List of Scientific Council Recommendations 2016

From the FC-SC Joint Working Group on Risk-Based Management Strategies – 4-6 Apr 2016

Recommendations to forward to the Fisheries Commission and Scientific Council

6. The Working Group recommends that:

On the Precautionary Approach (PA) Framework:

1. **Scientific Council, through its WG-PAF, adopt the timeline for the revision of the NAFO PA framework as outlined in Annex 3.**

On 2+3KMNO Greenland Halibut:

2. **Fisheries Commission and Scientific Council adopt the MSE work plan as outlined in Annex 5.**

The Working Group noted the following constraints and/or considerations to complete the MSE review within the established time frame: a) timely availability of catch data (total and catch-at-age); b) capacity/expertise to provide SCAA assessment models; and c) potential revision of the PAF.

For points a) and b):

3. **Scientific Council use 2015 catch estimate developed by the Catch Data Advisory Group (CDAG) of the FC-SC WG on Catch Reporting in MSE review/formulation.**

4. **Scientific Council consider how to incorporate the uncertainty associated with the 2011-2014 catch into the MSE review/formulation.**

5. **Contracting Parties and/or Scientific Council seek out expertise to facilitate integration of an SCAA-type model into the MSE review/formulation. This should be done, if possible, before June 2016 to allow timely progress.**

On 3M Cod:

7. **Fisheries Commission and Scientific Council adopt the timeline for the 3M Cod Benchmark Assessment and MSE, as outlined in Annex 7.**

From the June Scientific Council Meeting - 03 -16 June 2016

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

- STACFEN **recommends** *consideration of support for one invited speaker to address emerging issues and concerns for the NAFO Convention Area during the 2017 STACFEN Meeting.*

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

- *STACPUB **recommends** that the NAFO website continue to provide e-mail links for the Scientific Council Designated Experts for each stock.*

- *STACPUB **recommends** that the Secretariat investigate the development of popular advice web pages that would be interactive and appeal to a broader audience. Information on the species and stocks as well as maps of stock areas, fishing grounds and corresponding ecosystem areas could be included.*

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

- STACREC **recommends** that *the NAFO Secretariat develop a framework for communicating tagging study information to vessels from Contracting Parties and Coastal States fishing in the Convention Area (e.g., via a link to this information on the NAFO website homepage). A proposal on this recommendation will be tabled by the Secretariat for consideration at the Sept 2016 SC meeting.*

- STACREC **recommended** *SC endorse this change to existing working procedure and seek funds required (travel and/or stipend depending on review type) to allow an external review to commence in advance of the June 2017 meeting. Terms of Reference for this review, as well as a list of which stocks should be reviewed and the process whereby reviewers will be selected will be considered by SC at its September 2017 meeting.*

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

There were no general recommendations arising from STACFIS. The Council endorsed recommendations specific to each stock and they are highlighted under the relevant stock considerations below.

From STACFIS:

1. Greenland Halibut (*Reinhardtius hippoglossoides*) in SA 0, Div. 1A offshore and Divs. 1B-F

STACFIS **recommended** that *for Greenland halibut in SA0 + div1A offshore and 1B-F by-catch in Div. 0B should be estimated based on survey data and compared to the by-catch estimated by observers in order to evaluate of the estimation of by-catch in Div. 1CD based on surveys.*

4. Redfish in SA1

STACFIS reiterated the **recommendation** that *the species composition and quantity of redfish discarded in the shrimp fishery in SA 1 be further investigated.*

05b. American plaice in Subarea 1

STACFIS reiterated the **recommendation** that *the species composition and quantity of American plaice discarded in the shrimp fishery in SA1 be further investigated.*

STACFIS reiterated the **recommendation** that *the distribution of these species in relation to the main shrimp-fishing grounds in SA1 be investigated, in order to further discover means of reducing the amount of discarded American plaice in the by-catch.*

