Serial No. N7385 NAFO/COM-SC Doc. 23-02

Northwest Atlantic Fisheries Organization

Report of the NAFO Joint Commission-Scientific Council Working Group on Risk-Based Management Strategies (WG-RBMS) Meeting

18–19 April 2023
Halifax, Nova Scotia

NAFO
Halifax, Nova Scotia, Canada
2023

Report of the NAFO Joint Commission-Scientific Council Working Group on Risk-Based Management Strategies (WG-RBMS) Meeting

18–19 April 2023
Halifax, Nova Scotia

1. Opening by co-Chairs, Fernando Gonzalez-Costas (European Union) and Ray Walsh (Canada) 3
2. Appointment of Rapporteurs 3
3. Adoption of Agenda 3
4. MSE process for 2+3KLMNO Greenland halibut (from Annex 3 of COM-SC Doc. 22-03) 3
   a. Identification of conceptual initial Candidate Management Procedures (CMPs) 3
   b. Identification of management objectives and performance statistics 3
   c. Exceptional Circumstances for 2+3KLMNO Greenland halibut – Discussion and Considerations 3
5. MSE process for 3LN Redfish (from Annex 3 of COM-SC Doc. 22-03) 4
   a. Management Objectives and Performance Statistics 4
   b. Conceptual initial Candidate Management Procedures (CMPs) 4
   c. Potential Operating Models (OM) 4
6. Next steps in the MSE processes 4
7. Precautionary Approach Review progress - Update from the Scientific Council and Discussion 4
8. Other matters 5
9. Recommendations 5
10. Adoption of report 5
11. Adjournment 5

Annex 1. List of Participants 6
Annex 2. Agenda 7
Annex 3. Management Objectives for Greenland halibut MSE process (COM-SC RBMS-WP 23-08 Revised) . 8
Annex 4. Management Objectives for Redfish in NAFO Divisions 3LN (COM-SC RBMS-WP 23-09) 9
Annex 5. MSEs work plan for 2024 (COM-SC RBMS-WP 23-06 Rev. 2) 10

Report of the NAFO Joint Commission-Scientific Council Working Group on Risk-Based Management Strategies (WG-RBMS) Meeting

18–19 April 2023
Halifax, Nova Scotia

1. Opening by co-Chairs, Fernando Gonzalez-Costas (European Union) and Ray Walsh (Canada)

The meeting was opened by the co-Chairs Fernando González-Costas (European Union) and Ray Walsh (Canada) at 10:10 hours (UTC/GMT -3 hours in Halifax, Nova Scotia) on Tuesday, 18 April 2023.

The co-Chairs welcomed participants attending in person and virtually. This included representatives from Canada, European Union, Japan, Russian Federation, Ukraine, United Kingdom, United States of America, as well as the NAFO Scientific Council (SC) Chair and an invited expert on the Precautionary Approach Framework (Annex 1).

2. Appointment of Rapporteurs

The NAFO Secretariat was appointed as Rapporteur.

3. Adoption of Agenda

The provisional agenda was adopted as previously circulated (Annex 2).

4. MSE process for 2+3KLMNO Greenland halibut (from Annex 3 of COM-SC Doc. 22-03)

Paul Regular (Canada) presented on Greenland halibut in NAFO 2+3KLMNO Exceptional Circumstances for 2023 and the ongoing MSE review (COM-SC RBMS-WP 23-03), which provided background information for the discussions detailed in the sections below.

a. Identification of conceptual initial Candidate Management Procedures (CMPs)

The WG-RBMS reflected on the MSE Workplan for Greenland halibut (COM-SC RBMS-WP 22-07) and noted that it was agreed to propose conceptual initial Candidate Management Procedures (CMPs) at this meeting. The working group discussed and agreed to use the current CMP as the basis for the initial testing, noting that it is early in the process to propose other formulations.

b. Identification of management objectives and performance statistics

The WG-RBMS reflected on the MSE Workplan for Greenland halibut (COM-SC RBMS-WP 22-07) and noted that it was agreed to identify management objectives and performance statistics at this meeting. The working group agreed to use the 2017 Management Objectives and Performance Statistics (Table 2 of FC-SC Doc. 17-03) adjusting the time periods to the new calendar as a starting point for the testing. COM-SC RBMS-WP 23-08 (Revised) (Annex 3) outlines the management objectives and the performance statistics that were agreed at this meeting. It was noted that the objectives in bold have been identified as the primary required objectives and the remaining objectives are desirable secondary objectives.

