Northwest Atlantic Fisheries Organization

Serial No. N7390 **NAFO SCS Doc. 23/11**

Report of the NAFO Scientific Council MSE Meeting

March 16, 2023, via Webex

Recommended Citation:

NAFO. 2023. Report of the NAFO Scientific Council MSE Meeting, 16 March 2023, via Webex. NAFO SCS Doc. 23/11.

Report of the NAFO Scientific Council MSE Meeting

March 16, 2023. 09:00 Halifax time

WebEx

Chair: Karen Dwyer

1. Opening.

The meeting was opened by the SC Chair Karen Dwyer (Canada) at 09:00 hours (UTC/GMT -3 hours in Halifax, Nova Scotia) on 16 March 2023.

The Chair welcomed participants including representatives from Canada, Denmark (in respect of Faroes and Greenland) the European Union, Japan, the United Kingdom and the United States of America. A full participants list is presented in Annex 1.

Scientific Council Coordinator Tom Blasdale was nominated as rapporteur of the meeting.

The agenda was adopted as circulated.

2. Conclusions on data to be used in MSE for Greenland Halibut 2+3KLMNO and Redfish 3LN.

The chair referred meeting participants to the agreement on data inputs reached during the January 31 meeting of SC (SCS 23/01).

3. Review of timeline for MSEs.

SC considered the workplan agreed by WG-RBMS in August 2022. No changes to the workplan were proposed at this meeting, but it will be further reviewed by WG-RBMS in April.

4. Update on work to be presented at WG-RBMS.

a) OMs to be used in Greenland Halibut MSE; Discussion of MPs, objectives and PSs.

i) Exceptional Circumstances.

Exceptional circumstances will be triggered due to missing Canadian surveys in 2021 and 2022 (see Figure 1). According to the Exceptional Circumstances protocol, SC in June will be required to comment on the severity of the Exceptional Circumstances identified and advise on options. The current proposal is to explore empirical testing of the sensitivity of the HCR to missing survey data (as previously done in June 2022). Canadian scientists are currently working on this and will have results to present at the June SC meeting. The approach being taken is to re-run the application of the Harvest Control Rule performed in 2019 excluding each of the missing survey series for comparison with the advice produced with the full suite of survey series. An additional option to be explored will be dropping the spring 3LNO survey from the HCR, as well as both spring and autumn Canadian surveys. Other options for "patching" missing survey values and assessing the impacts of dropping 2 and 3 year blocks of data will be considered in June.

The WG-RBMS April meeting will be informed that there will be Exceptional Circumstances in 2023, and that SC will investigate the impacts during the June meeting, reporting the results to WG-RBMS in July.

It was also agreed that SC in June should be prepared to undertake a conventional assessment with one or two year projections to present as an alternative in case it is decided that the SC is unable to use the HCR. The base case operating model for the MSE could be used for this, if it is considered necessary, and WG-RBMS will be informed that this back-up plan exists.

	2017	2018	2019	2020	2021	2022
Canada Fall 2J3K	✓	✓	✓	✓	✓	×
Canada Fall 3LNO	✓	✓	✓	✓	×	×
EU 3M 0-1400m	✓	✓	✓	✓	✓	✓
Canada Spring 3LNO	×	✓	✓	×	×	×
EU-Spain 3NO	✓	✓	✓	×	✓	✓

Figure 1. Completion of surveys for years 2017-2022 (✓ = completed; × = not completed).

ii) Review of progress on the MSE:

Paul Regular (Canada) presented the data inputs agreed in the January meeting. It was agreed that MSE would be carried out with data up until 2021, and that 2022 would be the first year of the projected period. However it might be necessary to have the full set of 2022 data available in case a best assessment is required to provide TAC advice for 2024.

iii) Proposal of MPs for RBMS April:

The following option will be proposed to WG-RBMS:

- Revisit current MP
- Although no other MPs are proposed at present, some alternatives (probably model based as well as index based) will be tested to see if they work better

iv) Identify management objectives / PMs.

These will be discussed with WG-RBMS in April. As a starting point, it is proposed that management objectives and performance metrics developed for the previous MSE be used. The meeting considered possible changes to the existing PMs, including changes to the time period considered, risk levels associated with limit reference points, and ranking of objectives. These will be discussed further during WG-RBMS.

v) Proposal and review and finalization of OMs;

The initial proposal is to revisit and reuse previous operating models.

Within two frameworks, a statistical-catch-at-age model (SCAA) and state-space model (SSM), four Operating Models (OMs) were utilized previously:

1. Base case OM;
2. Low recruitment OM, where the expected recruitment was reduced by 50% for the first 8 years (2019 to 2026 inclusive) of the simulation;
3. OM with no plus group in the catch to model a fishery which mainly targets ages 5 to 9 (selectivity for plus group age 10+=0);
4. OM where the TAC is exceeded by 10% every year to allow for implementation error.

