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SCIENTIFIC COUNCIL MEETING – 2015**FISHERIES COMMISSION'S REQUEST FOR SCIENTIFIC ADVICE ON MANAGEMENT IN 2016 AND BEYOND OF CERTAIN STOCKS IN SUBAREAS 2, 3 AND 4 AND OTHER MATTERS**

1. Fisheries Commission requests that the Scientific Council provide advice for the management of the fish stocks below according to the assessment frequency presented below. The advice should be provided as a range of management options and a risk analysis for each option (rather than a single TAC recommendation).

<u>Yearly basis</u>	<u>Two year basis</u>	<u>Three year basis</u>
Northern shrimp in Div. 3LNO	American plaice in Div. 3LNO Cod in Div. 3M Redfish in Div. 3LN Redfish in Div. 3M Northern Shrimp in Div. 3M Thorny skate in Div. 3LNO White hake in Div. 3NO Witch flounder in Div. 3NO	American plaice in Div. 3M Capelin in Div. 3NO Cod in Div. 3NO Northern shortfin squid in SA 3+4 Redfish in Div. 3O Witch flounder in Div. 2J+3KL Yellowtail flounder in Div. 3LNO

To implement this schedule of assessments, the Scientific Council is requested to conduct the assessment of these stocks as follows:

In 2015, advice should be provided for 2016 for Northern Shrimp in NAFO Div. 3LNO

In 2015, advice should be provided for 2016 and 2017 for Cod in Div. 3M and Redfish in Div. 3M and White hake in Div. 3NO.

In 2015, advice should be provided for 2016, 2017 and 2018 for Cod in Div. 3NO, Yellowtail Flounder in 3LNO and Capelin in Div. 3NO.

Advice should be provided using the guidance provided in **Annexes A or B as appropriate**, or using the predetermined Harvest Control Rules in the cases where they exist.

The Fisheries Commission also requests the Scientific Council to continue to monitor the status of all these stocks annually and, should a significant change be observed in stock status (e.g. from surveys) or in by-catches in other fisheries, provide updated advice as appropriate.

2. The Fisheries Commission adopted in 2010 an MSE approach for Greenland halibut stock in Subarea 2 + Division 3KLMNO (FC Document 10/12). This approach considers a survey based harvest control rule (HCR) to set a TAC for this stock on an annual basis. The Fisheries Commission requests the Scientific Council to:
 - a) Monitor and update the survey slope and to compute the TAC according to HCR adopted by the Fisheries Commission according to Annex 1 of FC Document 10/12.

- b) Advise on whether or not an exceptional circumstance is occurring.
3. The Fisheries Commission requests the Scientific Council to analyze and provide advice on management measures that could improve selectivity in the 3M cod and 3M redfish fishery in the Flemish Cap in order to reduce possible by catches and discards. The objective is to reduce the mixed fisheries between cod and redfish, the by-catch of non-targeted stocks and to analyze if the selectivity pattern could be improved to reduce the catch of undersized fish.
 4. The Fisheries Commission requests the Scientific Council to continue to develop work on Significant Adverse Impacts in support of the reassessment of NAFO bottom fishing activities required in 2016, specifically an assessment of the risk associated with bottom fishing activities on known and predicted VME species and elements in the NRA.
 5. Recognizing the work done in NAFO to prevent significant adverse impacts to vulnerable marine ecosystems, and the need for effective stock assessments;
Further recognizing that modifications to survey designs occur on regular basis in fisheries surveys in many cases,
FC requests that SC investigate the impacts of removing the closed areas from the survey design for relevant stock surveys.
 6. For the cod stock in Divisions 2J+3KL, the Scientific Council is requested to comment on the trends in biomass and state of the stock in the most recent Science Advisory Report from the Canadian Science Advisory Secretariat.
 7. The Fisheries Commission requests the Scientific Council to conduct a full assessment of witch flounder in Div. 3NO.
 8. Please provide a stock assessment for alfonso and recommendation.
 9. Could the SC liaise with the national institutes of the different CPs to see if – as recommended by STACTIC – acoustic surveys for capelin can be carried out?
 10. There are some spatial and depth coverage deficiencies in the Greenland Halibut survey. It is suspected that there is a component of the Greenland Halibut stock of age-class 14+ that lives in depths under 1 500 meters and is therefore inaccessible to scientific trawling. Please
 - (1) comment on this hypothesis,
 - (2) indicate if information on this part of the stock would be useful for the stock assessment and the understanding of the stock dynamics,
 - (3) indicate if there are techniques available to assess the biomass below 1 500 meters and
 - (4) if useful and possible, implement such techniques in view of the next stock assessment.
 11. The NAFO 2011 Performance Review Panel encouraged NAFO to consider whether activities other than fishing in the NAFO Convention Area may impact the stocks and fisheries for which NAFO is responsible as well as biodiversity in the NAFO Regulatory Area. Such activities might include oil exploration, shipping and recreational activities. Some work has been carried out as part of the ecosystem approach.