c. Exceptional Circumstances for 2+3KLMNO Greenland halibut – Discussion and Considerations

The WG-RBMS noted that, due to the lack of some of the survey data, the exceptional circumstances protocol will be triggered this year, and that the Scientific Council will need to assess the severity of the exceptional circumstances and provide advice at their June 2023 meeting. It was noted that the level of severity would have an impact on whether the HCR can be used with confidence, or, if the conditions are severe enough, if consideration would need to be given on the necessity of a full assessment process at the Scientific Council meeting in June 2023. In reflecting on the possibility of the HCR not being able to be used for the 2024 TAC decision, the working group

requested that the Scientific Council 1) advise on the risk associated with maintaining the 2023 TAC for 2024; 2) provide a 1 year projection at this level and at +/-5% using the base case model; and 3) include in the standard risk table the probabilities associated with a rollover, and +/-5%.

5. MSE process for 3LN Redfish (from Annex 3 of COM-SC Doc. 22-03).

Andrea Perreault (Canada) presented on the 3LN redfish MSE (COM-SC RBMS-WP 23-04), which provided background information for the discussions detailed in the sections below.

a. Management Objectives and Performance Statistics

Canada presented potential management objectives and initial performance statistics for 3LN Redfish in COM-SC RBMS-WP 23-01. A fifth objective relating to maximizing yield was suggested, and Canada later drafted an objective to maximize the duration of high catches in COM-SC RBMS-WP 23-01 (Revised). The working group thanked Canada for drafting the working paper and provisionally agreed on the management objectives (COM-SC RBMS-WP 23-09; Annex 4). The working group then provided feedback on the performance statistics. This will be further discussed at the Scientific Council meeting in June 2023. It was further noted that it is difficult to determine a limit reference point for redfish due to the episodic recruitment of the stock, as well as other challenges that are reflected in the background documents NAFO SCR Doc 22/016, NAFO SCR Doc. 22/013, and NAFO SCR Doc. 22/027.

b. Conceptual initial Candidate Management Procedures (CMPs)

The working group noted that it was early in the process to be defining conceptual Candidate Management Procedures (CMPs) and noted the expectation that a presentation, review, and discussion of Empirical and Model-Based MPs will take place at the July 2023 meeting.

c. Potential Operating Models (OM)

As noted in COM-SC RBMS-WP 23-04, the state-space surplus production models, and the state-space age-structured length-based models are conceptual model structures that will be reviewed by the Scientific Council at the June 2023 meeting. An update of the progress on the operating models will be discussed at the July 2023 WG-RBMS meeting.

6. Next steps in the MSE processes

A MSE workplan for 2024 outlining the timeline and target deliverables for the two MSE process was developed in COM-SC RBMS-WP 23-06 (Rev. 2) (Annex 5). The working group agreed to further review this at the July 2023 WG-RBMS meeting.

The working group acknowledged that there is additional work, specific to Greenland halibut Operating Models, that will be required prior to the start of the June 2023 Scientific Council meeting by a Scientific Council technical team / group of experts, which will be overseen by the Scientific Council Chair.

7. Precautionary Approach Review progress - Update from the Scientific Council and Discussion

The co-chairs of the *NAFO Scientific Council Precautionary Approach Working Group (PA-WG)*, Fernando González-Costas and Steve Cadrin, presented an update on the work of the *NAFO Scientific Council Precautionary Approach Working Group (PA-WG)* in COM-SC RBMS-WP 23-07. The WG-RBMS participants expressed their gratitude to the PA-WG for their work. Canada noted that Option 2 currently aligns with the current Canadian approach, and that they look forward to the case studies that will be completed by the Scientific Council at their meeting in June 2023. The WG-RBMS also noted a preference to revise the terminology of the zones from Collapse, Danger, and Safe, to Critical, Cautious, and Healthy, respectively. There was also a suggestion to change the name of the Overfishing Zone, to the Risk of Overfishing Zone, noting that there is a specific definition of overfishing that may have legal implications. The working group was in agreement to further review the zone names and the Scientific Council will take the suggestions into consideration at the June 2023 meeting.

8. Other matters

No other matters were discussed.

9. Recommendations

There were no recommendations from this meeting, but the overall conclusions were:

- The WG-RBMS agreed to start the MSE process testing the current Candidate Management Procedure (CMP) for the Greenland halibut MSE.