7. Redfish in Div. 3M

STACFIS **recommended** that, *in order to confirm the most likely redfish depletion by cod on Flemish Cap, and be able to have an assessment independent approach to the magnitude of such impact and to the size structure of the redfish most affected by cod predation, the existing feeding data from the past EU surveys be analyzed and made available.*

STACFIS reiterated its **recommendation** that *the important line of ecosystem research based on the feeding sampling routine of the EU survey catch be done on an annual basis.*

8. American Plaice (*Hippoglossoides platessoides*) in Div. 3M

STACFIS **recommends** that *several input frameworks be explored in both models (such as: q's; M (e.g. in relation to F0.1); ages dependent of the stock size; the proxies and its distribution in the VPA-type Bayesian model).*

Due to the recent improved recruitment at low SSB, STACFIS **recommends** *to explore the Stock/Recruitment relationship and* $B_{lim.}$

11. American plaice in Div. 3LNO

STACFIS **recommended** that *investigations be undertaken to compare ages obtained by current and former Canadian age readers.*

STACFIS **recommends** that *investigations be undertaken to examine the retrospective pattern and take steps to improve the model.*

14. Capelin in Div. 3NO

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

15. Redfish in Div. 3O

STACFIS **recommended** that *for Redfish in Div. 3O, a recruitment index be developed for this stock*.

STACFIS **recommended** that for Redfish in Div. 3O, work continue on developing a recruitment index with sizes close to those recruiting to the fishery.

16. Thorny skate (*Amblyraja radiata*) in Divs. 3LNO and Subdiv. 3Ps

STACFIS **recommended** that *further work be conducted on development of a quantitative stock model*.

STACFIS **recommended** that *survey indices be investigated to compare catch rates in relation to depth in the spring and fall surveys, stock distribution, and comparison between Divs. 3LNO and Subdiv. 3Ps.*

17. White hake in Div. 3NO

STACFIS **recommended** that *age determination should be conducted on otolith samples collected during annual Canadian surveys (1972-2009+); thereby allowing age-based analyses of this population.*

Otoliths are being collected but have yet to be aged. STACFIS reiterates this **recommendation**.

STACFIS **recommended** *that the collection of information on commercial catches of white hake be continued and now include sampling for age, sex and maturity to determine if this is a recruitment fishery*.

STACFIS **recommended** that *survey conversion factors between the Engel and Campelen gear be investigated for this stock.*

STACFIS **recommended** that *work continue on the development of population models and reference point proxies.*

19. Witch Flounder (*Glyptocephalus cynoglossus*) in Divs. 2J+3KL

STACFIS **recommends** that *for 2+3KL witch flounder an evaluation be conducted of the influence of deep water strata (>732 m) in Div. 3L on the stock biomass index.*

20. Greenland Halibut (*Reinhardtius hippoglossoides*) in SA 2 + Divs. 3KLMNO

STACFIS **recommended** that *methods for estimating catch for 2011-2014 be explored for Greenland Halibut in SA 2 + Divs. 3KLMNO, including where ever possible the utility of using effort in conjunction with estimates of catch per unit effort.*

21. Northern shortfin squid in SA 3+4

In 2013, STACFIS **recommended** that *gear/vessel conversion factors be computed to standardize the 1970-2003 relative abundance and biomass indices from the July Div. 4VWX surveys*.

From the FC-SC WG-EAFFM, 10-12 August 2016

WG-EAFFM **recommends:**

In relation to the reassessment of NAFO bottom fisheries (EAFFM agenda item 4a)

1. **To support the next re-assessment in 2020, that SC;**
   a) **assess the overlap of NAFO fisheries with VME to evaluate fishery specific impacts in addition to the cumulative impacts;**
   b) **consider clearer objective ranking processes and options for objective weighting criteria for the overall assessment of risk;**
   c) **maintain efforts to assess all of the six FAO criteria (Article 18 Article 18 of the FAO International Guidelines for the Management of Deep-Sea Fisheries in the High Seas) including the three FAO functional SAI criteria which could not be evaluated in the current assessment (recovery potential, ecosystem function alteration, and impact relative to habitat use duration of VME indicator species).**
   d) **continue work on non-sponge and coral VMEs (for example bryozoan and sea squirts) to prepare for the next assessment.**