Additional robustness tests may be considered at the June SC potentially including:

5. Define a Limit Reference Point for assessing status annually and/or utilize this as an operational control point
6. OM with gaps in survey indices (e.g., missing year due to vessel issues, missing depth strata, etc)
7. Other OMs that were tested in the previous MSE but nevertheless may also be re-examined.

b) Discussion on potential MPs/PSs/OMs to be used in Redfish 3LN MSE.

Andrea Perreault (Canada) presented potential MPs/PSs/OMs to be used in Redfish 3LN MSE.

i) Initial discussion on Management Objectives

WG-RBMS encouraged Contracting Parties to submit proposed initial Candidate Management Procedures (CMP), management objectives and performance statistics for consideration in advance of the April 2023 WG-RBMS meeting. It was suggested that managers (Canada, EU and Japan) present a proposal of their management objectives to open discussion at meeting.

It was noted that at a previous WG-RBMS meeting the Canadian delegation had presented possible management objectives and CMPs with the intention to develop them in consultation with other Contracting Parties. It is expected that this delegation will circulate these ideas to other CPs in advance of the RBMS meeting to provide a basis for discussion.

This stock is characterized by sporadic recruitment events and that this presents difficulties for proposing biomass thresholds.

Performance statistics should be developed and proposed by the technical team in response to objectives and risk levels decided by managers.

ii) Initial discussion on conceptual Candidate Management Procedures.

Options to be discussed by RBMS are likely to include both empirical and model-based rules.

iii) Discussion of Operating Models

Development of OMs is at an early stage, but the following are likely to be included:

Model	Formulations
State-space surplus production models To compare with previous approaches, and potentially track long term trends in stock dynamics	Divisional (3L, 3N) Depth-based
State-space age-structured length-based models To develop a model that better captures complex stock dynamics (including tracking length-based cohorts and accounting for episodic recruitment)	Divisional (3L, 3N) Depth-based

c) External review of the MSE process.

The SC chair informed the meeting that it is planned to have an external reviewer for the MSE processes who will be present at the June SC meeting. The SC executive is in the process of identifying and contacting potential reviewers.

d) Documentation of MSE processes.

It was agreed that options for documenting the MSE processes in a complete and accessible format will be discussed in STACREC in June.

5. NAFO Scientific Council Precautionary Approach Working Group (PA-WG) meeting presentation.

Fernando González (cochair of PAWG, EU) presented the progress made by PA-WG since September 2022 (SCS Doc. 22/26 and SCS Doc. 23/07). The presentation covered the alternative PA frameworks, the ranking of the PA reference point proxies, and the possible proxies for use in the three chosen stocks to apply the alternatives frameworks.

In regard to the alternative PA frameworks, two frameworks with one operational biomass reference point between Blim and Bmsy, as approved in December, were presented (Option 1 and 2 of the PA-WG December 2022 report (NAFO SCS Doc. 22/26)). Furthermore, the proposal of a third framework (Option 3) with two operational biomass reference points between Blim and Bmsy was discussed and approved.

The ranking proposed for the PA reference point proxies was also presented and approved. The PA-WG proposed that the most appropriate reference points be conditioned on the information available from each stock's assessment, the stock's general life history, and the amount of uncertainty in the assessment. The classification was presented as ranks based on the tiers of information available, with more informative assessments and reference points ranked higher. The final ranking of the PA references points is available in the SCS Doc. 23/07.

In relation to the three chosen stocks (cod Div. 3M, yellowtail flounder Div. 3LNO and redfish Div. 3M) to which the alternatives frameworks are to be applied, the SC agreed the reference point proxies and values to be used in the alternative frameworks for the cod Div. 3M and the yellowtail flounder Div. 3LNO stocks (SCS Doc. 23/XX). No agreement was reached on the reference points that should be used in the alternative frameworks for the redfish Div. 3M stock.

The three frameworks, but not the rankings, will be presented to WG-RBMS in April. The results for the three case study stocks will be presented to SC in June.

6. Close

The meeting closed at 12:00.

