



NORTHWEST ATLANTIC
FISHERIES ORGANIZATION

Meeting Proceedings of the Commission

1 September 2018–31 August 2019

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Foreword

This issue of the *Meeting Proceedings of the Commission* contains the meeting reports of the Commission (COM) and the joint Commission-Scientific Council (COM-SC), including their subsidiary bodies and working groups held between 1 September 2018 to 31 August 2019. This follows a NAFO cycle of meetings starting with an Annual Meeting rather than by calendar year.

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Structure of the Northwest Atlantic Fisheries Organization (NAFO)

(1 September 2018 to 31 August 2019)

CONTRACTING PARTIES

Canada, Cuba, Denmark (in respect of the Faroe Islands and Greenland), European Union (EU), France (in respect of St. Pierre et Miquelon), Iceland, Japan, Norway, Republic of Korea, Russian Federation, Ukraine and United States of America (USA).

PRESIDENT

Stéphane Artano (France in respect of St. Pierre et Miquelon)

CONSTITUENT BODIES

Commission *Chair* – Stéphane Artano (France in respect of St. Pierre et Miquelon)
vice-Chair – Temur Tairov (Russian Federation)

Scientific Council *Chair* – Brian Healey (Canada)
vice-Chair – Carmen Fernandez (European Union)

STANDING COMMITTEES

Commission	Standing Committee on Finance and Administration (STACFAD)	<i>Chair</i> – Deirdre Warner-Kramer (USA) <i>vice-Chair</i> – Élise Lavigne (Canada)
	Standing Committee on International Control (STACTIC)	<i>Chair</i> – Judy Dwyer (Canada) <i>vice-Chair</i> – Aronne Spezzani (European Union)
Scientific Council	Standing Committee on Fishery Science (STACFIS)	<i>Chair</i> – Karen Dwyer (Canada)
	Standing Committee on Research and Coordination (STACREC)	<i>Chair</i> – Carmen Fernandez (European Union)
	Standing Committee on Publications (STACPUB)	<i>Chair</i> – Margaret Treble (Canada)
	Standing Committee on Fisheries Environment (STACFEN)	<i>Chair</i> – Miquel Caetano (European Union)

SECRETARIAT

Executive Secretary	Fred Kingston
Deputy Executive Secretary / Senior Finance and Staff Administrator	Stan Goodick
Senior Fisheries Commission Coordinator	Ricardo Federizon
Scientific Council Coordinator	Tom Blasdale
Senior Executive Assistant to the Executive Secretary	Lisa LeFort
Fisheries Information Administrator	Jana Aker
Scientific Information Administrator	Dayna Bell MacCallum
IT Manager	Matthew Kendall
Senior Publications/Web Manager	Alexis Pacey
Database Development/Programmer Analyst	DJ Laycock
Office Administrator	Sarah Guile
NAFO Intern	Antoine Balazuc (Oct. – Nov. 2018)
NAFO Intern	Javier Guijarro Sabaniel (Apr. – May 2019)

Headquarters Location

2 Morris Drive, Suite 100, Dartmouth, Nova Scotia, Canada, B3B 1K8



Northwest Atlantic Fisheries Organization



**Report of the NAFO Commission and its Subsidiary Bodies
(STACTIC and STACFAD)**

40th Annual Meeting of NAFO
17-21 September 2018
Tallinn, Estonia

NAFO
Dartmouth, Nova Scotia, Canada
2018

Report of the NAFO Commission and its Subsidiary Bodies (STACTIC and STACFAD)

40th Annual Meeting of NAFO, 17-21 September 2018
Tallinn, Estonia

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PART I.

Report of the Commission

40th Annual Meeting of NAFO, 17-21 September 2018
Tallinn, Estonia

I. Opening Procedure

1. Opening by the Chair, Stéphane Artano (France-SPM)

The 40th Annual Meeting of NAFO was convened on Monday, 17 September 2018 at 9:30 hrs at the Radisson Blu Hotel Olumpia with over 175 delegates present from 11 NAFO Contracting Parties (Annex 1). The NAFO President and Chair of the Commission, Stéphane Artano (France-SPM), welcomed delegates to the Meeting and invited the Honourable Siim Kiisler, Minister of the Environment of Estonia, as the host of the 40th NAFO Annual Meeting, to welcome Contracting Parties. The Chair then made his opening statement (Annex 2).

Consistent with past practice, Contracting Parties agreed to submit their opening statements in writing for inclusion in the report. Opening statements from Canada, Denmark (in respect of the Faroe Islands and Greenland), European Union, Japan, Russian Federation and the United States of America (USA) are attached (Annexes 3-8).

2. Appointment of Rapporteur

The NAFO Secretariat (Fred Kingston, Executive Secretary, and Ricardo Federizon, Senior Fisheries Management Coordinator) was appointed as Rapporteur.

The summary of decisions and actions taken by the Commission is presented in Annex 9.

3. Adoption of Agenda

Under item 22 of the provisional agenda that was previously circulated, four (4) fish stocks were added: Redfish in Divisions 3LN, Witch flounder in Divisions 3NO, Shrimp in Divisions 3LNO, and Greenland shark. The adopted agenda reflects the addition (Annex 10).

4. Admission of Observers

In accordance with the NAFO Rules for Observers and in advance of the meeting, the Executive Secretary formally invited the following States and intergovernmental organizations (IGOs) to attend:

- Government of Bermuda
- Convention on Biological Diversity (CBD) Secretariat
- Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)
- Permanent Commission for the South Pacific (CPPS)
- Food and Agriculture Organization of the United Nations (FAO)
- General Fisheries Commission for the Mediterranean (GFCM)
- International Commission for the Conservation of Atlantic Tunas (ICCAT)
- International Council for the Exploration of the Seas (ICES)
- International Monitoring, Control and Surveillance (IMCS) Network
- North Atlantic Marine Mammal Commission (NAMMCO)
- North Atlantic Salmon Conservation Organization (NASCO)
- North East Atlantic Fisheries Commission (NEAFC)
- North Pacific Anadromous Fish Commission (NPAFC)
- North Pacific Fisheries Commission (NPFC)
- North Pacific Marine Science Organization (PICES)

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- Sargasso Sea Commission
- South East Atlantic Fisheries Organization (SEAFO)
- South Indian Ocean Fisheries Agreement (SIOFA)
- South Pacific Regional Fisheries Management Organisation (SPRFMO)
- United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC),
- Western Central Atlantic Fishery Commission (WECAFC).

The IGOs that attended were:

- Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) – represented by the USA
- North-East Atlantic Fisheries Commission (NEAFC) – represented by Denmark (in respect of the Faroe Islands and Greenland)
- North Pacific Anadromous Fish Commission (NPAFC) – (Opening Statement – Annex 11)
- South East Atlantic Fisheries Organisation (SEAFO) – represented by European Union
- South Pacific Regional Fisheries Management Organisation (SPRFMO) – represented by the USA

Non-governmental organizations (NGOs) accredited with NAFO Observer Status that attended the 40th Annual Meeting were:

- Conseil de Bande de la Nation Innue de Nutashkuan
- Ecology Action Centre (EAC)
- Deep Sea Conservation Coalition (Opening Statement – Annex 12)
- Shark Trust (Opening Statement – Annex 13)

5. Publicity

In accordance with established practice, Contracting Parties agreed that no public statements would be made until after the conclusion of the meeting when a press release would be prepared by the Executive Secretary in collaboration with the Chairs of the Commission and Scientific Council.

II. Supervision and Coordination of the Organizational, Administrative and Other Internal Affairs

6. Review of Membership of the Commission

The membership of the Commission has not changed since the 2017 Annual Meeting and is currently comprised of twelve (12) Contracting Parties: Canada, Cuba, Denmark (in respect of the Faroe Islands and Greenland), European Union (EU), France (in respect of St. Pierre et Miquelon), Iceland, Japan, Norway, Republic of Korea, Russian Federation, Ukraine and United States of America (USA).

7. Administrative and Activity Report

The Administrative Report and Financial Statements (COM Doc. 18-05 Revised) was referred to STACFAD.

8. NAFO Headquarters Agreement

Canada presented COM Working Paper 18-32 introducing a revised draft text of a proposed headquarters agreement between the Organization and the Government of Canada, as the host Contracting Party. This revised draft text is intended to update the text of the headquarters agreement adopted by NAFO in 2009. The Working Paper also contained a table comparing the provisions of the 2009 text with the 2018 text. Canada explained that the 2018 proposed revisions to the 2009 text reflect both current domestic practices and are consistent with the Convention on the Privileges and Immunities of the United Nations. Canada added that the immunities NAFO enjoys in Canada would remain unchanged by this 2018 text. Canada proposed that the 2018 text be adopted by Contracting Parties as the text of the Headquarters Agreement between Canada and NAFO. The matter was referred to STACFAD.

Following the Report of STACFAD (agenda items 30 and 31), the revised draft text of a proposed headquarters agreement was **adopted**.

9. Review of the list of experts to serve as panelists under the NAFO Dispute Settlement provisions

The Executive Secretary introduced COM Working Paper 18-08 that listed, as of 31 July 2018, the experts nominated by Contracting Parties to serve as possible panelists in any ad hoc panel established under the settlement of disputes provisions of the NAFO Convention (Article XV). He added that several Contracting Parties had not yet nominated any experts. Iceland and Japan said that they intend to nominate their respective experts shortly.

10. Guidance to STACFAD necessary for them to complete their work

The issue of the proposed NAFO Headquarters Agreement (as discussed under agenda item 8 of the Commission's Agenda) and a proposal by Norway to amend the Commission's Rules of Procedure (STACFAD Working Paper 18-07) were added to STACFAD's provisional Agenda. The Chair of STACFAD, Deirdre Warner-Kramer (USA), was invited to prepare a report before the closing session.

11. Guidance to STACTIC necessary for them to complete their work

The Chair of STACTIC, Judy Dwyer (Canada), presented the results of the STACTIC May 2018 intersessional meeting, which was held at the NAFO Secretariat in Dartmouth, Canada (COM Doc. 18-02). The Chair reported on the status of the proposals on changes to the NAFO Conservation and Enforcement Measures (NCEM). The Chair advised that STACTIC will continue the discussions and deliberations on its work related to, among others, the enhancement of the Annual Compliance Review, measures concerning repeat non-compliance of serious infringements, Observer Scheme, stowage plans, move-along provisions for smaller longline vessels, the NAFO Monitoring, Control, and Surveillance (MCS) Website, reporting of haul by haul catches, bycatch and discards, data classification and access rights, Joint Advisory Group on Data Management (JAGDM), garbage disposal and labour conditions onboard vessels.

The Commission commended STACTIC for its hard work and encouraged STACTIC to continue working on the pending issues.

The Commission **accepted** the report. The formal adoption of the recommendations contained therein was done under agenda item 28.

The Commission forwarded to STACTIC the task of reviewing the charter arrangements (agenda item 25) and the Denmark (in respect of the Faroe Islands and Greenland) proposal concerning the definition of *bycatch* in the NCEM. The Commission also instructed STACTIC to examine the issue of American plaice bycatch in the yellowtail flounder fishery in Division 3LNO for a possible re-instatement of the current footnote 14 related to the bycatch provision as an article in the NCEM.

III. Coordination of External Affairs

12. Report of Executive Secretary on External Meetings

The Executive Secretary referred to section 12 of the Administrative and Activity Report (COM Doc. 18-05 Revised) and highlighted some of the external meetings that members of the Secretariat participated in since the last Annual Meeting, such as:

- Our Ocean Conference, Malta, 05–06 October 2017;
- The 5th Sustainable Ocean Summit (SOS), Halifax, Nova Scotia, Canada, 29 November–01 December 2017;
- Second meeting of the Sustainable Ocean Initiative (SOI) Global Dialogue with Regional Seas Organizations and Regional Fisheries Bodies on Accelerating the Progress towards the Aichi Biodiversity Targets, Seoul, Republic of Korea, 09–13 April 2018;

Report of the Commission, 17-21 September 2018

- The thirteenth round of Informal Consultations of State Parties to the United Nations Fish Stocks Agreement Meeting, "*Science-policy interface*", New York, New York, United States of America, 22–23 May 2018;
- NASCO Annual Meeting, Portland, Maine, United States of America, 11–12 June 2018;
- Regional Fishery Body Secretariats' Network (RSN) and the 33rd Meeting of the Committee on Fisheries (COFI), Rome, Italy, 09–13 July 2018;
- The First Session of the Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ), New York, New York, United States of America, 04–05 September 2018; and
- Second Global Fishery Forum & Seafood Expo 2018, St. Petersburg, Russia, 14-15 September 2018.

13. International Relations

a. Relations with other International Organizations

The Executive Secretary introduced COM WP 18-09 which outlined contacts the NAFO Secretariat has had with other international organizations since the last Annual Meeting. He recalled that Contracting Parties had agreed that the NAFO Secretariat should maintain dialogue with relevant organizations and explore mechanisms to improve the exchange of information. In this context, he reported that, in addition to already-established links with the UN Food and Agricultural Organization (FAO) and the UN Division for Ocean Affairs and the Law of the Sea (UNDOALOS), NAFO has participated in a number of initiatives of the Secretariat of the Convention on Biological Diversity (CBD). These include a member of the Scientific Council participating in a CBD expert workshop concerning marine protected areas and other effective area-based conservation measures for achieving Aichi Biodiversity Target 11 in marine and coastal areas and the Executive Secretary participating in the 2nd Sustainable Ocean Initiative Global Dialogue with Regional Seas Organizations and Regional Fisheries Bodies on Accelerating Progress towards the Aichi Biodiversity Targets organized by the CBD. The Executive Secretary also highlighted some of his contacts with Regional Fisheries Bodies (RFBs) and Regional Fishery Management Organizations (RFMOs) since the last Annual Meeting. These include participation in the Regional Fishery Body Secretariats' Network (RSN) meeting in the margins of the 33rd Meeting of the Committee on Fisheries (COFI), a meeting of the so-called Deep Sea RFMOs under the ABNJ Deep Seas Project (see agenda item 13.c), attendance as an observer at the NASCO Annual Meeting and separate visits to the Secretariat from the General Secretary of the North Atlantic Marine Mammal Commission (NAMMCO) and from the Compliance Manager of the North Pacific Fisheries Commission (NPFC).

The Executive Secretary also introduced COM WP 18-10 concerning the recently-convened Intergovernmental Conference under the auspices of the United Nations to elaborate the text of an international legally binding instrument under the United Nations Convention on the Law of Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, the so-called *BBNJ negotiations*, with a view to developing the instrument as soon as possible. He reported that he attended the first two days of the first negotiating session (4 to 17 September 2018) and participated as a panelist in side events organized by the FAO on both days. The second and third sessions will take place in 2019 – 25 March to 5 April 2019 and 19 to 30 August 2019 respectively -- and the fourth session in the first half of 2020 -- all at the UN Headquarters in New York. The Executive Secretary noted the importance of these negotiations, the results of which could significantly affect high seas fisheries and the role of RFMOs. He encouraged Contracting Parties to participate actively in these negotiations to ensure these interests are adequately taken into account. Several Contracting Parties expressed support for this position.

b. NAFO Members as Observers to External Meetings

At the last Annual Meeting (September 2017), it was agreed that the following NAFO Contracting Parties would represent NAFO at meetings of the following organizations during 2017/2018:

- Canada would represent NAFO at the North Atlantic Salmon Conservation Organization (NASCO) and the North Pacific Fisheries Commission (NPFC).

- Denmark (in respect of the Faroe Islands and Greenland) would represent NAFO at the North East Atlantic Fisheries Commission (NEAFC).
- European Union (EU) would represent NAFO at the International Commission for the Conservation of Atlantic Tunas (ICCAT) and South Indian Ocean Fisheries Agreement (SIOFA).
- Norway would represent NAFO at the South East Atlantic Fishery Organisation (SEAFO) and the North Atlantic Marine Mammal Commission (NAMMCO).
- USA would represent NAFO at the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), the North Pacific Anadromous Fish Commission (NPAFC).

The reports by these Observers were presented (COM WP 18-11 to 18-19). The same Contracting Parties agreed to represent NAFO at the same meetings for 2019 and the USA agreed to represent NAFO at the South Pacific Regional Fisheries Management Organization (SPRFMO).

c. Areas Beyond National Jurisdiction (ABNJ) Deep-Seas Project

In 2013, NAFO was invited to be a partner in the FAO-Global Environment Facility (GEF) Project “*Sustainable fisheries management and biodiversity conservation of deep-sea living marine resources and ecosystems in the Areas Beyond National Jurisdiction (ABNJ Deep Seas Project)*”. NAFO’s participation has been guided by the activities table which was jointly prepared by FAO and the NAFO Secretariat, in which NAFO support to the project would be an estimated in-kind contribution over the period of 2014-2018. This in-kind contribution represents staff time for activities and meeting expenses for work on deep sea fisheries, as well as administrative expenses for NAFO’s current core activities and operations which are of direct relevance to deep sea fisheries. Almost all the costs that have been implemented or are being planned are part of the regular work of NAFO.

The Executive Secretary, on behalf of the FAO, presented the latest project update from the ABNJ Project (COM WP 18-20 and COM WP 18-35). He added that the Project will close operationally in August 2019, but that a Phase Two of the Project is being considered. A Global Symposium is also scheduled for late June/early July 2019, which will bring together the Project’s various strands. The Executive Secretary also mentioned that the Project has been used as a means to bring together and coordinate the so-called *Deep Sea RFMOs* with regard to issues of mutual interest, including developments in the BBNJ negotiations (see agenda item 13.a).

14. Oil and Gas Activities in the NAFO Regulatory Area

The Executive Secretary presented COM WP 18-21 (Revised) on oil and gas activities in the NAFO Regulatory Area (NRA) and activities under the proposed information exchange arrangements, including an update on the use of the new provision to the NCEM that were adopted at the 2016 Annual Meeting to allow, under certain circumstances, the provision of a five-year monthly snapshot of fishing activity in the NRA on the basis of VMS data. The Executive Secretary also mentioned that, since the last Annual Meeting, Canada has sent six notifications to the NAFO Secretariat about petroleum-related activities on Canada’s continental shelf in the NRA for onward transmission to Contracting Parties.

Canada then presented COM WP 18-33, which details the measures that Canada has in place to ensure minimal impacts of oil and gas exploration activities on the marine ecosystem in the NAFO Regulatory Area (NRA). This information was already sent to Contracting Parties earlier in the month. Canada noted that NAFO has no regulatory authority over oil and gas activity, that there has been good cooperation by the oil and gas industry in providing information and that the current information exchange arrangement is complete. In the ensuing discussion, the European Union (EU) said that there is still scope for further fine-tuning of the information exchange arrangement. The EU noted an increasing trend recently in seismic activities in the NAFO Regulatory Area, particularly in Division 3L, and some of these activities were within VME closed areas. The EU would like to understand better the efforts by Canada to ensure that oil and gas activities were not unduly affecting fishing activities, such as catch rates and fishing times. Canada replied that much of the information the EU is requesting has already been shared. Canada said that the information exchange arrangement also envisages a two-way exchange of information, noting Canada’s outstanding request that Contracting Parties share their respective annual fishing plans. Canada added that it was not aware of any conflicts between the industries this

year. The EU agreed that there were no such incidents this year because the fishing vessels complied with requests from seismic vessels to leave the area. The EU added that it was not aware of the legal basis for seismic vessels to make such requests.

IV. Joint Session of Commission and Scientific Council

15. 2018 Performance Review

The Coordinator of the 2018 NAFO Performance Review Panel, Jane Willing, presented a summary of the Performance Review Panel Report and its 36 recommendations. In her presentation she noted many of NAFO's recent positive achievements including increased transparency, the protection of Vulnerable Marine Ecosystems (VME), improvements in data collection, compliance based on control measures and greater internal and external co-operation.

In addition, the Coordinator noted that a Contracting Party had commented that there should have been an added recommendation related to addressing the cumulative impacts of human activities on the marine environment. This comment was made after the Panel had distributed the provisional final Report to Contracting Parties. She said that the Panel saw merit in this comment but decided not to include it in the final Report, since the Panel was only considering factual changes to the Report at that stage in the Review process. Instead the Panel agreed that the issue would be raised at the time the Report was officially presented.

Contracting Parties **agreed** to accept the Report and thanked the Coordinator and the rest of the Panel for its work.

After discussion concerning the follow up to the Performance Review Panel's recommendations, Contracting Parties **agreed** to form a Working Group to develop an action plan to address these recommendations. It was also agreed that the Working Group would include in its action plan as an addendum the issue highlighted by the Panel related to the cumulative impact of various human activities beyond the mandate of NAFO on the marine environment. At the same time the Commission noted a related recommendation had already been adopted at this meeting. The terms of reference of this Working Group are set out in COM WP 18-46 Rev. 3 (Annex 14).

16. Presentation of scientific advice by the Chair of the Scientific Council

a. Response of the Scientific Council to the Commission's request for scientific advice

The Chair of the Scientific Council (SC), Brian Healy (Canada), presented this year's advice. The presentation included a report on the catch and survey data used in the stock assessment, environmental and ecosystem trends (COM WP 18-22). The scientific advice was formulated during the SC meeting in June 2018 (SCS Doc. 18-19). It represents the response of SC to the request from the Commission (COM Doc. 17-22). The specific advice or response is outlined below (according to request item number):

1. Assessment of Fish Stocks

- Cod in Div. 3M. For 2019, a catch of no more than 20 796 tonnes.
- American plaice in Divs. 3LNO. No directed fishing for 2019-2021.
- Thorny skate in Divs. 3LNO. No increase in catches (approximately 4 060t, 2013-2017).
- Yellowtail flounder in Divs. 3LNO. Catches of 24 900, 22 500 and 21 100 tonnes in 2019 to 2021, respectively have a less than 30% risk of exceeding F_{lim} .
- Cod in Divs. 3NO. No directed fishing for 2019-2021.
- Capelin in Divs. 3NO. No directed fishing for 2019-2021.

- Splendid alfonsino in SA6: Unable to advise on an appropriate TAC for 2019, 2020, 2021. Fishing should not be allowed to expand above current levels in *Kükenthal Peak (Div. 6G, part of the Corner Rise seamount chain)*
 - Monitoring of stocks 3M Redfish, 3M American plaice, 3NO White hake, 3O Redfish, 2J3KL Witch flounder, SA 3+4 Squid: No change to stock status or previously issued advice.
2. HCR for 2+3KLMNO Greenland halibut: The TAC for 2019 derived from the HCR is 16 521 tonnes.
 3. HCR for 3LN Redfish: Stock decreasing towards B_{msy} but no warning signs that catches adopted under management plan are problematic with respect to stock status. The stock is currently in the safe zone of the NAFO Precautionary Approach (PA) framework and is estimated to be at $1.5 \times B_{msy}$. There is a very low risk of the stock being below B_{lim} .
 4. Defining Exceptional Circumstances – MSE for GHL 2+3KLMNO: [Condensed] Expert judgement is applied in annual monitoring, five survey indices will be monitored, recruitment indices at age 4 will be compared to series mean, discrepancies between TAC and catch.
 5. Benchmark and MSE work plan – 3M Cod: Benchmark assessment is completed. A new assessment model was adopted in providing advice for 2019. Work on the MSE must be prioritized if completion is anticipated in September 2019.
 6. Impact of scientific surveys on Vulnerable Marine Ecosystems (VMEs) in closed areas: SC reiterates its 2017 recommendation that scientific bottom trawl surveys in existing closed areas be avoided if possible.
 7. Bycatch and Discard Action Plan: SC discussed the Action Plan developed by Working Group on Bycatch, Discards, and Selectivity (WG-BDS) and noted that most of the items will be worked on over the next few years and noted where work has been done in the past.
 8. Assessment of 3M Golden Redfish in 2019: SC will conduct a full assessment on 3M golden redfish in June 2019, consistent with the timing of the Commission Request.
 9. Implementation of Ecosystem Approach/application of Roadmap: [Condensed]: SC notes that Total Catch Ceilings (TCCs) aim to provide information for ecosystem-level strategic management advice. Formation of an ad hoc COM-SC Working Group consisting of subgroup of Working Group on Ecosystem Approach Framework to Fisheries Management (WG-EAFFM) to identify a mechanism or framework by which ecosystem considerations could be integrated into fisheries management advice and which would provide a basis for SC (WG-ESA) to investigate further options for the implementation of the NAFO Ecosystem Roadmap.
 10. 2021 Re-assessment of NAFO bottom fisheries: [Condensed] Four tasks for SC – a) assess the overlap of NAFO fisheries with VME and examine fishery specific and cumulative impacts, b) consideration of ranking processes and objective weighting criteria for the overall assessment of SAI and the risk of future impacts, c) maintain efforts to assess all of the six FAO criteria; and d) continue work on non-sponge and coral VMEs.
 11. Review of Precautionary Approach Framework: No progress since 2017 due to heavy workloads and limited capacity. SC encourages participation of additional quantitative experts in an effort to make progress.
 12. Greenland shark biology and management advice: Longevity = 392 ± 120 years, age at maturity = 156 ± 22 years, low fecundity. SC recommends that retention and landings be prohibited, requiring live release. SC also suggest that where appropriate, gear restrictions and modifications, and/or spatial and temporal closures.
 13. SWOT analysis/strategic plan: SC accomplished the first part of the request in 2017, completing the analysis. Due to heavy workload, SC was unable to start to develop a strategic scientific plan. It awaits the results of the Performance Review which would give more insight as to what the plan should include.

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In addition, SC, on its own accord, provided advice pertaining to:

- Sea pen closure area (Area 14): Following an updated analysis with additional sea pen biomass records (2014-2017), SC concludes there is very little change in the overall distribution of sea pen VME found on the eastern area of the Flemish Cap.
- Witch flounder in Divs. 3NO: No directed fishing in 2019 and 2020.

b. Other issues as determined by the Chairs of the Commission and Scientific Council

The SC Chair highlighted the following issues that would require further reflection of the Commission:

- Ad-hoc committee to produce next year's request for advice,
- Precautionary Approach Review – workplan and timelines,
- Implementation of ecosystem approach to fisheries management,
- Prioritization, resourcing, and reasonable timelines.

Discussions, follow-up actions, and decisions pertaining to the issues are reflected in various sections of this report (see agenda items 17 b. and c. and 18).

c. Feedback to the Scientific Council regarding the advice and its work during this meeting

The Commission noted the SC Reports and the presentation of advice. They engendered questions and inquiries for further clarification to which SC provided responses during the meeting. The Commission noted the response.

The Commission questions and SC responses were compiled in COM WP 18-50 (Annex 15).

17. Meeting Reports of the Joint Commission–Scientific Council Working Groups

a. Working Group on Improving Efficiency of NAFO Working Group Process, 2018

The Executive Secretary presented the report and recommendations of the Joint Commission-Scientific Council Efficiency Working Group (COM-SC WP 18-02) which was **accepted** by the Commission.

The Working Group recommends three (3) two-week periods where intersessional meetings by STACTIC and other Working Groups can be held (COM-SC WP 18-08, Annex 16). In this regard, the Tentative Schedule for 2018/2019 NAFO Meetings was developed (COM-SC WP 18-10 Rev. 2). This will serve a guide for the Working Groups in determining exact dates of the meetings.

The report and recommendations of the Working Group were **adopted**. It was also agreed that the Working Group should continue its work for the next year under its current terms of reference.

b. Joint Commission–Scientific Council Working Group on Risk-based Management Strategies (WG-RBMS), August 2018

The co-Chair of WG-RBMS, Jacqueline Perry (Canada), presented the report of WG-RBMS 2018 (COM-SC Doc. 18-02).

There was discussion of the proposed Greenland halibut Exceptional Circumstances protocol, the work plan for the development of a Management Strategy Evaluation (MSE) for cod in 3M and the review of the Precautionary Approach framework.

Norway requested clarification on whether the Exceptional Circumstances protocol would take account of biological parameters, such as recruitment failure. The SC Chair noted that low recruitment scenarios had been tested in the Greenland halibut Management Strategy Evaluation, however, monitoring of recruitment will continue to be included in annual monitoring for Exceptional Circumstances.

Regarding the Management Strategy Evaluation (MSE) for 3M cod, Denmark (in respect of the Faroe Islands and Greenland) enquired whether consideration had been given to what would happen if the work is not complete by next year. The SC Chair noted that, during the 2018 Greenland halibut MSE process, SC developed one-year advice during the June meeting to guard against the possibility that the MSE could not be completed in time. Such contingency could be built into the 3M cod timeline.

Regarding the Precautionary Approach Framework review, the Chair of the Scientific Council Precautionary Approach Working Group acknowledged the problems associated with the development of the Precautionary Approach but urged SC to continue to make efforts. The SC will consider appropriate responses to alleviate the situation.

The report was **accepted** and all the recommendations of WG-RBMS were **adopted** (COM-SC WP 18-06, Annex 17). The major recommendations pertain to Exceptional Circumstances protocol, calendar for the development of the 3M Cod MSE and the NAFO Precautionary Approach Framework.

The SC Chair informed the plenary that Carmen Fernandez Llana (EU) agreed to serve as co-Chair of the Working Group, replacing Carsten Hvingel (Norway) who stepped down from this capacity last year.

c. Joint Commission-Scientific Council Working Group on Ecosystems Approach Framework to Fisheries Management (WG-EAFFM), August 2018

The WG-EAFFM co-Chair, Elizabethann Mencher (USA), presented the 2018 report (COM-SC Doc. 18-03) and the recommendations.

There were discussions on the major recommendations.

Denmark (in respect of the Faroe Islands and Greenland) noted that stopping trawl surveys in VME closed areas would result in lost survey data. An alternative must be found in obtaining comparable data without trawling. The SC Chair responded that SC has done work on this issue and the difference from eliminating the survey stations within the protected areas was found to be minimal.

The EU inquired as to what work will be required to re-assess all 6 FAO criteria, including those relating to ecosystem function. The co-Chair of SC Working Group on Ecosystem Science and Assessment (WG-ESA), Dr. Pierre Pepin (Canada), responded that functionality of VMEs is being assessed through literature review. This aspect of the FAO criteria is challenging, and WG-ESA has come up with a protocol (decision tree) to deal with this. Other Contracting Parties emphasized the importance of application of the precautionary approach in NAFO's VME work.

Noting that the closure of Area 14 was scheduled to expire at the end of 2018, Contracting Parties expressed differing views on the question of whether area 14 should remain closed following the expiry. Contracting Parties noted the recent SC advice and there was no consensus on extending the current term of this closure. Contracting Parties noted that the Area 14 polygon would be included in NAFO's 2020 review of the VME closures.

On the recommendation pertaining to the implementation of the ecosystem approach and application of the EAF Roadmap, Dr. Pepin elaborated on the sample ecosystem-level advice contained in the Ecosystem Summary Sheets (ESS), which was developed by SC and the WG-ESA.

Several Contracting Parties commented that they were impressed with the work that has been done but more work will be required to integrate the ecosystem-level advice into the management decisions. For coastal States, there will be additional challenges in considering how this is going to be implemented domestically as well as in the NAFO context.

Several Contracting Parties commented that it will be important to use appropriate terminology to avoid using words that may have set legal meanings. The co-Chair and Dr Pepin reported that a WebEx meeting is planned

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for October to discuss terminology used in the EAFFM recommendation and this discussion is expected to continue in the coming year.

All the recommendations were **adopted** (COM-SC WP 18-07, Annex 18). The major recommendations pertain to, among others, scientific trawl surveys and their impact on VMEs in closed areas, implementation of the Ecosystem Approach Roadmap and Ecosystem Summary Sheets, Area 14 and the assessment of significant adverse impacts.

d. Joint Commission–Scientific Council Catch Estimation Strategy Advisory Group (CESAG), 2018

CESAG co-Chair, Katherine Sosebee (USA) presented the report of this Working Group (COM-SC Doc. 18-01). The Commission **accepted** the report and the recommendations were **adopted** (COM-SC WP 18-05, Annex 19).

The recommendations pertain to forwarding the catch estimates to SC for consideration in its fish stock assessment work and to the improvement of haul by haul data submissions from Contracting Parties.

18. Formulation of Request to the Scientific Council for Scientific Advice on the Management of Fish Stocks in 2020 and Beyond of Certain Stocks in Subareas 2, 3, and 4 and Other Matters

In accordance with the procedure outlined in FC Doc. 12-26, a steering committee was formed to assist in the drafting of the Commission request. The committee was comprised of the SC Coordinator, Sandra Courchesne (Canada), Élise Lavigne (Canada) and Cristina Almendra Castro Ribeiro (EU).

The Commission, as requested by SC, prioritized the request items, placing the 3M Cod Management Strategy Evaluation and Precautionary Approach Framework as top priorities.

The Commission request is presented in COM WP 18-51 Rev. 2 (Annex 20).

V. Conservation of Fish Stocks in the Regulatory Area

19. Recommendations of the Joint Commission–Scientific Council Working Group on Risk-based Management Strategies (WG-RBMS), August 2018 (if more discussion is required)

There was no further discussion on the WG-RBMS recommendations as they have been addressed under agenda item 17.b.

20. Management and Technical Measures for Fish Stocks in the Regulatory Area, 2019

The Quota Table for 2019, presented in Annex 21, incorporates the TAC decisions, updates of the relevant footnotes, and the footnote edits recommended by STACTIC (see agenda item 28).

a. Cod in Division 3M

Noting that the scientific advice recommends no more than 20 796 tonnes and that a Harvest Control Rule is anticipated to be applied next year, the Commission **agreed** on a 17 500 tonnes Total Allowable Catch (TAC) for 2019. Consequently, footnote 15 of the 2018 NCEM would be deleted.

Norway expressed that all CPs having a quota allocation in the 3M cod fishery agreed to the consideration made by SC (see Annex 15) that the starting points (2020 TAC) to be evaluated in the upcoming MSE process would be independent from the 2019 TAC.

b. Shrimp in Division 3M

It was **agreed** the moratorium continues in 2019 and 2020.

Some Contracting Parties expressed disappointment that the shrimp assessment meeting is scheduled after the Annual Meeting with the consequence that the scientific advice for this stock will not be available for the Annual Meeting. The SC was urged to re-consider its meetings calendar to be able provide more timely advice on this short-lived species.

EU noted that, with the improvement of the 3M shrimp situation (it is slightly above B_{lim}), it would be necessary to get advice on a yearly basis. Therefore, an update is needed in 2019.

Iceland expressed that, notwithstanding the moratorium, it maintains its objection to the effort allocation scheme traditionally applied to this stock.

c. Pelagic *Sebastes mentella* (oceanic redfish) in the NAFO Convention Area

It was **agreed** to rollover the TAC, which is set at zero, noting that the TAC might be adjusted in accordance with the footnote 3 of the Quota Table.

The Russian Federation read the following statement: *The Russian Federation adheres to its position that there is a single stock of pelagic Sebastes mentella in the Irminger Sea and adjacent waters, including the NAFO Convention Area. Russia reiterates its standpoint that studies into the redfish stock structure should be continued using all available scientific and fisheries data as a basis. Until new data on the stock structure are available, Russia will continue to regulate the pelagic fishery for Sebastes mentella based on the concept of the single stock structure of this stock.*

d. Splendid alfonsino (*Beryx splendens*)

Norway referred to the SC advice for 2019-2021 stating that in order "to prevent extirpation of entire subpopulations of Alfonsino, fishing should not be allowed to expand above current levels" which according to the SC correspond to the average catch for the years 2012-2017, i.e. 139 tonnes. Norway noted that the Performance Review Panel had recommended that the unregulated alfonsino fisheries be regulated at the earliest opportunity. Norway was therefore of the opinion that, to prevent extirpation of alfonsino, a precautionary TAC of 139 tonnes should be set and expressed their concern that NAFO is not willing to set catch limits for these fisheries as effectively recommended by the SC. Norway further noted that the alfonsino fishery is conducted within one of the NAFO seamount closures.

The EU stated that the alfonsino fishery is not an unregulated fishery, since there are already measures in the NCEM that apply to this fishery, e.g. haul by haul reporting product labelling requirements, and 100% observer coverage.

No consensus was reached on a new management measure for this stock.

In consideration of the scientific advice pertaining to this stock, a request was made to SC to provide the map and coordinates of the Kükenthal Peak in Division 6G, a part of the Corner Rise seamount chain, where alfonsino fishing occurs (see Annex 20).

21. Management and Technical Measures for Fish Stocks Straddling National Jurisdictions, 2019

a. Cod in Divisions 3NO

Contracting Parties **agreed** to maintain the moratorium for 2019, 2020 and 2021.

b. American plaice in Divisions 3LNO

Contracting Parties **agreed** to maintain the moratorium for 2019, 2020 and 2021.

c. Yellowtail flounder in Divisions 3LNO

Noting the SC advice, and in particular taking into consideration impacts on other fisheries, particularly bycatch of 3NO cod and 3LNO American plaice, the Commission **agreed** to rollover the TAC for one year at 17 000 tonnes.

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d. Capelin in Divisions 3NO

Contracting Parties **agreed** to maintain the moratorium for 2019, 2020 and 2021.

Article 7.10 of the NCEM was **updated** in view of the extension of the moratorium.

e. Thorny Skates in Divisions 3LNO

The Commission **agreed** to rollover the TAC of 7 000 tonnes, applicable to 2019 and 2020. Footnote 13 of the Quota Table was **updated**.

f. Greenland halibut in Subarea 2 and Divisions 3KLMNO

As calculated by SC and consistent with the MSE and Harvest Control Rule, it was **agreed** to set the TAC at 16 521 tonnes in 2+3KLMNO, 12 242 tonnes of which is allocated to the fishery in 3LMNO.

22. Other matters pertaining to Conservation of Fish Stocks

a. Redfish in Divisions 3LN

According to the SC advice, there are no warning signs that the catches adopted under the management plan are problematic with respect to stock status. In this regard, the Commission **agreed** to continue to apply the Harvest Control Rule outlined in Annex I.H of the NCEM resulting in a TAC of 18 100 tonnes for 2019.

b. Witch Flounder in Divisions 3NO

In 2017, SC provided TAC advice of 1 116 tonnes and 1 175 tonnes for 2018 and 2019, respectively. The advice came with a caution that *“because of the uncertainty and proximity to limit reference points the next full assessment is rescheduled for 2018”*. The Commission adopted the advice, including the 2019 TAC of 1 175 tonnes.

In 2018, SC conducted a full assessment at its own accord and provided updated advice of *“no directed fishery”* for 2019 and 2020.

Based on a question posed to SC on the impact of various harvest levels of the stock, some Contracting Parties noted that there was negligible impact on the resource between no directed fishing and the TAC at the previously agreed level, and the two-year decision taken in 2017 should be maintained.

A Contracting Party with a quota allocation expressed disappointment and concern that the timing in providing a change of advice (from 1 175 tonnes TAC to no directed fishery in 2019) poses considerable challenge for the fishery managers in applying the updated measure to the stakeholders which have already made their fishing plans for 2019.

The Commission **agreed** to maintain its decision that was made in 2017, i.e. 1 175 tonnes TAC for 2019.

Norway issued a statement: *The Norwegian delegation referred to the advice provided by the SC stating that in all tested scenarios the probability of the stock being below B_{lim} in 2021 ranges between 15 % and 24 %. In accordance with the PA Framework, there should be a low probability (5 % - 10 %) of the stock being below B_{lim} . Hence Norway could not support setting a TAC when the SC advice was no directed fishing in 2019 and 2020.*

c. Shrimp in Divisions 3LNO

It was **agreed** to continue the moratorium in 2019.

d. Greenland shark

Consistent with the SC advice, the Commission strengthen the conservation measures by **revising** Article 12 *“Conservation and Management of Sharks”* of the NCEM (COM WP 18-38 Rev. 4, Annex 22).

VI. Ecosystem Considerations

23. Recommendations of the Joint Commission–Scientific Council Working Group on Ecosystem Approach Framework to Fisheries Management (WG-EAFFM), August 2018 (if more discussion is required)

The proposal to extend the Area 14 closure to 2020 did not attain consensus and was eventually withdrawn by the proponents (Canada, Norway, and the US). Consequently, reference to Area 14 in the 2019 NCEM will be deleted. It was **agreed** that the Area 14 closure would be included in the scheduled review of the current closures in 2020.

24. Other matters pertaining to Ecosystem Considerations

There was no further matter discussed under this agenda item.

VII. Conservation and Enforcement Measures

25. Review of Chartering Arrangements

The annual review of chartering arrangements was tasked to STACTIC (see Part II).