- The WG-RBMS agreed to use the 2017 Management Objectives and Performance Metrics as a starting point for the Greenland halibut MSE testing process (COM-SC RBMS-WP 23-08 Revised); Annex 3).

- The WG-RBMS requested that, if the Greenland halibut HCR cannot be used for the 2024 TAC decision, the Scientific Council 1) advise on the risk associated with maintaining the 2023 TAC for 2024; 2) provide a 1 year projection at this level and at +/-5% using the base case model; and 3) include in the standard risk table the probabilities associated with a rollover, and +/-5%.

- The WG-RBMS agreed on provisional management objectives (COM-SC RBMS-WP 23-09; Annex 4) for the 3LN Redfish MSE process as outlined in COM-SC RBMS-WP 23-01 (Revised) and noted that further discussion is required to conclude the performance statistics.

- The WG-RBMS agreed on an updated MSEs work plan for 2024 in COM-SC RBMS-WP 23-06 (Rev. 2) (Annex 5), which will be finalized at the July 2023 WG-RBMS meeting for recommendation to the Commission.

- The WG-RBMS suggests that SC reflect on the suggested zone names of the revised PA framework options during the June 2023 Scientific Council meeting.

10. Adoption of report

The report was adopted on 19 April 2023, prior to the adjournment of the meeting.

11. Adjournment

The meeting was adjourned at 16:52 hours on 19 April 2023.

Annex 1. List of Participants

CO-CHAIRS	González-Costas, Fernando Walsh, Ray
SC CHAIR	Dwyer, Karen
PA-WG CO-CHAIR	Cadrin, Steven
CANADA	Byrne, Vanessa Chapman, Bruce Dennis, Olivia Devine, Brynn Diamond, Julie Fagan, Robert Hatefi, Fatemeh Johnson, Kate Krohn, Martha Lee, Robyn Perreault, Andrea Regular, Paul Simpson, Mark
EUROPEAN UNION	Alpoim, Ricardo Belmonte, Luis Blazkiewick, Bernard Cortina, Ángela França, Pedro Garrido, Irene Gonzalez-Troncoso, Diana Granell, Ignacio Lopes, Luis Mancebo, C. Margarita Merino, Adolfo Teixeira, Isabel Tuvi, Aare
JAPAN	Akiyama, Masahiro Butterworth, Doug Takehara, Toya Taki, Kenji
RUSSIAN FEDERATION	Fomin, Konstantin Tairov, Temur
UKRAINE	Honcharuk, Ihor Zabarna, Yulia
UNITED KINGDOM	Readdy, Lisa
UNITED STATES OF AMERICA	Jaburek, Shannah Kelly, Moira Mencher, Elizabethann Sosebee, Kathy
NAFO SECRETARIAT	Benediktsdóttir, Brynhildur Aker, Jana Blasdale, Tom LeFort, Lisa

Annex 2. Agenda

1. Opening by co-Chairs, Fernando Gonzalez-Costas (European Union) and Ray Walsh (Canada)
2. Appointment of Rapporteurs
3. Adoption of Agenda
4. MSE process for 2+3KLMNO Greenland halibut (from Annex 3 of COM-SC Doc. 22-03)
   a. Identification of conceptual initial Candidate Management Procedures (CMPs)
   b. Identification of management objectives and performance statistics
   c. Exceptional Circumstances for 2+3KLMNO Greenland halibut – Discussion and Considerations
5. MSE process for 3LN Redfish (from Annex 3 of COM-SC Doc. 22-03)

   Discussions on:
   a. Management Objectives and Performance Statistics
   b. Conceptual initial Candidate Management Procedures (CMPs)
   c. Potential Operating Models (OM)
6. Next steps in the MSE processes
7. Precautionary Approach Review progress - Update from the Scientific Council and Discussion
8. Other matters
9. Recommendations
10. Adoption of report
11. Adjournment

Annex 3. Management Objectives for the Greenland halibut MSE process
(COM-SC RBMS-WP 23-08 Revised)

During the discussion of the MSE process for Greenland halibut, the WG-RBMS agreed to use the 2017 Management Objectives, adjusting the time periods to the new calendar as a starting point for setting the management objectives for the Greenland halibut MSE process. The table below outlines the management objectives and the performance statistics that were agreed by Contracting Parties during the working group discussions. The objectives in bold have been identified as the primary required objectives and the remaining are desirable secondary objectives.