In relation to widening the scope of the NAFO coral and sponge guide (EAFFM item 4b)

2. **In addition to the VME guide, that SC further develop and compile identification guides for fishes (e.g. sharks and skates) that could be provided to observers.**

In relation to risk assessment of scientific trawl surveys impact on VMEs (EAFFM item 4c)

3. **In consideration of other SC priorities, that SC maintain efforts to conclude the assessment of the impact of survey hauls on VMEs in closed areas and the effect of excluding surveys from these areas on stock assessments.**

In relation to potential impact of non-fishing activities (EAFFM item 4d)

4. **That NAFO Secretariat maintains dialogue with relevant organizations and explore mechanisms to improve the exchange of information. The FC and Contracting Parties may consider other means to facilitate active monitoring of assessments, planning processes and actions taken in other fora in order to identify and, if needed, respond on issues concerning NRA fisheries, fisheries resources, and biodiversity.**

In relation to ongoing matters (EAFFM agenda item 5)

5. **Taking note of the recent SAI assessment from the SC, that FC consider management response, if appropriate, including the possible closure of the areas previously identified as sea pen candidate areas 13 and 14 (Eastern Flemish Cap) if proposals are made at the annual meeting (see Annex 1).**

In relation to Ecosystem Approach to Fisheries (EAF) (EAFFM agenda item 6)

6. **FC/SC give consideration (possibly through their informal dialogue) to how Fisheries Production Potential (FPP) limits could inform management of NAFO stocks and provide feedback and further direction.**

From the NIPAG Meeting, 7-14 September 2016

1. Northern Shrimp in Div. 3M

For Northern Shrimp in Div. 3M NIPAG **recommends** that *further exploration of the relationship between shrimp, cod and the environment be continued in WGESA and NIPAG encourages the shrimp experts to be involved in this work.*

2. Northern shrimp (*pandalus borealis*) in NAFO DIVS. 3LNO

NIPAG reiterates its **recommendation** that *ecosystem information related to the role of shrimp as prey in the Grand Bank (i.e. 3LNO) Ecosystem be presented to the 2017 NIPAG meeting.*

3. Northern Shrimp in SA 0+1

NIPAG **recommended** in 2012 that, for Northern shrimp off West Greenland (NAFO SAs 0 and 1)

- given that the CPUE series for the Greenland sea-going and coastal fleets continue to agree while neither agrees with changes in the survey estimates of biomass since 2002, possible causes for change in the relationship between fishing efficiency and biomass should be investigated;

STATUS: In progress; this recommendation is reiterated.

- the relationship between estimated numbers of small shrimps and later estimates of fishable biomass should be investigated anew.

STATUS: In progress; this recommendation is reiterated.

NIPAG **recommended in 2014** that *the structure and coding in the assessment model of the relationship between cod biomass, shrimp biomass and estimated predation should be reviewed, including an analysis of the error variation*.

STATUS: Ongoing. A correction to the coding of the model was implemented in the 2015 assessment, but further investigations of the treatment of the error variance is indicated.

NIPAG **recommended in 2014** that *further refinements to the "partial MIXing" method of estimating numbers at age should be explored*.

STATUS: In progress; this recommendation is reiterated.

Survey trends inshore and offshore are divergent and NIPAG **recommended in 2015** that *the nature and implications of this divergence is explored*.

Status: In progress; this recommendation is reiterated.

In 2016:
NIPAG **recommends** that *methods for prediction of future cod biomass should be explored.*
NIPAG **recommends** that *genetic stock structure in West and East Greenland should be further explored.*