26. Recommendations of the Joint Commission–Scientific Council Catch Estimation Strategy Advisory Group (CESAG), 2018 (if more discussion is required)

Acting on the recommendation pertaining to the haul by haul data submission requirements (see agenda item 17 d.), the Commission **adopted** the proposal outlining follow-up procedure to improve compliance (COM WP 18-37, Annex 23).

27. Meeting Report and Recommendations of the Ad hoc Working Group on Bycatches, Discards, and Selectivity (WG-BDS), May 2018

The Working Group Chair Temur Tairov (Russian Federation) presented the meeting report (COM Doc. 18-04) and the recommendations (COM WP 18-23, Annex 24). The Commission **accepted** the report and **adopted** all the recommendations.

The Chair also presented, and the Commission noted, the WG-BDS/Secretariat work plan (COM BDS WP 18-02) in support of Task 1.3 of the *Action Plan in the Management and Minimization of Bycatch and Discards* which was adopted last year (Com Doc. 17-26). The Chair indicated that a coordinated work plan is being developed with the STACTIC Chair (see Part II).

28. Report of STACTIC from this Annual Meeting and Recommendations

The STACTIC Chair Judy Dwyer (Canada) presented the STACTIC Meeting Report (see Part II), and highlighted the following amendments to the NAFO CEM that were forwarded to the Commission for adoption:

- STACTIC WP 18-18 *Vessel Monitoring System (VMS) (Article 29 and Annex II.E)* (Annex 25),
- STACTIC WP 18-21 (Rev.) *NAFO CEM Article 10 – Stowage plan requirement at checkpoint* (Annex 26)
- STACTIC WP 18-22 (Rev. 2) *NAFO CEM Article 35 – Collection of DNA samples by inspectors* (Annex 27),
- STACTIC WP 18-27 (Rev. 3) *Amendments to stowage of catch (Article 28.5)* (Annex 28),
- STACTIC WP 18-31 (Rev.) *Proposal for amendments to the NCEM – Chapter VII -- Port State Control* (Annex 29),

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- STACTIC WP 18-35 (Rev. 2) *Distribution of Notification of Infringements (Article 37.4)* (Annex 30),
- STACTIC WP 18-41 *Reinstatement of Footnote 14 into Article 6.3 for American plaice bycatch provisions in the 3LNO directed yellowtail fishery* (Annex 31),
- STACTIC WP 18-43 (Rev. 3) *CEM Article 12 – Catch reporting of individual sharks* (Annex 32),
- STACTIC WP 18-45 (Rev.) *Proposed revision of the NAFO Observer Program* (Annex 33),

The STACTIC Chair also forwarded other recommendations for adoption:

- STACTIC WP 18-28 (Rev. 4) *Action Plan to minimize or eliminate discards in NAFO* (Annex 34),
- STACTIC WP 18-29 (Rev. 2) *Draft Annual Compliance Review 2018 (Compliance Report for Fishing Year 2017)* (Annex 35),

The Commission accepted the report and **adopted** all the recommendations from the 2018 intersessional meeting (COM Doc. 18-02) and this meeting (see Part II),

STACTIC requested guidance from the Commission on how to move forward with regards to the pending proposals on bycatch definition and garbage and labour conditions on fishing vessels.

STACTIC sought guidance on the issue of participation of other stakeholders in STACTIC meetings from the Commission. The issue was unresolved at the meeting but STACTIC was advised to work together toward a solution at the May 2019 intersessional which should be presented to the Commission for validation.

29. Other matters pertaining to Conservation and Enforcement Measures

There was no further matter discussed under this agenda item.

VIII. Finance

30. Report of STACFAD from this Annual Meeting

The report of STACFAD (see Part III) was presented by the Chair, Deirdre Warner-Kramer (USA). The report contained recommendations for the adoption of the budget for 2019, the Auditor's Report for 2017, financial matters as well as an update on the Headquarters Agreement and office relocation.

31. Adoption of the 2019 Budget and STACFAD recommendations

It was agreed that the report and recommendations of STACFAD be adopted by the Commission.

STACFAD recommends that:

- **Rule 4.5 of the NAFO Financial Regulations be amended to allow for the establishment of a recruitment and relocation fund within the accumulated surplus account, as follows:**

The Standing Committee on Finance and Administration and the Commission shall review the amount available in the accumulated surplus account during each annual meeting. Insofar as possible, the Commission shall anticipate unforeseen expenditures during the succeeding three years and shall attempt to maintain the accumulated surplus account at a level sufficient to finance operations during the first three months of the year plus an amount up to a maximum of 10% of the annual budget for the current financial year for use in an emergency in accordance with Rule 4.4. In addition, the Organization shall also maintain a recruitment and relocation fund to pay recruitment and relocation costs for incoming and outgoing internationally recruited staff. The recruitment and relocation fund balance shall be kept at a maximum of \$100,000.

- **The 2017 Financial Statements be adopted.**

- The amount maintained in the accumulated surplus account be set at \$285,000 of which \$200,000 would be sufficient to finance operations during the first three months of 2018, and of which \$85,000 would be a contingency fund available to be used for unforeseen and extraordinary expenses.
- The recruitment and relocation fund be set at \$48,000 to pay for future recruitment and relocation costs for incoming and outgoing internationally recruited staff.
- The internship period be maintained for six (6) months during 2019.
- The budget for 2019 of \$2,274,000 (Annex 3) be adopted.
- The Commission appoint the three Staff Committee nominees for September 2018–September 2019: Justine Jury (EU); Joanne Morgan (Canada) and Deirdre Warner-Kramer (USA).
- The Commission adopt the revised Headquarters Agreement and request that the Government of Canada proceed with the next step of its domestic process to sign and ratify the revised Headquarters Agreement
- NAFO sign the memorandum of understanding with Fisheries and Ocean Canada, following the ratification of the revised Headquarters Agreement.
- Rule 2.7 of the NAFO Rules of Procedure be amended, as follows:

~~The result of a vote taken by e-mail or other electronic means shall be ascertained by the Executive Secretary at the end of a period of at least thirty (30) days after the date of the initial request for the vote and such period shall be made clear in the text of that request.~~

When requesting a vote referred to in Rule 2.6, the Executive Secretary shall advise the Contracting Parties of the closing date to submit a vote. This date shall be at the end of a period of at least 30 days after the initial request for the vote.

- Rule 2.8 of the NAFO Rules of Procedure be amended, as follows:
 - ba) Contracting Parties shall promptly acknowledge receipt of any request for vote by e-mail or other electronic means. If no acknowledgement is received from any particular Contracting Party within one week of the date of transmittal the Executive Secretary will shall retransmit the request, and will shall use all additional necessary means available to ensure that the request has been received. Confirmation by the Executive Secretary that the request has been received shall be deemed conclusive regarding the inclusion of the Contracting Party in the quorum for the purpose of the relevant vote by e-mail or other electronic means.
 - ab) If no reply from a Contracting Party, in the case of a vote taken by e-mail or other electronic means, reaches the Secretariat within the period established under 2.7, that Contracting Party would be recorded as having abstained and it shall be considered part of the relevant quorum for voting purposes.
- Insert a new Rule 2.9 in the NAFO Rules of Procedure, as follows:

The Executive Secretary shall communicate the result of a vote taken by e-mail or other electronic means to all Contracting Parties, without delay following the end of the period referred to in Rule 2.7.”
- Rule 3.5 of the NAFO Rules of Procedure be amended, as follows:

The Chairperson, or Vice-Chairperson when acting as Chairperson, shall not act as a Representative, Alternate Representative, Expert or Adviser of a Contracting Party, shall not vote and another representative of his or her delegation shall exercise this function."

- A practice be implemented that, unless otherwise requested by a delegation, each Contracting Party will receive three (3) sets of printed meeting documentation produced at NAFO meetings and meeting documentation will also be available electronically.
- The 2021 Annual Meeting (to be held in Halifax, Nova Scotia, Canada, unless an invitation to host is extended by a Contracting Party and accepted by the Organization) be held 20–24 September 2021.

To increase transparency of its documentation:

- An exclusive STACFAD Username and Password will no longer be required to access STACFAD documentation on the NAFO Members' pages.
- STACFAD documentation will be available in the NAFO Meetings SharePoint (<https://meetings.nafo.int/>) with the exception of Working Papers deemed restricted (e.g. personnel matters).
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- General Council (GC) and Commission Documents will be made publicly available on the NAFO website (<https://www.nafo.int/>) with the exception of documents deemed restricted (e.g. personnel matters).

IX. Closing Procedure

32. Other Business

There was no further matter discussed under this agenda item.

33. Time and Place of Next Annual Meeting

An invitation to host the next Annual Meeting was extended by France (in respect of St. Pierre et Miquelon) and accepted by the Organization. The 41st Annual Meeting will be held in Paris, France during the dates of 23-27 September 2019.

34. Press Release

The Press Release of the meeting was developed by the Executive Secretary, Senior Fisheries Management Coordinator, Scientific Council Coordinator through consultations with the Chairs of the Commission and Scientific Council. The agreed Press Release (Annex 36) was circulated and posted to the NAFO website at the conclusion of the meeting on Friday, 21 September 2018.

35. Adjournment

The Chair thanked Contracting Parties for their collaboration and contributions through the course of the meeting. He also expressed his thanks to the EU and Estonia for hosting the meeting and to the NAFO Secretariat for their support throughout the week.

The meeting adjourned 11:00 hrs on Friday, 21 September 2018.

Annex 1. Participant List

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Annex 2. Opening Statement by the NAFO President

Dear Minister, Distinguished colleagues and friends,

I am honoured to welcome all of you to Tallinn for the 40th Annual Meeting of the Northwest Atlantic Fisheries Organization. I wish to express my appreciation to the Government of Estonia for hosting this Meeting and for the outstanding support and facilities provided. As you all are aware, this year marks the 100th anniversary of the Republic of Estonia and I am very happy that we are here in beautiful Tallinn for these celebrations. But for now we have work to do!

One of the key issues we will have to address this week is the recommendations of NAFO's second Performance Review. The Performance Review Panel's Chair will present the report and its recommendations on Tuesday morning.

I believe we can take some comfort from the Performance Review Report. We have come a long way since 2011 following our first Performance Review and the current Report acknowledges that NAFO has made great efforts to address the previous Review's recommendations. However, the Panel has also found some areas that still need further attention and has highlighted a number of significant external challenges for the Organization. I expect these recommendations will provide a focus for NAFO's work in the coming years and I look forward to the discussion on this Report later this week.

With regard to significant external challenges, I should note the increasing attention to the work of RFMOs by the public and the international community. Today, for instance, at the UN Headquarters, the first substantive session of the intergovernmental conference on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction – the so-called BBNJ process – closes. The result of these negotiations, in areas such as governance structure, environmental impact assessments, area-based management tools and even capacity building, could affect the future functioning of NAFO. As I mentioned last year, I believe that NAFO is a model for best practices in international regional fisheries governance and it is incumbent on all of us to get this message out.

As I reflect on the past year, we have once again had a very busy year. We have met over 25 times since the last Annual Meeting, both virtually and face-to-face, to prepare for this Meeting. Besides the recommendations of the Performance Review, some of the issues we should address this week include:

- An exceptional circumstances protocol for the Greenland halibut Management Strategy Evaluation (MSE);
- A workplan for the 3M cod MSE;
- Further implementation of NAFO's ecosystem approach roadmap; and
- A possible overhaul of the observer programme.

We will indeed be very busy. However, I am confident that Contracting Parties are ready to meet the challenges ahead of us.

Finally, I would also thank the Secretariat for all its work throughout the year and its preparations for this meeting.

I now declare the 40th Annual Meeting of NAFO officially open!

Annex 3. Opening Statement by Canada

Canada is pleased to be a part of the 40th Annual Meeting in Tallinn. Those of us that were fortunate to be here for the 2005 Annual Meeting remember fondly the warm hospitality of this beautiful and historic city and hopefully those who are here for the first time will have an opportunity to discover this for themselves in the days ahead.

We extend our warmest thanks to the European Union and the people of Estonia for hosting us this year as they celebrate the 100th anniversary of the Republic of Estonia.

We would also like to acknowledge the efforts of the NAFO Secretariat in organizing this year's meeting. Their careful attention to meeting logistics and continued expertise in support of the Commission, the Scientific Council and other NAFO bodies is appreciated by all Contracting Parties.

In recent years, the co-operation of Contracting Parties has resulted in significant gains and we are confident that this will continue during what is expected to be a busy and productive week.

The recently completed second NAFO Performance Review detailed some of these recent gains and we are pleased with the overall positive tone of the report. We are keen to join with others on working to advance these recommendations in the years ahead.

NAFO's Scientific Council deserves recognition for another busy year. Their work is critical to inform management decisions in support of the sustainable management of stocks. We, along with other Contracting Parties, share the concern about the continued heavy workload of the Council and urge all Contracting Parties to make every effort to expand their participation and increase the overall capacity of the Council.

2018 was also marked by significant progress by each of the NAFO Working Groups. Consensus was reached on the exceptional circumstances protocol for the 2+3KLMNO Greenland halibut management strategy, a revised calendar for the development of the 3M Cod MSE and a commitment to try and make progress the review of the NAFO Precautionary Approach Framework. It was very encouraging to see agreement on continued dialogue between scientists and managers on the implementation of the Ecosystem Road Map. Further, efforts continued to refine catch estimates and advance the Action Plan on Bycatch and Discards.

Each of these elements contributes significantly to achieving NAFO's overall objectives and serve to promote and protect our ocean resources. We need to ensure that they remain healthy for future generations, while providing important economic opportunities to Canadians and its coastal communities and all Contracting Parties of NAFO.

Annex 4. Opening Statement by Denmark (in respect of the Faroe Islands and Greenland)

Mister Chair, Distinguished Delegates, Observers, Ladies and Gentlemen,

The Faroe Islands and Greenland would first of all like to thank Estonia for their hospitality to host this Annual Meeting in Tallinn. We appreciate the hard work you have put in the practical preparations of this meeting.

The DFG will present two working papers on how a part of the by-catch and discard problems may be solved in those fisheries where we encounter considerable by-catches.

It is our hope this can contribute constructively to better selectivity in the fishing gears and to a more appropriate way to look at by-catches.

The Second Performance Review of NAFO is finalized and the Panel will present the report. The DFG will continue to work constructively with our NAFO partners to address the recommendations of the 2018 Performance Review. The cod stock of 3M is of high importance to the DFG. A full benchmark evaluation was performed in 2018 and the scientific advice from the Scientific Council of NAFO for the cod stock of 3M is a significant increase in the total quota. This quota is only $\frac{3}{4}$ of F(lim), with less than 1% probability for the stock to be affected by the fisheries. Furthermore, we look forward to the Management Strategy Evaluation for cod in 3M which will be performed in the coming year.

Furthermore, the biological advice on NAFO stocks for the next year and beyond is, as usual, a mixed advice of stocks to be maintained under moratoria, of stocks in decline and of stocks that are healthy and growing.

Working groups take important tasks on their shoulders. However, it is increasingly a challenge to find time to participate in the various numbers of working groups, especially for Contracting Parties with limited resources in terms of staff.

Our delegation would like to take this opportunity to convey our appreciation and warm thanks to the Secretariat for once again having prepared this annual meeting so well.

The Faroe Islands and Greenland (DFG) can assure you that we are looking forward to working constructively with all delegations in the week ahead of us to bring the many points on our agenda to successful conclusion.

Annex 5. Opening Statement by the European Union

Mister Chair, Distinguished Delegates, Observers, Ladies and Gentlemen,

First of all, we would like to thank the Government of Estonia for hosting the 40th Annual Meeting of NAFO in this beautiful city, which hosted the tallest building in the world 400 years ago!

Secondly, I would like to congratulate all of us for the preparatory work carried out ahead of this meeting which should allow us to reach consensus in several important areas. In particular, the setting of TACs for fish stocks under the purview of this organisation will favour their sustainable management in the years to come. In this regard, the EU will continue to seek solutions based on the best available scientific advice, aiming to ensure long-term sustainability for the stocks and predictability for the industry that depend on exploitation of these stocks.

I would also like to highlight our strong support for long-term management approaches to key stocks such as Greenland Halibut and cod in the Flemish Cap.

In addition, the EU will continue supporting the protection of VMEs and will strive to ensure that NAFO's VMEs protection policy is based on the latest and best science available. To this end, the EU has, for example, contributed substantially over the years to the NEREIDA seabed mapping project, which aims at improving knowledge on the sea bottom. Moreover, the EU will support the ongoing efforts to pave the way towards an efficient implementation of the ecosystem approach.

The EU will also promote concrete protective measures for the Greenland sharks, taking into account the latest scientific advice.

Last and not the least, we are keen to review the conclusions of the new Performance Review exercise for the organisation carried out this year and to work towards implementation of many of its recommendations.

Regarding control and enforcement, the EU will continue to promote compliance of the EU fleet with the NAFO rules in force, both at sea and in port, and measures that increase the efficiency of NAFO's control and inspection systems.

The EU delegation looks forward to working with all Parties around the table in order to achieve the best possible result for NAFO stocks and ecosystems and to make this Annual Meeting in Tallinn a joint success.

Annex 6. Opening Statement by Japan

Mr. Chairman, Distinguished Delegates, Observers, Ladies and Gentlemen,

On behalf of the Japanese Delegation, I would like to express my deepest gratitude to the Government of Estonia for hosting the 40th Annual Meeting of NAFO in this beautiful city, Tallinn. We also thank the NAFO Secretariat staff for the excellent preparation and arrangements, and wish all the best to our Chair, Mr. Artano.

As the Japanese Delegation expressed in the past meetings, NAFO has played an important role for fisheries management. NAFO, as the historic and leading RFMO, should develop conservation and management measures for sustainable use of fishery resources and the measures should be based on scientific advice. We should bear in mind that the NAFO Conservation and Enforcement Measures (CEM) would be taken into account by other RFMOs.

Mr. Chairman, on this occasion, I would like to address two concrete issues and explain our thought for this year's NAFO Annual Meeting, namely (1) development of criteria for the identification of Exceptional Circumstances under the Greenland halibut 2+3KLMNO management strategy and (2) reviewing the closure of the area 14 in accordance with the paragraph 3 of the Article 17 of the CEM.

At the Annual Meeting last year, the new management strategy for 2+3 KLMNO Greenland halibut was adopted and it was decided that the total allowable catch would be adjusted annually from 2018 to 2023 according to the harvest control rule. It was the significant step for modernizing the fishery managements of NAFO. This year's Annual Meeting will address Exceptional Circumstances (EC) protocol which is outside of the range of possibilities considered within the Management Strategy Evaluation (MSE), based on the recommendation by the NAFO Joint Commission-Scientific Council Working Group on Risk-based Management Strategies (WG-RBMS). Japan strongly believes that the EC should be applied for very limited cases, and that will contribute to stable operation of the Management Strategy and the fisheries.

I also would like to touch upon the closure of the area 14 (Eastern Flemish Cap), which is going to expire at the end of December this year. In our view, the area 14 should be opened from 2019 because the closure does not meet all of the six FAO criteria (Article 18 of the FAO International Guidelines for the Management of Deep Sea Fisheries in the High Seas) at this moment. Japan support the idea that development of any area-closure must be carefully considered with a universal standard.

Mr. Chairman, the Japanese Delegation is ready to work closely and cooperatively with other delegations to find good solutions and sincerely hopes that this Annual meeting will be successfully and fruitfully concluded.

Thank you.

Annex 7. Opening Statement by the Russian Federation

Good morning Mr. President,

Distinguished Delegates, Observers, Ladies and Gentlemen,

First of all, as the Russian Representative, on behalf of the Russian Delegation I would like to thank the Government of Estonia for hosting the 40th Anniversary Meeting of NAFO in Tallinn. We look forward to visiting historical and cultural heritage sites in this beautiful city. I would also like to thank the NAFO Secretariat for all their preparatory work they have done to set up this meeting.

We attach great importance to the findings by the Performance Review Panel, which assessed NAFO's performance in 2011-2017, with special attention being given to the follow-up to the recommendations from the 1st Performance Assessment Report. As you know, NAFO established a Performance Assessment Working Group in 2009 to set up a performance review tasked with addressing NAFO's strengths, weaknesses, challenges and successes, using specifically identified criteria and identified areas for improvement. Looking back at the 1st performance assessment, we emphasize with a sense of deep satisfaction the enormous scope of work done based on those recommendations. The Working Group has largely contributed to identifying the key focus areas of NAFO activities over recent years, and now we clearly see the results. We would like to thank the members of the new Panel for their work and hope that their findings and recommendations will define new ways for improvement of NAFO and provide new capabilities for achievements in future.

We would like to note the progress by the Joint Commission-Scientific Council Catch Estimation Strategy Advisory Group in addressing the improvement of catch estimation accuracy. In our opinion, the use of haul-by-haul data and implementation of relevant technical measures in fisheries represent an important step forward to increased accuracy of fisheries data and stock assessments.

In our opinion, the precautionary approach in fisheries and development of fisheries management strategies for commercial stocks give tangible results. Each year we approach closer, though not as fast as we wish, to ensuring the maximum sustainable yield in the NAFO Regulatory Area. This will allow a more efficient use of fishing efforts and sustainability of the stocks. However, there is a concern that this process is of infinite nature because the more information we get about general factors influencing interactions among species, with environment and human activities, the more factors need to be taken into account in fisheries management. We do hope that the efforts put to achieve this goal will be commensurate to the benefits the fishing industry will obtain.

We should note the progress in assessment of risks associated with the vulnerable marine ecosystems. The evolution of perception about the VMEs has gone from an abstract concept, which was largely neglected in fisheries management, to a set of certain grades and criteria. This allows a gradual transition from the binary management logic, when the fishery in a certain area is either open or closed, to a more flexible scheme when the degree of benthic community vulnerability is evaluated depending on the type and severity of the impact. We believe that it will be possible to establish the more accurate conservation measures in the near future so that different types of fisheries are treated individually and scientific research is completely separated from commercial fishing activities.

In conclusion, we are assured that the work during this meeting will be efficient. We hope for a fruitful cooperation between all the Contracting Parties based on joint efforts by managers, scientists and observers.

Annex 8. Opening Statement by the United States of America

The United States is pleased to be here in beautiful, historic Tallinn once again, and we thank the Government of Estonia for hosting the 40th NAFO Annual Meeting. We also thank the NAFO Secretariat for their excellent organization of this meeting, and continuing efforts to ensure that our work is efficient and productive. We look forward to a successful week.

I would like to begin by introducing myself. My name is Michael Pentony, and I am the new U.S. Federal Commissioner to NAFO. At home, I serve as the Regional Administrator of the Greater Atlantic Regional Fisheries Office of NOAA Fisheries, which is charged with ensuring the sustainable use of fisheries and other living marine resources, conservation of marine habitats, and protection of endangered and threatened marine species in the U.S. waters of the NAFO Convention Area, off of New England and the mid-Atlantic. Although I am new to the NAFO world, I have spent a large part of my career focusing on sustainable management of Northwest Atlantic fisheries, and I look forward to participating in the international side of these efforts.

With regard to U.S. priorities for the 40th annual meeting and the U.S. goal for NAFO in the long term, the United States will continue to promote consistency between the management decisions of the Commission and the advice of the Scientific Council to achieve science-based management. We believe this approach will result in sustainable benefits from healthy fisheries and healthy marine ecosystems. As a NAFO coastal State with centuries of fishing history in the Northwest Atlantic, and a commensurate commitment to collection of reliable fisheries data, fisheries research, and sound management including enforcement, the United States has a strong stake in seeing those benefits realized – in our own waters, and in the Regulatory Area.

To achieve our goal, we must also recognize our role in ensuring that the needs of the Scientific Council are adequately addressed, so that its products are of the highest quality and utility in the management process. In recent years, the demands on the Scientific Council have increased substantially, while its resources -- especially its human resources -- have not kept pace. Thus, during this meeting the United States would like to have a practical discussion in the Commission on how to best meet the resource needs of the Scientific Council, in light of the priorities of the organization.

In addition to a significant number of stock management considerations before us this week, we look forward to deliberations on a number of broader ecosystem related issues. It is our hope that progress can be made on implementation of the ecosystem approach to fisheries framework. Additionally, the Commission will be deliberating on the future status of the Area 14 closure, and it is our hope that the Commission will follow the advice of the Scientific Council to maintain this status until the comprehensive review of VME's in NAFO in 2020.

Another key U.S. priority for the upcoming week will be initiating a process to implement the recommendations of NAFO's second External Performance Review. We welcome the Review Panel Chair, Ms. Jane Willing, and we look forward to her presentation. The Panel's report tells a good story about NAFO's successes since 2011, but it is also clear we have more work to do. So, the United States supports immediate action by the Commission to begin categorizing and assigning the task of responding to the recommendations to the various NAFO bodies.

Regarding conservation and enforcement measures, the United States has some concerns regarding the impact of the bycatch mitigation protocols, as currently written, on different gear types. We would proposing possible changes to the measures that will address these negative impacts, while at the same time ensuring that the conservation intention of the management measure remains intact. We will also be proposing to increase transparency for STACTIC working papers.

Finally, we note that NAFO's Scientific Council has advised that Greenland sharks warrant precautionary consideration due to their unknown stock status in NAFO waters, and their long lifespan (estimated to be in the 300-400 year range), extremely delayed maturity, and low fecundity which make them more susceptible to overfishing. The Scientific Council further recommends prohibiting the landing of Greenland sharks and increased data collection for these animals. The United States feels strongly that NAFO must take steps to

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protect vulnerable species in NAFO waters. Thus, we will seek to have a discussion on adequate measures consistent with these recommendations.

In closing, I look forward to working with you all and to a productive week ahead. Thank you very much.



**Annex 9. Summary of Decisions and Actions of the Commission
from the 40th Annual Meeting of NAFO**

ANNEX #	NAFO WORKING PAPER #	DOCUMENT TITLE	NAFO DOCUMENT #
14	COM WP 18-46 (Rev. 3)	NAFO Working Group to Address the Recommendations of the 2018 Performance Review Panel	<u>COM Doc. 18-21 (Rev.)</u>
15	COM-WP 18-50	SC Response to Feedback Questions regarding its Scientific Advice	
16	COM-SC WP 18-08	Recommendations of the E-WG to forward to the NAFO Commission and Scientific Council, 2018	<u>COM-SC Doc. 18-07</u>
17	COM-SC WP 18-06	Recommendations of the WG-RBMS to forward to the NAFO Commission and Scientific Council, August 2018	<u>COM-SC Doc. 18-05</u>
18	COM-SC WP 18-07	Recommendations of the WG-EAFFM to forward to the NAFO Commission and Scientific Council, August 2018	<u>COM-SC Doc. 18-06</u>
19	COM-SC WP 18-05	Recommendations of the CESAG to forward to the NAFO Commission and Scientific Council, 2018	<u>COM-SC Doc. 18-04 (Rev.)</u>
20	COM WP 18-51 (Rev. 2)	The Commission's Request for Scientific Advice on Management in 2020 and Beyond of Certain Stocks in Subareas 2, 3 and 4 and Other Matters	<u>COM Doc. 18-20</u>
21		2019 Quota Table	
22	COM WP 18-38 (Rev. 4)	Amendments to NAFO CEM - Measure to Conserve Greenland Sharks	<u>COM Doc. 18-17</u>
23	COM WP 18-37	Follow-up Procedure Regarding Haul-by-Haul Submissions	<u>COM Doc. 18-27</u>
24	COM WP 18-23	Recommendations of the WG-BDS to forward to the NAFO Commission, May 2018	<u>COM Doc. 18-22</u>
25	STACTIC WP 18-18	Amendments to NAFO CEM Article 29 and Annex II.E – Vessel Monitoring System (VMS)	<u>COM Doc. 18-06</u>
26	STACTIC WP 18-21 (Rev.)	Amendments to NAFO CEM Article 10 – Stowage Plan Requirement at Checkpoint	<u>COM Doc. 18-07</u>
27	STACTIC WP 18-22 (Rev. 2)	Amendments to NAFO CEM Article 35 – Collection of DNA samples by inspectors during sea Pilot project on DNA Analysis	<u>COM Doc. 18-08</u>
28	STACTIC WP 18-27 (Rev. 3)	Amendments to NAFO CEM Article 28.5 – Stowage of Catch	<u>COM Doc. 18-09</u>
29	STACTIC WP 18-31 (Rev.)	Amendments to NAFO CEM Chapter VII – Port State Control	<u>COM Doc. 18-10</u>
30	STACTIC WP 18-35 (Rev. 2)	Amendments to NAFO CEM Article 37.4 – Distribution of Notification of Infringements	<u>COM Doc. 18-11</u>
31	STACTIC WP 18-41	Reinstatement of Footnote 14 into Article 6.3 for American Plaice bycatch provisions in the 3NO directed Yellowtail fishery	<u>COM Doc. 18-12</u>
32	STACTIC WP 18-43 (Rev. 3)	Amendments to NAFO CEM Article 12 – Catch reporting of individual sharks	<u>COM Doc. 18-13</u>
33	STACTIC WP 18-45 (Rev.)	Amendments to NAFO CEM Article 30 – Revision of the NAFO Observer Program	<u>COM Doc. 18-14</u>
34	STACTIC WP 18-28 (Rev. 4)	Action Plan to minimize or eliminate discards in NAFO	<u>COM Doc. 18-18</u>
35	STACTIC WP 18-29 (Rev. 2)	Annual Compliance Review 2018 (Compliance Report Fishing Year 2017)	<u>COM Doc. 18-19</u>
	Part III - STACFAD Report	Headquarters Agreement between Government of Canada and the Northwest Atlantic Fisheries Organization	<u>COM Doc. 18-24</u>
	Part III - STACFAD Report	Amendments to the NAFO Rules of Procedure	<u>COM Doc. 18-25</u>
	Part III - STACFAD Report	Amendments to the NAFO Financial Rules	<u>COM Doc. 18-26</u>

Annex 10. Agenda

I. Opening Procedure

1. Opening by the Chair, Stéphane Artano (France-SPM)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Admission of Observers
5. Publicity

II. Supervision and Coordination of the Organizational, Administrative and other Internal Affairs

6. Review of Membership of the Commission
7. Administrative and Activity Report
8. NAFO Headquarters Agreement
9. Review of the list of experts to serve as panelists under the NAFO Dispute Settlement provisions
10. Guidance to STACFAD necessary for them to complete their work
11. Guidance to STACTIC necessary for them to complete their work

III. Coordination of External Affairs

12. Report of Executive Secretary on External Meetings
13. International Relations
 - a. Relations with other International Organizations
 - b. NAFO Members as Observers to External Meetings
 - c. Areas Beyond National Jurisdiction (ABNJ) Deep-Seas Project
14. Oil and Gas Activities in the NAFO Regulatory

IV. Joint Session of Commission and Scientific Council

15. 2018 Performance Review
16. Presentation of scientific advice by the Chair of the Scientific Council
 - a. Response of the Scientific Council to the Commission's request for scientific advice
 - b. Other issues as determined by the Chairs of the Commission and Scientific Council
 - c. Feedback to the Scientific Council regarding the advice and its work during this Meeting
17. Meeting Reports of the Joint Commission–Scientific Council Working Groups
 - a. Working Group on Improving Efficiency of NAFO Working Group Process, 2018
 - b. Joint Commission–Scientific Council Working Group on Risk-based Management Strategies (WG-RBMS), August 2018
 - c. Joint Commission–Scientific Council Working Group on Ecosystems Approach Framework to Fisheries Management (WG-EAFFM), August 2018
 - d. Joint Commission–Scientific Council Catch Estimation Strategy Advisory Group (CESAG), 2018

18. Formulation of Request to the Scientific Council for Scientific Advice on Management in 2020 and Beyond of Certain Stocks in Subareas 2, 3 and 4 and Other Matters

V. Conservation of Fish Stocks in the Regulatory Area

19. Recommendations of the Joint Commission–Scientific Council Working Group on Risk-based Management Strategies (WG-RBMS), August 2018 (if more discussion is required)
20. Management and Technical Measures for Fish Stocks in the Regulatory Area, 2019
 - a. Cod in Division 3M
 - b. Shrimp in Division 3M
 - c. Pelagic *Sebastes mentella* (oceanic redfish) in the NAFO Convention Area
 - d. Splendid alfonsino (*Beryx splendens*)
21. Management and Technical Measures for Fish Stocks Straddling National Jurisdictions, 2019
 - a. Cod in Divisions 3NO
 - b. American plaice in Divisions 3LNO
 - c. Yellowtail in Divisions 3LNO
 - d. Capelin in Divisions 3NO
 - e. Thorny skates in Divisions 3LNO
 - f. Greenland halibut in Subarea 2 and Divisions 3KLMNO
22. Other matters pertaining to Conservation of Fish Stocks
 - a. Redfish in Divisions 3LN
 - b. Witch flounder in Divisions 3NO
 - c. Shrimp in Divisions 3LNO
 - d. Greenland shark

VI. Ecosystem Considerations

23. Recommendations of the Joint Commission–Scientific Council Working Group on Ecosystems Approach Framework to Fisheries Management (WG-EAFFM), August 2018 (if more discussion is required)
24. Other matters pertaining to Ecosystem Considerations

VII. Conservation and Enforcement Measures

25. Review of Chartering Arrangements
26. Recommendations of the Joint Commission–Scientific Council Catch Estimation Strategy Advisory Group (CESAG), 2018 (if more discussion is required)
27. Meeting Report and Recommendations of the Ad hoc Working Group on Bycatches, Discards, and Selectivity (WG-BDS), May 2018
28. Report of STACTIC from this Annual Meeting and Recommendations
29. Other matters pertaining to Conservation and Enforcement Measures

Report of the Commission, 17-21 September 2018

VIII. Finance

30. Report of STACFAD from this Annual Meeting
31. Adoption of the 2019 Budget and STACFAD recommendations

IX. Closing Procedure

32. Other Business
33. Time and Place of Next Annual Meeting
34. Press Release
35. Adjournment



Annex 11. Opening Statement by the North Pacific Anadromous Fish Commission (NPAFC)

Dear Mr. Chair, distinguished delegates, ladies and gentlemen:

I am Vladimir Radchenko, Executive Director of the North Pacific Anadromous Fish Commission (NPAFC).

I am honoured to be here on behalf of the NPAFC as observer for the NAFO 40th Annual Meeting. I would like to extend the NPAFC's appreciation to members of the NAFO Commission and Executive Secretary Dr. Fred Kingston for the invitation.

This particular NAFO Annual Meeting is an event of considerable interest to the NPAFC. Despite distinctions in areas of responsibility, there are several important fields, where NAFO and NPAFC work together at the inter-organizational level. More than eight years have passed since the 2010 UN Review Conference described a modernizing of regional fisheries management organizations (RFMOs) as a priority and noted that progress had been made in reviewing the performance of RFMOs against emerging standards. At this meeting, the final report from the second NAFO Performance Review will be presented that NAFO organized first among the Canada-based fisheries management organizations. A question of performance review periodicity is critically important for the long-term strategic planning of the NPAFC, and your experience in this matter is very helpful to us.

This year, the NAFO is celebrating its 40th anniversary. During celebration, it is a good opportunity to obtain important information on the NAFO impact and achievements, strategic messages, and the future plans, especially taking into account that all of the NPAFC member countries are also the NAFO states. NAFO's stability and great performance is a good example for the NPAFC, which recently celebrated 25 years from the establishment.

Because the NAFO Commission will consider an appointment of NAFO members as observers to external meetings, I would like to take this opportunity to confirm that NPAFC looks forward to seeing the NAFO representative at the NPAFC 27th Annual Meeting in Portland, Oregon, U.S.A.

The NPAFC Committee on Enforcement (ENFO) resumed the workshop series to improve international cooperation in enforcement. In May 2018, there were discussions on how to operationalize organic Monitoring, Control, and Surveillance (MCS) knowledge and tools to improve the real-time coordination, information sharing, and to help operational planning. Discussions will be continued in Portland in May 2019.

The NPAFC is currently implemented the International Year of the Salmon (IYS) project launched together with the North Atlantic Salmon Conservation Organization (NASCO) and other partners. The IYS focal year will be 2019, with projects and activities starting in 2018 and continuing into 2022. The IYS is an international framework for collaborative research and outreach. Through the outreach efforts, the IYS will raise awareness of what humans can do to better ensure salmon and their varied habits are conserved and restored against the backdrop of increasing environmental variability. Despite NAFO does not deal with salmon, we expect that the model of implementation will be useful to our partners in development of similar programs.

Wishing the best of success and spirit of cooperation to the NAFO Annual Meeting,

Thank you for your kind attention.

Annex 12. Opening Statement by the Deep Sea Conservation Coalition (DSCC)

Chair, Heads of Delegation, Delegates and fellow Observers, on behalf of the Deep Sea Conservation Coalition and our 80+ member organizations, we are pleased this year to be attending as full observers to NAFO.

We have been actively engaged in NAFO for over a decade through our member organizations. We note that NAFO has made significant progress in the past 10 years on protecting vulnerable marine ecosystems in accordance with UNGA resolutions and in response to issues related to bottom fisheries that have been highlighted in the UNGA reviews of the implementation of the UN Fish Stocks Agreement. We also commend NAFO for completing its second performance review in 2018. While NAFO has been among the leaders amongst RFMOs in terms of making progress to reduce the impact of destructive fishing practices on vulnerable deep-sea ecosystems, we note that continued progress must be made to protect these vital ecosystems upon which NAFO fisheries depend and to protect marine biodiversity in areas beyond national jurisdiction – as is increasingly expected by the international community.

In keeping with making our recommendations clear and simple and in line with the ongoing work of the various working groups as well as Scientific Council, our expectations from this meeting include:

- NAFO close the remaining seamounts in the Corner Rise seamount chain to bottom fishing.
- NAFO add observer codes for VME indicator species to its observer protocol and begin assessment of observer data for VME encounters, as recommended by WG-EAFM.
- NAFO maintain closed area #14 until the full review of VME closures is completed in 2020.
- NAFO formally prohibit bottom trawling surveys in VME closed areas to minimize destruction of these fragile species and ecosystems and adopt non-destructive sampling in these areas.
- NAFO to direct Scientific Council to conduct a full assessment of bycatch of deep sea fisheries using the haul by haul data and take steps to restrict catches of deep sea sharks.
- NAFO formally address the unregulated Splendid Alphonsino fishery and adopt science-based catch limits.
- NAFO adopt quota decisions based on science advice for all NAFO managed species
- NAFO continue to make progress on adopting an ecosystem approach to fisheries management, including using ecosystem production and total catch ceilings as the basis for science advice on quotas.
- NAFO develop a workplan to implement recommendations of the 2018 Performance Review.

We look forward to this week's discussions and deliberations and urge Contracting Parties continue to make progress on ecosystem level fisheries management. Noting the ongoing negotiations of a new treaty under UNCLOS to conserve biodiversity on the high seas, we strongly urge NAFO to continue its collaboration and cooperation with other sectoral bodies and begin to identify mechanisms where biodiversity protection is achieved across these sectoral management organizations.

Matthew Gianni, Co-Founder, Political and Policy Advisor, DSCC
Susanna Fuller, Board of Directors, DSCC

Annex 13. Opening Statement by the Shark League (Represented by Ecology Action Centre & Shark Trust)

Dear Distinguished Delegates:

The Shark League thanks the Government of Estonia for hosting this 40th Annual Meeting of NAFO in the enchanting city of Tallinn. We appreciate the opportunity to participate in the deliberations and share our perspectives.

The members of Shark League (Shark Trust, Ecology Action Centre, Shark Advocates International, and Project AWARE) focus on conservation of sharks and rays (elasmobranchs) because low reproductive capacity leaves most species especially vulnerable to overfishing.

We are concerned about the status of **thorny skates** (*Amblyraja radiata*). The NAFO Scientific Council (SC) has noted this species' low resilience to fishing pressure and little improvement under NAFO management. The NAFO Total Allowable Catch (TAC) for skates, however, has been set significantly above advised levels since it was agreed in 2004. The SC is once again recommending that thorny skate catches not exceed recent levels (~4000t). In addition, more detailed catch data are needed for scientists to develop a robust thorny skate assessment.

Deep-sea sharks are exceptionally slow-growing, as evidenced by numerous cases of serious population depletion around the world. Scientists estimate that Greenland sharks (*Somniosus microcephalus*) mature at ~150 years of age and can live 400 years or more. This species, and smaller deep-sea sharks, are taken in NAFO fisheries, yet catch data are lacking. In special advice commissioned in 2016, the SC is recommending a suite of measures to protect Greenland sharks, the most straight-forward of which is a prohibition on retention.

Accordingly, we urge NAFO to:

- reduce the thorny skate TAC from 7000t to 4000t, and
- prohibit the retention of deep-sea sharks, particularly the Greenland shark, and adopt
 - other measures to minimize incidental mortality.