Management Objectives	Performance Statistics
Restore to within a prescribed period of time or maintain at B_{MSY}.	B^{5-9}_{2044} / B^{5-9}_{MSY} median and 80%PI, **$P(B^{5-9}_{2044} < B^{5-9}_{MSY}) \leq 0.5$,** $P(B^{5-9}_{2030} < 0.8B^{5-9}_{MSY}) \leq 0.25$, $P(B^{5-9}_{2044} < 0.8B^{5-9}_{MSY}) \leq 0.25$
The risk of failure to meet the Bmsy target and interim biomass targets within a prescribed period of time should be kept moderately low.	B^{5-9}_{lowest} / B^{5-9}_{MSY} median and 80%PI, $P(B^{5-9}_{2030} < B^{5-9}_{2025}) \leq 0.25$
Low risk of exceeding Fmsy.	**count[$P(F_{2025-2044} > F_{MSY}) > 0.3$]**
Very low risk of going below an established threshold.	B^{sp}_{2044} / B^{sp}_{2025}median and 80%PI B^{5-9}_{2044} / B^{5-9}_{2025} median and 80%PI **count[$P(B^{5-9}_{2025-2044} < 0.3B^{5-9}_{MSY}) \geq 0.1$]** **$P(B^{5-9}_{lowest}/B^{5-9}_{MSY} < 0.3) \leq 0.1$**
Maximize yield in the short, medium and long term.	$\bar{C}$: 2025-2029 median and 80%PI $\bar{C}$: 2025-2034 median and 80%PI $\bar{C}$: 2025-2044 median and 80%PI
The risk of steep decline of stock biomass should be kept moderately low.	$B^{5-9}_{2030} < 0.75B^{5-9}_{2025}$
Keep inter annual TAC variation below "*an established threshold*"	AAV: 2025-2029 median and 80%PI AAV: 2025-2044 median and 80%PI

Annex 4. Management Objectives for Redfish in NAFO Divisions 3LN
(COM-SC RBMS-WP 23-09)

Management Objectives
Avoid large interannual fluctuations in TACs
Mitigate steep declines in biomass
Avoid a fishery induced decline in biomass below *Blim*
If biomass declines below Blim, promote biomass recovery within a prescribed period of time
Maximize the duration of high annual catch

Annex 5. MSEs work plan for 2024
(COM-SC RBMS-WP 23-06 Rev. 2)

Table 1. Tentative 3LN redfish and 2+3KLMNO Greenland halibut MSE

Expected Delivery	NAFO Body	GHL MSE	3LN REDFISH MSE
April 2023	WG-RBMS	Schedule finalized and proposed to the Commission; propose conceptual initial Candidate Management Procedures (CMPs); identify management objectives/performance statistics	Schedule finalized and proposed to the Commission; initial discussion on management objectives, conceptual initial CMPs, potential OMs, and performance statistics
June 2023	Scientific Council	Review and finalization of Operating Models (OMs) to be used; initial testing of the current CMP and possibly further CMPs performance against established management objectives;	Proposal and review of OMs to be used; continue discussions on performance statistics;
July 2023	WG-RBMS	Review CMPs; finalize performance statistics including risk tolerances and constraints	Continued progress on OMs, development of performance statistics; initial discussion of CMPs
September 2023	Commission	Update on progress on the respective MSEs and seek endorsement from the Commission on the workplan for 2024 and beyond.	
January 2024	Scientific Council	Testing CMP performance against established management objectives & exceptional circumstances protocol	Address and review any further work on OMs, performance statistics, and CMPs stemming from RBMS
Spring 2024	WG-RBMS	Discussing results of CMP testing and exceptional circumstances protocol and possible recommendation to Commission on adoption of Management Strategy, subject to progress.	Input to SC on further progress on OMs, CMPs, and finalize the performance statistics.
June 2024	Scientific Council	Consider any follow up from Spring WG-RBMS	Review and finalization of OMs to be used; selection of the CMP for testing against established management objectives
Aug 2024	WG-RBMS	Finalize and recommend Management Strategy to the Commission	Finalize CMPs; refinement of performance statistics including risk tolerances and constraints; Update the workplan for Redfish.
Sept 2024	COM	The Commission considers adoption of proposed new Management Strategy	Update on progress

- Timelines are notional and subject to revision based on workload, capacity, and unanticipated problems.
- Target for completion for the Redfish MSE will be September 2025, and the details of the workplan will be developed at the August 2024 WG-RBMS meeting.