies of the population dynamics, the focus was made on determining factors affecting fluctuations in year-class abundance. In 1992, the long-term observations were discontinued due to the circumstances beyond the scientists' control. However, in 1993-1996 joint surveys were resumed on a Canadian vessel.

The co-operation with Canadian scientists, just like previously with American ones, had been terminated due to external factors, although, fortunately, that didn't happen too soon. In my opinion, on the whole, the specified goals had been achieved in both cases. As for the results of co-operation proper, in many respects they have preserved their applicability and can still serve as landmarks for planning some future, for example, ecosystem research in the NAFO area.

The intensity of the Soviet research in NWA experienced a considerable decrease after the introduction of 200-mile zones by the USA and Canada, which was directly connected to dramatic reduction of availability of the area to foreign fishery. The number of scientific and scouting expeditions dropped sharply. However, if we look at the number of research documents (over 80) prepared for the Scientific Council in 1980-1989, we will find that this decade turned out to be a quite productive one for the AtlantNIRO scientists. Though AtlantNIRO research activities were restricted mainly to the Nova Scotia shelf, it was this factor that enabled scientists to focus their efforts on in-depth studies of two species – silver hake and shortfin squid, which formed the basis of the Soviet fishing in this area. Research conducted within the framework of bilateral co-operation and the program of the Institute and collecting of biological samples from commercial catches contributed to the multifaceted character of the data.

In the 1980s, the Nova Scotia shelf started to lose its attractiveness for the Soviet fishery despite relatively good hake catches during this period, because of the exploration of other objects of fishery (horse mackerel in the southeast of the Pacific, pelagic redfish in the Irminger Sea) which began in the first half of the 1980s. In relation to this fact, re-distribution of scientific efforts inevitably started which led to liquidation of the Laboratory of Northwest Atlantic in 1987. There remained only a small group of specialists who continued the research. Thanks to their efforts and at the commission of the Scientific Council a paper on silver hake of the Nova Scotia shelf was

prepared, where an attempt was made to elucidate all aspects of life cycle of the species. The quality of the work had been considerably improved thanks to the comments made by Dr. Halliday, to whom all the authors would like once again to express their profound gratitude.

The period of relatively active research carried out by AtlantNIRO in NWA continued till 1997 when the program of joint research ceased to exist. In the 1990s, another 47 research documents were prepared and most of them in the first half of the period. It comes as no surprise that the topic of those documents mainly was hake from the Nova Scotia shelf.

And this completes the history of AtlantNIRO research in the NWA. In the subsequent years the co-operation between the Institute and NAFO took the form of yearly (until 2009) presentations of the national report sections to the Secretariat with information on available oceanographic data on the area of Nova Scotia and individual research documents. The AtlantNIRO representatives stopped participating in meetings of the Scientific Council after 2004.

In conclusion I would like to present you some figures which don't require any comments. During the period between 1959 and 1991 inclusive, AtlantNIRO and fish scouting service carried out about 190 scientific and scouting expeditions in the NWA. The first publications by scientists from AtlantNIRO on research results in this area began to come out in 1963. By now about 200 publications have come out in various journals and over 250 have been presented to ICNAF and NAFO in the form of research and summary documents. And finally, my colleague Dr. Sigayev is finishing his monograph "The dynamics of hydrological fronts in the Northwest Atlantic and its impact on the ecosystem of shelf waters of New England and Nova Scotia", which will probably be submitted to the publisher next year. As we can see, the general line of research of the former Laboratory of NWA has had its worthy extension.

Now I would like to finish my presentation at this optimistic note. Thank you very much for your attention!

## **APPENDIX I. REPORT OF STANDING COMMITTEE ON RESEARCH COORDINATION (STACREC)**

Chair: Carsten Hvingel

Rapporteur: Barbara Marshall

The Committee met at the Westin Hotel, Halifax, Nova Scotia, Canada, during 20 September 2011, to consider the various matters in its Agenda. Representatives attended from Canada, European Union (Estonia, France, Portugal and Spain), France (with respect to St. Pierre et Miquelon), Norway, Russian Federation and USA. The Scientific Council Coordinator was in attendance.

### **1. Opening**

The Chair opened the meeting and welcomed everyone. He especially welcomed the incoming Chair Don Stansbury and wished him well in his new role. Barbara Marshall was appointed the Rapporteur.