In addition, to improve elasmobranch management over the long term, we seek:

- significantly increased observer coverage and elasmobranch catch reporting detail, and
- further SC deliberation into means for:
 - minimizing incidental mortality of vulnerable elasmobranchs, and
 - establishing precautionary reference points for a thorny skate rebuilding plan.

We believe that these actions are consistent with amended Convention commitments to prevent overfishing, ensure long-term sustainability, heed scientific advice, apply the precautionary approach, minimize incidental catch, protect marine ecosystems, and preserve biological diversity.

We hope that important strides in elasmobranch conservation will be made this week in Tallinn.

**Annex 14. NAFO Working Group to
Address the Recommendations of the 2018 Performance Review Panel**
(COM WP 18-46 (Rev. 3) now COM Doc. 18-21 Rev.)

Recalling that the UN General Assembly has called for regular performance reviews of Regional Fisheries Management Organizations (RFMOs);

Re-affirming NAFO's commitment to make efforts to advance the 2018 Performance Review Panel recommendations;

Noting that NAFO previously established a Working Group to provide regular updates on progress to address the recommendations of the first performance review;

Recalling the report of the 2018 Performance Review Panel notes that NAFO established a comprehensive and detailed process to address recommendations of the first performance review;

It is recommended that:

A Commission Working Group be established and develop an action plan to address the recommendations using the following terms of reference:

1. The Commission Working Group is established to address the recommendations in the context in which they were made by the Performance Review Panel 2018 as outlined in Annex 1 to this document.

These recommendations shall be prioritized, and Plans of Action developed that identify possible next steps.

The Working Group shall designate which recommendations can be addressed immediately and for which Plans of Action can be established in the short, medium and long-term. The Working Group shall also recommend courses of action, where possible and appropriate, to address the recommendations of the Performance Review Panel in particular for the areas identified as priority.

2. Composition and Chairing of the Working Group

The Working Group shall be composed of representatives of Contracting Parties and shall be chaired by the Commission Chair. Chair of the Scientific Council shall serve as resource person to the Working Group.

3. Timing and Venue of the Meeting

The NAFO Secretariat will coordinate the first meeting of the Working Group in consultation with the Chairperson and participants. The Working Group will then convene as required and as determined by the Chair of the Working Group. The use of electronic means should be considered for the completion of its work if necessary.

4. Administration

The Secretariat shall provide the administrative and information support to the Working Group.

5. Report

The report from the Working Group shall be provided to the Secretariat for distribution to Contracting Parties at least 30 days before the 2019 Annual Meeting. The report shall be presented by the Chair at that meeting.

Annex 1. Recommendations of the 2018 Performance Review Panel

#	CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY			
			COM	SC	SECRETARIAT	CPs
		III. Conservation and Management				
		In relation to the Ecosystem Approach Framework to Fisheries Management, the NAFO Performance Review Panel:				
1.	III.2.a.1	<ul style="list-style-type: none"> Recommends the Commission, within a defined timeline, sets objectives and determines acceptable risks as outlined in the Ecosystem Approach Framework Roadmap to ensure its implementation. [pg. 16] 	x (COM/ WG-EAFFM/ WG-RBMS)	x (WG-EAFFM/ WG-RBMS)		
		In relation to the Precautionary Approach Framework, the NAFO Performance Review Panel:				
2.	III.2.b.1	<ul style="list-style-type: none"> Recommends NAFO assigns a high priority, including a timeline, to the review of its Precautionary Approach Framework and urges NAFO to act with precaution while awaiting the completion of this review, in particular through a commitment to follow scientific advice. [pg. 17] 	x (WG-RBMS)	x (WG-RBMS)		
3.	III.2.b.2	<ul style="list-style-type: none"> Recommends that NAFO includes 'data-poor' stocks in the Precautionary Approach Framework. [pg. 17] 	x (WG-RBMS)	x (WG-RBMS)		
		In relation to data collection and sharing, the NAFO Performance Review Panel:				
4.	III.3.1	<ul style="list-style-type: none"> Recommends NAFO implements the applicable outcomes of the catch estimates methodology study once completed, continue the work of CESAG and utilize Scientific observer data. [pg. 20] 	x (CESAG)	x (CESAG)		x

#	CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY			
			COM	SC	SECRETARIAT	CPs
5.	III.3.2	<ul style="list-style-type: none"> • Recommends NAFO agrees on a means to respond to instances of non-compliance by a Contracting Party with its reporting requirements, including logbook data. [pg. 20] 	x (STACTIC)			
6.	III.3.3	<ul style="list-style-type: none"> • Recommends NAFO implements measures to ensure that fisheries research data, including fisheries survey data used by the Scientific Council, is complete and available for peer review in accordance with established scientific publication standards. [pg. 20] 		x		
7.	III.3.4	<ul style="list-style-type: none"> • Recommends NAFO assesses whether the discard data collected on the basis of daily electronic catch reporting is sufficient in order to support a future discards policy. [pg. 20] 	x (WG-BDS/ STACTIC)			
		In relation to the consistency of conservation and management decisions with scientific advice, the NAFO Performance Review Panel:				
8.	III.4.a.1	<ul style="list-style-type: none"> • Recommends the Commission, as a matter of high priority, follows the Scientific Council advice and implements its multi-annual management strategies and plans in a consistent manner. [pg. 22] 	x			
9.	III.4.a.2	<ul style="list-style-type: none"> • Recommends NAFO adopts and implements a multi-annual schedule/planning for the delivery of advice, applicable over a cycle of at least five (5) years, including timelines for the various tasks required. Requests for advice outside the agreed planning should only be accepted in exceptional circumstances. [pg. 22] 	x	x		
10.	III.4.a.3	<ul style="list-style-type: none"> • Recommends NAFO publishes annually a comparison between decisions adopted and the relevant scientific advice. [pg. 22] 			x	
		In relation to the adoption of consistent/compatible management measures, the NAFO Performance Review Panel:				

#	CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY			
			COM	SC	SECRETARIAT	CPs
11.	III.4.b.1	<ul style="list-style-type: none"> • Recommends NAFO develops mechanisms for the application of Article VI.11 of the Convention. [pg. 23] 	x			
		In relation to the allocation of fishing opportunities, the NAFO Performance Review Panel:				
12.	III.4.c.1	<ul style="list-style-type: none"> • Recommends NAFO revisits the allocation of new fishing opportunities, should a change in circumstances justify it. [pg. 24] 	x			
		In relation to previously unregulated and exploratory fisheries, the NAFO Performance Review Panel:				
13.	III.4.d.1	<ul style="list-style-type: none"> • Recommends NAFO establishes conservation and management measures for Splendid Alfonsino in Subarea 6, at the earliest opportunity. [pg. 24] 	x	x		
		In relation to the conservation of marine biodiversity and the minimization of harmful fishing impacts on marine ecosystems, the NAFO Performance Review Panel:				
14.	III.4.e.1	<ul style="list-style-type: none"> • Recommends NAFO assesses means of minimizing or eliminating harmful impacts of fishing surveys on Vulnerable Marine Ecosystems within closed areas. [pg. 26] 	x (WG-EAFFM)	x (SC/ WG-EAFFM)		
15.	III.4.e.2	<ul style="list-style-type: none"> • Recommends NAFO establishes codes for Vulnerable Marine Ecosystem indicator species to facilitate reporting of encounters. [pg. 26] 	x (WG-EAFFM)	x (WG-EAFFM)		
16.	III.4.e.3	<ul style="list-style-type: none"> • Recommends NAFO reviews data available from observers reports and other possible sources that would help identify why encounters with Vulnerable Marine Ecosystems have not been reported to date. [pg. 26] 	x (STACTIC)			

#	CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY			
			COM	SC	SECRETARIAT	CPs
		In relation to minimizing pollution, waste, discards, lost and abandoned gear and impacts on non-target species, the NAFO Performance Review Panel:				
17.	III.4.f.1	<ul style="list-style-type: none"> • Recommends NAFO ensures the implementation of the Action Plan on discards by the stipulated target date in 2021 and establishes measures in the shorter-term to minimize or eradicate high-grading practices. [pg. 27] 	x (WG-BDS/ STACTIC)			
18.	III.4.f.2	<ul style="list-style-type: none"> • Urges NAFO gives effect to Article III of the amended Convention in respect of minimizing other harmful impacts such as pollution and waste originating from fishing vessels, catch of species not subject to a directed fishery and impacts on associated or dependent species, in particular endangered species. [pg. 27] 	x (STACTIC)			
		In relation to reporting requirements, the NAFO Performance Review Panel:				
19.	III.6.1	<ul style="list-style-type: none"> • Recommends NAFO develop a user-friendly data manual. [pg. 29] 	x (STACTIC)		x	
		IV. Compliance and Enforcement				
		In relation to flag State duties, the NAFO Performance Review Panel:				
20.	IV.1.1	<ul style="list-style-type: none"> • Recommends NAFO calls on all Contracting Parties to carry out self-assessments of flag State performance in accordance with the criteria set out in the FAO Voluntary Guidelines for Flag State Performance. Reports of the self-assessments should be submitted to STACTIC in order for it to present a summary report to the Commission. [pg. 30] 	x (STACTIC)			x

#	CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY			
			COM	SC	SECRETARIAT	CPs
21.	IV.1.2	<ul style="list-style-type: none"> • Recommends NAFO amends the NAFO Conservation and Enforcement Measures in order to clarify, rectify and harmonize references to the duties of the Contracting Parties as flag States. [pg. 31] 	x (STACTIC)			
		In relation to Monitoring Control and Surveillance, the NAFO Performance Review Panel:				
22.	IV.3.1	<ul style="list-style-type: none"> • Recommends NAFO evaluates and adopts appropriate measures to deter repeat serious non-compliance. [pg. 32] 	x (STACTIC)			
23.	IV.3.2	<ul style="list-style-type: none"> • Recommends NAFO urges Contracting Parties to become parties to the International Labour Organization (ILO) Work in Fishing Convention No. 188. [pg. 32] 	x			x
		In relation to follow-up on infringements, the NAFO Performance Review Panel:				
24.	IV.3.3	<ul style="list-style-type: none"> • Recommends NAFO urges Contracting Parties to increase their efforts in ensuring timely follow-up to infringements. [pg. 33] 	x (STACTIC)			x
		V. Governance				
		In relation to transparency, the NAFO Performance Review Panel:				
25.	V.3.1	<ul style="list-style-type: none"> • Recommends NAFO reorganizes its website library based on the topics covered. [pg. 36] 			x	
26.	V.3.2	<ul style="list-style-type: none"> • Recommends NAFO makes all working documents publicly available, unless otherwise requested by a Contracting Party or subject to confidentiality rules. [pg. 36] 	x	x	x	

#	CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY			
			COM	SC	SECRETARIAT	CPs
		VI. Science				
		In relation to science, the NAFO Performance Review Panel:				
27.	VI.2.1	<ul style="list-style-type: none"> • Recommends NAFO decides the level of acceptable risk regarding the outcomes of conservation and management measures, following a dialogue between Commission and SC, to provide the latter with guidance in its advisory work. [pg. 44] 	x (WG-RBMS)	x (WG-RBMS)		
28.	VI.2.2	<ul style="list-style-type: none"> • Recommends NAFO develops and publishes an advisory decision-making framework to ensure advice is linked explicitly to policy objectives, is consistent and its basis is transparent. [pg. 44] 	x	x		
29.	VI.2.3	<ul style="list-style-type: none"> • Recommends NAFO, as a matter of high priority, develops a plan and implements steps to match the scientific resources to the workload. [pg. 44] 	x	x		x
30.	VI.2.4	<ul style="list-style-type: none"> • Recommends NAFO implements a peer review process for the science underlying the SC advice and applies it consistently to all SC science used in advice. [pg. 44] 		x		
31.	VI.2.5	<ul style="list-style-type: none"> • Recommends the Secretariat conducts a survey of usage and identify further improvements to the public outreach documents relating to the state of NAFO stocks and NAFO science available on the NAFO website. [pg. 44] 			x	
		VII. International Cooperation				
		In relation to cooperation with other international organizations, the NAFO Performance Review Panel:				

#	CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY			
			COM	SC	SECRETARIAT	CPs
32.	VII.2.1	<ul style="list-style-type: none"> • Recommends NAFO strengthens and enhances cooperation with RFMOs and other relevant international organizations. [pg. 46] 	x			
33.	VI.2.2	<ul style="list-style-type: none"> • Recommends NAFO assesses how it can contribute its expertise to international developments, in particular the completion of the Aichi Targets and the Intergovernmental Conference on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. [pg. 46] 	x	x		x
		In relation to special requirements of developing countries, the NAFO Performance Review Panel:				
34.	VI.3.1	<ul style="list-style-type: none"> • Recommends NAFO participates in capacity building initiatives for developing countries. [pg. 46] 	x			
		VIII. Finance and Administration				
		In relation to finance and administration, the NAFO Performance Review Panel:				
35.	VII.1	<ul style="list-style-type: none"> • Recommends NAFO develops an annual operational plan for the NAFO Secretariat outlining key objectives and specifying resources required to meet these objectives. [pg. 48] 	x (STACFAD)			
36.	VII.2	<ul style="list-style-type: none"> • Recommends NAFO initiates a process to design a new visual identity for NAFO that reflects the role and responsibilities of the Organization. [pg. 48] 	x (STACFAD)			

In addition, considering that the cumulative impact of various human activities beyond the mandate of NAFO on the marine environment is mentioned by the 2018 Performance Review Panel among the significant external challenges for the long-term conservation and sustainable use of the fisheries resources, the **Commission recommends** that:

		<ul style="list-style-type: none"> • Contracting Parties be encouraged to share any relevant research they have completed with the Scientific Council; • Scientific Council monitor and provide regular updates on relevant research related to the potential impact of activities other than fishing in the Convention Area, such as oil exploration, shipping and recreational activities, and how they may impact the stocks and fisheries as well as biodiversity in the Regulatory Area. 	<p style="text-align: center;">x (WG-EAFFM)</p>	<p style="text-align: center;">x (WG-EAFFM)</p>		
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Annex 15. SC Response to Feedback Questions regarding its Scientific Advice – Compilation
(COM WP 18-50)

From Norway:
Revised Request [COM Working Paper 18-26 Rev.]

Further detail on this question was requested by the SC.

In response, Norway provided the following clarification:

Given the options in the provided table for yield in 2019, compute the projected yield in 2020 that would result in the same level of SSB2021 as the $F=0.75 F_{MSY}$ scenario (i.e. 32,204 t)

Original Request [COM Working Paper 18-26]

In relation to the Scientific Council's advice on Cod in 3M,

The projection table indicates that a substantial change in quota advice from 2019 to 2020 is to be expected as the fish from the good recruitment years is gradually being fished out. If the $75\%F_{msy}$ -approach used for the 2019 advice is applied also for 2020 to this year's assessment results, the projections table indicate a decrease in TAC of about 40% (from 20,796 t to 12,359t). If the Commission, for the purpose of promoting stability in the fishery, was to consider evening out the large variations in TACs going from 2018 to 2020, i.e. choose to accept a lower TAC for 2019 to allow for a larger TAC in 2020, what would be the cost in loss of biomass to natural mortality?

If possible, fill out the blanks in table below:

Option #	Yield (tonnes)		total	loss
	2019	2020		%
1	20 796	12 359	33 155	0 %
2	18 000			
3	16 000			
4	14 000			

Scientific Council responded:
[COM Working Paper 18-40]

SC noted that the advice of June 2018 for 3M cod was made only for one year, as the development of a MSE is in progress for this stock and it is scheduled to be in force for the next Annual Meeting to generate the TAC for 3M cod for 2020.

Projections assuming catches in 2019 equal to 18000, 16000 and 14000 tons were produced, and yield for 2020 that maintains the SSB in 2021 at the same value as in the projections made in June ($F = \frac{3}{4} F_{lim}$, median SSB=32 204 with 90% of confidence interval of (23 660 – 42 420)) was computed. The results of these projections, including the risks, are below:

F ₂₀₂₀	Yield					P(B < B _{lim})				P(F > F _{lim})		
	2018	2019	2020	Total (2019+2020)	Loss (%)	2018	2019	2020	2021	2018	2019	2020
0.115	11145	20796	12359	33155	0.00%	<1%	<1%	<1%	1%	<1%	1%	5%
0.131	11145	18000	14450	32450	2.25%	<1%	<1%	<1%	1%	<1%	<1%	18%
0.142	11145	16000	15956	31956	3.82%	<1%	<1%	<1%	1%	<1%	<1%	32%
0.152	11145	14000	17458	31458	5.26%	<1%	<1%	<1%	1%	<1%	<1%	49%

Decreasing the catch in 2019 increases the catch in 2020 without jeopardizing the SSB in 2021, but at the expense of increasing rapidly the risk of being above F_{lim} in 2020. The loss in yield for the sum of 2019 and 2020 is between 2.25% and 5.26%.

From Canada
[COM Working Paper 18-34]

In relation to the Scientific Council's advice on 3NO Witch flounder,

Taking into account that the relative biomass is higher in 2018 than 2017 and is projected to increase further under all five removal scenarios considered by the recent assessment of the Scientific Council (including F_{msy}), and observing that the TAC has not been taken since the fishery re-opened in 2015, Canada requests the Scientific Council to comment on the difference in the following TAC/removal scenarios, in terms of biomass growth and probability of being below B_{lim} :

1. *No Directed Fishing in 2019 and 2020, with bycatch in the range of 300-400t that was observed during 2008-14 before the fishery was re-opened*

Scientific Council responded:
[COM Working Paper 18-41]

Catches in the range of 300 to 400 t are bracketed within the first two rows of the risk table provided in the summary sheet. The risk of $B < B_{lim}$ is between 20% and 22% in 2020 and between 15% and 19% in 2021. In terms of biomass growth, the probability that $B_{2021} > B_{2018}$ under this scenario would be between 67-72%.

2. *TAC of 1175t, which is the Commission's decision for 2019 that was made last year based on 2/3 $F_{msy}=0.04$*

Scientific Council responded:

Catches of 1175 t in 2019 and 2020 are bracketed within 3rd and 4th rows of the risk table provided in the summary sheet. The risk of $B < B_{lim}$ is between 23% and 24% in 2020 and between 21-23% in 2021. In terms of biomass growth, the probability that $B_{2021} > B_{2018}$ under this scenario would be between 63-65%.

3. *TAC of 979t in 2019 and 1035t in 2020, using the re-calculated 2/3 $F_{msy}=0.04$ that was the basis of the Commission's decision made last year*

Scientific Council responded:

Catches of 979 t in 2019 and 1035 t in 2020 correspond to row 3 of the risk table provided in the summary sheet. The risk of $B < B_{lim}$ is 23% 2020 and 21% in 2021. In terms of biomass growth, the probability that $B_{2021} > B_{2018}$ under this scenario would be 65%.

There is little difference in risk among these catch scenarios; however, in all cases, there is a 15% or greater risk of being below B_{lim} .

Projected yield (t) and the risk of $F > F_{lim}$, $B < B_{lim}$ and $B < B_{MSY}$ and probability of stock growth ($B_{2021} > B_{2018}$) under projected F values of $F=0$, F_{2017} , $2/3 F_{MSY}$, $85\% F_{MSY}$, and F_{MSY} .

	Yield 2019	Yield 2020	P(F>F _{lim})		P(B<B _{lim})			P(B<B _{MSY})			P(B ₂₀₂₁ >B ₂₀₁₈)
			2019	2020	2019	2020	2021	2019	2020	2021	
F=0	0	0	0	0	26%	20%	15%	96%	95%	93%	72%
F ₂₀₁₇ =0.03	740	792	7%	8%	26%	22%	19%	96%	95%	93%	67%
2/3 F _{msy} =0.04	979	1035	19%	20%	26%	23%	21%	96%	95%	94%	65%
85%F _{msy} =0.05	1248	1306	36%	37%	26%	24%	23%	96%	95%	94%	63%
F _{msy} =0.06	1468	1522	50%	50%	26%	25%	24%	96%	95%	94%	61%

**From Russian Federation:
[from COM Working Paper 18-27]**

On the Scientific Council proposal for the 3NO witch flounder moratorium in 2019-2020, made at the SC meeting in June 2018.

Considering the recommendation for the 3NO witch flounder made by the Scientific Council during the June meeting:

"... SC recommends that there be no directed fishing in 2019 and 2020",

Noting that the most recent assessment (2018) indicates increase in witch flounder biomass, abundance and recruitment, as well as decrease in fishing mortality,

Reviewing the projected biomass growth under all scenarios shown in the same assessment,

Respecting the witch flounder fishery as a source of stock information on par with the annual surveys,

Russian Federation would like to make the following requests from the Scientific Council:

1. *The 2017 witch flounder assessment has shown that almost all projected scenarios had the probability of fishing mortality getting above the F_{lim} rather high (15-42% for 2018, 16-43% for 2019), with the probability of biomass declining below the B_{lim} being within 18-19% and 16-19% for the same years respectively, even in case of no fishery. SC has decided to recommend the TAC in accord with the F₂₀₁₆ scenario, which did not have the lowest possible mortality value. The 2018 assessment has shown the improvement of the stock and comparable projected scenarios; however, SC has chosen to recommend the moratorium for directed witch flounder fishery despite having several scenarios, including a more sparing one in compare with previous years, available. Have there been any additional factors not included in the assessment that might have affected the SC decision?*

**Scientific Council responded:
[COM Working Paper 18-42]**

When Witch flounder Div 3NO was assessed in 2017, SC accepted the model but because of uncertainty related to the model fit and proximity to reference points, SC scheduled another assessment for 2018. In 2018, the model formulation was improved by adjusting to accommodate rapid declines in survey biomass indices from 2014-16 and the issue was resolved. The stock status was worse in 2018 than had been seen in 2017 (according to the 2017 assessment the stock was 52% B_{msy} versus 34% B_{msy} in the 2018 assessment). Because of this, the probability of being below B_{lim} was higher in 2018 (0.29 versus 0.15 in the 2017 assessment) and in all projections. The basis for the advice is that according to NAFO's PA framework (FC Doc 04-18) there should be a very low probability (e.g. 5-10%) of biomass being below B_{lim} and all projections carried out in 2018 indicated that all probabilities were greater than or equal to 15%.

In 2018, further evidence of ecosystem wide decline in productivity (NAFO SCS 18-19 page 170; SCS 17-16 page 22) made SC more certain both about this change in productivity and the ability of the model to accommodate it.

2. *The witch flounder assessment uses commercial fishery data as part of its input. Should there be no directed fishery for that stock, will the witch flounder bycatch data from other fisheries be enough to use in the assessment? In addition, if there will be no sufficient survey coverage for witch flounder, do there exist any methods of assessing the stock with such lack of data?*

Scientific Council responded:

If there is no directed fishery on this stock, the stock will still be assessed using all available information including bycatch data. This could be either by an analytical assessment or a survey-based assessment as before the re-opening of the fishery in 2015.

Witch flounder uses two annual scientific surveys (Canadian fall and spring surveys) to assess the stock and these surveys cover most of the distribution of witch flounder. These are expected to continue in future years so sufficient survey coverage would persist.

3. *Current Conservation and Enforcement Measures limit the 3NO witch flounder bycatch as 5% of haul or 1250 kg, whichever is greater. The rest of bycatch in case of no directed fishery would be inevitably discarded. Notwithstanding the 'move-on rule' when exceeding the mentioned limit (which only increases the time of fishery, without actually reducing the fishing effort), the systematic high bycatches of witch flounder do contribute to the increase in fishing mortality, regardless of whether the fish is retained or discarded. Has there been any research for the approximate amount of discard-related mortality increase. In general, are the bycatches and discards accounted for when assessing any stock and have they been accounted for when assessing the 3NO witch flounder.*

Scientific Council responded:

There has been no research on discard-related mortality for the witch flounder Div. 3NO stock. However, in NE US waters discard mortality was found to be 52% after 1.5-3 hours. Tow duration was not recorded and the study was based on a small sample size of juvenile witch flounder (27 animals, Hendrickson and Nies 2007; Ross and Hokenson 1997) caught at a depth of 110 m. This is likely an under-estimate as the mortality was only recorded for a up to 3 hours or less. Additionally, it has been found that witch flounder die after 15 min of exposure to air (Davis 2002).

Data on discards are included in the catch estimates that have been produced using the CESAG/CDAG method. Bycatches and discards are accounted for in all assessments including witch flounder.

References

Hendrickson, L. and T. Nies (2008). Discard and gear escapement survival rates of some Northeast groundfish species. Groundfish Assessment Review meeting, NOAA. Draft working paper.

Ross, M.R. and S.R. Hokenson 1997. Short-term mortality of discarded finfish bycatch in the Gulf of Maine fishery for northern shrimp *Pandalus Borealis*. *N. Am. J. Fish. Man.* 17: 902-907.

From Norway
[COM Working Paper 18- 43]

(In plenary) regarding Alfonsino catches,

1. What are the “current levels” (SC advice grey box):
 - a. The average of STATLANT 21 catch figures for the period 2009-2017
 - b. The average of STATLANT 21 catch figures for a selected number of years during the period 2009-2017? If yes, which years?
 - c. The average of STACFIS catch figures for the period 2009-2017?
 - d. The average of STACFIS catch figures for a selected number of years during the period 2009-2017? If yes, which years?

Scientific Council responded:
[COM Working Paper 18-44]

“Current levels” of catches, using the same number of years as in the 2015, advice is 139 t. The table below has catch data from:

- STATLANT 21A data available during June SC 2018
- STATLANT 21A data available during September 2018
- STACFIS estimates

	Alfonsino Catches (t) Div. 6G									Mean
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2012-2017
STATLANT June 2018 ¹		53		298	112	118	77		51	109
STATLANT Sep 2018		53		298	112	118	77	129	51	131
STACFIS	479	52	152	302	114	118	122	127	51 ²	139

SC reiterates its advice that it is unable to advise on an appropriate TAC for this stock.

2. How are the STACFIS catch estimates as tabled in the advice sheet derived?

Scientific Council responded:

Due to the problems with the availability and quality of the STATLANT, the catches used in the STACFIS are based on the data collected by NAFO and scientific observers until the year 2016. The 2017 catches are those estimated by CESAG.

3. What is the explanation for using STACFIS figures – if that is the case – rather than the officially reported STATLANT 21 figures?

1 Note that in the table in June 2018 SC report, the STATLANT values for the period 2012 to 2015 were accidentally reversed
 2 Mistakenly reported as 55 t in the June 2018 SC report.

Scientific Council responded:

STACFIS estimates were used because they were considered more reliable. This is consistent with other stocks (eg. Brodie 2013, History of catch estimates, SCR 13-051).

From Norway:**[COM Working Paper 18-48]***(In plenary) regarding the Div. 3M Cod MSE,*

Can SC confirm that HCRs with starting points (TAC for 2020) which are independent of the 2019 TAC – e.g. not constrained by “max/min variation constraint” – will also be explored during the MSE process for 3M cod?

Scientific Council responded:**[COM Working Paper 18-49]**

RBMS is the main body tasked to develop the HCRs to be tested and any adopted HCR would have to be compliant with the prescribed management objectives. Expecting a similar procedure as for GHJ a variety of HCRs will indeed be tested. In this case with the expected low recruitment to the fishable stock in the coming years, it is likely that a range of starting points (2020 TAC) will need to be tested in order to meet management objectives, independent of the 2019 TAC.

Annex 16. Recommendations of the NAFO Working Group on Improving Efficiency of NAFO Working Group Process, 2018

(COM-SC WP 18-08 **now** COM-SC Doc. 18-07)

The Working Group on Improving Efficiency of NAFO Working Group Process recommends that:

- **For the 2017-2018 NAFO year, the following two-week periods, be considered for NAFO intersessional meetings:**
 - **25 February – 8 March 2019**
 - **29 April –10 May 2019 (including STACTIC intersessional meeting)**
 - **08 – 19 July 2019**

**Annex 17. Recommendations of the WG-RBMS to forward to the
NAFO Commission and Scientific Council, 2018**
(COM-SC WP 18-06 **now** COM-SC Doc. 18-05)

The NAFO Joint Fisheries Commission-Scientific Council Working Group on Risk-Based Management Strategies (WG-RBMS) met in August of 2018 (COM-SC Doc. 18-02) and agreed on the following recommendations to forward to the NAFO Commission and Scientific Council:

The WG-RBMS **recommends** that:

- **The Commission adopt the Exceptional Circumstances Protocol for 2+3KLMNO Greenland halibut management strategy as reflected in Annex 3. The Protocol would be inserted as Annex I.G in the NAFO Conservation and Enforcement Measures.**
- **The Commission and Scientific Council consider and endorse the revised calendar for the development of the 3M Cod MSE as reflected in Annex 4 of this report (COM-SC Doc. 18-02).**
- **The Commission and the Scientific Council continue their work on the NAFO PA Framework.**
- **The Commission approve the corrections in Annex I.F of the NCEM as reflected in Annex 5 of this report (COM-SC Doc. 18-02).**

Annex 3. Draft Exceptional Circumstances Protocol for the
Greenland halibut Management Procedure
(from COM-SC Doc. 18-02)

The following criteria constitute Exceptional Circumstances:

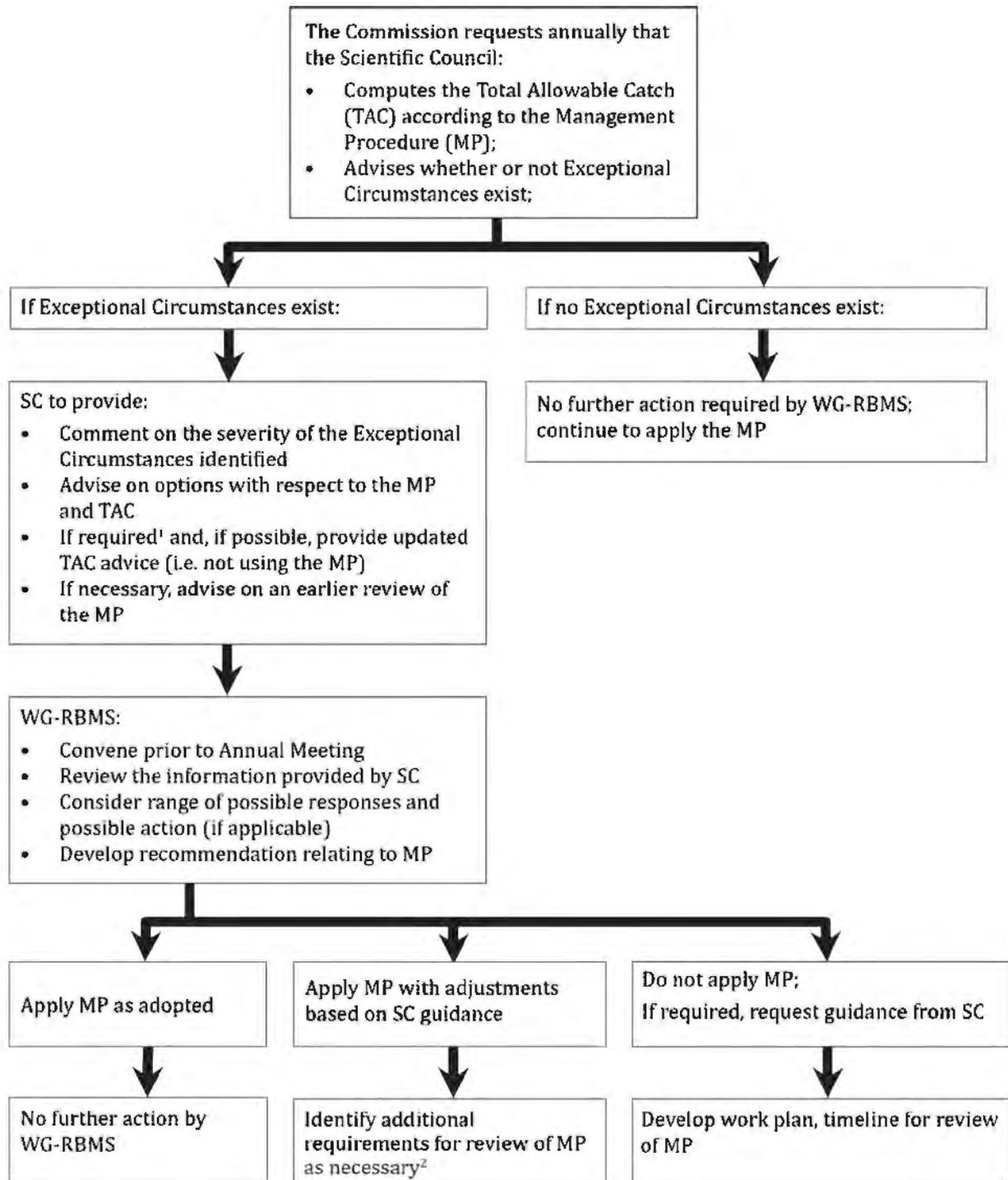
1. Missing survey data:
 - More than one value missing, in a five-year period, from a survey with relatively high weighting in the HCR (Canadian Fall 2J3K, Canadian Fall 3LNO, and EU 3M surveys);
 - More than two values missing, in a five-year period, from a survey with relatively low weighting in the HCR (Canadian Spring 3LNO and EU-Spain 3NO surveys);
2. The composite survey index used in the HCR, in a given year, is above or below the 90 percent probability envelopes projected by the base case operating models from SSM and SCAA under the MS; and
3. TACs established that are not generated from the MP

The following elements will require application of expert judgment to determine whether Exceptional Circumstances are occurring:

4. the five survey indices relative to the 80, 90, and 95 percent probability envelopes projected by the base case operating models (SSM and SCAA) for each survey;
5. survey data at age four (age before recruitment to the fishery) compared to its series mean to monitor the status of recruitment; and
6. discrepancies between catches and the TAC calculated using the MP.³

Figure 1 illustrates the actions to be taken in Exceptional circumstances.

³ Noting that 10% exceedance of TAC was tested during MSE.



¹ For example, where the SC determines that, in the light of identified exceptional circumstances, the application of the TAC generated by the MP may not be appropriate.

² This review may include updated assessment, sensitivity analysis, etc.

Figure 1. Decision tree illustrating actions to be taken in the event of Exceptional Circumstances.

Annex 4. Revised calendar for the development of 3M Cod MSE
(from COM-SC Doc. 18-02)

The table below shows actions required to complete the MSE process, the parties responsible for their completion, and indicative dates that would enable the process to be completed by September 2019.

Validation of code by independent analysts was initially suggested as a separate step towards the end of the process. It is considered to be unlikely that this could be done in the time available although this will remain under consideration. An alternative option would be that external validation could be achieved through some sort of continuous external review throughout the process.

Dates	Action	Responsibility
Fall 2018	Development of OMs	Analysts
	Testing of HCRs	Analysts
	Development of Projection Specifications	Analysts
	Proposals for full set of MO/PS/Risks	Analysts
	Develop Trials Specification document (to be updated as the process continues)	Analysts
	Arrange repository for code and results	Secretariat
January 2019	Review OMs and approve initial set of OMs, including the acceptability of their conditioning, and/or suggest further refinements	SC
	Approve Projection Specifications	SC
	Comments on initial set of HCR (if required)	SC
Feb-March 2019	Test initial/refined HCRs using initial/refined set of OMs	Analysts
March 2019	Review initial MSE results	WG-RBMS
	Update and possibly finalize PS and associated risk levels	WG-RBMS
	Indicate where improvements in performance are most required to guide analysts in revising HCRs	WG-RBMS
April – May 2019	Implement HCR improvements	Analysts
	Propose plausibility weightings for OMs (if required)	Analysts
June 2019 SC Meeting	Review refined OMs and approve final set of OMs, including the acceptability of their conditioning	SC
	Review results from refined HCRs and cull those HCRs not needing further consideration	SC
	Agree plausibility weightings of OMs (though subject to endorsement by RBMS)	SC
Summer 2019. (potentially an additional day on the end of the SC June meeting or separate July meeting, possibly by Webex)	Finalize PS and associated risk levels –	WG-RBMS
	Endorse plausibility weightings of OMs	WG-RBMS
August-early September 2019	Run tests of a final set of HCRs on finalized OMs and prepare consolidated results –	Analysts
preceding NAFO AM 2019	Review results of MSE for revised HCRs & recommendation to Commission –	WG-RBMS

**Annex 5. Changes in Greenland halibut Harvest Control Rule in Annex I.F of the NCEM
(from COM-SC Doc. 18-02)**

**Revision of NCEM Annex I.F
Greenland halibut Management Strategy Procedure**

Proposed changes to Annex I.F to reflect the original intention in the Greenland halibut management strategy adopted by the Commission in 2017.

**Annex I.F
Greenland halibut Management Strategy Procedure**

The harvest control rule (HCR) will adjust the total allowable catch (TAC) from year (y) to year ($y+1$), according to:

a combination of a “target based” and a “slope based” rule detailed below.

Target based (t)

The basic harvest control rule (HCR) is:

$$TAC_{y+1} = TAC_y (1 + \gamma(J_y - 1)) \quad (1)$$

where

TAC_y is the TAC recommended for year y ,

γ is the “response strength” tuning parameter,

J_y is a composite measure of the immediate past level in the mean weight per tow from surveys (J_y^i) abundance indices that are available to use for calculations for year y ; for this base case CMP five series have been are used, with $i = 1, 2, 3, 4$ and 5 corresponding respectively to Canada Fall 2J3K, EU 3M 0-1400m, Canada Spring 3LNO, EU 3NO and Canada Fall 3LNO:

$$J_y = \frac{\sum_{i=1}^5 \frac{1}{(\sigma^i)^2} \frac{J_{current,curr,y}^i}{J_{target}^i}}{\sum_{i=1}^5 \frac{1}{(\sigma^i)^2}} \quad (2)$$

with

$(\sigma^i)^2$ being the estimated variance for index i (estimated in the SCAA model fitting procedure, see Table 1)

$$J_{current,curr,y}^i = \frac{1}{q} \sum_{y'=y-q}^{y-1} I_{y'}^i \quad (3)$$

$$J_{target}^i = \alpha \frac{1}{5} \sum_{y'=2011}^{2015} I_{y'}^i \quad (\text{where } \alpha \text{ is a control/tuning parameter for the CMPMP) \quad (4)$$

Note the assumption that when a TAC is set in year y for year $y+1$, indices will not at that time yet be available for the current year y .

Slope based (s)

The basic harvest control rule (HCR) is:

$$TAC_{y+1} = TAC_y [1 + \lambda_{up/down} (s_y - X)] \quad (5)$$

where

$\lambda_{up/down}$ and X are tuning parameters,

s_y is a measure of the immediate past trend in the survey-based abundance indices, computed by linearly regressing $\ln I_{y'}^i$ vs year y' for $y' = y - 5$ to $y' = y - 1$, for each of the five surveys considered, with

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$$s_y = \frac{\sum_{i=1}^5 \frac{1}{(\sigma^i)^2} s_y^i}{\sum_{i=1}^5 \frac{1}{(\sigma^i)^2}} \quad (6)$$

with the standard error of the residuals of the observed compared to model-predicted logarithm of survey index i (σ^i) estimated in the SCAA base case operating model.

Combination Target and Slope based (s+t)

For the target and slope-based combination:

- 1) TAC_{y+1}^{target} is computed from equation (1),
- 2) TAC_{y+1}^{slope} is computed from equation (5), and
- 3) $TAC_{y+1} = (TAC_{y+1}^{target} + TAC_{y+1}^{slope})/2$

Finally, constraints on the maximum allowable annual change in TAC are applied, viz.:

$$\text{if } TAC_{y+1} > TAC_y(1 + \Delta_{up}) \text{ then } TAC_{y+1} = TAC_y(1 + \Delta_{up}) \quad (7)$$

and

$$\text{if } TAC_{y+1} < TAC_y(1 - \Delta_{down}) \text{ then } TAC_{y+1} = TAC_y(1 - \Delta_{down}) \quad (8)$$

The control parameters for the recommended adopted MP MP: CMP16.5_s+t are shown in Table 2 with a starting TAC of 16 500 t in 2018. Missing survey values are treated as missing in the calculation of the rule as in the MSE.

Table 1. The weights given to each survey in obtaining composite indices of abundance are proportional to the inverse squared values of the survey error standard deviations σ^i listed below.

Survey	σ^i
Canada Fall 2J3K	0.22
EU 3M 0-1400m	0.21
Canada Spring 3LNO	0.49
EU 3NO	0.38
Canada Fall 3LNO	0.26

Table 2. Control parameter values for the MPs recommended. The parameters α and X were adjusted to achieve a median biomass equal to B_{msy} for the exploitable component of the resource biomass in 2037.