As the first step in the assessment of such impacts and for the implementation of the priorities of the Ecosystem Roadmap, could the Scientific Council provide a literature survey that would indicate what the risks are to the fish stocks and ecosystems in the NAFO Regulatory Area by looking at comparable situations.
 12. The Fisheries Commission requests the Scientific Council to evaluate the impact of mid-water trawls on VME indicator species in those instances when the gear makes contact with or is lost on the bottom.

[illegible]

2. For stock assessed with an age-structured model, information should be provided on stock size, spawning stock sizes, recruitment prospects, historical fishing mortality. Graphs and/or tables should be provided for all of the following for the longest time-period possible:

- historical yield and fishing mortality;
- spawning stock biomass and recruitment levels;
- Stock trajectory against reference points

And any information the Scientific Council deems appropriate

Stochastic short-term projections (3 years) should be performed with the following constant fishing mortality levels as appropriate:

- For stocks opened to direct fishing: F0.1, Fmax, 2/3 Fmax, 3/4 Fmax, 85% Fmax, 75% F2014, F2014, 125% F2014,
- For stocks under a moratorium to direct fishing: F2014, F = 0.

The first year of the projection should assume a catch equal to the agreed TAC for that year.

Results from stochastic short term projection should include:

- The 10%, 50% and 90% percentiles of the yield, total biomass, spawning stock biomass and exploitable biomass for each year of the projections
- The risks of stock population parameters increasing above or falling below available biomass and fishing mortality reference points. The table indicated below should guide the Scientific Council in presenting the short term projections.

				Limit reference points													P(B2017 > B2014)
				P(F>Flim)			P(B<Blim)			P(F>F0.1)			P(F>Fmax)				
F in 2015 and following years*	Yield 2015	Yield 2016	Yield 2017	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017		
F0.1	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%		
Fmax	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%		
66% Fmax	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%		
75% Fmax	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%		
85% Fmax	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%		
0.75 X F2014	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%		
F2014	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%		
1.25 X F2014	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%		

ANNEX B Guidance for providing advice on Stocks Assessed without a Population Model

For those resources for which only general biological and/or catch data are available, few standard criteria exist on which to base advice. The stock status should be evaluated in the context of management requirements for long-term sustainability and the advice provided should be consistent with the precautionary approach.

The following graphs should be presented, for one or several surveys, for the longest time-period possible:

- a) time trends of survey abundance estimates
- b) an age or size range chosen to represent the spawning population
- c) an age or size-range chosen to represent the exploited population
- d) recruitment proxy or index for an age or size-range chosen to represent the recruiting population.
- e) fishing mortality proxy, such as the ratio of reported commercial catches to a measure of the exploited population.
- f) Stock trajectory against reference points

And any information the Scientific Council deems appropriate.