### **2. Fisheries Statistics**

#### **a) Progress Reports on Secretariat Activities**

A proposal is being submitted to STACFAD to create a Data Manager position in the Secretariat. This position would then become responsible for the STATLANT database which is presently managed by the Fisheries Commission Coordinator.

The NAFO website is currently being redesigned and the new pages will feature a Data tab on the front page. This will contain links to the STATLANT, GIS and other data held by NAFO.

#### **b) Review of STATLANT 21**

All 21B submissions were made in a timely matter and the situation with some non-submissions of 21A data noted in June has been rectified.

### **3. Research Activities**

#### **a) Surveys Planned for 2010 and Early-2011**

Designated Experts were requested to check and update the information contained in SCS Doc. 11/18.

### **4. External Cooperation**

#### **a) ICES Strategic Initiative on Stock Assessment Methods (SISAM)**

A symposium will be held in 2013 in Boston. A funding request will be presented to NAFO and Scientific Council members are encouraged to attend. More information will be available at a later date.

### **5. Review of Recommendations**

From the June Meeting:

STACREC **recommended** that *DEs compile historical catch data in as fine a scale (ideally by NAFO Division) and for as many years as possible.*

STATUS: No progress has been made at this time. This will be reviewed again next year.

To facilitate the compilation of overviews of research and data needs for NAFO stocks, STACREC **recommended** that *DEs compile this information for their stocks and forward to the Secretariat for inclusion in a future SCS document/working paper.*

STATUS: No progress has been made at this time. This will be reviewed again next year.

STACREC expressed concern about the possible inaccuracy of Greenland halibut age determination and therefore, STACREC **recommended** that *research be conducted to determine maximum ages and to improve age determination methods.*

STATUS: No progress reported.

STACREC **recommended** that *General Council seek approval from all Contracting Parties for sharing of survey data among members of Scientific Council for research aimed at addressing requests from Fisheries Commission.*

STATUS: This recommendation was endorsed by the Scientific Council and presented to the Fisheries Commission for action.

## **6. Other Matters**

### **a) Review of SCR and SCS Documents**

No documents were reviewed during this meeting.

### **b) Other Business**

Carsten Hvingel was thanked for his work as Chair and his contributions to the Executive Committee were appreciated.

The meeting was adjourned at 1530 on 20 September 2011.

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

Chair : Joanne Morgan

Rapporteur: Various

The Committee met at the Westin Hotel, Halifax, Nova Scotia, Canada, during 19-21 September 2011, to consider the various matters in its Agenda. Representatives attended from Canada, European Union (Estonia, France, Portugal and Spain), France (with respect to St. Pierre et Miquelon), Norway, Russian Federation and USA. The Scientific Council Coordinator was in attendance.

### 1. Opening

The Chair opened the meeting by welcoming participants. The provisional agenda was reviewed and adopted, and a plan of work developed for the meeting.

### 2. Any matter outstanding from the WebEx SC Meeting, 1 - 12 September 2011

#### a) Northern Shrimp in Div. 3M and Div. 3LNO

The Chair informed the meeting that the assessments for Div. 3M and Div. 3LNO Northern shrimp had been updated during a SharePoint and Webex meeting of STACFIS. The assessments were completed at that time and there were no outstanding issues.

### 3. Nomination of Designated Experts

There are likely to be some changes in Designated Experts for stocks over the next year. The current list of Designated Experts is given below and will be nominated again. The relevant institutes will be contacted to confirm the Designated Experts.

The nominated Designated Experts for 2012 are:

From the Science Branch, Northwest Atlantic Fisheries Centre, Department of Fisheries and Oceans, P. O. Box 5667, St. John's, NL, Canada A1C 5X1, Canada (Fax: + 709-772-4188)