TAC_{2018}	16 500 tonnes
γ	0.15
q	3
α	0.972
λ_{up}	1.00
λ_{down}	2.00
X	-0.0056
Δ_{up}	0.10
Δ_{down}	0.10

**Annex 18. Recommendations of the WG-EAFFM to forward to the
NAFO Commission and Scientific Council, 2018**
(COM-SC WP 18-07 now COM-SC Doc. 18-06)

The NAFO Joint Fisheries Commission-Scientific Council Working Group on Ecosystem Approach Framework to Fisheries Management (WG-EAFFM) met in August of 2018 (COM-SC Doc. 18-03) and agreed on the following recommendations from the WG-EAFFM to the NAFO Commission and Scientific Council:

The WG-EAFFM **recommends** that:

- **In relation to the evaluation of impact of scientific trawl surveys on VMEs in closed areas, Contracting Parties consider possible options for non-destructive regular monitoring within closed areas, bearing in mind cost implications and the utility of data collected for provision of advice.**

In relation to implementation of the Ecosystem Approach Roadmap, WG-EAFFM continue to make progress on the Ecosystem Approach Roadmap, acknowledging the general concepts of Ecosystem Production Potential (EPP) as a useful step towards implementation of EAFFM.

The Scientific Council continue to refine its work under the ecosystem approach road map, including testing the reliability of the ecosystem production potential model and other related models, and to report on these results to the WG-EAFFM to further develop how it may apply to management decisions.

- **WG-EAFFM work to reconsider the terminology used in the Ecosystem Summary Sheets in order to avoid potential confusion with standard terminology in fisheries management, as well as considering their potential ability to inform management decisions.**
- **In relation to the area #14, the Scientific Council include it in its review of closed areas in 2020, irrespective of the decision on continuing or not this closure after 2018, which remains to be considered by the Commission.**
- **In relation to the assessment of significant adverse impacts (SAI), SC maintain efforts to assess all of the six FAO criteria, including the three FAO functional SAI criteria (Article 18 of the FAO international Guidelines for the management of deep-sea fisheries in the High Seas) which could not be evaluated in the current assessment.**
- **In relation to FAO three letter codes for VME indicator species, the existing taxa list in Annex I.E. Part VI of the NCEM be updated with the FAO ASFIS codes as listed in Annex 4 of this report.**
- **The Scientific Council review the proposed revisions to Annex I.E. Part VI as reflected in COM-SC EAFFM-WP 18-01, and to compare the consistency of the list of taxa in that Annex to the VME species guide with a view to recommend updates, as necessary.**
- **The Secretariat to work with the FAO to develop new ASFIS codes, as necessary, for those taxa listed in Annex 1.E Part VI.**

Annex 4. FAO ASFIS 3-alpha FAO codes of VME indicator species
(from COM-SC Doc 18-03)

The following table lists the current NAFO VME Indicator Species as found in Annex I.E Part VI. of the NAFO CEM with the available ASFIS 3-Alpha codes.

Benthic Invertebrate VME Indicator Species			
Common name of taxonomic group	Known Taxon	Family	Phyllum
Large-sized sponges (SPO)	<i>Iophon piceum</i> (WJP)	Acarinidae	Porifera
	<i>Stelletta normani</i>	Ancorinidae	
	<i>Stelletta</i> sp. (WSX)	Ancorinidae	
	<i>Stryphnus ponderosus</i>	Ancorinidae	
	<i>Axinella</i> sp.	Axinellidae	
	<i>Phakellia</i> sp.	Axinellidae	
	<i>Esperiopsis villosa</i> (ZEW)	Esperiopsidae	
	<i>Geodia barretti</i>	Geodiidae	
	<i>Geodia macandrewii</i>	Geodiidae	
	<i>Geodia phlegraei</i>	Geodiidae	
	<i>Mycale (Mycale) lingua</i> (YHL)	Mycalidae	
	<i>Thenia muricata</i>	Pachastrellidae	
	<i>Polymastia</i> spp. (ZPY)	Polymastiidae	
	<i>Weberella bursa</i>	Polymastiidae	
	<i>Weberella</i> sp. (ZWB)	Polymastiidae	
	<i>Asconema foliatum</i> (ZBA)	Rossellidae	
	<i>Craniella cranium</i>	Tetillidae	
Stony corals (CSS) (known seamount species may not occur in abundance in the NRA)	<i>Lophelia pertusa</i> (LWS)	Caryophylliidae	Cnidaria
	<i>Solenosmilia variabilis</i> (RZT)	Caryophylliidae	
	<i>Enallopsammia rostrata</i> (FEY)	Dendrophylliidae	
	<i>Madrepora oculata</i> (MVI)	Oculinidae	
Small gorgonian corals (GGW)	<i>Anthothela grandiflora</i> (WAG)	Anthothelidae	Cnidaria
	<i>Chrysogorgia</i> sp. (FHX)	Chrysogorgiidae	
	<i>Radicipes gracilis</i> (CZN)	Chrysogorgiidae	
	<i>Metallogorgia melanotrichos</i>	Chrysogorgiidae	
	<i>Acanella arbuscula</i>	Isididae	
	<i>Acanella eburnea</i>	Isididae	
	<i>Swiftia</i> sp.	Plexauridae	
<i>Narella laxa</i>	Primnoidae		
Large gorgonian corals (GGW)	<i>Acanthogorgia armata</i> (AZC)	Acanthogorgiidae	Cnidaria
	<i>Iridogorgia</i> sp.	Chrysogorgiidae	
	<i>Corallium bathyrubrum</i>	Coralliidae	
	<i>Corallium bayeri</i>	Coralliidae	
		Coralliidae	

	<i>Keratoisis ornata</i> (KRY)	Isididae	
	<i>Keratoisis</i> sp.	Isididae	
	<i>Lepidisis</i> spp. (QEX)	Isididae	
	<i>Paragorgia arborea</i> (BEU)	Paragorgiidae	
	<i>Paragorgia johnsoni</i> (BEV)	Paragorgiidae	
	<i>Paramuricea grandis</i>	Plexauridae	
	<i>Paramuricea placomus</i>	Plexauridae	
	<i>Paramuricea</i> spp. (PZL)	Plexauridae	
	<i>Placogorgia</i> sp.	Plexauridae	
	<i>Placogorgia terceira</i>	Plexauridae	
	<i>Calyptrophora</i> sp.	Primnoidae	
	<i>Parastenella atlantica</i>	Primnoidae	
	<i>Primnoa resedaeformis</i>		
	(QOE)	Primnoidae	
	<i>Thouarella grasshoffi</i>	Primnoidae	
Sea pens (NTW)	<i>Anthoptilum grandiflorum</i>	Anthoptilidae	Cnidaria
	<i>Funiculina quadrangularis</i>		
	(FOI)	Funiculinidae	
	<i>Halipterus</i> cf. <i>christii</i>	Halipteridae	
	<i>Halipterus finmarchica</i> (HFM)	Halipteridae	
	<i>Halipterus</i> spp. (ZHX)	Halipteridae	
	<i>Kophobelemnion stelliferum</i>		
	(KVF)	Kophobelemnidae	
	<i>Pennatula aculeata</i> (OAC)	Pennatulidae	
	<i>Pennatula grandis</i>	Pennatulidae	
	<i>Pennatula</i> sp.	Pennatulidae	
	<i>Distichoptilum gracile</i> (WDG)	Protoptilidae	
	<i>Protoptilum</i> sp.	Protoptilidae	
	<i>Umbellula lindahli</i>	Umbellulidae	
	<i>Virgularia</i> cf. <i>mirabilis</i>	Virgulariidae	
Tube-dwelling anemones	<i>Pachycerianthus borealis</i>	Cerianthidae	Cnidaria
	(WQB)		
Erect bryozoans (BZN)	<i>Eucratea loricata</i> (WEL)	Eucrateidae	Bryozoa
Sea lilies (Crinoids) (CWD)	<i>Trichometra cubensis</i>	Antedonidae	Echinodermata
	<i>Conocrinus lofotensis</i> (WCF)	Bourgueticrinidae	
	<i>Gephyrocrinus grimaldii</i>	Hyocrinidae	
Sea squirts (SSX)	<i>Boltenia ovifera</i> (WBO)	Pyuridae	Chordata
	<i>Halocynthia aurantium</i>	Pyuridae	

**Annex 19. Recommendations of the CESAG to forward to the
NAFO Commission and Scientific Council, 2018**
(COM-SC WP 18-05 **now** COM-SC Doc. 18-04 Rev.)

The NAFO Joint Commission-Scientific Council Catch Estimation Strategy Advisory Group (CESAG) met via WebEx on 26 April 2018 (NAFO COM-SC Doc. 18-01) and agreed on the following recommendations to forward to the NAFO Commission and Scientific Council.

The CESAG **recommends** that:

- **The Secretariat, on behalf of CESAG, forward to Scientific Council, for consideration in its fish stock assessment work, the updated 2017 catch estimates as contained in CESAG WP 18-01 (Revised 2);**
- **Noting the specific duty of CESAG to consider and identify potential refinements of the Catch Estimate Strategy *including the incorporation of haul-by-haul data within the strategy* and noting the compliance issues with regards to the submission of the haul by haul reports, CESAG requests the Commission to consider some formal follow-up procedure to Contracting Parties with the aim of improving the compliance to the haul by haul submission requirement.**

Annex 20. The Commission's Request for Scientific Advice on Management in 2020 and Beyond of Certain Stocks in Subareas 2, 3 and 4 and Other Matters
(COM WP 18-51 (Rev. 2) **now** COM Doc. 18-20)

Following a request from the Scientific Council, the Commission agreed that items 1, 2, 3, 4, and 12 should be the priority for the June 2019 Scientific Council meeting. Items 4 and 12 were identified as top priorities for Scientific Council subject to resources.

1. The Commission requests that the Scientific Council provide advice for the management of the fish stocks below according to the assessment frequency presented below. In keeping with the NAFO Precautionary Approach Framework (FC Doc. 04/18), the advice should be provided as a range of management options and a risk analysis for each option (rather than a single TAC recommendation) and the actual risk level should be decided upon by managers.

Yearly basis	Two-year basis	Three-year basis
Cod in Div. 3M Northern shrimp in Div. 3M	Redfish in Div. 3M Northern shrimp in Div. 3LNO Thorny skate in Div. 3LNO Witch flounder in Div. 3NO Redfish in Div. 3LN	American Plaice in Div. 3LNO American Plaice in Div. 3M Capelin in Div. 3NO Northern shortfin squid in SA 3+4 Redfish in Div. 3O Yellowtail flounder in Div. 3LNO Greenland halibut in Div. 2+3KLMNO Splendid alfonsino in SA 6

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

In 2019, advice should be provided for 2020 for Cod in 3M (subject to the outcomes of the Management Strategy Evaluation process) and Northern shrimp in 3M. With respect to Northern shrimp in 3M, SC is requested to provide its advice to the Commission prior to the 2019 Annual Meeting.

In 2019, advice should be provided for 2020 and 2021 for: Redfish in 3M, White hake in 3NO, and Northern shrimp in 3LNO.

In 2019, advice should be provided for 2020, 2021 and 2022 for: Northern shortfin squid in SA 3+4, and Redfish in 3O.

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 (currently 3LN Redfish and Greenland halibut 2+3KLMNO).

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

2. In 2019, the Commission requests Scientific Council to conduct a full assessment of Witch Flounder in Div. 3NO. The advice should be provided for 2020 and 2021.

3. The Commission requests the Scientific Council to monitor the status of Greenland halibut in Subarea 2+Div 3KLMNO annually to compute the TAC using the agreed HCR and determine whether exceptional circumstances are occurring. If exceptional circumstances are occurring, the exceptional circumstances protocol will provide guidance on what steps should be taken.
4. The Commission requests the Scientific Council to implement the steps as described in the revised calendar (COM/SC Doc 18-02, Annex 4 relevant to the SC for progression of the 3M Cod Management Strategy Evaluation for 2019).
5. The Commission requests that Scientific Council continue its evaluation of the impact of scientific trawl surveys on VME in closed areas, and the effect of excluding surveys from these areas on stock assessments.
6. The Commission requests the Scientific Council to implement the steps of the Action plan relevant to the SC and in particular the tasks identified under section 2.2 of the Action Plan, for progression in the management and minimization of Bycatch and discards (COM Doc 17-26).
7. The Commission requests Scientific Council to conduct a full assessment on 3M golden Redfish in 2019 and, acknowledging that there are three species of redfish that exist in 3M and are difficult to separate in the catch, provide advice on the implications for catch reporting and stock management.
8. The Commission requests the Scientific Council to continue to refine its work under the Ecosystem Approach Road Map, including testing the reliability of the ecosystem production potential model and other related models, and to report on these results to both the WG – EAFFM and WG- RBMS to further develop how it may apply to management decisions.
9. In relation to the assessment of NAFO bottom fisheries, the Commission endorsed the next re-assessment in 2021 and that the Scientific Council should:
 - Assess the overlap of NAFO fisheries with VME to evaluate fishery specific impacts in addition to the cumulative impacts;
 - Consider clearer objective ranking processes and options for objective weighting criteria for the overall assessment of significant adverse impacts and the risk of future adverse impacts;
 - Maintain efforts to assess all of the six FAO criteria (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).
 - Continue to work on non-sponge and coral VMEs (for example bryozoan and sea squirts) to prepare for the next assessment.
10. Review the proposed revisions to Annex I.E, Part VI as reflected in COM/SC WG –EAFFM WP 18-01, for consistency with the taxa list annexed to the VME guide and recommend updates as necessary.
11. The Commission requests Scientific Council to conduct a re-assessment of VME closures by 2020, including area #14.
12. The Commission requests the Scientific Council to continue progression on the review of the NAFO PA Framework.
13. According to the Scientific Advice for years 2019, 2020 and 2021, fishing should not be allowed to expand above current levels on Kükenthal Peak (Div. 6G, part of the Corner Rise seamount

chain). To allow this recommendation to be enforceable the Commission requests the Scientific Council to provide the map and coordinates of the Kükenthal Peak.

14. The Commission requests Scientific Council work with WG- BDS to identify areas and times where bycatch and discards of Greenland sharks have a higher rate of occurrence. This work will support WG-BDS in developing appropriate management recommendations, including safe handling practises for live release of Greenland sharks, for consideration by the Commission at its 2021 Annual Meeting.
15. The Commission requests Scientific Council to monitor and provide regular updates on relevant research related to the potential impact of activities other than fishing in the Convention Area, such as oil exploration, shipping and recreational activities, and how they may impact the stocks and fisheries as well as biodiversity in the Regulatory Area.
16. The Commission requests Scientific Council to take the first steps to develop a 3-5 year work plan, which reflects requests arising from the 2018 Annual Meeting, other multi-year stock assessments and other scientific inquiries already planned for the near future. The work plan should identify what resources are necessary to successfully address these issues, gaps in current resources to meet those needs and proposed prioritization by the Scientific Council of upcoming work based on those gaps.

ANNEX A: Guidance for providing advice on Stocks Assessed with an Analytical Model

The Commission request the Scientific Council to consider the following in assessing and projecting future stock levels for those stocks listed above. These evaluations should provide the information necessary for the Fisheries Commission to consider the balance between risks and yield levels, in determining its management of these stocks:

1. For stocks assessed with a production model, the advice should include updated time series of:
 - Catch and TAC of recent years
 - Catch to relative biomass
 - Relative Biomass
 - Relative Fishing mortality
 - 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: $2/3 F_{msy}$, $3/4 F_{msy}$, $85\% F_{msy}$, $75\% F_{2018}$, F_{2018} , $125\% F_{2018}$,
- For stocks under a moratorium to direct fishing: F_{2018} , $F = 0$.

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.

F in 2018 and following years*	Yield 2019 (50%)	Yield 2020 (50%)	Yield 2021 (50%)	Limit reference points						P(B2021 > B2017)									
				P(F > F _{lim})			P(B < B _{lim})				P(F > F _{msy})			P(B < B _{msy})					
				2019	2020	2021	2019	2020	2021		2019	2020	2021	2019	2020	2021			
$2/3 F_{msy}$	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
$3/4 F_{msy}$	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
$85\% F_{msy}$	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
F_{msy}	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
$0.75 \times F_{2018}$	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
F_{2018}	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
$1.25 \times F_{2018}$	t	t	t	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
$F=0$	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.

Annex 21. 2019 Quota Table

CATCH LIMITATIONS – Article 5. Total allowable catches (TACs) and quotas (metric tons in live weight) for 2019 of particular stocks in Subareas 1-4 of the NAFO Convention Area.

Species	Cod				Redfish					American plaice		Yellowtail
Stock Specification	COD 3L	COD 3M		COD 3NO	RED 3LN		RED 3M	RED 3O	REB 1F_2_3K (i.e. Sub-Area 2 and Divs. 1F+3K)	PLA 3LNO	PLA 3M	YEL 3LNO
% of TAC			% of 3M Cod TAC			% of 3LN Redfish TAC						
Contracting Party												
Canada		140	0.80	0	7 710	42.60	500	6 000	0 ¹	0	0	16 575
Cuba		648	3.70	-	1 774	9.80	1 750		0 ¹	-	-	-
Denmark (Faroe Islands and Greenland)		3 911	22.35	-	-		69 ¹⁰		0	-	-	-
European Union		9 980 ⁵	57.03	0 ⁴	3 300 ⁴	18.23	7 813 ⁴	7 000	0 0 ⁷	0	0 ⁴	-
France (St. Pierre et Miquelon)		-		-	-		69 ¹⁰		0 ¹	-	-	340
Iceland		-		-	-		-		0	-	-	-
Japan		-		-	-		400	150	0 ¹	-	-	-
Korea		-		-	-		69 ¹⁰	100	0 ¹	-	-	-
Norway		1 619	9.25	-	-		-		0	-	-	-
Russian Federation		1 132	6.47	0	5 207	28.77	9 137	6 500	0	-	0	-
Ukraine								150	0 ¹			
United States of America		-		-	-		69 ¹⁰		0 ¹	-	-	-
Others		70	0.40	0	109	0.60	124	100	-	0	0	85
TOTAL ALLOWABLE CATCH	*	17 500	100.0 ¹⁴	* ¹¹	18 100	100.0 ¹⁵	10 500	20 000	0 ^{3,9}	* ¹¹	* ⁸	17 000 ¹²

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Species	Witch			White hake	Capelin	Skates	Greenland halibut	Squid (<i>Illex</i>)	Shrimp	
Stock Specification	WIT 3L	WIT 3NO		HKW 3NO	CAP 3NO	SKA 3LNO	GHL 3LMNO	SQI 3_4 (i.e. Sub-areas 3+4)	PRA 3L	PRA 3NO
% of TAC			% of 3NO Witch TAC							
Contracting Party										
Canada		705	60.00	294	0	1 167	1 836	N.S. ²	0	
Cuba		-			0		-	510	0	
Denmark (Faroe Islands and Greenland)		-			-		211	-	0	
European Union		156 ⁴	13.27	588	0 ⁵	4 408	7 177 ⁶	N.S. ² 611 ⁵	0 ⁶	
France (St. Pierre et Miquelon)		-			-		201	453	0	
Iceland		-			-		-	-	0	
Japan		-			0		1 255	510	0	
Korea		-			-		-	453	0	
Norway		-			0		-	-	0	
Russian Federation		302	25.73	59	0	1 167	1 562	749	0	
Ukraine							-		0	
United States of America		-			-		-	453	0	
Others		12	1.00	59	-	258		794	0	
TOTAL ALLOWABLE CATCH	*	1 175	100.00 ¹⁶	1 000	* ¹¹	7 000 ^{13,8}	12 242	34 000	0	*



- * Ban on fishing in force.
- 1 Quota to be shared by vessels from Canada, Cuba, France (St. Pierre et Miquelon), Japan, Korea, Ukraine and USA.
- 2 The allocations to these Contracting Parties are as yet undetermined, although their sum shall not exceed the difference between the total of allocations to other Contracting Parties and the TAC (= 29.467 tonnes).
- 3 Should NEAFC modify its level of TAC, these figures shall be adjusted accordingly by NAFO through a mail vote.
- 4 Including allocations to Estonia, Latvia and Lithuania in accordance with the sharing arrangement of the former USSR quota adopted by the Fisheries Commission in 2003 (FC WP 03/7), as applied by NAFO since 2005 following their accession to the European Union.
- 5 Including allocations to Estonia, Latvia and Lithuania in accordance with the sharing arrangement of the former USSR quota adopted by the Fisheries Commission in 2003 (FC WP 03/7), and to Poland, as applied by NAFO since 2005 following their accession to the European Union.
- 6 Including allocations to Estonia, Latvia, Lithuania and Poland, as applied by NAFO since 2005 following their accession to the EU.
- 7 Allocation of 17.85% to Lithuania and 2.15% to Latvia following their accession to the European Union.
- 8 Applicable to 2019 and 2020.
- 9 If an increase in the overall TAC as defined in footnote 3 leads to an increase in these shares, the first 500 tonnes of that increase shall be added to the quota share referred to in footnote 1.
- 10 Notwithstanding the provision of Article 5.3 (b) and without prejudice to future agreements on allocations, these quotas may be fished in their entirety by these Contracting Parties.
- 11 Applicable to 2019, 2020 and 2021.
- 12 Following the NAFO Annual Meeting and prior to 1 January of the succeeding year, at the request of the USA, Canada will transfer 1,000 tonnes of its 3LNO yellowtail quota to the USA.
- 13 Should catches exceed 5 000 tonnes, additional measures would be adopted to further restrain catches in 2019.

Historical statements

- 14 The allocation key of this stock is based on the 1998 Quota Table. In 1999, a moratorium on cod in Division 3M was declared.
- 15 The allocation key of this stock is based on the 1997 Quota Table. In 1998, a moratorium on redfish in Division 3LN was declared.
- 16 The allocation key of this stock is based on the 1994 Quota Table. In 1995, a moratorium on witch flounder in Division 3NO was declared.

**Effort Allocation Scheme for Shrimp Fishery in the
NAFO Regulatory Area Div. 3M, 2019-2020**

Contracting Party	Number of Fishing Days¹	Number of Vessels¹
Canada	0	0
Cuba	0	0
Denmark		
– Faroe Islands	0	0
– Greenland		0
European Union	0	0
France (in respect of St. Pierre et Miquelon)	0	0
Iceland	N/A	N/A
Japan	0	0
Korea	0	0
Norway	0	0
Russia	0	N/A
Ukraine	0	0
USA	0	0

¹ When the scientific advice estimates that the stock shows signs of recovery, the fishery shall be re-opened in accordance with the effort allocation key in place for this fishery at the time of the closure.

Annex 22. Amendments to NAFO CEM - Measure to Conserve Greenland Sharks
(COM WP 18-38 (Rev. 4) **now** COM Doc. 18-17)

Explanatory memorandum

Under the revised NAFO convention, NAFO members have re-committed themselves to applying an ecosystem-based approach to fisheries management, including conserving the marine biodiversity within NAFO waters. NAFO has acted upon this responsibility by applying science-based management and implementing the NAFO Precautionary Approach, helping to ensure sustainable fisheries and safeguard the marine environment.

Reflecting this foundational commitment of NAFO, we propose a measure to help to conserve the Greenland shark (*Somniosus microcephalus*). The Scientific Council reported, as a result of an inquiry from NAFO's 2016 Annual Meeting, that Greenland sharks warrant precautionary consideration due to their unknown stock status in the NRA and their long lifespan, extremely delayed maturity and low fecundity which make them more susceptible to overfishing. The Scientific Council noted that Greenland Sharks are assessed as "Near Threatened" by the IUCN Red List Shark Specialist Group based primarily on their biological vulnerability. In NAFO regulatory waters, there are no directed fisheries on Greenland sharks but they are caught incidentally.

The Scientific Council contends that "a prohibition on retention and directed fishing for Greenland sharks is advised, along with the implementation of bycatch reduction measures." This proposal sets out actions that NAFO Contracting Parties can take immediately to help to conserve Greenland sharks, while also setting in motion additional scientific review to support the development of additional management measures, as appropriate. Additionally, to support this effective conservation of Greenland Sharks, the Scientific Council encouraged Contracting Parties to undertake and report to the Scientific Council research on gear restrictions and modifications to reduce or eliminate the incidental catch of Greenland sharks.

Proposal

Reaffirming NAFO's commitment to ecosystem and science-based management;

Recognizing the Scientific Council's advice on Greenland Sharks, including that "management actions should keep fishing mortality as close to zero as possible to ensure that there will be a very low probability that biomass will decline within the foreseeable future;"

Recalling Article 12 "Conservation and Management of Sharks" which requires all Contracting Parties to report all catches of sharks;

Additionally recalling that paragraph of that same Article calls upon Contracting Parties to encourage vessels to release sharks alive, especially juveniles, that are not intended for use as food or subsistence;

Further Recalling paragraph five of Article 12 which calls upon Contracting Parties to undertake research on sharks, including research on gear selectivity for the protection of sharks;

Therefore recommends that CEM Article 12 paragraph 1, be amended by inserting as a new sub-paragraphs (d) and (e):

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- (d) prohibit fishing vessels flying its flag from conducting a directed fishery for Greenland shark (*Somniosus microcephalus*) in the Regulatory Area,**
- (e) require every vessel entitled to fly its flag to undertake all reasonable efforts to minimize incidental catch and mortality, and where alive, release Greenland sharks in a manner that causes the least possible harm.**

Consistent with its Action Plan, we recommend that the Ad Hoc Working Group on Bycatch, Discards and Selectivity (WG-BDS), working with the Scientific Council, identify areas and times where bycatch and discards of Greenland sharks have a higher rate of occurrence. Contracting Parties shall report to WG-BDS on their efforts to minimize incidental catches and mortalities of Greenland Sharks in the NAFO Convention Area, including amounts of Greenland Sharks released and retained 2019-2021. Further, we recommend that the WG-BDS advise the Commission, at its 2021 Annual Meeting, on appropriate management recommendations, including for safe handling practices including for live release, to address the bycatch of Greenland sharks to allow the Commission to consider additional measures for their conservation.

Annex 23. Follow-up Procedure Regarding Haul-by-Haul Submissions
(COM WP 18-37 **now** COM Doc. 18-27)

Mindful that reliable catch information is necessary to support the best available scientific advice, the sustainable management of NAFO fish stocks, and the credibility of the Organization as a whole;

Recognizing that significant efforts have been made by NAFO to develop reliable catch estimates;

Further recognizing the ongoing efforts to enhance the catch estimation process, which relies in part on the timely provision of haul-by-haul (logbook) information to the NAFO Secretariat;

Mindful that Contracting Parties are to ensure that logbook information is submitted to the NAFO Secretariat within 60 days following the completion of each fishing trip in accordance with Article 28.8 (b) of the NAFO Conservation and Enforcement Measures;

Noting that a number of Contracting Parties have not submitted the required data within the 60 day period outlined by Article 28.8 (b);

Noting that both the Joint Commission-Scientific Council Catch Estimation Strategy Advisory Group (CESAG) and the Commission Ad hoc Working Group to Reflect on the Rules Governing Bycatches, Discards and Selectivity (WG-BDS) have recommended that the Commission consider a means of formal follow-up procedure with Contracting Parties to enhance compliance to the haul-by-haul submission requirement;

Noting that the 2018 NAFO Performance Review, in relation to data collection and sharing, recommended that NAFO agree on a means to respond to instances of non-compliance by a Contracting Party with its reporting requirements, including logbook data;

It is recommended:

That a formal follow-up procedure with Contracting Parties be established to respond to late submissions or non-submissions of haul-by-haul data to the Secretariat, in order to enhance the effectiveness of the haul-by-haul submission requirement.

Procedure:

The NAFO Secretariat will send a letter to Contracting Parties that have not complied with the haul-by-haul reporting requirements. The letter will identify the nature of the issue and request a response by the Contracting Party on actions taken to resolve the issue.

On an annual basis, the NAFO Secretariat will compile an administrative haul-by-haul report that identifies late submissions and/or non-submissions of haul-by-haul records by Contracting Parties. The report will also include any follow-up efforts by the NAFO Secretariat consistent with current practice in response to late submissions and/or non-submissions and any responses/explanations received from the Contracting Parties.

The annual haul-by-haul report will be presented to the Commission by the NAFO Secretariat at the NAFO Annual Meeting and included in the Annual Meeting Report. Contracting Parties at that time will be provided an opportunity to provide additional information regarding any outstanding records.

Annex 24. Recommendations of the WG-BDS addressed to the NAFO Commission, May 2018
(COM WP 18-23 now COM Doc. 18-22)

The NAFO Commission Ad hoc Working Group to Reflect on the Rules Governing Bycatches, Discards and Selectivity (WG-BDS) in the NAFO Regulatory Area met in May of 2018 (COM Doc. 18-04) and agreed on the following recommendations to forward to the NAFO Commission:

The WG-BDS **recommends** that:

1. **The Commission and Scientific Council, and their subsidiary bodies, as well as the Secretariat, move forward with full implementation of the Action Plan in the Management and Minimization of Bycatch and Discards (COM Doc. 17-26).**
2. **The Commission consider a means of formal follow-up with Contracting Parties to address non-compliance with the requirement to submit haul by haul data, including previous years (2016 and 2017).**
3. **Contracting Parties be encouraged to explore with their respective industry representatives the reasons for discards and bycatch and report back to the Working Group at its next meeting.
To the extent possible, this information should seek to identify specific times, areas, fisheries and/or other factors.**
4. **The Commission include in its request for advice to Scientific Council at the 2018 meeting the task identified under Section 2.2 of the Action Plan in the Management and Minimization of Bycatch and Discards (COM Doc. 17-26).**
5. **STACTIC review existing NAFO observer and haul-by-haul reporting requirements to consider enhancements that would provide specific information related to the rationale for discards.**
6. **The Secretariat, in conjunction with STACTIC and WG-EAFFM, develop tools to cross-reference the relevant FAO 3-alpha code with the VME indicator species, set out in Annex I.E of the NCEM to facilitate their inclusion in observer and haul by haul catch reports.**

Annex 25. Amendments to NAFO CEM Article 29 and Annex II.E – Vessel Monitoring System (VMS)

(STACTIC WP 18-18 **now** COM Doc. 18-06)

This working paper is based on JAGDM Document 2018-01-09_rev1.

The NAFO Conservation and Enforcement Measures prescribe electronic data transmission of VMS position data in Article 25. Details regarding data elements and required information in the messages/reports are indicated in the table in Annex II.E. It has become apparent that the usage of footnotes to describe the specialties of each message/report can lead to misunderstandings and have contributed to inconsistencies in electronic reporting by Contracting Parties.

At the March 2017 JAGDM meeting, Norway volunteered to write a proposal to rewrite Annex II.E of the NAFO CEM to provide further clarification through the removal of footnotes. As the June 2017 JAGDM meeting was postponed until October 2017, which was after the NAFO Annual Meeting, the proposal was rescheduled for review at the first JAGDM meeting of 2018. At the March 2018 meeting, the proposal by Norway was reviewed by JAGDM participants and some revisions were made.

Below is a reference to the existing table in Annex II.E and the edits recommended by JAGDM. The proposed edits separate the format specifications into two separate tables to alleviate the usage of footnotes to clarify the data elements required for the different message types. JAGDM also recommends revising the remarks associated with the data element “Type of Message” to reflect how they are defined in Article 29 in order to provide clearer definitions.

The current Annex II.E in the NAFO CEM with the footnotes**Annex II.E
VMS Data Format**

Format specifications when sending reports from FMC to NAFO (XNW) see also Annex II.D.A, II.D.B, II.D.C and II.D.D.1

Data Element	Field Code	Mandatory/Optional	Remarks
Start record	SR	M	System detail; indicates start of record
Address	AD	M	Message detail; destination; "XNW" for NAFO
From	FR	M	Message detail; Name of transmitting Party (ISO-3)
Record Number	RN	M	Message detail; Unique serial number starting at 1 each year for records sent from the FMC to (XNW) (See also Annex II.D.C)
Record Date	RD	M	Message detail; Year, month and day in UTC of the record transmission from the FMC
Record Time	RT	M	Message detail; Hours and minutes in UTC of the record transmission from the FMC
Type of Message	TM ⁴	M	Message detail; message type, "POS" as Position report/message to be communicated by VMS or other means by vessels with a defective satellite tracking device
Radio call sign	RC	M	Vessel registration detail; international radio call sign of the vessel
Sequence Number	SQ	M ¹	Message detail; Unique serial number starting at 1 each year for messages sent from a vessel to final destination (XNW) (See also Annex II.D.C)
Trip Number	TN	O	Activity detail; fishing trip serial number in current year
Vessel Name	NA	O	Vessel registration detail; name of the vessel
Contracting Party Internal Reference Number	IR	O	Vessel registration detail. Unique Contracting Party vessel number as ISO-3 flag State code followed by number
External Registration Number	XR	O	Vessel registration detail; the side number of the vessel
Latitude	LA	M ²	Activity detail; Latitude at the fixing of the position transmitted from the vessel
Longitude	LO	M ²	Activity detail; Longitude at the fixing of the position transmitted from the vessel
Latitude (decimal)	LT	M ³	Activity detail; Latitude at the fixing of the position transmitted from the vessel
Longitude (decimal)	LG	M ³	Activity detail; Longitude at the fixing of the position transmitted from the vessel
Speed	SP	M	Activity detail; Speed at the fixing of the position transmitted from the vessel
Course	CO	M	Activity detail; Course at the fixing of the position transmitted from the vessel
Date	DA	M	Message detail; UTC date of the fixing of the position transmitted from the vessel
Time	TI	M	Message detail; UTC time of the fixing of the position transmitted from the vessel
End of record	ER	M	System detail; indicates end of the record

¹ Optional in case of a VMS message.² Mandatory for manual messages³ Mandatory for VMS messages.⁴ Type of message shall be "ENT" for the first VMS message from the Regulatory Area as detected by the FMC of the Contracting Party. Type of message shall be "EXI" for the first VMS message from outside the Regulatory Area as detected by the FMC of the Contracting Party, and the values for latitude and longitude are, in this type of message, optional. Type of message shall be "MAN" for reports communicated by vessels with a defective satellite tracking device in accordance with Article 29.8.

The Proposal

Annex II.E VMS Data Format

1) "Entry", "Position" and "Exit" messages

Format specifications when sending reports from FMC to NAFO (XNW) see also Annex II.D.A, II.D.B, II.D.C and II.D.D.1

Data Element	Field Code	Mandatory/Optional	Remarks
Start record	SR	M	System detail; indicates start of record
Address	AD	M	Message detail; destination; "XNW" for NAFO
From	FR	M	Message detail; Name of transmitting Party (ISO-3)
Record Number	RN	M	Message detail; Unique serial number starting at 1 each year for records sent from the FMC to (XNW) (See also Annex II.D.C)
Record Date	RD	M	Message detail; Year, month and day in UTC of the record transmission from the FMC
Record Time	RT	M	Message detail; Hours and minutes in UTC of the record transmission from the FMC
Type of Message	TM ⁴	M	Message detail; message types, ENT , POS or EXI - "POS" as Position report/message to be communicated by VMS or other means by vessels with a defective satellite tracking device (i) "ENT", for first VMS position transmitted by each vessel upon entering the Regulatory Area as detected by the FMC of the Contracting Party; (ii) "POS", for every subsequent VMS position transmitted by each vessel from within the Regulatory Area; (iii) "EXI", for first VMS position transmitted by each vessel upon exiting the Regulatory Area as detected by the FMC of the Contracting Party;
Radio call sign	RC	M	Vessel registration detail; international radio call sign of the vessel
Sequence Number	SQ	M ¹ ₀	Message detail; Unique serial number starting at 1 each year for messages sent from a vessel to final destination (XNW) (See also Annex II.D.C)
Trip Number	TN	0	Activity detail; fishing trip serial number in current year
Vessel Name	NA	0	Vessel registration detail; name of the vessel
Contracting Party Internal Reference Number	IR	0	Vessel registration detail. Unique Contracting Party vessel number as ISO-3 flag State code followed by number
External Registration Number	XR	0	Vessel registration detail; the side number of the vessel
Latitude	LA	M ¹	Activity detail; Latitude at the fixing of the position transmitted from the vessel
Longitude	LO	M ¹	Activity detail; Longitude at the fixing of the position transmitted from the vessel
Latitude (decimal)	LT	M ¹ ₃	Activity detail; Latitude at the fixing of the position transmitted from the vessel
Longitude (decimal)	LG	M ¹ ₃	Activity detail; Longitude at the fixing of the position transmitted from the vessel
Speed	SP	M	Activity detail; Speed at the fixing of the position transmitted from the vessel
Course	CO	M	Activity detail; Course at the fixing of the position transmitted from the vessel
Date	DA	M	Message detail; UTC date of the fixing of the position transmitted from the vessel
Time	TI	M	Message detail; UTC time of the fixing of the position transmitted from the vessel
End of record	ER	M	System detail; indicates end of the record

¹ ¹ Optional for "EXI" messages

¹ ¹ Optional in case of a VMS message

² ² Mandatory for manual messages

³ ³ Mandatory for VMS messages

⁴ ⁴ Type of message shall be "ENT" for the first VMS message from the Regulatory Area as detected by the FMC of the Contracting Party.

Type of message shall be "EXI" for the first VMS message from outside the Regulatory Area as detected by the FMC of the Contracting Party, and the values for latitude and longitude are, in this type of message, optional.

Type of message shall be "MAN" for reports communicated by vessels with a defective satellite tracking device in accordance with Article 29.8.

2) "Manual" Position Report

Format specifications when sending reports from FMC to NAFO (XNW) see also Annex II.D.A, II.D.B, II.D.C and II.D.D.1

Data Element	Field Code	Mandatory/Optional	Remarks
Start record	SR	M	System detail; indicates start of record
Address	AD	M	Message detail; destination; "XNW" for NAFO
From	FR	M	Message detail; Name of transmitting Party (ISO-3)
Record Number	RN	M	Message detail; Unique serial number starting at 1 each year for records sent from the FMC to (XNW) (See also Annex II.D.C)
Record Date	RD	M	Message detail; Year, month and day in UTC of the record transmission from the FMC
Record Time	RT	M	Message detail; Hours and minutes in UTC of the record transmission from the FMC
Type of Message	TM	M	Message detail; message type; "MAN" for reports communicated by vessels with a defective satellite tracking device in accordance with Article 29.8.
Radio call sign	RC	M	Vessel registration detail; international radio call sign of the vessel
Sequence Number	SQ	M⁰	Message detail; Unique serial number starting at 1 each year for messages sent from a vessel to final destination (XNW) (See also Annex II.D.C)
Trip Number	TN	O	Activity detail; fishing trip serial number in current year
Vessel Name	NA	O	Vessel registration detail; name of the vessel
Contracting Party Internal Reference Number	IR	O	Vessel registration detail. Unique Contracting Party vessel number as ISO-3 flag State code followed by number
External Registration Number	XR	O	Vessel registration detail; the side number of the vessel
Latitude	LA	M¹	Activity detail; Latitude at the fixing of the position transmitted from the vessel
Longitude	LO	M¹	Activity detail; Longitude at the fixing of the position transmitted from the vessel
Latitude (decimal)	LT	M²	Activity detail; Latitude at the fixing of the position transmitted from the vessel
Longitude (decimal)	LG	M²	Activity detail; Longitude at the fixing of the position transmitted from the vessel
Speed	SP	M	Activity detail; Speed at the fixing of the position transmitted from the vessel
Course	CO	M	Activity detail; Course at the fixing of the position transmitted from the vessel
Date	DA	M	Message detail; UTC date of the fixing of the position transmitted from the vessel
Time	TI	M	Message detail; UTC time of the fixing of the position transmitted from the vessel
End of record	ER	M	System detail; indicates end of the record

¹ [Optional in case of a VMS message](#)

² [Mandatory for manual messages](#)

³ [Mandatory for VMS messages](#)

⁴ [Type of message shall be "ENT" for the first VMS message from the Regulatory Area as detected by the FMC of the Contracting Party.](#)

[Type of message shall be "EXI" for the first VMS message from outside the Regulatory Area as detected by the FMC of the Contracting Party, and the values for latitude and longitude are, in this type of message, optional.](#)

[Type of message shall be "MAN" for reports communicated by vessels with a defective satellite tracking device in accordance with Article 29.8.](#)



Annex 26. Amendments to NAFO CEM Article 10 – Stowage Plan Requirement at Checkpoint
(STACTIC WP 18-21 (Rev.) now COM Doc. 18-07)

Preamble

The 'checkpoint provisions' provide for prior notification of vessels entering the NAFO RA to fish for GHJ with catches > 50t LWT on board.