APPENDIX I. LIST OF PARTICIPANTS

CHAIR	
Dwyer, Karen	Science Branch, Fisheries & Oceans Canada, P.O. Box 5667, St. John's, NL. A1C 5X1 Tel.: +709-772-0573 - E-mail: karen.dwyer@dfo-mpo.gc.ca
CANADA	
Gullage, Nick	Science Branch, Fisheries & Oceans Canada, P.O. Box 5667, St. John's, NL. A1C 5X1 E-mail: nicholas.gullage@dfo-mpo.gc.ca
Hatefi, Fatemeh	Science Branch, Fisheries & Oceans Canada, P.O. Box 5667, St. John's, NL. A1C 5X1 E-mail: fatemeh.hatefi@dfo-mpo.gc.ca
Ings, Danny	Science Branch, Fisheries & Oceans Canada, P.O. Box 5667, St. John's, NL A1C 5X1 E-mail: danny.ings@dfo-mpo.gc.ca
Krohn, Martha	Senior Science Advisor, Fisheries & Oceans Canada, 200 Kent Street, Ottawa, ON K1A 0E6, Canada Tel.: +613-998-4234 – E-mail: martha.krohn@ dfo-mpo.gc.ca
Kumar, Rajeev	Research Scientist, Fisheries & Oceans Canada, P.O. Box 5667, St. John's, NL A1C 5X1 E-mail: Rajeev.Kumar@dfo-mpo.gc.ca
Perreault, Andrea	Science Branch, Fisheries & Oceans Canada, P.O. Box 5667, St. John's, NL. A1C 5X1 E-mail: andrea.perreault@dfo-mpo.gc.ca
Regular, Paul	Research Scientist, Fisheries & Oceans Canada, P. O. Box 5667, St. John's, NL A1C 5X1 Tel.: 709-772-2067 – E-mail: paul.regular@dfo-mpo.gc.ca
Simpson, Mark	Science Branch, Fisheries & Oceans Canada, P.O. Box 5667, St. John's, NL. A1C5X1 Tel.: +709-772-4841 - E-mail: mark.r.simpson@dfo-mpo.gc.ca
Skanes, Katherine	Science Branch, Fisheries & Oceans Canada, P.O. Box 5667, St. John's, NL A1C 5X1 katherine.skanes@dfo-mpo.gc.ca
Varkey, Divya	Research Scientist, Fisheries & Oceans Canada, P.O. Box 5667, St. John's, NL A1C 5X1 E-mail: divya.varkey@fo-mpo.gc.ca
DENMARK (IN RESPECT OF FAROE ISLANDS + GREENLAND)	
Nogueira, Adriana	Greenland Institute of Natural Resources, P.O. Box 570, DK-3900 Nuuk, Greenland Tel.: +299 361200 - E-mail: adno@natur.gl
EUROPEAN UNION	
Alpoim, Ricardo	Instituto Português do Mar e da Atmosfera, I. P., Av. de Brasilia, 1449-006 Lisbon, Portugal Tel.: +351 21 302 7000 - E-mail: ralpoim@ipma.pt
Garrido Fernandez, Irene	Instituto Español de Oceanografia, Aptdo 1552, E-36280 Vigo (Pontevedra), Spain E-mail: irene.garrido@ieo.csic.es

González-Troncoso, Diana	Instituto Español de Oceanografia, Aptdo 1552, E-36280 Vigo (Pontevedra), Spain Tel.: +34 9 86 49 2111 - E-mail: diana.gonzalez@ieo.csic.es
González-Costas, Fernando	Instituto Español de Oceanografia, Aptdo 1552, E-36280 Vigo (Pontevedra), Spain Tel.: +34 9 86 49 2111 - E-mail: fernando.gonzalez@ieo.csic.es
Merino Buisac, Adolfo	European Commission. Directorate-General for Maritime Affairs and Fisheries. Unit C.3 – Scientific advice and data collection--E-mail: Adolfo.MERINO-BUISAC@ec.europa.eu
Gonçalves, Patrícia	Instituto Português do Mar e da Atmosfera, I. P., Av. de Brasilia, 1449-006 Lisbon, Portugal Tel.: +351 21 302 7000 - E-mail: patricia@ipma.pt
JAPAN	
Butterworth, Doug S.	Emeritus Professor, Department of Mathematics and Applied Mathematics, University of Cape Town, Rondebosch 7701 South Africa -- Tel: +27 21 650 2343 – E-mail: doug.butterworth@uct.ac.za
UNITED KINGDOM	
Readdy, Lisa	CEFAS, Lowestoft Laboratory, Lowestoft, UK E-mail: lisa.readdy@cefas.co.uk
UNITED STATES OF AMERICA	
Hendrickson, Lisa	National Marine Fisheries Service, NEFSC, 166 Water St., Woods Hole, MA 02543 E-mail: lisa.hendrickson@noaa.gov
Sosebee, Katherine	National Marine Fisheries Service, NEFSC, 166 Water St., Woods Hole, MA 02543 Tel.: +508-495-2372 - E-mail: katherine.sosebee@noaa.gov
NAFO SECRETARIAT	
Aker, Jana	Fisheries Management Coordinator, NAFO Secretariat, Halifax, NS, Canada E-mail: jaker@nafo.int
Bell MacCallum, Dayna	Scientific Information Administrator, NAFO Secretariat, Halifax, NS, Canada E-mail: dbell@nafo.int
Blasdale, Tom	Scientific Council Coordinator, NAFO Secretariat, Halifax, NS, Canada E-mail: tblasdale@nafo.int

APPENDIX II. AGENDA: NAFO SCIENTIFIC COUNCIL MSE MEETING

16 March 2023, 08:30 – 13:00 (Halifax time = UTC - 3)

By Webex

Draft Provisional Agenda

1. Opening & appointment of rapporteur
2. Conclusions on data to be used in MSE for Greenland Halibut 2+3KLMNO and Redfish 3LN.
3. Review of timeline for MSEs.
4. Update on work to be presented at WG-RBMS.
   a) OMs to be used in Greenland Halibut MSE; Discussion of MPs, objectives and PSs.
   b) Discussion on potential MPs/PSs/OMs to be used in Redfish 3LN MSE.
5. NAFO Scientific Council Precautionary Approach Working Group (PA-WG) meeting presentation.
6. Close