Cod in Div. 3NO	Don Power	Tel: +1 709-772-4935	don.power@dfo-mpo.gc.ca
Redfish Div. 3O	Don Power	Tel: +1 709-772-4935	don.power@dfo-mpo.gc.ca
American Plaice in Div. 3LNO	Rick Rideout	Tel: +1 709-772-6975	rick.rideout@dfo-mpo.gc.ca
Witch flounder in Div. 3NO	Bill Brodie	Tel: +1 709-772-3288	bill.brodie@dfo-mpo.gc.ca
Witch flounder in Div. 2J+3KL	Dawn Maddock Parsons	Tel: +1 709-772-2495	dawn.parsons@dfo-mpo.gc.ca
Yellowtail flounder in Div. 3LNO	Dawn Maddock Parsons	Tel: +1 709-772-2495	dawn.parsons@dfo-mpo.gc.ca
Greenland halibut in SA 2+3KLMNO	Brian Healey	Tel: +1 709-772-8674	brian.healey@dfo-mpo.gc.ca
Northern shrimp in Div. 3LNO	David Orr	Tel: +1 709-772-7343	david.orr@dfo-mpo.gc.ca
Thorny skate in Div. 3LNO	Mark Simpson	Tel: +1 709-772-4148	mark.r.simpson@dfo-mpo.gc.ca
White hake in Div. 3NO	Mark Simpson	Tel: +1 709-772-4148	mark.r.simpson@dfo-mpo.gc.ca

From the Instituto Español de Oceanografía, Aptdo 1552, E-36200 Vigo (Pontevedra), Spain (Fax: +34 986 49 2351)

Roughhead grenadier in SA 2+3	Fernando Gonzalez-Costas	Tel: +34 986 49 2111	fernando.gonzalez@vi.ieo.es
Roundnose grenadier in SA 2+3	Fernando Gonzalez-Costas	Tel: +34 986 49 2111	fernando.gonzalez@vi.ieo.es
Cod in Div. 3M	Diana Gonzalez-Troncoso	Tel: +34 986 49 2111	diana.gonzalez@vi.ieo.es
Shrimp in Div. 3M	Jose Miguel Casas Sanchez	Tel: +34 986 49 2111	mikel.casas@vi.ieo.es

From the Instituto Nacional de Recursos Biológicos (INRB/IPIMAR), Av. de Brasília, 1449-006 Lisbon, Portugal (Fax: +351 21 301 5948)

American plaice in Div. 3M	Ricardo Alpoim	Tel: +351 21 302 7000	ralpoim@ipimar.pt
Redfish in Div. 3M	Antonio Avila de Melo	Tel: +351 21 302 7000	amelo@ipimar.pt
Redfish in Div. 3LN	Antonio Avila de Melo	Tel: +351 21 302 7000	amelo@ipimar.pt

From the Greenland Institute of Natural Resources, P. O. Box 570, DK-3900 Nuuk, Greenland (Fax: +299 36 1212)

Redfish in SA1	Rasmus Nygaard	Tel: +299 36 1200	rany@natur.gl
Other Finfish in SA1	Rasmus Nygaard	Tel: +299 36 1200	rany@natur.gl
Greenland halibut in Div. 1A	Rasmus Nygaard h	Tel: +299 36 1200	rany@natur.gl
Northern shrimp in SA 0+1	Michael Kingsley	Tel: +299 36 1200	mcsk@natur.gl
Northern shrimp in Denmark Strait	Nanette Hammeken	Tel: +299 36 1200	nanette@natur.gl

From the Danish Institute for Fisheries Research, Charlottenlund Slot, DK-2920, Charlottenlund, Denmark (Fax: +45 33 96 33 33)

Roundnose grenadier in SA 0+1	Ole Jørgensen	Tel: +45 33 96 33 00	olj@dfu.min.dk
Greenland halibut in SA 0+1	Ole Jørgensen	Tel: +45 33 96 33 00	olj@dfu.min.dk

From Knipovich Polar Research Institute of Marine Fisheries and Oceanography (PINRO), 6 Knipovich Street, Murmansk, 183763, Russia (Fax: +7 8152 47 3331)

Capelin in Div. 3NO	Ivan Tretiakov	Tel: +7 8152 450568	tis@pinro.ru
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From National Marine Fisheries Service, NEFSC, 166 Water St., Woods Hole, MA 02543

Northern Shortfin Squid in SA 3 & 4	Lisa Hendrickson	Tel: +1 508 495-2285	lisa.hendrickson@noaa.gov
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#### 4. Other Matters

##### a) Review of SCR and SCS Documents

There were no papers presented to STACFIS.

##### b) Other Business

There being no other business STACFIS Chair thanked the Designated Experts for their competence and very hard work and the Secretariat for its great support. The STACFIS Chair also thanked the Chair of Scientific Council, and the Scientific Council Coordinator for their support and help. The meeting was adjourned at 1615 on 21 September.