It has been identified that the stowage plan as presented by vessel masters is not usually detailed enough for catches caught in beyond the NAFO RA to be readily identified at the species level. In that sense, these stowage plans currently do not facilitate an effective inspection of the quantities on board on entry to NAFO.

Considering the likelihood of substantial catches of GHJ being taken from the adjoining NEAFC Regulatory Area, the risk exists that the fishing strategy of beginning a trip in NEAFC and then moving to NAFO (or indeed *vice versa*) can be used to conceal a mis-declaration of catches from NAFO.

It is suggested to add in CEM Article 10 a requirement for stowage plans of vessels entering NAFO to comply with NAFO CEM standards (in accordance with Article 28.5) for the catch already on board when entering the NAFO RA.

This is also a strong case for enhanced collaboration between NAFO and NEAFC in this regard, in particular to promote the sharing of information between RFMOs.

Proposed Amendment

In CEM Article 10 paragraph 5, the sub-paragraph (c) is modified as follows:

- c. A fishing vessel notified in accordance with paragraph (b) shall
 - i. proceed to the designated inspection point, **and**
 - ii. **ensure the stowage plan for catch on board on entry to the NAFO RA meets the requirements of Article 28 paragraph 5 and is made available to inspectors upon request.**

Annex 27. Amendments to NAFO CEM Article 35 – Collection of DNA samples by inspectors during sea Pilot project on DNA Analysis

(STACTIC WP 18-22 (Rev .2) now COM Doc. 18-08)

Preamble

The identification of species in boxes of processed products is essential to ensure the accuracy of catch declarations. To facilitate that, inspectors at sea and in port may require taking samples for subsequent DNA analysis. To support the sampling, the related provisions should be added to the CEM Article 35 (Obligation of Masters during sea inspection) and CEM Article 43 paragraph 13.

Proposed Amendment

1. In CEM Article 35:

- Add the following text as new sub-paragraph (h), and modify the numbering of the subsequent sub-paragraphs accordingly:

(h) facilitating the taking of samples of processed fish by inspectors, for the purpose of species identification through DNA analysis

2. In CEM Article 43 paragraph 13, add the following text as sub-paragraph (f)

(f) where relevant, verify species for compliance with accuracy of catch declaration

Annex 28. Amendments to NAFO CEM Article 28.5 – Stowage of Catch(STACTIC WP 18-27 (Rev. 3) **now** COM Doc. 18-09)

The NAFO Conservation and Enforcement Measures require that vessels maintain a stowage plan that clearly shows the location and quantity, expressed as product weight in kg, of each species within each fish hold, that the plan is updated daily, and is retained onboard until the vessel has been fully offloaded. However, unlike the requirements currently in place for the fishing logbook, production logbook and catch reporting (CAT) to be maintained daily, the retention of daily stowage plans for previous days is not required.

The lack of a requirement to retain daily stowage plans that reflect each day's product stowage prevents inspectors from confirming the historical progression of the stowage of catch. Limiting inspectors to only one stowage record at the time of the inspection impedes their ability to verify the stowed product against daily production, fishing log, and catch reporting (CAT) records.

During the 2018 NAFO Intersessional in Halifax, Canada proposed to amend Article 28.5 of the NCEMs to ensure that the stowage plan will accurately display the location and weight of each species, allowing inspectors to see the progression of daily product stowage throughout the course of the fishing trip. The implementation of this amendment will allow for improved comparison of the stowage plan with all other daily reports, thereby improving the verification of catch. Contracting Parties requested further clarification and visual references, resulting in the addition of Annexes I and II to this working paper, which contain examples of a stowage plan.

Proposed Amendments Stowage of Catch

4. Each vessel shall, with due regard for safety and navigational responsibilities of the master, stow all catch taken in the NAFO Regulatory Area separately from all catch taken outside the NAFO Regulatory Area, and ensure that such separation is clearly demarcated using plastic, plywood or netting;
5. Each fishing vessel shall maintain a stowage plan that:
 - (a)** clearly **shows**:
 - i)** the location and quantity, expressed as product weight in kg, of each species within each fish hold;
 - ii)** the location in each hold of shrimp taken in Division 3L and in Division 3M that includes the quantity of shrimp in kg, by Division;

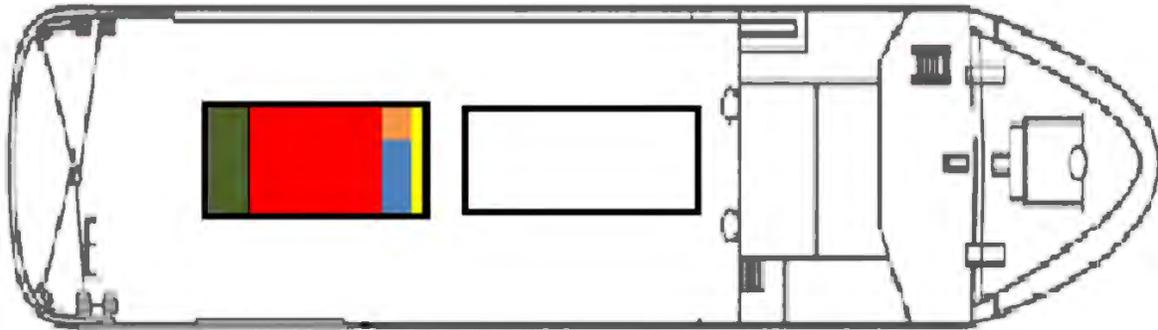
iii) the top view of product within each fish hold;

(b) is updated daily for the preceding day from 00:01 to 24:00 UTC; and

(c) is retained on board **for each day fished** until the vessel has been unloaded completely.

Annex I - Illustrations for Clarification and Visual Reference

Ship's Top View Fish Hold Perspective



F/V RED FISHER Topside View – Lower Aft Hold (Full) June 21, 2018



GHL	53.675
-----	--------

SKA	21.761
-----	--------

RED	102.54
-----	--------

COD	10.651
-----	--------

YEL	4.654
-----	-------

Annex II – Excel File for Clarification and Visual Reference

Annex II – Excel File for Clarification and Visual Reference is available, by request from the Secretariat, for clarification and visual reference of how the stowage plan can for each individual be kept electronically day fished.



Annex 29. Amendments to NAFO CEM Chapter VII –Port State Control
(STACTIC WP 18-31 (Rev.) **now** COM Doc. 18-10)

Background

NEAFC adopted amendments to its port State control measures at the Annual Meeting in 2017. These amendments entail that Article 23 of the NEAFC Scheme of Control and Enforcement, as well as the PSC 1 and 2 forms, now include a requirement for flag State confirmation and port State authorization if foreign vessels with catch on board request port entry for other port services than landing or transshipment.

In order to align the NAFO port State control with the NEAFC requirements, Norway is proposing to include similar provisions in Chapter VII and annex II.L of the NAFO Control and Enforcement Measures (CEM).

Proposed amendments

CEM Article 42, first paragraph:

Subject to the right of the port State Contracting Party to impose requirements of its own under domestic laws and regulations for entry or denial to its ports, the provisions in this Chapter apply to landings, transshipments, or use of ports of Contracting Parties by fishing vessels entitled to fly the flag of another Contracting Party, conducting fishing activities in the Regulatory Area. The provisions apply to **vessels carrying** fish caught in the Regulatory Area, or fish products originating from such fish, that have not been previously landed or transhipped at a port.

CEM Article 43, paragraphs 6 and 8:

6. Fishing vessels may not enter port without prior authorization by the competent authorities of the port State Contracting Party. Authorization to land, ~~or~~ tranship **or make use of other port services** shall only be given if the confirmation from the flag State Contracting Party as referred to in Article 44.2 has been received.

...

8. The port State Contracting Party shall without delay notify the master of the fishing vessel of its decision on whether to authorize or deny the port entry, or if the vessel is in port, the landing, transshipment and other use of port. If the vessel entry is authorized the port State returns to the master a copy of the form PSC 1 or 2 with Part C duly completed. This copy shall also be posted to the NAFO MCS Website, in PDF format, without delay. In case of a denial the port State shall also notify the flag State Contracting Party.

CEM Article 44, second paragraph:

2. The flag State Contracting Party of a fishing vessel intending to land, ~~or~~ tranship **or make use of other port services**, or where the vessel has engaged in transshipment operations outside a port, the flag State Contracting Party or parties, shall confirm by returning a copy of the form, PSC 1 or 2, transmitted in accordance with Article 43.5 with part B duly completed, stating that:

(a) the fishing vessel declared to have caught the fish had sufficient quota for the species declared;

(b) the declared quantity of fish on board has been duly reported by species and taken into account for the calculation of any catch or effort limitations that may be applicable;

(c) the fishing vessel declared to have caught the fish had authorization to fish in the areas declared; and

(d) the presence of the vessel in the area in which it has declared to have taken its catch has been verified by

CEM Article 45, paragraph 3:

3. The master of a fishing vessel shall not commence landing ~~or~~ transshipment operations, *or make use of other port services, before authorization has been given by the port State Contracting Party* or prior to the Estimated Time of Arrival (ETA) as reported in PSC 1 or PSC 2 has expired. However, landing, ~~or~~ transshipment operations *and make use of other port services* may commence prior to ETA with permission from the competent authorities of the port State *Contracting Party*.

Flag State confirmation: I confirm that the above information is complete, true and correct to the best of my knowledge and belief.						
Name and Title:					Date:	
Signature:				Official Stamp:		
PART C: For official use only - to be completed by the Port State <u>Note: NAFO Port State Authorization to use port for landing, transshipment or other</u>						
Name of Port State:						
Authorization:		Yes:		No:		Date:
Signature:				Official Stamp:		
¹ Fishing vessels not assigned an IMO number shall provide their external registration number ² If necessary an additional form or forms shall be used ³ FAO Species Codes – NEAFC Annex V - NAFO Annex I.C ⁴ Product presentations – NEAFC Appendix 1 to Annex IV – NAFO Annex II.K						



d) The presence of the fishing vessel in the area of catch declared has been verified according to VMS data							
Flag State confirmation: I confirm that the above information is complete, true and correct to the best of my knowledge and belief.							
Name and Title:				Date:			
Signature:				Official Stamp:			
PART C: For official use only - to be completed by the Port State Note: NAFO Port State Authorization to use port for landing, transshipment or other							
Name of Port State:							
Authorization:		Yes:		No:		Date:	
Signature:				Official Stamp:			
1. Fishing vessels not assigned an IMO number shall provide their external registration number 2. If necessary an additional form or forms shall be used 3. FAO Species Codes – NEAFC Annex V - NAFO Annex II 4. Product presentations – NEAFC Appendix 1 to Annex IV – NAFO Annex II.K							

Annex 30. Amendments to NAFO CEM Article 37.4 – Distribution of Notification of Infringements

(STACTIC WP 18-35 (Rev. 2) **now** COM Doc. 18-11)

Background

At the 2018 NAFO Intersessional meeting in Halifax, Canada was tasked with developing a proposal to amend Article 37.4 to allow the Executive Secretary to more broadly distribute notification of infringements to Contracting Parties.

The purpose of this amendment is to ensure that any port State Contracting Party receiving a vessel for landing that has been issued an infringement is notified and has an opportunity to receive the written notification related to an infringement in advance of the vessel's arrival in port.

Proposed Amendments

Amend Article 37 as follows:

Duties of the Executive Secretary

4. The Executive Secretary transmits without delay to the other Contracting Parties participating in the Scheme the written notification ~~related to an~~ of the infringement including a copy of the report of inspection consistent with Annex IV.B.
5. The Executive Secretary transmits without delay to all Contracting Parties electronic notification that an infringement has been issued to a particular vessel.
6. Upon a request from a Contracting Party receiving a vessel for landing to which an infringement has been issued, the Executive Secretary will transmit to that Contracting Party without delay a copy of the report of inspection consistent with Annex IV.B.

Annex 31. Reinstatement of Footnote 14 into Article 6.3 for American Plaice bycatch provisions in the 3NO directed Yellowtail fishery
(STACTIC WP 18-41 now COM Doc. 18-12)

Background

At the 2015 Annual Meeting, the Commission adopted revisions to the footnotes in Annex I of the NAFO CEM (FC Doc. 15-08). One of the amendments was incorporating footnote 21 to the Quota Table into the text of the NAFO CEM under Article 6. At the 2016 Annual Meeting, the U.S. raised a concern that the newly implemented provision under Article 6 did not accurately reflect the language or intent of the former footnote 21. Therefore, at the 2017 Annual Meeting, the U.S. proposed in STACTIC WP 17-41 (Revised) that Article 6.3(f) be removed from the NCEM and that the former footnote 21 be reinstated into the Quota Table as footnote 14 without prejudice. This proposal was adopted at the 2017 Annual Meeting and the 2018 NAFO CEMs were updated to reflect this change. It was also agreed that Canada and the U.S. would have further discussions on the issue.

Canada and the United States have met in advance of the 2018 Annual Meeting and discussed the issue and have agreed on a way forward. Canada proposes that the by-catch provision established in 2016 for American Plaice in the 3NO directed Yellowtail fishery be reinstated under Article 6 of the NCEM and Footnote 14 be deleted. References to Footnote 14 located within the quota table under Total Allowable Catch listed for both 3LNO Yellowtail and 3LNO American plaice will also be deleted.

Proposed Amendments

Limits for Species Listed in Annex I.A Retained on Board as Bycatch

3. Each Contracting Party shall ensure that its vessels, including vessels chartered in accordance with Article 26, shall limit the retention of on-board species classified as bycatch to the maxima specified below:
 - (a) for cod in Division 3M, redfish in 3LN and witch flounder in 3NO: 1 250 kg or 5%, whichever is the greater;
 - (b) for cod in Division 3NO: 1 000 kg or 4%, whichever is the greater;
 - (c) for all other stocks listed in Annex I.A where no specific quota has been allocated to the flag State Contracting Party: 2 500 kg or 10%, whichever is the greater;
 - (d) where a ban on fishing applies (moratoria), or when the "Others" quota opened to for that stock has been fully utilized: 1 250 kg or 5%, whichever is the greater; and
 - (e) once the directed fishery for redfish in Division 3M is closed in accordance with Article 5.5 (d): 1 250 kg or 5%, whichever is the greater; and
 - (f) while conducting a directed fishery for yellowtail in Divisions 3LNO: 15 % of American plaice; otherwise bycatch provisions in Article 6.3 (d) apply.

ANNEX I – FISHERIES MANAGEMENT
Annex I.A – Annual Quota Table

CATCH LIMITATIONS – Article 5. Total allowable catches (TACs) and quotas (metric tons in live weight) for 2018 of particular stocks in Subareas 1-4 of the NAFO Convention Area.

Species	Cod				Redfish					American plaice		Yellowtail
	COD 3L	COD 3M		COD 3NO	RED 3LN		RED 3M	RED 3O	REB 1F, 2, 3K (i.e. Sub-Area 2 and Divs. 1F+3K)	PLA 3LNO	PLA 3M	YEL 3LNO
% of TAC			% of 3M Cod TAC			% of 3LN Redfish TAC						
Contracting Party												
Canada		89	0.80	0	6 049	42.60	500	6 000	0 ¹	0	0	16 575
Cuba		412	3.70	-	1 392	9.80	1 750		0 ¹	-	-	-
Denmark (Faroe Islands and Greenland)		2 491	22.35	-	-		69 ^{1*}		0	-	-	-
European Union		6 356 ⁴	57.03	0 ⁴	2 589 ⁴	18.23	7 813 ⁴	7 000	0 0 ⁷	0	0 ⁴	-
France (St. Pierre et Miquelon)		-		-	-		69 ^{1*}		0 ¹	-	-	340
Iceland		-		-	-		-		0	-	-	-
Japan		-		-	-		400	150	0 ¹	-	-	-
Korea		-		-	-		69 ^{1*}	100	0 ¹	-	-	-
Norway		1031	9.25	-	-		-		0	-	-	-
Russian Federation		721	6.47	0	4 085	28.77	9 137	6 500	0	-	0	-
Ukraine								150	0 ¹			
United States of America		-		-	-		69 ^{1*}		0 ¹	-	-	-
Others		45	0.40	0	85	0.60	124	100	-	0	0	85
TOTAL ALLOWABLE CATCH	*	11 145^{15, 16}	100.0	*	14 200¹⁷	100.0	10 500⁸	20 000⁹	0^{2*}	**	**1	17 000^{12, 14}

~~14. In lieu of Article 6.3 of the CEM, the following by-catch provisions for American plaice only in the 3LNO yellowtail fishery shall apply: Contracting Parties projection indicates that this rate is likely to undermine stock recovery or cause an unreasonable delay in reaching B_{lim} , this rate may be subject to a reassessment by the Fisheries Commission fishing for yellowtail flounder allocated under the NAFO allocation table will be restricted to an overall Am. plaice by-catch harvest limit equal to 15% of their total yellowtail fishery as calculated in accordance with Article 6.4. If a Scientific Council~~

Annex 32. Amendments to NAFO CEM Article 12 – Catch reporting of individual sharks
(STACTIC WP 18-43 (Rev. 3) **now** COM Doc. 18-13)

Preamble

The Scientific Council (NAFO SCS Doc. 18-19) has identified the need to complete the reporting obligation for sharks referred to in CEM Article 12 paragraph 1.

To meet this request, it is proposed to insert these specific requests in CEM Articles 12 and Article 28.

Proposed amendment:

1. In CEM Article 12 paragraph 1:

(a) report all catches of sharks, including available historical data, in accordance with the data reporting procedures set out in Article 28.

(b) For all observed hauls that contain Greenland shark, observers shall record the number, estimated weight and measured length (estimated length if measured length is not possible) per haul or set, the sex, and catch disposition (alive, dead, unknown) of each individual Greenland shark.

Renumber other paragraphs accordingly.

2. In CEM Article 28 paragraph 6, add the following amendments to subparagraph (g):

Catch of species listed in Annex I.C for which the total live weight on board is less than 100kg, may be reported using the 3-alpha code MZZ (marine species not specified), except in the case of sharks. All sharks shall be reported at the species level under their corresponding 3 alpha code presented in Annex I.C ~~or if not contained in Annex I.C or the FAO ASFIS List of Species for Fishery Statistics to the extent possible.~~ When species specific reporting is not possible, shark species shall be recorded as either large sharks (SHX) or dogfishes (DGX), as appropriate and in accordance the with the 3-alpha codes. The ~~estimated weight of each sharks~~ **estimated weight of each sharks caught per haul or set shall also be recorded.**



Annex 33. Amendments to NAFO CEM Article 30 – Revision of the NAFO Observer Program
(STACTIC WP 18-45 (Rev.) now COM Doc. 18-14)

Article 1 – Definitions

"Observer" means a person who is authorized and certified by a Contracting Party to observe, monitor and collect information aboard fishing vessels. Observers shall be independent and impartial, and have the training, knowledge, skills and abilities to perform all of the duties, functions and requirements as specified in Article 30.

Article 30 – Observer Program

General provisions

1. The purpose of this Observer Program is to collect reliable information and data on activities in the NAFO Regulatory Area. The information and data collected through the Observer Program shall be made available to any NAFO body requesting it.
2. Observers shall execute their duties and functions in an unbiased manner regardless of nationality and of which flag the vessel is flying, and shall be free from undue influence or benefit linked to the fishing activity of the vessel.
3. This Program shall apply to all Contracting Parties fishing vessels operating in the Regulatory Area.

Duty to carry observers

4. Subject to the exception in paragraph 5, each flag State Contracting Party shall ensure that every fishing vessel flying its flag, while conducting fishing activities in the Regulatory Area, carries at all times at least one observer in accordance with the provisions of this Program. A vessel shall not commence fishing until the observer is deployed on the vessel. The failure to carry an observer if required is considered a serious infringement.

Partial withdrawal of observers

5. By way of derogation from paragraph 4, and providing that the Commission has not requested a higher observer coverage level, a flag State Contracting Party may allow its vessels to carry an observer for less than 100 %, but not less than 25% of the fishing trips conducted by its fleet, or of the days the vessels are present, in the Regulatory Area during the year, on the condition that the flag State Contracting Party for the vessels not carrying an observer:
 - (a) ensures that the vessels concerned target species in areas where negligible by-catch of other species is expected to occur;
 - (b) ensures that the vessel complies with all real-time reporting requirements;
 - (c) physically inspects or otherwise evaluates as appropriate, following risk assessment, each landing in its ports by the vessel concerned according to domestic monitoring control and

surveillance procedures. If any infringement to the CEM is detected and confirmed, it shall prepare a report in the format prescribed in Annex IV. C (PSC 3). The PSC 3 shall be uploaded to the NAFO MCS Website, in computer readable format, as soon as possible after the infringement has been confirmed.

- (d) as soon as possible in advance of the fishing trip, posts to the NAFO MCS Website, in PDF format:
- i. the name, IMO number, and International Radio Call sign of the vessel,
 - ii. the factors that support the decision to grant the derogation to the 100 % coverage;
- (e) submits to the Executive Secretary by 1 March each year, for the previous calendar year, a report containing a comparison of all relevant catch and fishing activities showing the difference between the trips where the vessel had an observer on board and those where the observer was withdrawn.
6. Where an inspector issues a notice of an infringement to a fishing vessel that is not carrying an observer, in accordance with this derogation, at the time of the notice, the infringement shall be deemed a serious infringement for the purpose of Article 38.1 and, where the flag State Contracting Party does not require the fishing vessel to proceed immediately to port in accordance with Article 38.3, it shall deploy an observer to the fishing vessel without delay.

Duties of the flag State Contracting Party

7. Each Contracting Party shall:
- (a) each year, before its vessels start fishing in the NAFO Regulatory Area, post to the MCS Website an ongoing list of observers (name and ID if applicable) that it intends to deploy to vessels entitled to fly its flag operating in the Regulatory Area;
 - (b) require its vessels to carry an observer from the list it has posted to the NAFO MCS website, in accordance with this Program;
 - (c) to the extent practicable, ensure that individual observers are not deployed on consecutive trips on the same vessel;
 - (d) ensure that vessel Masters, operators, or owners cannot refuse to accept an observer deployment;
 - (e) ensure that observers are equipped with an independent two-way communication device at sea;
 - (f) take appropriate action with respect to their vessels to ensure safe working conditions, the protection, security and welfare of observers in the performance of their duties, consistent with international standards or guidelines.

- (g) ensure that the observers treat all data and information related to the fishing operations collected during their deployment, including images and videos taken, in accordance with applicable confidentiality requirements;
8. Upon the receipt of an OBR from an observer reporting discrepancies with the NAFO CEM or an incident, including any instances of obstruction, intimidation, interference with, or otherwise prevention of the observer from performing their duties, concerning a vessel entitled to fly its flag, a Contracting Party shall:
 - (a) treat the report with upmost sensitivity and discretion, in accordance with applicable confidentiality requirements;
 - (b) assess discrepancies identified in the OBR and conduct any follow-up action deemed appropriate;
 - (c) create a report on follow-up actions and post it in a computer readable format to the NAFO MCS website.
 9. Each Contracting Party shall provide to the Executive Secretary:
 - (a) no later than 24 hours in advance of an observer's deployment onboard a fishing vessel, by posting to the MCS Website the name of the fishing vessel and International Radio Call Sign, together with the name and ID (if applicable) of the observer concerned;
 - (b) electronically and without delay following its receipt, the daily OBR report referred to in paragraph 13 (e);
 - (c) within 30 days following the arrival of the vessel in port, the observer trip report referred to in paragraph 13;
 - (d) by 1 March each year for the previous calendar year, a report on its compliance with the obligations outlined in this Article.
 10. If a vessel is carrying an observer from another Contracting Party, that observer will report to the vessel's flag State Contracting Party.
 11. If a vessel required to carry an observer is not carrying one, the flag State Contracting Party may allow any other Contracting Party to deploy an observer to the vessel.
 12. If, during deployment, it is determined that a serious risk to the observer exists, take steps to ensure that the observer is removed from the vessel unless and until the risk is addressed;

Duties of the Observer

13. Each Contracting Party shall ensure that observers assigned to their vessels shall, at a minimum, perform the duties listed below:
 - (a) record for each haul/set, in the format indicated in Annex II.M, hereafter referred to as the observer trip report:

- i. the quantity of all catch, by species, including for discards and VMEs indicators as referred to in Annex I.E.VI:
 - 1. as recorded in the vessel fishing and production logbooks,
 - 2. as estimated independently by the observer. For hauls where independent observer estimations are not possible, the relevant data cells should be left blank and noted in the comments section
 - ii. record in the observer trip report any discrepancy identified between the different sources of catch data;
 - iii. gear type, mesh size, attachments
 - iv. effort data
 - v. longitude and latitude, fishing depth
 - vi. in the case of trawl fisheries, the time from the end of setting to the start of gear retrieval. In any other case, the start of setting and the end of retrieval;
- (b) monitor the vessel's stowage plan referred to in Article 28, and record in the observer report any discrepancies identified;
- (c) record any observed interruption or interference with the Vessel Monitoring System (VMS);
- (d) only set vessel's instruments with the Master's agreement;
- (e) transmit daily, whether the vessel is fishing or not, before 12:00 UTC to the Fisheries Monitoring Centre (FMC) of the flag State Contracting Party, in accordance with Annex II.G, the OBR report, by division;
- (f) perform such work, including for scientific purposes, as the Commission may request;
- (g) submit the observer report, in a computer readable form, where possible with the associated images taken by the observer as attachment
- i. as soon as possible after leaving the Regulatory Area and at the latest at arrival of the vessel in port, to the flag State Contracting Party,
 - ii. immediately upon arrival in port, to the local port inspection authority if an inspection in port occurs
- (h) make themselves available to inspectors at sea, or in port upon arrival of the vessel, for the purposes of inspecting the fishing activities of the vessel.
- (i) referring to any incidents of discrepancies with the NAFO CEM:
- i. report without delay to the competent authority of the flag State Contracting Party of the vessel, any discrepancy with the NAFO CEM, including any instances of obstruction, intimidation, interference with or otherwise prevention of the observer

from performing their duties, using the independent two-way communication device, and

- ii. maintain detailed records, including relevant images and video footage, of any circumstances and information related to any instances of discrepancies with the NAFO CEM, for transmission to the to the Fisheries Monitoring Centre (FMC) of the flag State Contracting Party at the earliest opportunity, and at the latest upon arrival of the vessel in port;

Obligations of the Master

14. Each flag Contracting Party shall ensure that Masters of vessels entitled to fly their flag:
- (a) extend such co-operation and assistance as may be required to enable the observer to carry out his or her duties. This cooperation shall include providing the observer with such access as may be required to the catch, including such catch as the vessel may intend to discard;
 - (b) provide food and accommodations to the observer of a standard no less than that provided to the vessel's officers. If officers' accommodations are not available, the observer shall be provided accommodations of a standard as close to an officer's as practicable but no less than that provided to the crew;
 - (c) provide access to all operational areas of the vessel necessary to complete their duties, including the vessel's hold(s), production area(s), bridge, garbage processing equipment and navigation and communication equipment;
 - (d) do not obstruct, intimidate, interfere with, influence, bribe or attempt to bribe an observer in the performance of his/her duties;
 - (e) include the observer in all emergency drills conducted on-board; and
 - (f) notify the observer when an inspection party has signaled their intent to board the vessel.

Costs

15. Subject to any arrangement with another Contracting Party, each Contracting Party shall bear the costs of remunerating every observer it has deployed.
16. Contracting Parties shall ensure that their observers have no financial or beneficial interest in, and are paid in a manner that demonstrates financial independence from, the vessel(s) being monitored.

Duties of the Executive Secretary

17. The Executive Secretary:
- (a) shall make available to all Contracting Parties, via the NAFO MCS website for enforcement purposes only, without delay:
 - i. a copy of the observer trip report in the format of Annex II.M,

- ii. the annual lists of observers and observed vessels,
 - iii. the name of fishing vessel together with the name and ID (if applicable) of the observer concerned as communicated by the flag State Contracting Party,
 - iv. any observer report of a discrepancy with the CEM, including, but not limited to any instances of obstruction, intimidation, interference with or otherwise prevention of the observers from performing their duties, and the report of the investigation conducted, and
 - v. the daily OBR report.
- (b) makes available upon request the observer data, including the daily OBR report, to the other NAFO bodies;
- (c) where a daily OBR report has not been received for 2 consecutive days, notifies the flag State Contracting Party and any Contracting Party participating in the at-sea Inspection and Surveillance Scheme that an OBR has not been received;
- (d) submits to STACTIC, at its Intersessional meeting, a synthesis of the Contracting Parties performance reports referred to in paragraph 9.d.

Implementation

18. This Observer Program will be reviewed by STACTIC in 2022.
19. Any Contracting Party may elect to delay the application of Article 30 until 01 January 2020, but shall follow the provisions of Article 30 outlined in the 2018 NAFO CEM (COM Doc. 18-01). Those Contracting Parties electing to delay shall notify the Executive Secretary no later than 31 December 2018, and the Executive Secretary shall post this information to the MCS Website.

Annex 34. Action Plan to minimize or eliminate discards in NAFO(STACTIC WP 18-28 (Rev. 4) **now** COM Doc. 18-18)

At the 2017 Annual Meeting, the Commission agreed to an examination of the feasibility of introducing policies to minimize or eliminate discards in NAFO (COM Doc. 17-23). As part of this examination, STACTIC along with the Ad hoc Working Group to Reflect on the Rules Governing Bycatches, Discards and Selectivity (WG-BDS) were tasked with:

STACTIC and WG-BDS shall coordinate their plans, including realistic timetables, and present them to the Commission during the annual meeting in 2018.

Action Item: STACTIC will review the action plan developed by the WG-BDS and the Chairs of the two Working Groups will coordinate their respective plans and report to the Commission at the 2018 Annual Meeting.

STACTIC was also asked to consider four main tasks as part of this process and STACTIC's plan for moving forward with each one is detailed below:

ACTION ITEM	ACTION	STATUS
1. Identification of the current discard obligations in the NAFO Conservation and Enforcement Measures.		
Action Item 1	<p>The Secretariat agreed to inform STACTIC, WG-BDS and other interested CPs on current NAFO discard measures. The Secretariat will collate all CEM measures relevant to discards (e.g. Articles 5, 6, 14) as well an overview of how discards are currently being reported by CPs, and how that information is being used by the Secretariat.</p> <p><i>STACTIC has addressed this action item in STACTIC WP 18-23.</i></p>	Completed
2. Compilation of existing relevant domestic legislation of the Contracting Parties and review the various policies implemented.		
Action Item 2	<p>To help facilitate this the NAFO Secretariat circulated an email on 08 March 2018 requesting information on the following bullet points from COM Doc. 17-23:</p> <p><i>STACTIC shall consider the following:</i></p> <ul style="list-style-type: none"> • Compilation of existing relevant domestic legislation of the Contracting Parties and review the various policies implemented, • Review the approaches to the control of the landing obligations implemented domestically by Contracting Parties and identify best practices and challenges. 	Completed
Action Item 3	<p>By mid-August, CPs will review and revise their submissions, with a view to summarize domestic and, as appropriate other RFMOs', discard and landing obligation best practices and challenges to address the discard requirements in the CEM. This analysis should focus on fisheries similar to NAFO fisheries (e.g. groundfish) and include information on how these policies overcome challenges to minimize discards, such as incentives for industry.</p>	Completed
Action Item 4	<p>The NAFO Secretariat will collate submissions of these best practices for distribution at the 2018 Annual Meeting to STACTIC, BDS and SC.</p>	Completed

ACTION ITEM	ACTION	STATUS
Action Item 5	At the Annual Meeting, STACTIC will identify any additional information that would be necessary to inform a discussion of possible measures to minimize or eliminate discards.	Completed
<p>3. Examination of possible measures to minimize or eliminate discards in the various NAFO fisheries, including measures such as selectivity requirements, incentives for fishermen not to discard, and/or bans on discarding.</p>		
Action Item 6	A questionnaire has been developed and Contracting Parties will provide responses by 31 December 2018.	Pending
Action Item 7	<p>STACTIC members expressed concern that a true picture of the bycatch and discards in NAFO waters could be compromised by potentially unreliable available data. They also noted that STACTIC, WG-BDS and SC have different, but complementary, mandates, and to that end, the Chairs of these bodies should meet jointly in advance of 2019 Annual Meeting.</p> <p>At the joint meeting, the Secretariat should present an initial analysis on bycatch/discard data completeness and gaps, as well as trends, patterns and anomalies, per the bycatch action plan. Contracting Parties should be prepared to present their discard and landing obligation best practices, as well as their responses to the questionnaire.</p> <p>The reports from the secretariat, answers to the questionnaire and other relevant information would form basis for the discussions at the joint meeting.</p> <p>The joint meeting will report on its progress at the 2019 Annual Meeting, with a goal of developing recommendations at a following meeting of the three bodies in 2020.</p>	Pending
<p>4. Review the approaches to the control of the landing obligations implemented domestically by Contracting Parties and identify best practices and challenges.</p>		
<p><i>Reflected under item 2.</i></p>		

Report of the Commission, 17-21 September 2018

Annex 1. Proposed Questionnaire

How are technical measures relevant to NAFO used to reduce/eliminate discards?

Gear (describe how the selectivity of the gear in main fisheries is regulated i.e. with mesh size, sorting grids, or other devices that enhance the selectivity).

Area closures (describe eventual use of closing areas and the purpose, are closures permanent, seasonal, or short-term Real Time Closures)

Other (describe other measures that are used, i.e. move on rules, utilization of illegal catch etc.)

Gear	
Mesh size	
Sorting grids	
Other devices	
Area closures	
Permanent	
Seasonal	
Short term (Real time closure)	
Gear limitations in an area.	
Other measures	
Move-on rules	
Minimum catch size	

Annex 35. Annual Compliance Review 2018 (Compliance Report Fishing Year 2017)
(STACTIC WP 18-29 (Rev. 2) **now** COM Doc. 18-19)

1.0 Introduction

The scope of this compliance review covers the fishing activities of NAFO-registered vessels which operated in the NAFO Regulatory Area in 2017⁴ (see Figure 1.0).

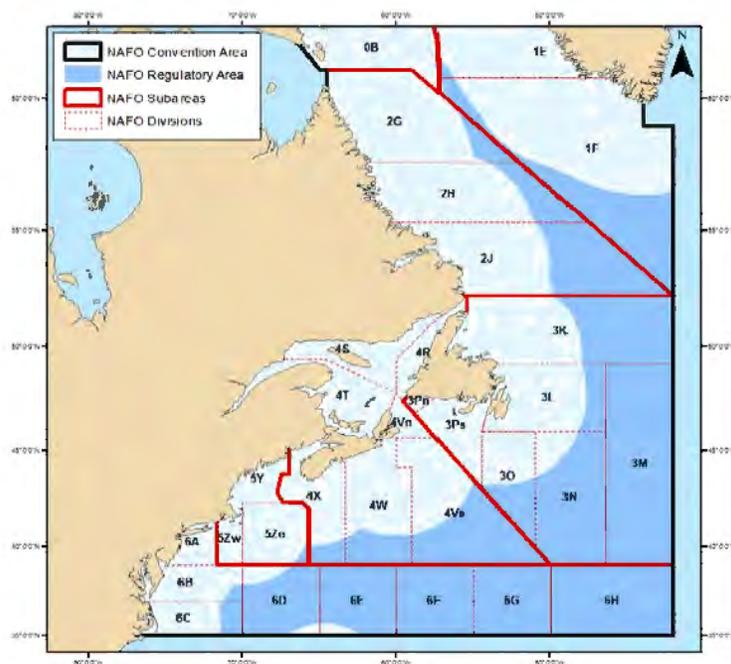


Figure 1.0. *Divisions of the NAFO Convention Area and the Regulatory Area.*

This review is being undertaken in accordance with NAFO Rules of Procedure 5.1 and 5.2. As part of the process of the review, the Secretariat compiled 2017 information from the following sources: vessel monitoring system (VMS) and hail messages delivered by the vessels (Vessel Transmitted Information – VTI), Port Inspection Reports, At-sea Inspection Reports and Reports on Dispositions of Apparent Infringements provided by the Contracting Parties, and Observer Reports sent to the Secretariat.

The report follows the outline that the Standing Committee on International Control (STACTIC) developed during the 2017 NAFO Annual Meeting (STACTIC WP 17-42 Rev. 2).

⁴ For the purpose of this compliance analysis, only fishing trips which ended in 2017 were considered. Fishing trip for a fishing vessel includes “the time from its entry into until its departure from the Regulatory Area and continues until all catch on board from the Regulatory Area is unloaded or transhipped” (NAFO Conservation and Enforcement Measures Article 1.7).

2.0 Fisheries in the NAFO Regulatory Area

2.1 Fishing effort by gear type

NAFO traditionally identifies three main fisheries in its Regulatory Area: the groundfish (GRO - primarily in Div. 3LMNO), shrimp (PRA - primarily in Div. 3LM) and pelagic redfish fisheries (REB - primarily in Div. 1F and 2J). The PRA and the REB fisheries have been under moratoria. In 2017, fisheries in the NAFO Regulatory Area (NRA) was limited to groundfish. There were 112 trips by 45 fishing vessels spending a total of 3872 days in the NRA (Table 1). Additionally, a single vessel (class size 5) spent 14 days, as part of its fishing trip, in Division 6G catching alfonosinos. According to the observer report, the fishing gear used was a mid-water trawl.

Smaller vessels (<500 GT) tend to fish in Divisions 3NO using mainly longlines. The vast majority of the effort comes from larger vessels (> 500 GT) which account for 96% of fishing effort in terms of days. The larger vessels use bottom trawl and fish in Divisions 3LMNO. The major species caught by the bottom trawlers are cod, Greenland halibut, redfish, and thorny skate (see Table 1).

Table 2.1.1. *Fishing Effort in the NAFO Regulatory Area for trips that ended in 2017.*

Vessel Class	# of fishing vessels	# of fishing trips	Main Gear	f = Days present in the NRA	Fishing Trip Range (days)	Main Species	Fishing Area
Class 3-4 vessels (less than 500 mt)	7	17	Longline	205	1-18 days	Cod, Yellowtail flounder	Flemish Cap (for cod); Tail of the Grand Banks (for yellowtail flounder)
Class 5 vessels (500-1000 MT)	10	31	Bottom Trawl	1051	9-71 days	Cod, Greenland halibut, redfish, skates	Flemish Cap; Tail and Nose of the Grand Banks
Class 6 vessels (1000-2000 MT)	26	60	Bottom Trawl	2435	2-100 days	Cod, Greenland halibut, redfish, skates	Flemish Cap; Tail and Nose of the Grand Banks
Class 7 vessels (> 2000 MT)	2	4	Bottom Trawl	181	28-57 days	Cod, Greenland halibut, redfish, skates	Flemish Cap; Tail and Nose of the Grand Banks
Total	45	112		3872			

2.2 Effort Distribution by depth of groundfish vessel

The requirement of providing the speed and course information in the position reports of Vessel Monitoring System (VMS) is satisfied. Hourly positions are required to be transmitted. Speeds between 0.5 and 5 knots were assumed to be fishing speeds in this analysis. In Figure 2.2.1, the

distribution of fishing effort in hours of groundfish vessels is presented. It shows that about half of all groundfish effort is at depths 400 meters and below (skates, redfish and cod). Figure 2.2.1 also shows a concentration of fishing effort around 1000 meters and this can be attributed to the Greenland halibut fishery.

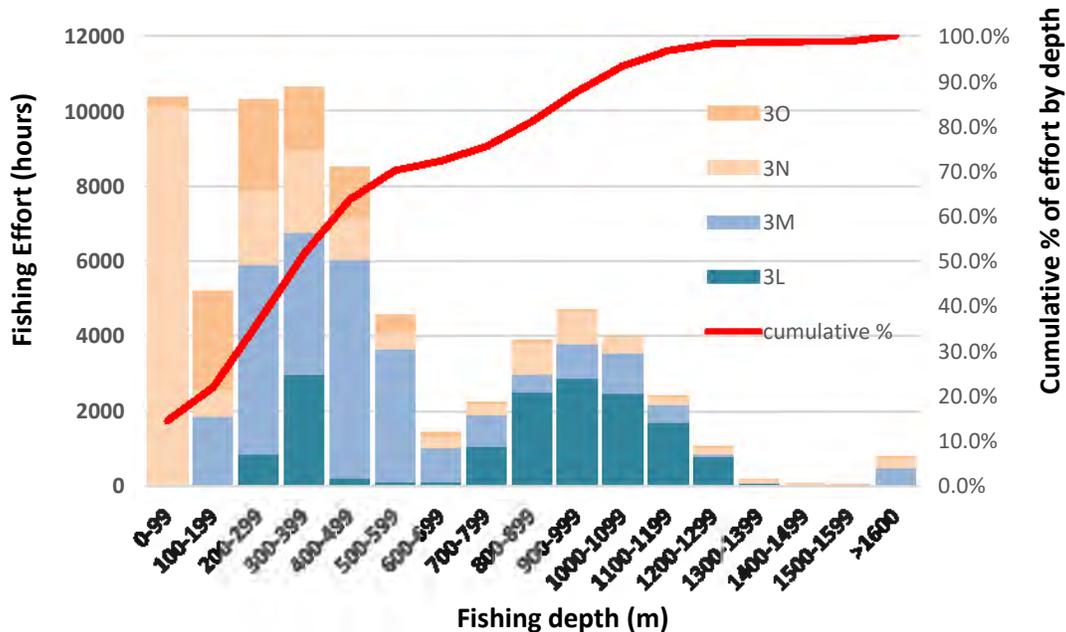


Figure 2.2.1. Distribution of fishing effort (in hours) by depth (m) in the NRA in 2017. Vessels are assumed to be fishing at speed in the range of 0.5-5.0 kt.

2.3 Catch totals

In 2017, a grand total of 59 533 t of fish (58 141 t retained + 1 392 t rejected) were caught by NAFO-registered vessels (as reported in the daily CATs) authorized to fish in the Regulatory Area (Table 2.3.1). In terms of quantities caught, the stocks 3M Cod, 3LMNO Greenland halibut, 3M Redfish, 3LN Redfish, 3O Redfish, 3LNO Yellowtail flounder and 3NO Skates constitute the major groundfish fishery in the NRA.

Table 2.3.1 Total reported retained catches (in tonnes) of species (in FAO 3-alpha code) by Division for trips that ended in 2017 (Source: CA field of CAT Reports)

Division	3L	3M	3N	3O	6G	TOTAL
<i>Species subject to catch limitations (as listed in the Quota Table)</i>						
COD	98.6	14196.5	350.8	227.9		14873.9
GHL	6594.3	1562.0	1094.4	8.6		9259.3
HKW	0.0	1.9	56.2	113.8		171.9
PLA	82.9	158.7	622.4	254.0		1118.1
RED	3729.3	7079.3	4595.0	7484.9		22888.5
SKA	77.4	43.3	3695.8	425.5		4242.0
SQI	0.0	2.8	0.0	11.5		14.4
WIT	38.1	181.7	94.2	219.0		533.0
YEL			3821.3	44.7		3866.0
<i>Selected species not listed in the Quota Table</i>						
ALF					54.5	54.5
ANG			2.7	19.7		22.3
CAT	2.6	5.9	3.3			11.8
HAD		4.2	6.0	23.3		33.4
HAL	103.3	132.9	219.0	176.8		632.0
RHG	71.0	24.8	24.5			120.4
RNG	12.7	5.8	0.1			18.6
<i>Sharks</i>						
DGX			0.1			0.1
GSK		2.6	1.5			4.1
<i>Other Species</i>	3.4	11.5	8.9	250.9	1.7	276.4
TOTAL	10813.7	23413.8	14596.2	9260.7	56.2	58140.7

Table 2.3.2 *Total reported rejected catches (in tonnes) of species (in FAO 3-alpha code) by Division for trips that ended in 2017 (Source: RJ field of CAT Reports)*

Division	3L	3M	3N	3O	Total
<i>Species subject to catch limitations (as listed in the Quota Table)</i>					
CAP	0.0		9.2	2.1	11.3
COD	4.9	7.1	30.0		41.9
GHL	0.0	0.0	1.1		1.2
HKW		0.0	14.9	0.6	15.5
PLA	5.5	1.3	58.6	3.7	69.1
RED	1.0	10.8	1.2	2.9	15.8
RJR	0.4	1.5	56.4		58.3
SKA	2.1	2.2	61.7	0.9	66.8
SQI		0.1	0.0	2.1	2.2
WIT	8.1	1.3	6.6	9.0	25.0
YEL	0.0		24.5	0.0	24.5
<i>Selected species not listed in the Quota Table</i>					
ANG			0.0		0.0
CAT	13.2	5.1	7.5	6.3	32.0
HAD		0.0	0.1	0.5	0.6
HAL	0.1	0.9	16.0	0.0	17.0
RHG	202.1	38.2	24.1	0.8	265.2
RNG	36.6	44.3	9.3	0.1	90.3
<i>Sharks</i>					
DGX	3.0	0.4	0.7		4.2
GSK	183.0	36.3	130.2	19.7	369.2
POR			1.4	1.6	2.9
SHX		0.1		1.2	1.3
SMA	0.2		1.5	0.7	2.4
<i>Other Species</i>	24.6	29.7	194.1	27.5	275.9
Total	484.9	179.3	648.9	79.7	1392.8

3.0 Inspection and Surveillance

Chapter VI of the NCEM outlines the general provisions and protocol of the at-sea inspection and surveillance in the NRA. Inspectors are appointed by Contracting Parties with inspection presence in the NRA and assigned to fishery patrol vessels tasked to carry out NAFO inspection duties at sea. Currently, Canada and the European Union are the Contracting Parties with inspection presence. They deploy the patrol vessels in the NRA.

Chapter VII of the NCEM – Port State Control Measure – outlines the procedure and protocol for landings and port inspection.

3.1 Patrol Activity

Arial Surveillance

In 2017, Canada deployed surveillance planes, collectively flying 342 hours with 993 sightings of vessels in the NRA. No vessel suspected of conducting IUU fishing activities was spotted.

Vessel surveillance

Six patrol vessels were deployed by the CPs with inspection presence. In all 365 days were spent in the NRA. The total length of time each patrol vessel exercised its patrol duties in 2017 varied between 11 days and 166 days. However, there were 88 days when no patrol vessel was present, and 83 days when there was more than one patrol vessel. Figure 3.1 shows the time of the year they were present in the NRA.

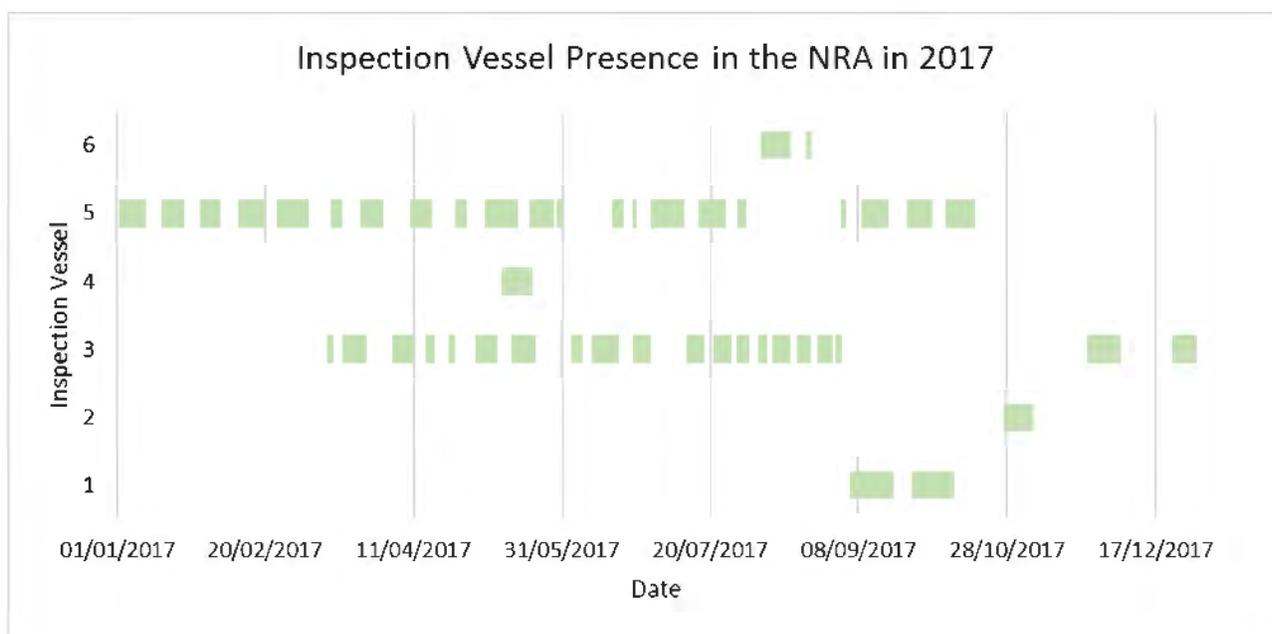


Figure 3.1 *Inspection Vessel Presence in the NRA in 2017.*

3.2 At-sea inspections

In all, 115 at-sea inspections were conducted, out of which seven (7) inspections detected Apparent Infringements (AI). Some AI's were considered serious (as per Article 38 definition), some could not be confirmed by the flag State upon further investigation or port inspection. Details of the AIs and their disposition can be found in Sections 4.6-4.8.

3.3 Port Inspections

According to Article 43.10, the port State Contracting Party shall carry out inspections of at least 15% of all such landings or transshipments during each reporting year, unless otherwise required in a recovery plan in which case 100% coverage is required. Greenland halibut is the only species which presence in the landing would require a port inspection (See Article 10). Port inspection reports are accomplished by port States using a PSC3 form (Annex IV.C).

In evaluating the compliance of port State authorities with Article 10, only trips with Greenland halibut onboard were considered. Table 3.3.1 shows the coverage levels (based on the number of trips, and days effort) of port inspections for vessels that had Greenland halibut onboard.

Table 3.3.1 *The number of fishing trips, fishing days, and catch amounts in tonnes of vessels that had Greenland halibut onboard (based on the COX for the trip) and the number and percent coverage of port inspections for that trip.*

	GHL onboard (COX)	Port Inspection Coverage	Percent Coverage
Number of Trips	65 (where GHL>0 at COX)	54 (trips with PSC3)	83.1
Fishing Days	2812	2554	90.8
Amount (tonnes)	9297	8397	90.3

In evaluating compliance with Port State Control measures outlined in Chapter VII of the NCEM, a review of the submission of Port State Control Prior Request (PSC1) and Port Inspection reports (PSC3) is presented in Table 3.3.2.

Table 3.3.2 *The number of PSC1s and corresponding PSC3s received by the NAFO Secretariat by port State Contracting Party.*

Port State Contracting Party	PSC1	PSC2	PSC3	% Coverage
Canada	19	0	11	57.9
Cuba	0	0	0	N/A
DFG (Faroe Islands)	2	0	1	50.0
DFG (Greenland)	0	0	0	N/A
EU (Spain, Netherlands)	5	0	4	80.0
France (St Pierre et Miquelon)	5	0	1	20.0
Iceland	0	0	0	N/A
Japan	0	0	0	N/A
Norway	0	0	0	N/A
Republic of Korea	0	0	0	N/A
Russian Federation	0	0	0	N/A
Ukraine	0	0	0	N/A
United States of America	0	0	0	N/A

4.0 Compliance

In this section, reporting obligations and apparent infringements (AIs) are examined. AIs are detected by at-sea inspectors and by port inspection authorities (see Section 3).

4.1 Reporting Obligation

The NCEM requires fishing vessels, flag State Contracting Parties, and fishing observers to provide reports on their fisheries activity within a determined time frame. In evaluating completeness in the cases of Vessel Transmitted Information (VTI) and of fishing observers under Article 30.A, reports were examined to determine which fishing trips were covered by the reports, and the following tables show the results of these analyses. The percentage coverage is computed as a ratio of fishing days accounted for by the reports and total fishing days effort in the NRA.

4.2 Vessel Reporting

4.2.1 Vessel Transmitted Information (VTI) – Catch-on-Entry (COE), Daily Catch Reports (CAT), and Catch-on-Exit (COX)

The Fisheries Monitoring Centres (FMCs) of flag States are responsible for transmitting the VTI reports to the Secretariat. The COE and COX are transmitted signifying the start and end of a fishing trip. COE-COX information is used to estimate the fishing-days effort in a fishing trip. The CATs are daily catch quantities reported by species and by Division while on a fishing trip and the NAFO Secretariat uses the CATs in the monitoring of the quota uptake by the fleet of the Contracting Parties.

In Table 4.2.1, the number of COE, COX, and CAT, as well as of fishing trips and fishing effort-days in the NRA, is presented. Ideally, the number of COE and COX should correspond to the number of fishing trips. The higher than expected numbers suggest that vessels left the NRA and returned while still operating under the same trip, or that duplicate and erroneous reports were occasionally sent. The VMS-VTI system features a cancel report (CAN) which allows vessels and FMCs to withdraw or correct previously sent VTI report. Nonetheless, all identified fishing trips had corresponding COE and COX, representing 100% coverage.

In total 4013 CATs were received within the calendar year 2017. This number is expectedly higher than the number of fishing days because some vessels were fishing in more than one Division in a single day.

Table 4.2.1 *Fishing effort and VTI statistics in the NRA, 2017.*

Number of fishing trips identified	112
Days Present in the Regulatory Area	3872
Number of Daily Catch Reports (CATs)	4013
Number of Catch on Entry Reports (COEs)	137
Number of Catch on Exit Reports (COXs)	136

4.2.2. Catch reporting on sharks

Article 28.6.g requires that all shark catches be reported at the species level, to the extent possible. When species specific reporting is not possible shark species shall be recorded as either large sharks (SHX) or dogfishes (DGX).

The 2017 CAT reports were examined and not all shark catches were reported to the species level. It is not known how many species of shark were lumped into SHX or DGX.

Table 4.2.2. *Amount of shark catches (t) as reported in CATs in 2017.*

3-Alpha Code	Common Name	Retained (t)	Rejected (t)	Total (t)	Percentage
DGX	Dogfishes	0.1	4.2	4.3	1.1%
GSK	Greenland Shark	4.1	369.2	373.3	97.2%
POR	Porbeagle		2.9	2.9	0.8%
SHX	Large sharks		1.3	1.3	0.3%
SMA	Shortfin mako sharks		2.4	2.4	0.6%
Total		4.2	380.1	384.2	100.0%

4.2.3 Haul by haul Reports

The submission of logbook data on a haul by haul basis became mandatory in 2015 (Article 28.8.b). The haul by haul data must be submitted to the Secretariat in the format prescribed in Annex II.N. for all hauls of the fishing trip. The Secretariat has received logbook data for 94 of 112 trips that were completed in 2017. This accounts for 3304 out 3872 fishing days, i.e. 83.3% coverage.

4.2.4 Position reporting – Vessel Monitoring System (VMS)

According to Article 29, every fishing vessel operating in the NRA shall be equipped with a satellite monitoring device capable of continuous automatic transmission of position to its land-based FMC, which in turn is transmitted to the Secretariat in real time. The transmission of position reports (POS) shall be no less frequently than once an hour.

The Secretariat can confirm that the requirement is fully complied with. In 2017, a total of 99 293 POS reports were received. Occasionally, technical problems were encountered by the fishing vessels or FMC. During these occasions, the POSs were transmitted manually. Technical issues were usually resolved within a few days through the coordination between the Secretariat and the FMC.

4.3 Closed Areas and Exploratory Fisheries

As of 2017, in total 21 areas in NAFO have been closed to bottom fishing including 14 areas with significant concentration of coral, sponges and sea pens, one coral protection zone, and six seamounts. The measures concerning the protection of Vulnerable Marine Ecosystems (VMEs) from bottom fishing are stipulated in Chapter II of the NCEM.

Fishing tracks were plotted from the haul by haul data by connecting the start and end points of each haul, implying that each track is a straight line. On closer examination of the fishing tracks, it was noted that some lie within the closed areas and even within the Canadian EEZ. However, upon cross-verification with the VMS data, the outliers were proven to be inaccurate.

The Secretariat did not receive a notification from a Contracting Party concerning its intention to conduct exploratory fisheries (as defined in Article 18) in 2017.

4.4 Vessel activity after 3M redfish 50%- and 100% TAC uptake notifications

The Secretariat monitors the TAC uptake through the daily catch reports it receives from the vessels and FMCs. When the TAC is projected to be reached, CPs are notified and are required to instruct their vessels to cease directed fishery on the stock starting on the date projected by the Secretariat.

Figure 4.4 shows the total daily catches and the percentage of cumulative catch derived from CAT reports. According to Article 5.5.d) of the NCEM, not more than 50% of the TAC may be fished before 01 July. A total of 18 vessels were targeting 3M redfish in early 2017. On 20 February 2017, the five-day prior notification of 50%-TAC uptake was circulated, stating that the 50% of the quota was projected to be taken by 25 February 2017, until which time the fishery would be suspended until 30 June. On 5 July 2017, the 96-hour projection notification was circulated, advising that 100% of the TAC was projected to be reached by 9 July. By the projected closure date, 101% of the 7000 t-TAC was fished. There was a total of 18 vessels targeting 3M redfish in July 2017. No directed 3M fishery was conducted after the closure.

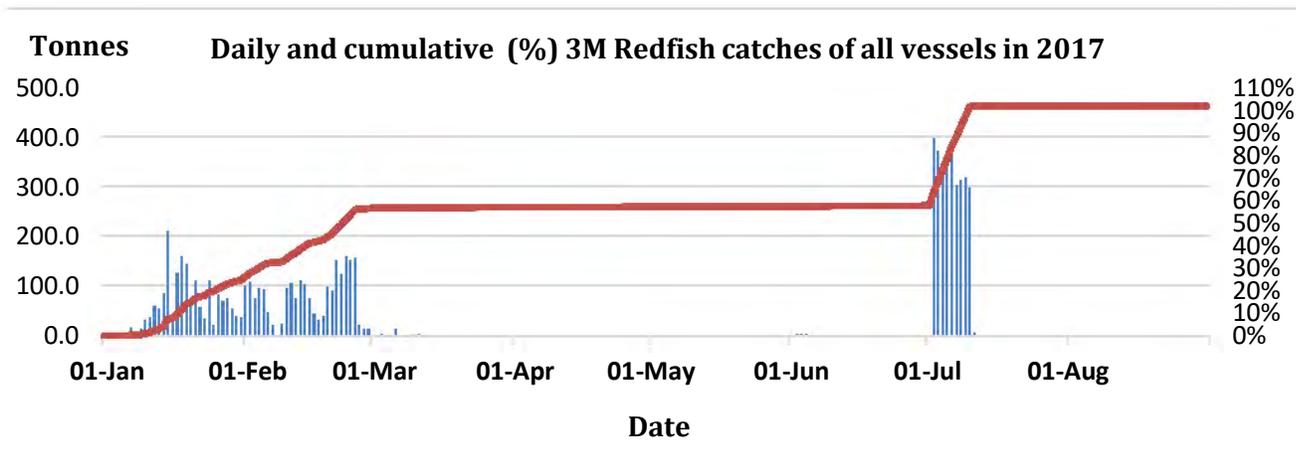


Figure 4.4 Daily catches of 3M redfish of all vessels in 2017. Source: 2017 CATs.

4.5 Observer Reports

Under Article 30.A – Observer Scheme, vessels are required to have an independent observer on board at all times (i.e. 100% coverage) during every fishing trip. In 2017, two Contracting Parties, Denmark (in Respect of the Faroe Islands and Greenland) and Norway, operated under Article 30.B. Faroe Islands vessels completed 13 trips in 2017, and two of those trips had an observer onboard and reports were submitted, and Norway had two vessels, conducting three trips in 2017 and two of those trips had an observer on board and reports were submitted.

In evaluating compliance of observer reports submission, only reports from vessels operating under Article 30.A were considered. In 2017, of the 100 fishing trips (3718 days present in the NRA) under Article 30.A, the Secretariat received observer reports from 89 trips (3236 days present in the NRA), an 87% report coverage.

4.6 Apparent Infringements detected at-sea and at-port

In 2017, a total of eight (8) vessels were cited with AI by inspectors at sea and port inspection services. At-sea inspectors issued AIs on six (6) vessels; port inspection services issued AIs on two (2) vessels. In all, there were nine AIs. Vessel 24 was cited twice by the port inspection services on separate incidents. Details on the nature of the AIs are provided in Table 4.6.

Flag State Contracting Parties are required to report on the judicial actions it has undertaken on the vessels issued with AIs (Article 40.1.d). Details of the follow-up actions are also provided in Table 4.6. The status of each AI case was determined by STACTIC during its intersessional meeting in May 2018.

Port AIs were determined by the completion of section E.1B (c) – *Additional Infringements found during the Port inspection* – of the PSC3 by the port inspection services. There is no indication in section E.1B (c) whether the AI is considered “serious” or “non-serious”.

Table 4.6 *Details of Apparent Infringements (AI) detected by inspectors at-sea and by port inspection services and their disposition. AIs presented in bold are AIs at-sea which were considered “serious” by the inspectors.*

Vessel Code	flag State CP	Date of inspection	Division (at-sea) or Port	Apparent Infringement (AI)	Confirmation of AI	Update as of Mar. 2018 (as reported by the flag State) (Art. 40.1.d.)	Remarks from Secretariat	STATUS as of May 2018 (Art. 40.2)
24	EU	05-Jan-17	St. John's	Master inaccurately recorded tow/set catch amount in 3N on 22 Dec 2016 and in 30 on 28 Dec 2016.	Section E.1.B (a) of PSC 3: Not confirmed during port inspection.		At the port inspection in Aveiro on March 2017, the AI could not be confirmed.	CLOSED
3	RUS	07-Apr-17	3M	Issued at sea: Failed to maintain Stowage plan (art 28.5.a); failed to maintain accurate production logbook (Art 28.3.a.); failure to maintain an accurate fishing logbook (Art 28.2.b). Considered serious in accordance with 38.1.i and 38.8.b as they relate to mis-recording of catches.	Section E.1.B (a) of PSC 3: Art 28.2(b) and 3 (a). Master give us a document signed by officers and NAFO Observer in April 10th 2017, according as they threw to sea 71900 kg of damaged Redfish in hold #1 between April 4th and 6th. Art. 28.5 (a) - Coincident stowage plane hold #1 (partially empty). Empty space 136,23 m³ = 72.64 tons."	Fined 120000 Rubles		CLOSED
24	EU	07-Jun-17	Vigo	PSC 3 - Section E.1.B(c) : Article 28.5a (Stowage Plan)		Proposal of resolution fine 8000 €. Case Pending	AI's issued by port inspection services are not indicated whether 'serious' or non-serious:	PENDING
39	USA	09-May-17	3N	Contrary to Art 6.6.a -- conducting directed fishery of COD, a species classified as bycatch in accordance with art 6.2.b as it is a moratorium species. Considered serious under art 38.1.		Submitted for prosecution. Case Pending.		PENDING

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Vessel Code	flag State CP	Date of inspection	Division (at-sea) or Port	Apparent Infringement (AI)	Confirmation of AI	Update as of Mar. 2018 (as reported by the flag State) (Art. 40.1.d.)	Remarks from Secretariat	STATUS as of May 2018 (Art. 40.2)
41	EU	24-Jul-17	3M	Fishing gear requirements. Use of a multiple flap-type topside chafer, with mesh size lesser than the cod-end.; and flaps more than ten meshes long. Contrary to Art. 13.6.	Use of multiple flap-type topside chafer, with meshes less than that of cod-end, and with flaps more than ten meshes long. Contrary to Art. 13.6 as described in Annex III.B.2.	Proposal of resolution 7000 €. Case Pending.		PENDING
11	EU	01-Aug-17	3L	Mis-recorded on 29July catch in 3L contrary to Art 28.6.c.			Canadian inspectors issued the AI. EU inspectors could not confirm the AI.	CLOSED
38	EU	04-Jul-17	3M	Package labels at time of stowage could not be read by inspectors. Contrary to Art. 27.2.			During port inspection at Cangas in September 2017, fisheries inspectors did not confirm the apparent infringement in port.	CLOSED
42	USA	19-Sep-17	Loiusbourg	While directing for YEL in 3N, the master exceeded specified PLA bycatch limit of 15% in tow#5 of the trip, the master failed to immediately move 10 nautical miles from any position of tow #5 during tow#6, as required under Art 6.6.(b)(i).		CLOSED. Footnote 21 (now Footnote 14) applies to seasonal PLA bycatch limit.		CLOSED

Vessel Code	flag State CP	Date of inspection	Division (at-sea) or Port	Apparent Infringement (AI)	Confirmation of AI	Update as of Mar. 2018 (as reported by the flag State) (Art. 40.1.d.)	Remarks from Secretariat	STATUS as of May 2018 (Art. 40.2)
31	EU	15-Sep-17	3L	Failed to maintain Stowage plan (art 28.5.a); failed to maintain accurate production logbook (Art 28.3.a.); failure to maintain an accurate fishing logbook (Art 28.2.b). Considered serious in accordance with 38.1.i and 38.8.b as they relate to mis-recording of catches contrary to Art. 28. EU confirmed the AI.	Article 28.6 c	Case led by Spain. Waiting to be initiated. Case Pending		PENDING

4.7 Follow-up to apparent infringements

NCEM Article 39 spells out obligations of a flag State Contracting Party that has been notified on an infringement. It includes taking immediate judicial or administrative action in conformity with the national legislation of the flag State Contracting Party and ensuring that sanctions applicable in respect of infringements are adequate in severity.

Article 40 requires Contracting Parties to report on the disposition of the AIs. The legal resolution of AIs may take more than a year. Contracting Parties shall continue to list such infringements on each subsequent report until it reports the final disposition of the infringement. In Table 4.8, a summary of status of AI cases in the last five years (2013-2017) and their resolution are presented.

Table 4.8 *Resolution of citations (by at-sea inspectors and port inspection services) against vessels fishing in the NAFO Regulatory Area by year in which the citations were issued (as of May 2018). A citation is an inspection report that lists one or more apparent infringement. Inspections carried out for confirming a previous citation are not included.*

Year	Number of Inspection Reports with AI citation/s	Number of Resolved cases	Number of Pending Cases	% Resolved
2013	13	13	0	100%
2014	6	5	1	83%
2015	3	0	3*	0%
2016	10	3	7	30%
2017	9	5	4	55%

* all 3 cases are under appeal

5.0 Trends and Analysis

Five-year trends (2013-2017) are presented in this section.

5.1 General Trends

Trends in fishing effort and catches are presented in Figures 5.1.1 and 5.1.2.

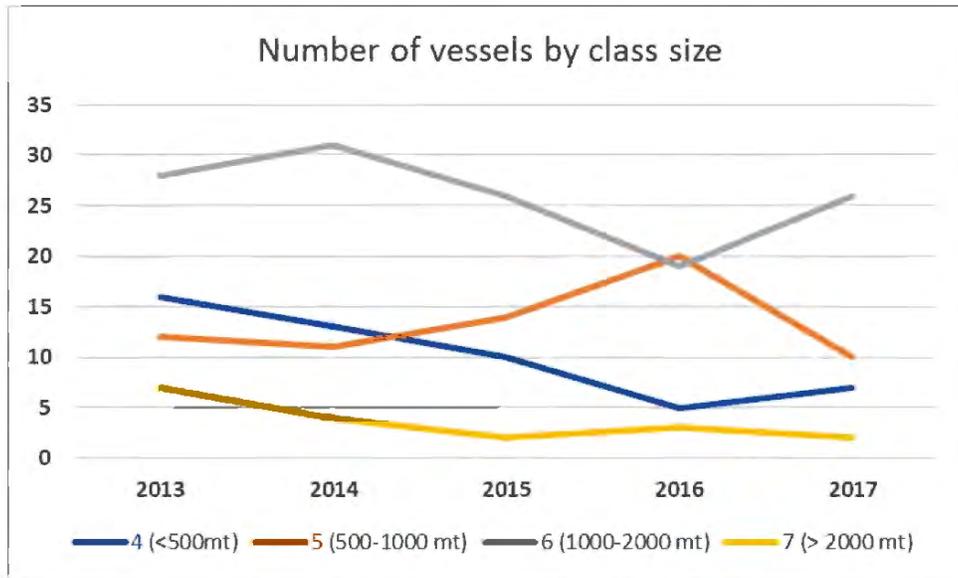


Figure 5.1.1 Number of fishing vessels in Divisions 3LMNO by class size, 2013-2017.

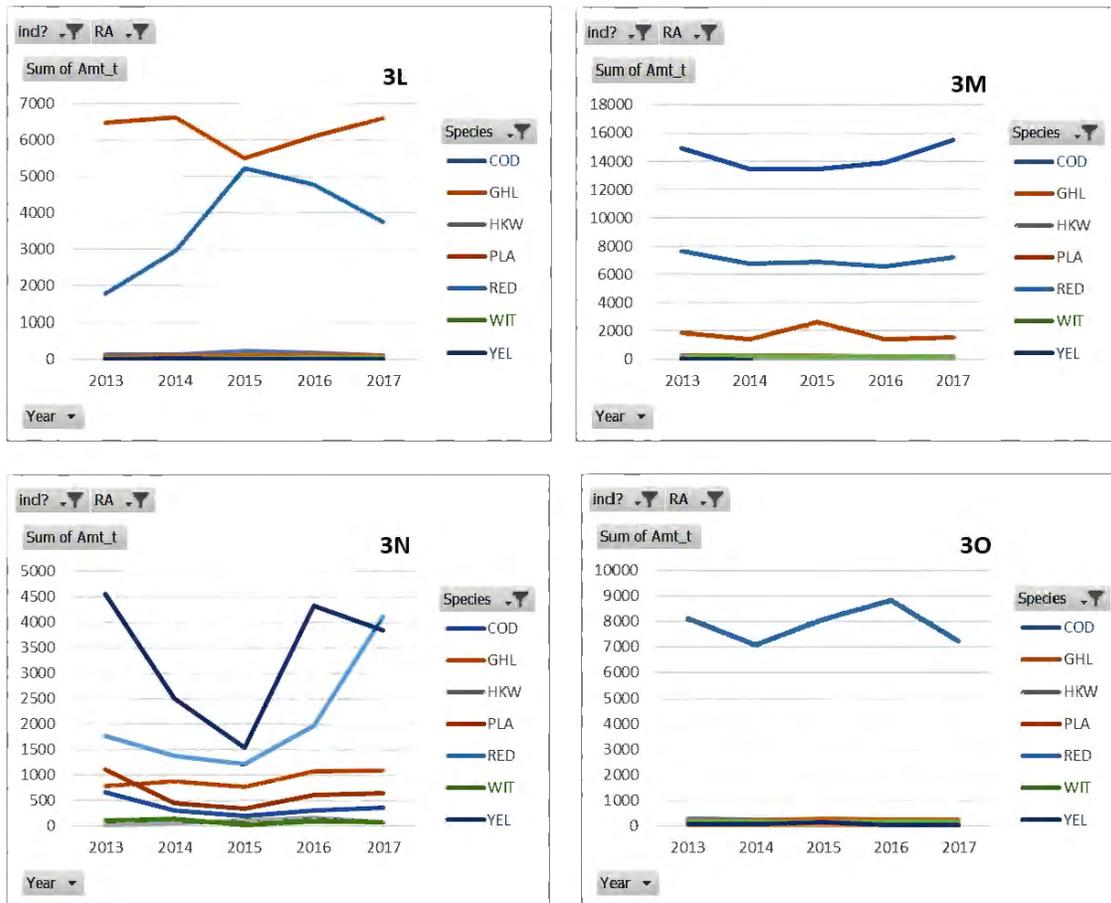


Figure 5.1.2 Catches (in tonnes) by Division of selected species managed by TAC, 2013-2017 (Source: CATs)

5.2 Reporting Obligations by Contracting Parties and Observers

Compliance with reporting obligations is quantified as a percentage coverage – the ratio of the fishing effort accounted for by the reports and of the total effort (days). A 100% coverage would mean that all expected reports were delivered to the Secretariat, less than 100% means some fishing trips did not have a corresponding report. Figure 5.2 presents the percentage coverage of port inspections reports on vessels with Greenland halibut landings, observer reports from vessels operating under Article 30A, and haul by haul reports in accordance with Article 28.8.b.

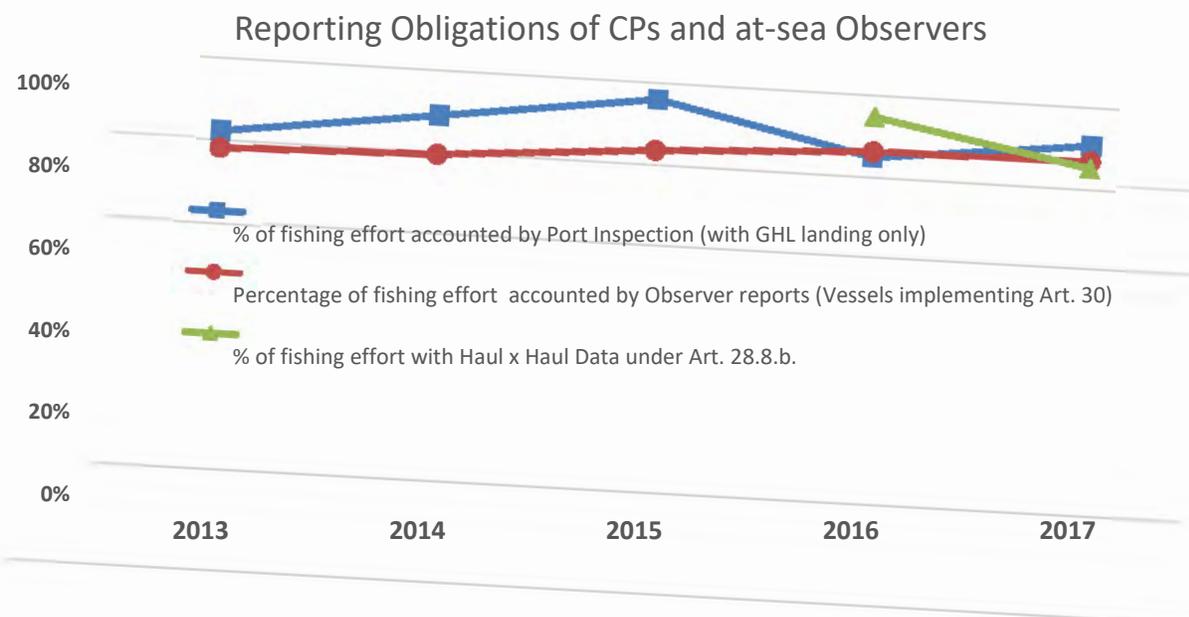


Figure 5.2 *Percentage coverage of Port Inspections reports with Greenland halibut landings reports (Art. 42.10), Observer Reports on fishing vessels operating under Article 30A, and Haul by Haul reports (Article 28.8.b and Annex II.N), 2013-2017.*

5.3 Compliance by Fishing vessels

Vessel compliance on this requirement (Articles 28 and 29) has been 100% coverage since 2013. The beginning and end of each fishing trips were indicated by the Catch-on-Entry (COE) and Catch-on-Exit (COX). Vessels also submitted Daily catch reports by Division (CATs) while in the NRA.

Hourly position reports (POS) were also transmitted to the Secretariat while the vessels were in the NRA.

5.4 Inspections and Apparent Infringements

At-sea inspection rates in the period 2013-2017 are presented in Figure 5.4.1. Frequency of AI cases in the period 2013-2017 are presented in Figure 5.4.2.

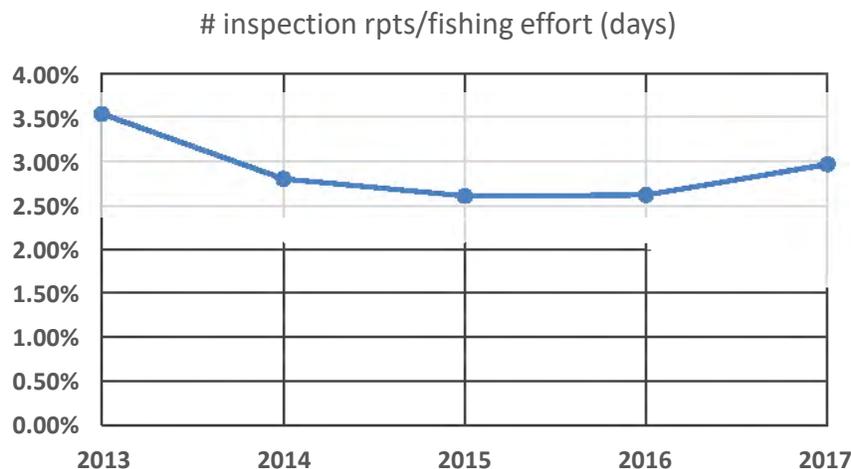


Figure 5.4.1 Inspection rates (number of at-sea inspections/vessel days) in the NAFO Regulatory Area, 2013-2017.

	2013	2014	2015	2016	2017
Bycatch - move-away	•	•			
Bycatch - retaining 3m Redfish	•••••••• ••••••				
By-catch requirements	•	••	•	••••	••
Catch communication violations (COX)				•	
Directed fishing of moratorium stock				•	•
Evidence tampering	•	•		•	
Falsification of documents	•				
Fishing after date of closure				•	
Gear requirements - mesh size, illegal attachments		•			•
Inspection protocol	•		•	•	
Mis-recording of catches - inaccurate recording	•••	•••••••• •	••	•••••••• •	••••
Mis-recording of catches -stowage		••	•	•	•••
Observer requirements		•			
Product labelling	•••••	•••			•
Quota requirements				••	
Vessel requirements - capacity plans	••••	•		•	
VMS requirements		•			

Figure 5.4.2 Number of AI cases detected by at-sea inspectors and port inspection services in 2013-2017. Black dots represent AIs issued at sea and blue dots represent AIs issued at port.



6.0 Conclusions

Overall compliance with reporting obligations is high and has continued to improve in recent years. While Contracting Parties are to be commended for their engagement in the compliance review process and their continued promotion of compliance with all aspects of the NAFO Conservation and Enforcement Measures (CEM), there is still work to be done.

Port State Inspections when Greenland halibut are landed are below the mandatory 100% inspection rate as required in Article 10. The submission of haul by haul logbook data in accordance with NAFO CEM Article 28.8 has reached 83.3% compliance. The submission of observer reports in accordance with the Article 30.A of the NAFO CEM is 87%. To address the above-noted reporting deficiencies, STACTIC is undertaking review of the reasons for these deficiencies and researching short-term and long-term solutions.

The port inspection provisions outlined in Chapter VII of the NAFO CEM require that Contracting Parties inspect 15% of the landings of vessels entitled to fly the flag of another Contracting Party. Contracting Parties have exceeded the 15% requirement in 2017.

New compliance review format implemented by STACTIC this year appears to be working well and continues to reassess the compliance review process and looks for opportunities to add relevant information to guide the decision-making process. In 2017, STACTIC detected fewer infringements. STACTIC remains committed to developing measures to address apparent infringements, particularly misreporting of catch and division areas and repeat non-compliance.

7.0 Recommendations

STACTIC recommends that the Secretariat outline port State reporting requirements by port State Contracting Party in the 2019 Compliance Review to determine which Contracting Parties are below the reporting requirements.

STACTIC recommends that all Contracting Parties review the timeliness of their reporting to ensure compliance with the requirements set out in the NAFO CEM.

STACTIC recommends that the NAFO Secretariat clarify in the 2019 Compliance Review the difference between actual fishing days and days spent in the NAFO Regulatory Area and present both figures, as well as an analysis of fishing time by species and area.

STACTIC recommends that Contracting Parties ensure the correct reporting of species by division, including species where no catch limitations apply.

STACTIC shall continue to review the changes in fishing patterns in the NAFO Regulatory Area, with a particular focus upon incidental catches of other species, including sharks.

STACTIC will continue to discuss environmental considerations, including garbage at-sea.

STACTIC recommends that the Contracting Parties with an Inspection Presence maintain and continue efforts to protect stocks that are subject to moratorium.

STACTIC recommends that Contracting Parties with an inspection presence continue to collaborate.



Annex 36. NAFO Press Release

NAFO AGREES TO SECOND PERFORMANCE REVIEW AND CONTINUES ITS COMMITMENT TO CONSERVING MARINE BIODIVERSITY

FOR IMMEDIATE RELEASE

Tallinn, Estonia, 21 September 2018- The 40th Annual Meeting of the Northwest Atlantic Fisheries Organization (NAFO) took place from 17-21 September in Tallinn, Estonia. Delegates from the 12 NAFO Contracting Parties were welcomed to Estonia by the NAFO President, Stéphane Artano, and the Honourable Siim Kiisler, Minister of the Environment of Estonia. Contracting Parties were also welcomed by the Director-General for Maritime Affairs and Fisheries from the European Commission, Mr. João Aguiar Machado, later in the week.

At the meeting, NAFO accepted the Performance Review Panel Report and its 36 recommendations to further improve its functioning. This second comprehensive Review addressed conservation and management; compliance and enforcement; governance; science; international cooperation; and financial and administrative issues. NAFO also established a working group to develop an action plan to address all the recommendations. A copy of NAFO's Performance Review Report and its recommendations can be found on the NAFO website (<https://www.nafo.int>).

In addition, to the traditional total allowable catch (TAC)* and quota decisions, significant decisions were made regarding the following:

- NAFO adopted an exceptional circumstances protocol for NAFO's Greenland halibut management strategy evaluation.
- NAFO continued its commitment to the conservation of marine biodiversity in NAFO waters by implementing measures to prohibit the directed fishing of Greenland shark and for Contracting Parties to report on efforts to minimize incidental catches and mortalities.
- NAFO adopted a comprehensive revision to the NAFO Observer Program to enhance the quality of data being collected by NAFO observers.
- NAFO agreed to a schedule for the management strategy evaluation (MSE) plan for cod in the Flemish Cap (Division 3M), including setting a Harvest Control Rule (HCR) for the stock, for the next Annual Meeting.
- NAFO continued its efforts towards further developing its ecosystem approach to fisheries management by requesting that the NAFO Scientific Council develop a 3 to 5-year workplan to ensure its prioritization and support. In this context, NAFO looks to further progress in the implementation of its Ecosystem Approach Roadmap.

*All of the TACs and quotas can be found [here](#).

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PART II.

Report of the Standing Committee on International Control (STACTIC)

40th Annual Meeting of NAFO, 17-21 September 2018
Tallinn, Estonia

1. Opening by the Chair, Judy Dwyer (Canada)

The opening of the STACTIC meeting was delayed as Contracting Parties could not achieve consensus on how STACTIC should proceed if industry representatives who are members of some Contracting Party delegations were present at the meeting. This question was presented to the Commission who convened two emergency Heads of Delegation meetings. Heads of Delegation acknowledged that each Contracting Party can make its own decision on whether or not to allow industry representatives of Contracting Party delegations to attend STACTIC. The Heads of Delegation advised that, for this meeting only, if any Contracting Party felt they were unable to address agenda items, they were asked to signal their intent not to participate or object to discussing the item with industry representatives in attendance at the start of each Agenda Item. It was clarified during the discussion of the advice that no participation on an agenda item was in no sense to be taken as agreement to adopt such item.

The Chair opened the meeting at 11:00 hours on Tuesday, 18 September 2018 at the Radisson Blu Hotel Olumpia in Tallinn, Estonia. The Chair welcomed representatives from the following Contracting Parties (CPs) – Canada, Denmark (in respect of Faroe Islands and Greenland), the European Union, France (in Respect of St. Pierre et Miquelon), Iceland, Japan, Norway, the Russian Federation, Ukraine, and the United States of America (Annex 1).

2. Appointment of Rapporteur

Jana Aker (NAFO Secretariat) was appointed as rapporteur.

3. Adoption of Agenda

The following additions were made to the agenda under agenda Item 17 – Other Business:

- a. Designated Ports - FAO
- b. Global Record – list of vessels
- c. Development of executive session of STACTIC
- d. Nordic Fisheries Inspection Network
- e. Performance Review Recommendations
- f. Reporting of sharks

The agenda was adopted, as amended (Annex 2).

4. Compliance Review 2018 Including Review of Reports of Apparent Infringements

The NAFO Secretariat presented the draft Annual Compliance Review in STACTIC WP 18-29 and highlighted that the version follows the template adopted by STACTIC at the 2017 Annual Meeting found in STACTIC WP 17-42 (Rev. 2). Contracting Parties made several suggestions for improvement and clarification within the working paper and they have been reflected in STACTIC WP 18-29 (Revised). Representatives from the United States, Canada, and the European Union volunteered to draft the conclusions and recommendations sections which are also presented in STACTIC WP 18-29 (Revised). The United States requested that going forward, the NAFO Secretariat complete the initial draft of the Conclusions and Recommendations sections of the Compliance Review prior to the Annual Meeting to save time during the meeting. Contracting Parties made



further editorial comments on the document and it was agreed to forward STACTIC WP 18-29 (Rev. 2) to the Commission for adoption.

The Chair highlighted COM WP 18-07 which is the overview of Chartering Arrangements and explained that the Commission normally reviews this working paper annually but felt that STACTIC should review this information. STACTIC reviewed the working paper and noted that the information should be included in the Compliance Review, and Contracting Parties agreed that it should be included in the Compliance Review going forward. Contracting Parties also identified a need for the inclusion of transshipment operations in the Compliance Review.

It was **agreed** that:

- **The Annual Compliance Review outlined in STACTIC WP 18-29 (Rev. 2) be forwarded to the Commission for adoption.**
- **The NAFO Secretariat would, going forward, complete an initial draft of the conclusions and recommendations section of the Compliance Review prior to the start of the Annual Meeting.**
- **STACTIC will recommend to the Commission that going forward, the Overview of Chartering Arrangements and transshipment operations will be incorporated into the Compliance Review starting in 2019.**

5. Measures concerning repeat non-compliance of serious infringements in the NAFO Regulatory Area

The European Union objected to discussing this Agenda Item as per the process described under Agenda Item 1. Iceland agreed with the European Union and noted that they are interested in seeking potential mechanisms for addressing repeat non-compliance, but that the discussions would have to be deferred.

Canada provided an update on the status of the proposal that they have been working on, noting that they have received information from most, but not all Contracting Parties. They further noted that in the preliminary review of the information, not all Contracting Parties have a common mechanism within their domestic legislation to address repeat non-compliance of serious infringements. Canada noted that future discussions were required under this agenda item.

It was **agreed** that:

- **The discussions relating to measures concerning repeat non-compliance of serious infringements were deferred as per the process described under Agenda Item 1.**

6. New and Pending Proposals on Enforcement Measures: possible revisions of the NAFO CEM

Canada presented STACTIC WP 18-27 (Rev. 2) noting that this was a proposal on amendments to the stowage plan provisions that had been updated following discussions after the Intersessional Meeting as well as bilateral discussions with Iceland during this meeting. The European Union expressed concern with the Annexes in the working paper, and Canada clarified that the Annexes were only provided to facilitate a visual for the discussions during this meeting and that they were not for inclusion in the NAFO CEM. Contracting Parties thanked Canada for the clarification and suggested minor revisions to the text of the proposal and it was agreed to forward the proposal outlined in STACTIC WP 18-27 (Rev. 3) to the Commission for adoption.

Norway presented STACTIC WP 18-31 which contained a proposal for amendments to Chapter VII of the NAFO CEM in response to the recommendation from the Intersessional Meeting. Norway explained that NEAFC had adopted amendments to the NEAFC Scheme of Control and Enforcement and the PSC 1 and 2 to require flag

State confirmation and port State authorisation when a foreign vessel requests permission to enter port for use of port services other than for offloading and transshipment. Contracting Parties thanked Norway for preparing this proposal. Iceland proposed an addition to the PSC1 and PSC2 forms under Part C to differentiate between the authorization of NAFO catch and NEAFC catch because there may be differences in time limits for PSC authorization of catch to be landed but also that the current PSC can be interpreted as NAFO giving authorization on behalf of NEAFC. Contracting Parties agreed, and the final revision is presented in STACTIC WP 18-31 (Revised) and it was agreed to forward this to the Commission for adoption.

Denmark (in Respect of the Faroe Islands and Greenland) presented STACTIC WP 18-33 which outlined a provision for amendments to the gear requirements in Article 13 of the NAFO CEM. Contracting Parties noted that they felt the addition of square mesh panels would be allowed under the current NAFO CEM provisions. The European Union added that the addition of square mesh panels is complicated and that with these types of panels the size and position are of crucial importance, and the research shows different results for different fish species. Denmark (in Respect of the Faroe Islands and Greenland) thanked Contracting Parties for their input and withdrew the proposal until the 2019 Intersessional Meeting.

The Chair invited Canada to present STACTIC WP 18-34 outlining proposed changes to the definitions of bycatch in Article 6 of the NAFO CEM. Iceland objected to discussing this agenda item as per the process described under Agenda Item 1 and the working paper was deferred.

Canada presented STACTIC WP 18-35 outlining a proposal to modify the distribution of the notification of infringements to allow port State inspection authorities to be aware of infringements issued at sea. Canada drafted this paper in a response to a recommendation made at the 2018 Intersessional Meeting. Contracting Parties were supportive of the concept of the proposal but offered edits for clarification. Contracting Parties agreed to forward the proposal outlined in STACTIC WP 18-35 (Rev. 2) to the Commission for adoption.

The United States presented STACTIC WP 18-39 outlining proposed amendments to the move along provisions but noted that further information was required before the proposal could be finalized. Contracting Parties provided comments to the United States on the proposal, and the United States thanked Contracting Parties for their input and requested that the action on the proposal be deferred to the 2019 Intersessional Meeting.

Canada presented STACTIC WP 18-41 which was a proposal to reinstate the text of footnote 14 of Annex I.A of the NAFO CEM into Article 6. The United States noted that this issue has been under discussion during the last few meetings of STACTIC and noted that the original issue stemmed from a procedural question as to whether the Editorial Drafting Group was authorized to recommend the change to the NAFO CEM in 2015. The United States explained that, in its view, the change should have been initiated and approved by the Commission. Since this change, this year, was initiated by the Commission and forwarded to STACTIC for further development, there is no longer a procedural concern and the United States agreed with the proposal presented by Canada.

It was noted that at the 2018 Intersessional Meeting, it was agreed that the proposals outlined in STACTIC WP 18-18, STACTIC WP 18-21 (Revised), and STACTIC WP 18-22 (Rev. 2) were to be forwarded to the Commission for adoption.

It was **agreed** that:

- **The proposed changes to the NAFO CEM outlined in STACTIC WP 18-27 (Rev. 3) be forwarded to the Commission for adoption.**
- **The proposed changes to the NAFO CEM outlined in STACTIC WP 18-31 (Revised) be forwarded to the Commission for adoption.**
- **Denmark (in Respect of the Faroe Islands and Greenland) would withdraw their proposal presented in STACTIC WP 18-33 until the 2019 Intersessional Meeting.**

- **The proposed changes to the NAFO CEM outlined in STACTIC WP 18-35 (Rev. 2) be forwarded to the Commission for adoption.**
- **The discussion of STACTIC WP 18-34 be deferred as per the process described under Agenda Item 1.**
- **The United States would defer their proposal presented in STACTIC WP 18-39 until the 2019 Intersessional Meeting.**
- **The proposed changes to the NAFO CEM outlined in STACTIC WP 18-41 be forwarded to the Commission for adoption.**

7. NAFO Monitoring, Control and Surveillance (MCS) Website

The NAFO Secretariat noted that the Quota Monitoring Application has been added to the MCS Website following the recommendation at the Intersessional Meeting. The European Union highlighted the importance of the MCS website as a tool for inspection and enforcement in NAFO but noted that there are some enhancements that could be made to improve the functionality of the website, such as correcting filtering issues, including VMS positional information, photos of the vessels, quota transfers, and elements that could be included in the risk analysis. The European Union also highlighted that it would be useful for the NAFO Secretariat to develop a guidance document on using the MCS website that could be used during the training of inspectors. The European Union noted that they still intend to propose that all inspection personnel (at-sea and in port) have access to all of the information on the MCS Website for inspection purposes but called a meeting of the Editorial Drafting Group in advance of the 2019 Intersessional Meeting to begin drafting the necessary changes in the NAFO CEM to facilitate this. Iceland noted that they were pleased with this proposed way forward and offered to assist.

It was **agreed** that:

- **The EDG would meet in advance of the 2019 Intersessional Meeting to review the access rights outlined in the NAFO CEM to the MCS Website to at-sea and in port inspectors to ensure that all inspectors have access to all information necessary to facilitate their inspections.**
- **The NAFO Secretariat would investigate, in advance of the 2019 Intersessional Meeting, potential enhancements to the MCS Website, including the development of a guidance document.**

8. Editorial Drafting Group (EDG) of the NAFO CEM

The Chair noted that there were a number of items raised for discussion by the Editorial Draft Group during this meeting, and that a face to face meeting would be scheduled within the first designated two-week period for 2019 meetings (25 February to 08 March 2019).

It was **agreed** that:

- **The Editorial Drafting Group would schedule a face to face meeting during the period of 25 February to 08 March 2019.**

9. Report and Recommendations of the STACTIC Observer Program Review Working Group (WG-OPR)

The Chair presented STACTIC WP 18-45 which outlined proposed changes to the NAFO Observer Program in Article 30 of the NAFO CEM. The Chair noted that these revisions were the result of work from all Contracting Parties involved in the working group and expressed thanks to everyone for their input and collaboration.

It was highlighted that the criteria for derogation outlined in the proposed Article 30.5 may need to be reviewed at a later date, by STACTIC. It was also noted that during the drafting process, templates were developed for the reporting requirements outlined in Article 30.5.e and Article 30.9.d, and Contracting Parties could elect to provide the reports in these templates, but that they are not a requirement, however, would be available on the MCS Website. It was also noted that the term “undue influence or benefit” in Article 30.2 of the proposed revisions was intended to deter the direct transfer of funds / benefits between the industry and observers, whilst not precluding industry funded observer programs. Canada asked whether Contracting Parties had a common understanding of what “negligible” meant in Article 30.5.a of the proposed provisions, and it was agreed that the term “negligible” was understood to mean “so small or unimportant as to be not worth considering; insignificant” in the context of this Article. Editorial changes were suggested in the working paper for clarification and it was agreed to forward STACTIC WP 18-45 (Revised) to the Commission for adoption. Any Contracting Party may elect to delay the application of Article 30 until 01 January 2020 but shall follow the provisions of Article 30 outlined in the 2018 NAFO CEM (COM Doc. 18-01). Those Contracting Parties electing to delay shall notify the Executive Secretary no later than 31 December 2018, and the Executive Secretary shall post this information to the MCS Website.

It was **agreed** that:

- **The revised version of Article 30 of the NAFO CEM outlined in STACTIC WP 18-45 (Revised) be forwarded to the Commission for adoption.**
- **Any Contracting Party may elect to delay the application of Article 30 until 01 January 2020 but shall follow the provisions of Article 30 outlined in the 2018 NAFO CEM (COM Doc. 18-01). Those Contracting Parties electing to delay shall notify the Executive Secretary no later than 31 December 2018, and the Executive Secretary shall post this information to the MCS Website.**

10. Review and Evaluation of Practices and Procedures

The Chair highlighted that two Contracting Parties had agreed at the 2018 Intersessional Meeting to provide presentations under this agenda item, but those Contracting Parties deferred these discussion as per the process described under Agenda Item 1.

It was **agreed** that:

- **The presentations from Iceland and Denmark (in Respect of the Faroe Islands and Greenland) would be deferred as per the process described under Agenda Item 1.**

11. Review of Current IUU list Pursuant to NAFO CEM, Article 53

Following discussions at the 2018 Intersessional Meeting relating to the vessel “Maine” on the NAFO IUU list, the NAFO Secretariat highlighted that NEAFC has updated the name from “Maine” to “Labiko”. It was agreed that the NAFO Secretariat should also make this change based on available information.

It was **agreed** that:

- **The NAFO Secretariat update the name of the vessel “Maine” to “Labiko” on the IUU list.**

12. Review of Data Reporting Requirements in the NAFO CEM

a. Review of the Reporting of Haul by Haul data (Article 28.8.b)

The Chair opened this agenda item and highlighted the recommendation from the 2018 Intersessional meeting that stated:

It was agreed that:

A review of the reporting of haul by haul data be added to the agenda for the next Annual Meeting with a view to examine and address potential causes of untimely reporting or non-reporting of this data, an appropriate timeframe for reporting this data, the feasibility of including catch information by haul in the daily CAT, the availability of this data to NAFO inspectors, recommendation 5 from the WG-BDS meeting report, and any other issues related to haul by haul reporting.

Contracting Parties noted that there were a lot of items to be discussed and uncertainty on how to move forward to address each of the items. Following discussions, Canada offered to develop a paper to identify some potential approaches. Canada presented this paper in STACTIC WP 18-46 and offered to draft a proposal addressing the points outlined in item 5.a of the paper at the 2019 Intersessional Meeting.

It was **agreed** that:

- **Canada would develop a proposal in response to the items outlined in item 5.a of STACTIC WP 18-46 for discussion at the 2019 Intersessional Meeting.**

b. Review of the Reporting of Provisional Monthly Catch (Article 28.8.a)

The Chair opened this item reflecting on discussion from the intersessional meeting relating to this reporting provision. The Chair noted that following discussion with the Chair of the Scientific Council, it was determined that the data being provided in this provision were in fact being used by the Scientific Council, although these are combined from two different types of data, daily catch evaluations (CAT messages) and landing figures. The European Union felt that with daily CAT reporting, there was no longer a need for this monthly aggregation of CAT messages and presented a proposal for Contracting Parties to opt out of this provision in STACTIC WP 18-44. Canada expressed reservations on moving forward with this proposal until confirmation could be provided about any other uses for the data. It was agreed that the discussion of the Reporting of Provisional Monthly Catch (Article 28.8.a) be deferred to the 2019 Intersessional Meeting.

It was **agreed** that:

- **The discussion on the Reporting of Provisional Monthly Catch (Article 28.8.a) outlined in STACTIC WP 18-44 be deferred until the 2019 Intersessional Meeting.**

13. Bycatches and Discards

The Chair highlighted STACTIC WP 18-28 (Revised) that was developed at the 2018 Intersessional Meeting in response to the request from the Commission in COM Doc. 17-23 requesting a joint action plan to minimize or eliminate discards in the NAFO Regulatory Area. Norway offered that a questionnaire to Contracting Parties may facilitate discussion to provide more concise information to work with, rather than filtering through each Contracting Party’s domestic legislation. Contracting Parties agreed with Norway’s proposed way forward and

Norway offered to draft the questionnaire. The final version of the coordinated plan to examine the feasibility of introducing policies to minimize or eliminate discards in NAFO of STACTIC and the WG-BDS, with the questionnaire provided by Norway is presented in STACTIC WP 18-28 (Rev. 4), and it was agreed to forward this to the Commission for adoption. Contracting Parties agreed to respond to the questionnaire outlined in STACTIC WP 18-28 (Rev. 4) prior to 31 December 2018. It was also agreed that the Chairs of STACTIC, WG-BDS, and the Scientific Council would meet during the first designated two-week period in 2019 to review the responses to the questionnaire, and the analyses to be completed by the NAFO Secretariat. The report of this meeting will be presented at the 2019 Intersessional Meeting.

Contracting Parties expressed differing views regarding the proposed approach to the issue of bycatch and discards in the NAFO Regulatory Area.

Denmark (in Respect of the Faroe Islands and Greenland) presented COM WP 18-26, which was forwarded to STACTIC by the Commission. They noted that this was intended as a discussion paper on potential options for minimizing bycatch and discards in NAFO. The United States noted that the changes being proposed in the paper were substantive policy changes that had not been approved by the Commission and therefore not appropriate for discussion within STACTIC until further guidance from the Commission is received. The Russian Federation expressed a reservation to discussing the potential options presented in the working paper. It was decided that guidance from the Commission was required on whether it is appropriate to continue discussions in STACTIC on STACTIC WP 18-26.

It was **agreed** that:

- **The coordinated plan between STACTIC and the WG-BDS to examine the feasibility of introducing policies to minimize or eliminate discards in NAFO outlined in STACTIC WP 18-28 (Rev. 4) be forwarded to the Commission for adoption.**
- **Contracting Parties would respond to the questionnaire outlined in STACTIC WP 18-28 (Rev. 4) prior to 31 December 2018.**
- **the Chairs of STACTIC, WG-BDS, and the Scientific Council would meet during the first designated two-week period in 2019 to review the responses to the questionnaire, and the analyses to be completed by the NAFO Secretariat. The report of this meeting will be presented at the 2019 Intersessional Meeting.**
- **guidance from the Commission was required to identify how STACTIC should proceed in this matter. on whether it is appropriate to continue discussions in STACTIC on STACTIC WP 18-26.**

14. Data classification and Access Rights

Some Contracting Parties noted that they were not willing to discuss STACTIC WP 18-40, the US proposal on transparency of working papers, and the NAFO Secretariat working paper, STACTIC WP 18-37, referring to data classification as per the process described under Agenda Item 1.

It was **agreed** that:

- **Discussions under this agenda item be deferred as per the process described under Agenda Item 1.**

15. Report and Advice of the Joint Advisory Group on Data Management (JAGDM)

The European Union highlighted the Electronic Reporting System (ERS) developments currently taking place in NEAFC and requested that JAGDM review this in the context of potential future use in NAFO. Norway also

noted that currently in the NEAFC port authorization systems, the PSC1 and PSC2 processes are electronic, and in NAFO they are not. Norway proposed that JAGDM could consider the possibility of an electronic PSC system in NAFO.

It was **agreed** that:

- **STACTIC would request JAGDM to review the work on the ERS system in NEAFC in the context of NAFO.**
- **STACTIC would request JAGDM to discuss the possibility of transposing the NEAFC electronic system into NAFO for PSC1 and PSC2 forms.**

16. Discussion on Garbage Disposal and Labour Conditions Onboard Vessels

The NAFO Secretariat presented STACTIC WP 18-30 highlighting the results of a survey of other RFMO Secretariats (CCAMLR and SIOFA) on their application of MARPOL. Japan noted that WCPFC has also adopted measures related to garbage disposal at sea. Canada presented STACTIC WP 18-36 highlighting Canada's legislative mechanisms to address garbage disposal at sea, and Denmark (in Respect of the Faroe Islands and Greenland) presented STACTIC WP 18-38 highlighting information pertaining to their domestic practices on the issue of garbage disposal at sea for discussion. Norway also provided a summary of their domestic practices in relation to this issue. The European Union explained that it is enforcing provisions to enhance port reception facilities to collect garbage from ships, including fishing vessels, with the view to fully implement MARPOL Annex V and promote further re-use and recycling. Pending guidance from the Commission, it was agreed to continue these discussions at the 2019 Intersessional Meeting and the European Union also offered to table a proposal on garbage at the 2019 Intersessional Meeting.

Norway flagged under this agenda item a discussion on lost and abandoned fishing gear in NAFO, noting the provisions of Article 13.10-13.13 in the NAFO CEM. Norway proposed that the NAFO Secretariat investigate the development of an application to fulfill the notification requirements for lost gear to facilitate reporting, and also requested the Secretariat investigate the possibility of creating a map showing where the gear had been lost to get an indication of patterns. Norway agreed to provide a proposal for the application and the map creation at the 2019 Intersessional Meeting. Norway also highlighted that NAFO could investigate the possibility of conducting retrieval operations for gear that has been lost.

Contracting Parties discussed labour conditions onboard vessels and noted that this is addressed in other international organizations such as the ILO and the IMO and is not under the mandate of NAFO; however, highlighted the importance of open communication mechanisms with these organizations to facilitate the reporting of incidents to the relevant authorities. Contracting Parties noted the importance of this for Contracting Parties with an inspection presence and port inspectors, as they could be presented with situations of questionable labour conditions onboard vessels. Iceland proposed posting, on the MCS Website, a single point of contact (SPOC) for each Contracting Party which would direct notification on such incidents to the correct authorities, as there is a difference between each Contracting Party on how labour laws are enforced. Contracting Parties agreed that this would be useful, and suggested the inclusion of links to the ILO, IMO, and MARPOL websites.

The United States noted that any proposals to recommend measures to address garbage disposal and labour conditions onboard vessels should be initiated by the Commission.

It was **agreed** that:

- **STACTIC would request guidance from the Commission on moving forward with the development of proposed measures to address garbage disposal at sea.**

- **Pending guidance from the Commission:**
 - **This agenda item remain on the agenda for the 2019 Intersessional Meeting.**
 - **the European Union would table a proposal on garbage at the 2019 Intersessional Meeting.**
 - **Norway would draft a proposal for the development of an application and map for lost and abandoned fishing gear in NAFO.**
 - **Contracting Parties would submit their single point of contact (SPOC), as described above, to the NAFO Secretariat.**
 - **The NAFO Secretariat would add a page for a single point of contact for each Contracting Party on the MCS Website along with links to ILO, IMO, and MARPOL documentation.**

17. Other Business

a. Designated Ports - FAO

Norway presented STACTIC WP 18-32 highlighting a proposal for NAFO to request the FAO to add a link to the relevant NAFO pages on designated ports, rather than having each port State upload this information on the FAO Website in order to avoid double reporting, which could lead to a mismatch between RFMO lists and the FAO list. Contracting Parties expressed concerns that the information being uploaded to the FAO database contains more detail than that being sent to NAFO, and some information would be lost if only the link was provided. It was agreed that the NAFO Secretariat would reach out to the FAO to clarify if posting a link would facilitate the requirement and report back to STACTIC at the 2019 Intersessional Meeting.

It was agreed that:

- **The NAFO Secretariat would contact the FAO and discuss the proposal outlined in STACTIC WP 18-32 and report back to STACTIC at the 2019 Intersessional Meeting.**

b. Global Record – list of vessels

Norway highlighted that the FAO Global Record is an initiative to make data available from State authorities about vessels and vessel-related activities. Norway proposed that rather than having each Contracting Party submit their vessel information to the Global Record, the NAFO vessel registry could be linked, lessening the administrative burden on the Contracting Parties. Contracting Parties noted concerns with this proposal as the NAFO vessel registry is very fluid and subject to change from year to year. Norway withdrew this suggestion.

c. Development of executive session of STACTIC

The United States requested this agenda item following the initial discussions around fishing industry presence in the STACTIC meeting. The Chair clarified that the Commission would be providing STACTIC with advice on a way forward with this issue during the presentation from STACTIC at the Commission meeting.

d. Nordic Fisheries Inspection Network

Denmark (in Respect of the Faroe Islands and Greenland) presented STACTIC WP 18-42 highlighting the Nordic Fisheries Inspection Network project that took place in August 2018. The seminar was an opportunity for fisheries control professionals in the West Nordic Region to collaborate and share experiences and expertise. Iceland noted that they had representatives attend this seminar and it was very useful and thanked Denmark

for hosting. Canada and the European Union also reflected on their current Inspectors Workshop and noted that this forum has also been extremely beneficial for information exchange between Contracting Parties with Inspection Presence, and that the next meeting would be taking place in December 2018.

e. Performance Review Recommendations

The NAFO Secretariat highlighted COM-SC WP 18-04 which outlined the recommendations from the NAFO Performance Review. The Chair noted that the current tasking asked of STACTIC by the Commission was to ensure that the relevant NAFO Bodies that were identified to address the recommendations are correct. STACTIC sought clarification on Recommendation 24 relating to the follow-up to infringements and questioned if this recommendation should be referred to STACTIC. Iceland noted that infringements detected in port are missing from the review.

The European Union expressed a strong concern about recommendation number 20 on flag State performance and noted that the FAO guidelines are a reference to States that voluntarily want to evaluate their level of performance and are not entitled to be applied by RFMOs that have in force an internal Contracting Party review process, such as NAFO. The European Union also stated that, should this recommendation number 20 go through, the performance evaluation exercise should be strictly limited to NAFO waters and to legal aspects such as how the NAFO rules are made binding by the Contracting Parties.

f. Reporting on sharks

The European Union presented STACTIC WP 18-43 outlining a proposal to enhance the reporting of individual sharks in response to a request from the Scientific Council. Contracting Parties expressed concerns with the technical changes that would have to take place in order to facilitate the updates proposed to the CAT message. The United States and the European Union worked together to revise and co-sponsor the proposal, and it was agreed to forward STACTIC WP 18-43 (Rev. 3) to the Commission for adoption.

During the discussions, Japan highlighted that it would be extremely useful to have guidance documents for the collection of biological data on shark species. Canada noted that they have this information available and agreed to post it to the Practices and Procedures webpage. Contracting Parties questioned the difference between Annex I.C and the ASFIS list, and it was noted the ASFIS list is more robust. Contracting Parties request the EDG to review the NAFO CEM for references to these lists. Contracting Parties noted that the FAO ASFIS list can be found at the following link: <http://www.fao.org/fishery/collection/asfis/en>

Iceland highlighted the NAFO CEM provision permitting vessels to report the species code MZZ in CAT reporting when catch is below 100kg. It was agreed that this provision would be discussed at the 2019 Intersessional Meeting.

It was **agreed** that:

- **That the proposed changes to the NAFO CEM outlined in STACTIC WP 18-43 (Rev. 3) be forwarded to the Commission for adoption.**
- **Canada would post information on how to collect biological data on shark species to the Practices and Procedures webpage.**
- **The EDG would review references to FAO 3-alpha codes in the NAFO CEM.**
- **The provisions relating to reporting the species code MZZ in CAT reporting when the catch is less than 100kg be discussed at the 2019 Intersessional Meeting.**

Report of STACTIC, 17-21 Sept 2018

18. Time and Place of next meeting

The next STACTIC Intersessional meeting will be hosted by the European Union in Portugal from 07-09 May 2019.

19. Adoption of Report

The report was adopted on 20 September 2018, prior to the adjournment of the meeting.

20. Adjournment

The meeting was adjourned at 20:15 hours on 20 September 2018. The Chair thanked Estonia for hosting the meeting and the NAFO Secretariat for their support during the meeting. She also thanked the meeting participants for their cooperation and input. The participants likewise expressed their thanks and appreciation to the Chair for her leadership.

Annex 1. List of Participants

Judy Dwyer (Chair) Natasha Barbour Amy Kavanagh-Penney Mike Hurley Lloyd Slaney	Canada
Meinhard Gaardlykke Claus Christian Jørgensen Mads T. Nedergaard	Denmark (in respect of the Faroe Islands and Greenland)
Carlos Chamizo Carlos Ferreira Marta Moya Diaz Epp Meremaa Aare Pai Glenn Quelch Aronne Spezzani	European Union
Arnaud Granger	France (in Respect of St. Pierre et Miquelon)
Björgólfur H. Ingason Hrannar M. Asgeirsson	Iceland
Takeshi Miwa Kunitaka Shimotashiro	Japan
Hilde Ognedal	Norway
Ilya Skryabin	Russian Federation
Vitalii Popov	Ukraine
Mike Henry Peter Hughes Shannah Jaburek Kevin King Gene Martin Katie Pohl Eric Reid Richard Usher	United States of America
Jana Aker Matt Kendall DJ Laycock	NAFO Secretariat

Annex 2. Agenda

1. Opening by the Chair, Judy Dwyer (Canada)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Compliance Review 2018 Including Review of Reports of Apparent Infringements
5. Measures concerning repeat non-compliance of serious infringements in the NAFO Regulatory Area
6. New and Pending Proposals on Enforcement Measures: possible revisions of the NAFO CEM
7. NAFO Monitoring, Control and Surveillance (MCS) Website
8. Editorial Drafting Group (EDG) of the NAFO CEM
9. Report and Recommendations of the STACTIC Observer Program Review Working Group (WG-OPR)
10. Review and Evaluation of Practices and Procedures
11. Review of Current IUU list Pursuant to NAFO CEM, Article 53
12. Review of Data Reporting Requirements in the NAFO CEM
 - a. Review of the Reporting of Haul by Haul data (Article 28.8.b)
 - b. Review of the Reporting of Provisional Monthly Catch (Article 28.8.a)
13. Bycatches and Discards
14. Data classification and Access Rights
15. Report and Advice of the Joint Advisory Group on Data Management (JAGDM)
16. Discussion on Garbage Disposal and Labour Conditions Onboard Vessels
17. Other Business
 - a. Designated Ports - FAO
 - b. Global Record – list of vessels
 - c. Development of executive session of STACTIC
 - d. Nordic Fisheries Inspection Network
 - e. Performance Review Recommendations
 - f. Reporting on sharks
18. Time and Place of next meeting
19. Adoption of Report
20. Adjournment

Part III.

Report of the NAFO Standing Committee on Finance and Administration (STACFAD)

40th Annual Meeting of NAFO, 17-21 September 2018
Tallinn, Estonia

1. Opening by the Chair, Deirdre Warner-Kramer (USA)

The first session of STACFAD was opened by the Chair, Deirdre Warner-Kramer (USA) on Monday, 17 September 2018. The Chair welcomed delegates and members of the NAFO Secretariat to the meeting.

The Chair noted the excellent representation of Contracting Parties as delegates were present from Canada, Denmark (in respect of the Faroe Islands and Greenland), European Union, France (in respect of St. Pierre et Miquelon), Japan, Norway, and the United States of America. Representatives of the 2018 NAFO Performance Review Panel and the North Pacific Anadromous Fish Commission (NPAFC) were also in attendance (Annex 1).

2. Appointment of Rapporteur

The NAFO Secretariat was appointed as Rapporteur.

3. Adoption of Agenda

The following agenda items were added under "*Other Matters*":

- Performance Review Panel Report Recommendations
- Draft Headquarters Agreement
- Revision to the Rules of Procedure
- Distribution of Meeting Documentation

The agenda, as revised, was adopted (Annex 2).

4. Audited Financial Statements for 2017

At the 2017 Annual Meeting, the Committee was informed that during the completion of the 2016 audit, NAFO's Auditor's (Grant Thornton) noted several deviations from the Organization's adopted accounting framework, International Financial Reporting Standards (IFRS). These deviations would not allow them to issue a qualified opinion, as was received in the past from previous auditors. It was agreed to change to Not-for-Profit accounting standards from the current IFRS accounting framework and that the Secretariat would work intersessionally to modify the NAFO Financial Regulations, including any specific departures from the generally accepted accounting practices.

The modifications to the NAFO Financial Regulations were approved by the Commission intersessionally and the 2016 audit was completed on the basis of the modified Financial Regulations.

Grant Thornton performed the audit for the 2017 fiscal year, in accordance with the NAFO Financial Regulations. The draft financial statements were circulated to the Heads of Delegations of the Commission and STACFAD delegates in advance of the meeting.

The Secretariat presented the draft Audited Financial Statements of the Northwest Atlantic Fisheries Organization for the year ended December 31, 2017. It was noted that the financial statements will be shown as draft until after they are reviewed by STACFAD and approved by the Organization. The Committee reviewed the statements in detail.



Report of STACFAD, 17-21 September 2018

The total expenditures incurred for the fiscal period ending 2017 amounted to \$1,957,301, which was \$168,699 under the approved budget of \$2,126,000. One noteworthy reason for expenditures being under budget was the deferral of the second Performance Review until 2018.

The excess of revenues over expenditures for 2017 was \$89,058.

During the 2017 audit, the NAFO auditors noted the annual accrual and offsetting expense of \$12,000 for future recruitment and relocation expenses goes against current financial reporting standards. To achieve the decision taken in 2013 to avoid sharp increases to membership contributions resulting from these intermittent costs, the auditors are recommending that a relocation fund be established. Therefore, monies would be added each year to the relocation fund until there is a changeover of internationally recruited staff. At this time, funds required to offset recruitment and relocation costs incurred to the NAFO budget would be transferred from the relocation fund.

STACFAD recommends that:

- **Rule 4.5 of the NAFO Financial Regulations be amended to allow for the establishment of a recruitment and relocation fund within the accumulated surplus account, as follows:**

The Standing Committee on Finance and Administration and the Commission shall review the amount available in the accumulated surplus account during each annual meeting. Insofar as possible, the Commission shall anticipate unforeseen expenditures during the succeeding three years and shall attempt to maintain the accumulated surplus account at a level sufficient to finance operations during the first three months of the year plus an amount up to a maximum of 10% of the annual budget for the current financial year for use in an emergency in accordance with Rule 4.4. In addition, the Organization shall also maintain a recruitment and relocation fund to pay recruitment and relocation costs for incoming and outgoing internationally recruited staff. The recruitment and relocation fund balance shall be kept at a maximum of \$100,000.

- **The 2017 Financial Statements be adopted.**

5. Administrative and Activity Report by NAFO Secretariat

The Executive Secretary highlighted NAFO administrative matters and activities for the period September 2017 to August 2018 (COM Doc. 18-05 Revised).

6. Financial Statements for 2018

The Secretariat presented the 2018 financial statements to the Committee. The operating budget for 2018 was approved at \$2,297,000 while expenditures for the year are projected to be at \$2,259,000, or \$38,000 under the approved budget. Savings for the year can be attributed to the following:

- SC Sessional meeting costs being lower than budgeted;
- Fewer SC Intersessional meetings than budgeted; and
- The establishment of a recruitment and relocation fund.

All remaining 2018 operating expenses are anticipated to be on or near budget for the year. The above noted cost savings of \$38,000 will be returned to the accumulated surplus and will be available to reduce Contracting Parties contributions in 2019.

Assessed Contributions

At the beginning of 2018, the accumulated surplus had \$399,694, which was deemed to be in excess of the needs of the Organization and was allocated towards the 2018 operating budget. Therefore, in order to meet

the 2018 operations budget of \$2,297,000, Contracting Parties were assessed contributions in the amount of \$1,897,306.

Balance Sheet

The Organization's cash position at December 31, 2018 is estimated to be \$607,620. The cash balance should be sufficient to finance appropriations in early 2019 pending the receipt of annual payments by Contracting Parties in the spring of 2019. The Committee was informed that a payment was received from Ukraine just prior to the Annual Meeting. Only two partial contributions are currently outstanding for 2018 - Cuba and Ukraine.

An update on the activities of the Scientific Research and other Trust Funds, including contributions received and disbursed, for the period 2014–2018 was presented in STACFAD WP 18-09. Updates on the Scientific Research and other Trust funds will be provided annually.

7. Review of Accumulated Surplus Account and Contingency Fund

According to the Financial Regulations, STACFAD and the Commission shall review the amount available in the accumulated surplus account during each Annual Meeting. The accumulated surplus account shall be set at a level sufficient to temporarily finance operations during the first three months of the year, plus an amount up to a maximum of 10% of the annual budget for the current financial year to be used for unforeseen and extraordinary expenses. In addition, the Organization shall also maintain a recruitment and relocation fund to pay costs for incoming and outgoing internationally recruited staff, as agreed under agenda item 4.

The Secretariat noted the accumulated surplus account at December 31, 2018 is estimated to be \$633,000.

STACFAD recommends that:

- **The amount maintained in the accumulated surplus account be set at \$285,000 of which \$200,000 would be sufficient to finance operations during the first three months of 2018, and of which \$85,000 would be a contingency fund available to be used for unforeseen and extraordinary expenses.**
- **The recruitment and relocation fund be set at \$48,000 to pay for future recruitment and relocation costs for incoming and outgoing internationally recruited staff.**

8. NAFO Website

a. NAFO Members' pages

The NAFO Secretariat presented the newly re-designed Members' pages which were launched in July 2018 (STACFAD WP 18-10).

The key highlights of the re-designed webpages include:

- The text was reviewed resulting in a clean and concise presentation of NAFO information.
- The information is divided by documentation type rather than NAFO body, as done previously. This division allows the user to quickly and easily locate required documentation.
- The pages are now mobile device friendly.

Throughout the process, the Secretariat worked in close consultation with the *ad hoc Virtual NAFO Website Re-design Working Group: Phase II – Data Classification* to identify any information that could be migrated to the public pages and to eliminate redundant information.

The Committee appreciated the work on the website re-design project and welcomed the new format.

b. Ad hoc virtual NAFO Website Re-design Working Group: Phase II – Data Classification

An update was provided on the work of the *ad hoc Virtual NAFO Website Re-design Working Group: Phase II – Data Classification* (STACFAD WP 18-11).

At the 2017 Annual Meeting of NAFO, the Working Group was tasked with identifying information that is clearly of a non-sensitive nature that can be migrated from the NAFO Members' pages (<https://members.nafo.int/>) to the public website (<https://www.nafo.int/>). In reviewing the Members' pages, the Working Group identified three items as requiring input and/or review from STACFAD.

Exclusive STACFAD Username and Password

At the 2013 Annual Meeting, it was agreed that an exclusive username and password would be created to access STACFAD documentation. The Committee does not believe this additional password is required.

Classification of STACFAD Working Papers

In the Working Group, a lengthy discussion was had regarding Working Papers. As Working Papers are traditionally “draft” or “working” documents for discussion and consideration at a meeting, the process has been that Working Papers are not publicly available. However, once a Working Paper is adopted by the relevant NAFO body, it is converted into a NAFO document and becomes publicly accessible. For increased transparency, the Committee endorsed that STACFAD Working Papers be re-classified and be made available on the NAFO public site. However, it was recognized by STACFAD that certain matters should remain confidential (e.g. personnel matters) and therefore would not be made publicly available.

Classification of General Council (GC) Documents

In the Working Group, further discussion was had regarding General Council Documents. General Council Documents are currently contained on the restricted area of the NAFO website (i.e. NAFO Members' pages) as they may contain information regarding the policies and procedures of the Organization. For increased transparency, the Committee endorsed that General Council (GC) Documents be re-classified and be made available on the NAFO public site. However, it was recognized by STACFAD that certain matters should remain confidential (e.g. personnel matters) and therefore would not be made publicly available.

To increase transparency of its documentation, STACFAD recommends that:

- **An exclusive STACFAD Username and Password will no longer be required to access STACFAD documentation on the NAFO Members' pages.**
- **STACFAD documentation will be available in the NAFO Meetings SharePoint (<https://meetings.nafo.int/>) with the exception of Working Papers deemed restricted (e.g. personnel matters).**
- **Following a meeting, STACFAD Working Papers will be made publicly available on the NAFO website (<https://www.nafo.int/>) with the exception of Working Papers deemed restricted (e.g. personnel matters).**
- **General Council (GC) and Commission Documents will be made publicly available on the NAFO website (<https://www.nafo.int/>) with the exception of documents deemed restricted (e.g. personnel matters).**

9. Personnel Matters

There were no personnel matters raised under this agenda item.

10. Internship Program

The Secretariat presented a report (STACFAD WP 18-01) on the activities and tasks of the two interns, Sebastian Glindtvd and Antoine Balazuc, hosted at the Secretariat in 2018.

The Committee recognized the considerable benefits of the internship program to the Organization and the intern themselves, and once again endorsed its continuation.

STACFAD recommends that:

- The internship period be maintained for six (6) months during 2019.

11. Report on the Annual Meeting of the International Fisheries Commissions Pension Society (IFCPS)

The annual meeting of the International Fisheries Commissions Pension Society (IFCPS) was hosted by the Great Lakes Fishery Commission during 17-19 April 2018 in Ann Arbor, Michigan, USA. The meeting was attended by the Executive Directors and Finance Officers of the seven International Fisheries Commissions with headquarters located in Canada and the United States of America. NAFO was represented by Fred Kingston, Executive Secretary, and Stan Goodick, Deputy Executive Secretary/Senior Finance and Staff Administrator. Also attending the meeting were the IFCPS Directors appointed by the Governments of Canada and the United States of America. Background information on the pension plan, investment performance, financial status, as well as future administrative support was presented with the information paper (STACFAD WP 18-02).

The next annual meeting of the IFCPS will be hosted by NAFO during 15-17 April 2019 in Halifax, Nova Scotia, Canada.

12. Update on implementation of the NAFO Performance Review Panel (PRP) recommendations tasked to STACFAD

One PRP recommendation tasked to STACFAD remains outstanding from the 2011 Performance Review. PRP Recommendation 7.2.3 suggests amending certain provisions of the NAFO Staff Rules pertaining to the rights and obligations of NAFO Secretariat Staff, particularly dismissal or termination of appointment. A review of this agenda item has been deferred in prior years until the conclusion of the wrongful dismissal legal case against NAFO.

Now that the legal case has been concluded, and in line with the above PRP Recommendation, the Secretariat requested a review by its lawyers, Stewart McKelvey, of NAFO Staff Rules 9.1 and 9.2. The received comments were presented in STACFAD WP 18-03.

The Committee endorsed the recommendations in the Working Paper and agreed that no change is required to the NAFO Staff Rules 9.1 and 9.2.

13. Budget Estimate for 2019

The Committee reviewed the 2019 budget estimate as detailed in COM WP 18-06.

Approved Budget 2018	Preliminary Budget Forecast 2019	Budget Estimate 2019
\$2,297,000	\$2,225,000	\$2,274,000

Report of STACFAD, 17-21 September 2018

The 2019 budget estimate of \$2,274,000 represents a decrease of \$23,000 or 1.0% under the prior years approved budget.

It is expected that the NAFO Headquarters will be relocating in 2019 and therefore \$10,000 has been added to both the equipment and supplies budget to cover any unexpected costs. The main physical server for the Organization is hosted by the Secretariat and contains all the Organization's servers, except the VMS server. This main server is due to be replaced in 2019 and the costs for the server replacement will be spread over a three-year period with the first installment included in the 2019 budget. Canada inquired if a recent cost benefit analysis had been performed on hosting the NAFO servers in-house vs. outsourcing. As such a review has not been completed in recent years, the Secretariat was asked to report back to the Committee on this issue next year.

The 2018 budget included \$93,000 to cover the expenses of the Performance Review Panel. As NAFO's second Performance Review was completed in 2018, this extraordinary budget amount is not required for 2019.

STACFAD recommends that:

- **The budget for 2019 of \$2,274,000 (Annex 3) be adopted.**

14. Budget Forecast for 2020 and 2021

STACFAD reviewed the preliminary budget forecast for 2020 (\$2,315,000) and 2021 (\$2,369,000) (Annex 4) and approved the forecast in principle. It was noted that the budget for 2020 will be reviewed in detail at the next Annual Meeting.

15. Adoption of 2018/2019 Staff Committee Appointees

The Secretariat members nominated the following people to serve as members of the Staff Committee for September 2018–September 2019: Justine Jury (EU), Joanne Morgan (Canada) and Deirdre Warner-Kramer (USA).

STACFAD recommends that:

- **The Commission appoint the three Staff Committee nominees for September 2018–September 2019: Justine Jury (EU); Joanne Morgan (Canada) and Deirdre Warner-Kramer (USA).**

16. Office Relocation Update

As reported at last year's Annual Meeting, the NAFO Secretariat has been informed by the Government of Canada that it will be terminating all its leases at 2 Morris Drive and consequently the Secretariat will have to relocate. While the process to find appropriate space to meet the needs and interests of the Organization continues, the current lease of the NAFO Secretariat headquarters has been renewed for another year and is now scheduled to expire on April 30, 2019.

The NAFO Secretariat met regularly with representatives from Fisheries and Oceans Canada and Public Services and Procurement Canada (PSPC) to review available leased space currently held by PSPC in the Halifax area. Although a number of properties were considered, it was determined that PSPC did not have suitable space in its current inventory and therefore a public lease tender process was initiated.

An Expression of Interest for prospective parties wishing to submit a tender proposal identified 16 potential locations in the downtown Halifax area. As there are several steps remaining in the tender process, the final award of the lease is not anticipated until late 2018 or early 2019. After the lease has been awarded, the Secretariat will continue to work with Canada on a suitable office design.

STACFAD reiterated the importance of ensuring the new office location provides the Secretariat with the appropriate space to meet the needs and interests of the Organization, in particular the ability to host intersessional meetings on-site in order to minimize expenses.

17. Other Business

The following other business was raised under this agenda item:

a. Performance Review Panel Report Recommendations

As requested by the Commission, the Committee reviewed the recommendations of the Performance Review Panel that have been proposed for STACFAD's future consideration, as contained in COM-SC WP 18-04, to ensure that the assignment is pertinent to STACFAD.

STACFAD concluded that the two recommendations assigned below are appropriate for STACFAD's future consideration:

- *Recommendation # 35, Chapter VII.1 "Recommends NAFO develops an annual operational plan for the NAFO Secretariat outlining key objectives and specifying resources required to meet these objectives." [pg. 48]*
- *Recommendation # 36, Chapter VII.2 "Recommends NAFO initiates a process to design a new visual identity for NAFO that reflects the role and responsibilities of the Organization." [pg. 48]*

b. Draft Headquarters Agreement

Canada provided an update on the status of the draft Headquarters Agreement.

At the 2009 Annual Meeting, NAFO adopted the Headquarters Agreement to be signed with the Government of Canada. The signing of the Agreement however was met with considerable delays. Since the Agreement's adoption nearly a decade ago, Canada has established a new domestic approach to treaties that includes certain safeguards. As such, Canada is proposing revisions to the 2009 Agreement that reflect both current domestic practices and are consistent with the Convention on the *Privileges and Immunities of the United Nations*. Implementation of a Headquarters Agreement is consistent with modern practice and will align NAFO with similar organizations headquartered in Canada (e.g. the NPAFC in Vancouver and the International Civil Aviation Organization in Montreal). Further, its implementation will satisfy the requirements of the *Convention on Cooperation in the Northwest Atlantic Fisheries* (specifically Article V.3), which came into effect May 18, 2017.

The Executive Secretary reported that the Secretariat sought advice from its lawyers concerning the proposed agreement. The advice received was forwarded to Canada, the NAFO President and the Chair of STACFAD prior to this Annual Meeting. The Executive Secretary provided to STACFAD a brief summary of the advice and added that the advice itself is available on request.

STACFAD reviewed the revised Agreement, as presented in COM WP 18-32, and endorsed its adoption by the Commission (Annex 6).

It was further noted that a memorandum of understanding, as presented in STACFAD WP 15-09, was adopted at the 2016 Annual Meeting (Annex 7). This document addresses issues related to the provision of the premises and security by the host country. This document will be signed by NAFO and Fisheries and Oceans Canada following the ratification of the Headquarters Agreement.

STACFAD recommends that:

- **The Commission adopt the revised Headquarters Agreement and request that the Government of Canada proceed with the next step of its domestic process to sign and ratify the revised Headquarters Agreement**

- **NAFO sign the memorandum of understanding with Fisheries and Ocean Canada, following the ratification of the revised Headquarters Agreement.**

c. **Revision to the Rules of Procedure**

Norway presented a proposal for amendments to the Rules of Procedure (STACFAD WP 18-07), as agreed at the 2017 Annual Meeting, specifically Rule 2 regarding voting procedure and Rule 3.5 regarding the role of the Chairperson.

Some Contracting Parties welcomed the spirit of change to better align these rules with other RFMOs while others believed such revisions were unnecessary as no issues have been raised regarding the current Rules of Procedures. In particular, one Contracting Party felt the proposed amendment to Rule 2.4 was unnecessary as Rule 3.2.c achieves the same result by providing the opportunity for Contracting Parties “*to request that any ruling of the Chairperson shall be submitted to the Commission for decision by vote*”.

For that reason, no consensus was reached on the proposed amendment to Rule 2.4. However, Contracting Parties were invited to discuss this issue further at the next Annual Meeting. For the remaining proposed amendments, the Committee collaboratively developed alternative text that would better achieve the desired clarity.

During the discussion regarding the voting procedure, the Secretariat noted its recent practice of utilizing electronic “read receipt” as acknowledgement of receipt of request for a mail vote under Rule 2.8. STACFAD agreed that, while formal acknowledgement by each Contracting Party is preferred, in its absence the use of an electronic “read receipt” would suffice as confirmation that the request has been received for the purposes of establishing quorum.

STACFAD recommends that:

- **Rule 2.7 of the NAFO Rules of Procedure be amended, as follows:**

~~The result of a vote taken by e-mail or other electronic means shall be ascertained by the Executive Secretary at the end of a period of at least thirty (30) days after the date of the initial request for the vote and such period shall be made clear in the text of that request.~~

When requesting a vote referred to in Rule 2.6, the Executive Secretary shall advise the Contracting Parties of the closing date to submit a vote. This date shall be at the end of a period of at least 30 days after the initial request for the vote.

- **Rule 2.8 of the NAFO Rules of Procedure be amended, as follows:**

ba) Contracting Parties shall promptly acknowledge receipt of any request for vote by e-mail or other electronic means. If no acknowledgement is received from any particular Contracting Party within one week of the date of transmittal the Executive Secretary will shall retransmit the request, and will shall use all additional necessary means available to ensure that the request has been received. Confirmation by the Executive Secretary that the request has been received shall be deemed conclusive regarding the inclusion of the Contracting Party in the quorum for the purpose of the relevant vote by e-mail or other electronic means.

ab) If no reply from a Contracting Party, in the case of a vote taken by e-mail or other electronic means, reaches the Secretariat within the period established under 2.7, that Contracting Party would be recorded as having abstained and it shall be considered part of the relevant quorum for voting purposes.

- **Insert a new Rule 2.9 in the NAFO Rules of Procedure, as follows:**

The Executive Secretary shall communicate the result of a vote taken by e-mail or other electronic means to all Contracting Parties, without delay following the end of the period referred to in Rule 2.7."

- **Rule 3.5 of the NAFO Rules of Procedure be amended, as follows:**

The Chairperson, or Vice-Chairperson when acting as Chairperson, shall not act as a Representative. Alternate Representative. Expert or Adviser of a Contracting Party. shall not vote and another representative of his or her delegation shall exercise this function."

d. Distribution of Annual Meeting Documentation

In recent years, NAFO Meetings SharePoint has become a valuable resource allowing access to the meeting documentation before, during and after meeting hours. This increased use of electronic documentation has significantly reduced paper usage. The Committee further encouraged the reduction of paper usage by proposing to provide a set number per Contracting Party of printed meeting documents produced at NAFO meetings, eliminating the provision of printed meeting documents for each participant. If desired, Contracting Parties may request additional sets and/or copies of meeting documentation. Printing on demand is also available at the Internet Café.

STACFAD recommends that:

- **A practice be implemented that, unless otherwise requested by a delegation, each Contracting Party will receive three (3) sets of printed meeting documentation produced at NAFO meetings and meeting documentation will also be available electronically.**

18. Election of Chair

According to the NAFO Rules of Procedure *"The Committee shall elect from among its members, to serve for two years, a Chair and a vice-Chair who shall be allowed to vote."*

The present Chair, Deirdre Warner-Kramer (USA), was nominated and re-elected for a two-year term.

19. Time and Place of 2019-2021 Annual Meetings

As previously agreed, the 2019 and 2020 Annual Meetings will be held 23–27 September and 21–25 September, respectively. The meetings will be held in Halifax, Nova Scotia, Canada, unless an invitation to host is extended by a Contracting Party and accepted by the Organization.

STACFAD recommends that:

The 2021 Annual Meeting (to be held in Halifax, Nova Scotia, Canada, unless an invitation to host is extended by a Contracting Party and accepted by the Organization) be held 20–24 September 2021.

20. Adjournment

The final session of the STACFAD meeting adjourned on 19 September 2018.

Gratitude was expressed to the Committee members for their effective cooperation this week, and to the NAFO Secretariat for its excellent support.

Annex 1. List of Participants

Simon Cridland Steve Hwang Élise Lavigne	Canada
Brita i Dali	Denmark (in respect of the Faroe Islands and Greenland)
Bernard Blazkiewicz	European Union
Benoît Tourtois	France (in respect of St. Pierre et Miquelon)
Kenro Iino	Japan
Ingrid Vikanes	Norway
Moira Kelly Elizabethann Mencher Deirdre Warner-Kramer	United States of America
Jane Willing	2018 NAFO Performance Review Panel Coordinator
Vladimir Radchenko	North Pacific Anadromous Fish Commission (NPAFC)
Fred Kingston Stan Goodick Lisa LeFort	NAFO Secretariat

Annex 2. Agenda

1. Opening by the Chair, Deirdre Warner-Kramer (USA)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Audited Financial Statements for 2017
5. Administrative and Activity Report by NAFO Secretariat
6. Financial Statements for 2018
7. Review of Accumulated Surplus and Contingency Fund
8. NAFO website
 - a. NAFO Members' pages
 - b. Ad hoc virtual NAFO Website Re-design Working Group: Phase II – Data Classification
9. Personnel Matters
10. Internship Program
11. Report of the Annual Meeting of the International Fisheries Commissions Pension Society (IFCPS)
12. Update on implementation of the NAFO Performance Review Panel (PRP) recommendations tasked to STACFAD
13. Budget Estimate for 2019
14. Budget Forecast for 2020 and 2021
15. Adoption of 2018/2019 Staff Committee Appointees
16. Office Relocation Update
17. Other Business
 - a. Performance Review Panel Report Recommendations
 - b. Revised Headquarters Agreement
 - c. Revision of the Rules of Procedure
 - d. Distribution of Annual Meeting Documentation
18. Election of Chair
19. Time and Place of 2019-2021 Annual Meetings
20. Adjournment

Annex 3. Budget Estimate for 2019

NORTHWEST ATLANTIC FISHERIES ORGANIZATION

Budget Estimate for 2019

(Canadian Dollars)

	Approved Budget 2018	Projected Expenditures 2018	Preliminary Budget Forecast 2019	Budget Estimate 2019
1. Personal Services				
a) Salaries	\$1,080,000	\$1,089,000	\$1,117,000	\$1,127,000
b) Superannuation and Annuities	466,000	469,000	464,000	469,000
c) Medical and Insurance Plans	93,000	91,000	98,000	93,000
d) Employee Benefits	68,000	69,000	68,000	67,000
Subtotal Personal Services	<u>1,707,000</u>	<u>1,718,000</u>	<u>1,747,000</u>	<u>1,756,000</u>
2. Additional Help	2,000	2,000	2,000	2,000
3. Communications	24,000	24,000	24,000	24,000
4. Computer Services	47,000	47,000	42,000	51,000
5. Equipment	28,000	28,000	28,000	33,000
6. Fishery Monitoring	41,000	40,000	42,000	41,000
7. Hospitality Allowance	3,000	3,000	3,000	3,000
8. Internship	11,000	11,000	11,000	11,000
9. Materials and Supplies	28,000	28,000	28,000	33,000
10. NAFO Meetings				
a) Sessional	109,000	97,000	129,000	132,000
b) Inter-sessional Scientific	60,000	42,000	25,000	60,000
c) Inter-sessional Other	35,000	35,000	35,000	35,000
Subtotal NAFO Meetings	<u>204,000</u>	<u>174,000</u>	<u>189,000</u>	<u>227,000</u>
11. Other Meetings and Travel	32,000	32,000	32,000	34,000
12. Performance/External Reviews	93,000	93,000	-	-
13. Professional Services	51,000	45,000	51,000	45,000
14. Publications	14,000	14,000	14,000	14,000
15. Recruitment and Relocation	12,000	-	12,000	-
	<u>\$2,297,000</u>	<u>\$2,259,000</u>	<u>\$2,225,000</u>	<u>\$2,274,000</u>

Notes on Budget Estimate 2019
(Canadian Dollars)

Item 1(a)	Salaries Salaries budget estimate for 2019.		\$1,127,000
Item 1(b)	Superannuation and Annuities Employer's pension plan which includes employer's contributions, administration costs, actuarial fees and the required annual payment towards previous pension plan deficits.		\$469,000
Item 1(c)	Group Medical and Insurance Plans Employer's portion of Canada Pension Plan, Employment Insurance, Group Life Insurance, Long Term Disability Insurance and Medical Coverage.		\$93,000
Item 1(d)	Employee Benefits Employee benefits as per the NAFO Staff Rules including overtime, repatriation grant, termination benefits, vacation pay, and home leave travel for internationally recruited members of the Secretariat.		\$67,000
Item 2	Additional Support Other assistance as required.		\$2,000
Item 3	Communications Phone, fax and internet services Postage and Courier	\$18,000 6,000	\$24,000
Item 4	Computer Services Computer hardware, software, supplies, support and website hosting.		\$51,000
Item 5	Equipment Leases (print department printer, photocopier and postage meter) Purchases Office Relocation Maintenance	\$15,000 9,000 5,000 4,000	\$33,000
Item 6	Fishery Monitoring Vessel Monitoring System (VMS) annual maintenance fee including programming changes as required due to changes to CEM Oracle database annual maintenance	\$38,000 3,000	\$41,000

Report of STACFAD, 17-21 September 2018

Item 10(a)	NAFO Sessional Meetings Annual Meeting, September 2019, Halifax, Canada SC Meeting, June 2019, Halifax, Canada SC Meeting, October 2019	\$132,000
Item 10(b)	NAFO Inter-sessional Scientific Meetings Provision for inter-sessional meetings and a general provision for unforeseen expenses necessarily incurred by SC required for the provision of answering requests for advice from the Commission.	\$60,000
Item 10(c)	NAFO Inter-sessional Other General provision for Commission inter-sessional meetings.	\$35,000
Item 11	Other Meetings and Travel International Meetings regularly attended by the NAFO Secretariat which may include the following: Aquatic Sciences and Fisheries Abstracts (ASFA), Committee on Fisheries (COFI), Co-ordinating Working Party on Fishery Statistics (CWP), Fisheries Resources Monitoring Systems (FIRMS), International Fisheries Commissions Pension Society (IFCPS), Regional Fishery Body Secretariats' Network (RSN), United Nations	\$34,000
Item 12	Performance/External Reviews Costs associated with the performance review of the Organization.	\$0
Item 13	Professional Services Professional Services (audit, consulting, legal fees, and insurance) Professional Development and Training Public Relations	\$45,000 \$29,000 11,000 5,000
Item 14	Publications Production costs of NAFO publications, booklets, brochures, posters, etc., which may include the following: Conservation and Enforcement Measures, Convention, Inspection Forms, Journal of Northwest Atlantic Fishery Science, Meeting Proceedings, Rules of Procedure, Scientific Council Reports, Staff Rules, Secretariat Structure, etc.	\$14,000

Annex 4. Preliminary Budget Forecast for 2020 and 2021

NORTHWEST ATLANTIC FISHERIES ORGANIZATION
Preliminary Budget Forecast for 2020 and 2021
(Canadian Dollars)

	Preliminary Budget Forecast 2020	Preliminary Budget Forecast 2021
1 Personal Services		
a) Salaries	\$1,163,000	\$1,204,000
b) Superannuation and Annuities	469,000	472,000
c) Medical and Insurance Plans	100,000	105,000
d) Employee Benefits	71,000	73,000
Subtotal Personal Services	<u>1,803,000</u>	<u>1,854,000</u>
2 Additional Help	2,000	2,000
3 Communications	24,000	24,000
4 Computer Services	51,000	51,000
5 Equipment	28,000	28,000
6 Fishery Monitoring	42,000	43,000
7 Hospitality Allowance	3,000	3,000
8 Internship	11,000	11,000
9 Materials and Supplies	28,000	28,000
10 NAFO Meetings		
a) Sessional	134,000	135,000
b) Inter-sessional Scientific	60,000	60,000
c) Inter-sessional Other	35,000	35,000
Subtotal NAFO Meetings	<u>229,000</u>	<u>230,000</u>
11 Other Meetings and Travel	32,000	32,000
12 Professional Services	48,000	49,000
13 Publications	14,000	14,000
14 Recruitment and Relocation	0	0
	<u>\$2,315,000</u>	<u>\$2,369,000</u>

Annex 5. Preliminary Calculation of Billing for Contracting Parties for 2019

**Preliminary calculation of billing for Contracting Parties
against the proposed estimate of \$2,274,000 for the 2019 financial year
(Canadian Dollars)**

Budget Estimate		\$2,274,000
Deduct:	Amount from Accumulated Surplus Account (pending approval from the Commission)	\$300,000
Funds required to meet 2019 Administrative Budget		\$1,974,000

Part A

Contracting Parties	Catches 2016	Catch %	NAFO Convention Article IX.2.a,b,c			
			10%	30%	60%	Subtotal
Canada	129,885	33.55%	\$77,684	\$49,350	\$397,366	\$524,400
Cuba	1,058	0.27%	-	\$49,350	\$3,198	\$52,548
Denmark (in respect of Faroe Islands and Greenland) (Note 2)	164,742	42.55%	\$98,531	\$49,350	\$503,962	\$651,843
European Union	39,985	10.33%	-	\$49,350	\$122,349	\$171,699
France (in respect of St. Pierre et Miquelon)	1,759	0.45%	\$1,052	\$49,350	\$5,330	\$55,732
Iceland	-	-	-	\$49,350	-	\$49,350
Japan	2,389	0.62%	-	\$49,350	\$7,343	\$56,693
Norway	3,197	0.83%	-	\$49,350	\$9,831	\$59,181
Republic of Korea	-	-	-	\$49,350	-	\$49,350
Russian Federation	10,500	2.71%	-	\$49,350	\$32,097	\$81,447
Ukraine	-	-	-	\$49,350	-	\$49,350
United States of America	33,662	8.69%	\$20,133	\$49,350	\$102,924	\$172,407
Total	387,177	100.00%	\$197,400	\$592,200	\$1,184,400	\$1,974,000

Part B

Contracting Parties	Subtotal from Part A	NAFO Convention Article IX.2.d (Note 1)					Subtotal	Total contribution
		% Contribution	Catch % minus DFG	10%	30%	60%		
Canada	\$524,400	26.57%	58.39%	\$32,605	\$11,317	\$145,387	\$189,309	\$713,709
Cuba	\$52,548	2.66%	0.48%	-	\$11,317	\$1,184	\$12,501	\$65,049
Denmark (in respect of Faroe Islands and Greenland)	\$651,843	33.02%	-	-\$41,496	-\$124,487	-\$248,980	-\$414,963	\$236,880
European Union	\$171,699	8.70%	17.98%	-	\$11,317	\$44,756	\$56,073	\$227,772
France (in respect of St. Pierre et Miquelon)	\$55,732	2.82%	0.79%	\$442	\$11,317	\$1,969	\$13,728	\$69,460
Iceland	\$49,350	2.50%	-	-	\$11,317	\$0	\$11,317	\$60,667
Japan	\$56,693	2.87%	1.07%	-	\$11,317	\$2,674	\$13,991	\$70,684
Norway	\$59,181	3.00%	1.44%	-	\$11,317	\$3,578	\$14,895	\$74,076
Republic of Korea	\$49,350	2.50%	-	-	\$11,317	\$0	\$11,317	\$60,667
Russian Federation	\$81,447	4.13%	4.72%	-	\$11,317	\$11,753	\$23,070	\$104,517
Ukraine	\$49,350	2.50%	-	-	\$11,317	\$0	\$11,317	\$60,667
United States of America	\$172,407	8.73%	15.13%	\$8,449	\$11,317	\$37,679	\$57,445	\$229,852
Total	\$1,974,000	100.00%	100.00%	\$0	\$0	\$0	\$0	\$1,974,000

Note 1

The annual contribution of any Contracting Party which has a population of less than 300,000 inhabitants shall be limited to a maximum of 12% of the total budget. When this contribution is so limited, the remaining part of the budget shall be divided among the other Contracting Parties in accordance with Article IX.2.a,b and c of the NAFO Convention.

Note 2

Faroe Islands	3,556 metric tons
Greenland	161,186 metric tons



Annex 6. Headquarters Agreement between the Government of Canada and the Northwest Atlantic Fisheries Organization

[Annex 2, COM WP 18-32]

The Government of Canada and the Northwest Atlantic Fisheries Organization, wishing to conclude an agreement respecting the headquarters of the Organization in Canada, have agreed as follows:

Article 1

Definitions

For the purposes of this Agreement:

- (a) "Convention" means the *Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries*, signed on 24 October 1978 in Ottawa, Canada.
- (b) "NAFO" means the Northwest Atlantic Fisheries Organization, established under Article V of the Convention.
- (c) "Representative of members of NAFO" means a representative of a Contracting Party to the Convention and shall be deemed to include the Chairperson and Vice-Chairperson of the Commission, the Chairperson and Vice-Chairperson of the Scientific Council and all delegates, deputy delegates, advisers, technical experts and secretaries of delegations.
- (d) "Officials of NAFO" means the Executive Secretary and internationally recruited staff of NAFO.

Article 2

NAFO shall have in Canada the legal capacities of a body corporate, including the capacity to contract, to acquire and dispose of property, to institute legal proceedings and, to such extent as may be required for the performance of its functions, shall have the privileges and immunities specified in this Agreement.

Article 3

NAFO, its property and its assets, wherever located and by whomsoever held, shall enjoy immunity from every form of judicial process except in so far as in any particular case the Executive Secretary of NAFO has expressly waived its immunity. Such waiver shall be understood not to extend to any measure of execution, save with the express consent of the

Executive Secretary, NAFO shall establish guidelines as to the circumstances in which the Executive Secretary may waive any immunity of NAFO, and as to the method in which any such waiver shall be made.

Article 4

The premises of NAFO shall be inviolable. The property and assets of NAFO, wherever located and by whomsoever held, shall be immune from search, requisition, confiscation, expropriation and any other form of interference, whether by executive, administrative, judicial or legislative action, except with the consent of and under the conditions agreed to by the Executive Secretary of NAFO. This Article shall not prevent the reasonable application of fire protection regulations.

Article 5

The archives of NAFO, and in general all documents belonging to it or held by it, shall be inviolable wherever located.

Article 6

NAFO, its assets, income and other property shall be:

- (a) exempt from all direct taxes except for charges for public utility services;

- (b) exempt from customs duties in respect of articles imported or exported by NAFO in the furtherance of its functions, provided that articles imported under such exemption shall not be sold or disposed of in Canada except under conditions agreed to by the Government of Canada; and
- (c) exempt from customs duties and prohibitions and restrictions on imports and exports in respect of its publications.

Article 7

NAFO shall enjoy in Canada, for its official communications, treatment not less favourable than that accorded by the Government of Canada to any other Government including its diplomatic mission in the matter of priorities, rates and taxes on mails, cables, telegrams, radiograms, telephotos, telephone and other communications; and press rates for information to the press and radio. No censorship shall be applied to the official correspondence and other official communications of NAFO.

Article 8

NAFO shall have the right to use codes and to despatch and receive its correspondence by courier or in bags, which shall have the same immunities and privileges as diplomatic couriers and bags.

Article 9

Except insofar as in any particular case any privilege or immunity is waived pursuant to Article 11, representatives of members of NAFO shall have in Canada, to such extent as may be required for the performance of their functions, while exercising their functions and during the journey to and from the place of meeting, the following privileges and immunities:

- (a) immunity from personal arrest or detention and from seizure of their personal baggage, and, in respect of words spoken or written and all acts done by them in their capacity as representatives, immunity from legal process of every kind;
- (b) inviolability for all papers and documents;
- (c) the right to use codes and to receive papers or correspondence by courier or in sealed bags;
- (d) exemption in respect of themselves and their spouses from immigration restrictions, alien registration or national service obligations in Canada;
- (e) the same facilities in respect of currency or exchange restrictions as are accorded to representatives of foreign governments on temporary official missions;
- (f) the same immunities and facilities in respect of their personal baggage as are accorded to diplomatic envoys; and,
- (g) such other privileges, immunities and facilities not inconsistent with the foregoing as diplomatic envoys enjoy, except that they shall have no right to claim exemption from customs duties on goods imported (otherwise than as part of their personal baggage) or from excise duties or sales taxes.

Article 10

In order to secure, for the representatives of members of NAFO complete freedom of speech and independence in the discharge of their duties, the immunity from legal process in respect of words spoken or written and all acts done by them in discharging their duties shall continue to be accorded, notwithstanding that the persons concerned are no longer the representatives of members of NAFO.

Article 11

Privileges and immunities are accorded to the representatives of members of NAFO, not for the personal benefit of the individuals themselves, but in order to safeguard the independent exercise of their functions in connection with NAFO. Consequently, a member not only has the right but is under a duty to waive the immunity of its representative in any case where in the opinion of the member the immunity would impede the course of justice, and it can be waived without prejudice to the purpose for which the immunity is accorded.

Article 12

Except insofar as in any particular case any privilege or immunity is waived pursuant to Article 13, officials of NAFO shall have in Canada, to such extent as may be required for the performance of their functions:

- (a) 87 immunity from legal process in respect of words spoken or written and all acts performed by them in their official capacity;
- (b) exemption from taxation on the salaries and emoluments paid to them by NAFO;
- (c) immunity from national service obligations;
- (d) immunity, together with their spouses and relatives dependent on them, from immigration restrictions and alien registration;
- (e) the same privileges in respect of exchange facilities as are accorded to the officials of comparable ranks forming part of diplomatic missions to Canada;
- (f) together with their spouses and relatives dependent on them, the same repatriation facilities in time of international crisis as diplomatic envoys; and
- (g) the right to import free of duty their furniture and effects at the time of first taking up their post in Canada.

Article 13

Privileges and immunities are granted to officials in the interests of NAFO and not for the personal benefit of the individuals themselves. The Executive Secretary shall have the right and the duty to waive the immunity of any official in any case where, in the Executive Secretary's opinion, the immunity would impede the course of justice and can be waived without prejudice to the interests of NAFO. In the case of the Executive Secretary, the Commission shall have the right to waive immunity.

Article 14

NAFO shall co-operate at all times with the appropriate Canadian authorities to facilitate the proper administration of justice, secure the observance of police regulations and prevent the occurrence of any abuse in connection with the privileges, immunities and facilities mentioned in this Agreement.

Article 15

Except insofar as in any particular case any privilege or immunity is waived pursuant to Article 16, all experts (other than those falling within the scope of Article 12) performing missions for NAFO shall have in Canada, to such extent as may be required for the performance of their functions, during the period of their missions, including the time spent on journeys in connection with their missions:

- (a) immunity from personal arrest or detention and from seizure of their personal baggage;
- (b) in respect of words spoken or written and acts done by them in the course of the performance of their mission, immunity from legal process of every kind, which immunity shall continue to be accorded when they are no longer employed on mission for NAFO;
- (c) inviolability for all papers and documents;
- (d) for the purpose of their communications with NAFO, the right to use codes and to receive papers or correspondence by courier or in sealed bags;
- (e) the same facilities in respect of currency or exchange restrictions as are accorded to representatives of foreign governments on temporary foreign missions; and
- (f) the same immunities and facilities in respect of their personal baggage as are accorded to diplomatic envoys.

Article 16

Privileges and immunities are granted to experts in the interests of NAFO and not for the personal benefit of the individuals themselves. The Executive Secretary shall have the right and the duty to waive the immunity

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of any expert in any case where, in the Executive Secretary's opinion, the immunity would impede the course of justice and can be waived without prejudice to the interests of NAFO.

Article 17

Nothing in this Agreement exempts a Canadian citizen, residing or ordinarily resident in Canada, from liability for any taxes or duties imposed by any law in Canada.

Article 18

Any dispute between NAFO and the Government of Canada concerning the interpretation or application of this Agreement or any supplementary agreement, which is not settled by negotiation or other agreed mode of settlement, shall be referred to a tribunal of three arbitrators for final decision. One arbitrator shall be designated by the President of NAFO, and another by the Minister of Foreign Affairs of Canada. The two arbitrators shall appoint a third arbitrator.

Article 19

"Without prejudice to any of the privileges and immunities provided to NAFO as set out in this agreement, NAFO shall make adequate provision for appropriate modes of settlement of:

- (a) disputes arising out of contracts or other disputes to which the organization is a party; and
- (b) disputes involving any officials of the organization if their immunity has not been waived in accordance with Article 13.

Article 20

NAFO shall inform the Minister of Foreign Affairs of Canada of the names and title of the officials of NAFO who are posted to Canada.

Article 21

Nothing in this Agreement shall be construed as in any way diminishing, abridging, or weakening the right of the Canadian authorities to safeguard the security of Canada, provided that NAFO shall be immediately informed in the event that the Government of Canada shall find it necessary to take any action against any person enumerated in the Agreement.

Article 22

Without prejudice to their privileges and immunities, it is the duty of all persons enjoying such privileges and immunities to respect the laws and regulations of Canada. They also have the duty not to interfere in the internal affairs of Canada.

Article 23

1. This Agreement shall enter into force in accordance with an Exchange of Notes between the Executive Secretary of NAFO and the Government of Canada.
2. This Agreement may be amended by written agreement between the Parties.
3. This Agreement shall cease to be in force if the seat of the organization is removed from the territory of Canada, except for such provisions as may be applicable in connection with the orderly termination of operations of NAFO at its seat in Canada and the disposition of its property therein.
4. Each Party may terminate this Agreement at any time by giving two years written notice to the other Party.

Done at ____ [location] _____, on __ [date] _____, in the English and French languages, each version being equally authentic.

[representative of Canada]

[representative of NAFO]

Annex 7. Memorandum of Understanding
[STACFAD Working Paper 15-09]

Memorandum of Understanding

BETWEEN

Fisheries and Oceans Canada

AND

Northwest Atlantic Fisheries Organization

Month, Year

Fisheries and Oceans Canada (“DFO”) and the Northwest Atlantic Fisheries Organization (“NAFO”),

CONSIDERING the Government of Canada’s obligation as Host State to the NAFO Secretariat;

HAVE REACHED the following understanding:

1. PURPOSE/OBJECTIVES/EXPECTED OUTCOMES

This Memorandum of Understanding (MOU) is intended to outline the logistics for the accommodation of the Headquarters of NAFO in Canada, outline the undertakings of DFO as provider of premises and NAFO as occupant, and elaborate on security measures that are needed for protection, safe operation and sound management of the premises occupied by NAFO.

2. ROLES AND ACTIVITIES

NAFO accepts that DFO will provide the premises of the Organization. DFO will make the final determination on the location of the premises in consultation with NAFO.

DFO permits NAFO to occupy the premises, for the foreseeable future, for the sole purpose of providing reasonable and adequate space for the Headquarters of NAFO, without cost to NAFO unless explicitly stated in this Memorandum of Understanding.

NAFO will occupy the premises for the sole purpose of the Headquarters. NAFO will use and occupy the premises of the Organization in accordance with its mandate as outlined in the NAFO Convention and the provisions of this Memorandum of Understanding.

DFO will pay the costs of a capital nature related to the premises of the Organization as well as Maintenance and Operating Costs as stipulated in the lease agreement for the premises of the Organization.

NAFO Secretariat will subscribe to and maintain in force, at its expense, comprehensive all-risk property insurance for contents belonging to the Organization and civil liability insurance.

Participants will not be responsible towards each other with respect to a risk which is the responsibility of the other Participant to insure or self-insure.

The allocation of space and the configuration of that space within the premises of the NAFO Secretariat will be based on the applicable Government of Canada Workplace Standards.

NAFO Secretariat will be provided with security measures that are outlined in a typical lease agreement, customary to the building security measures and office space that is being leased. If additional security measures are required, NAFO Secretariat would be responsible for the administrative management of those additional measures.

3. AMENDMENT

The Participants may amend this MOU at any time upon their mutual written consent. An amendment will be confirmed by an exchange of letters by the Participants setting out the amendment and its effective date.

4. STATUS OF THE MOU

This MOU is an expression of the mutual intentions of the Participants and is not legally binding on them or enforceable against them.

5. CONTACTS

[List of the names, titles, telephone numbers and email addresses of the main contacts]

6. FINAL DISPOSITION

- a. This MOU will come into effect upon its signature by the Participants and will remain valid for the duration of the Headquarters Agreement.
- b. Either Participant may terminate this MOU by giving to the other Participants [X] days' written notice of its intent to terminate.

Signed, in [duplicate], at [location of the official signature] this day of Year, in the English and French languages, each version being equally valid.

For [Full Title of Participant #1]

For [Full Title of Participant #2]



Report of the Joint Advisory Group on Data Management (JAGDM) Meeting

19–20 March 2019

NEAFC Secretariat, London, United Kingdom

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Report of the Joint Advisory Group on Data Management (JAGDM) Meeting

19–20 March 2019
NEAFC Secretariat, London, United Kingdom

1. Opening of the meeting

The Chair, Leifur Magnusson (Iceland) opened the meeting and welcomed the participants to this meeting.

Following Contracting Parties were present: Canada, Denmark (in respect of Faroes and Greenland), the European Union, Iceland and Norway. The NAFO and NEAFC Secretariats were also present. The NEAFC Service provider Trackwell attended the meeting virtually via Webex on 19th March at 14:00.

2. Appointment of the rapporteur

The NEAFC Secretariat was appointed as rapporteur

3. Discussion and adoption of the Agenda

The Chair mentioned that under agenda item 5.b.ii at 14:00 Trackwell would join the meeting via WebEx, with input in regards to the discussion on duplicates.

The Agenda was adopted without no changes.

4. Data Exchange Statistics

a. NAFO

The NAFO Secretariat presented document JAGDM 2019-01-12 on messages and reports (VMS Stats) received by the NAFO Secretariat. The NAFO Secretariat noted that the analyses was presented a bit differently this year with more graphs than tables.

No discussion took place in regards to the first graph (Chart 1) showing Catch messages by flag State in 2018. The NAFO Secretariat noted that there were little over 120 thousand messages stored by the NAFO Secretariat in its database in 2018, showing total messages stored for the past 10 years.

Norway raised an issue in regards to a discussion that took place in this working group some years ago about the Observer reports and if it was possible to send those report through the “normal” system. According to Norway, their vessels have done that even though Norway has a very few vessels. Norway then raised another question, if Norway was the only one doing so or did anyone else do it as well. The NAFO Secretariat informed participants that it was possible to send these reports through the system. The NAFO Secretariat was going to follow-up with Norway on the question raised.

Canada noted that they were sending daily Observer reports, which is a new requirement for 2019 for the observers and they send that electronically to the NAFO Secretariat, according to the Annexes, in the same way as for example the CAT messages and this is working very well for them.

b. NEAFC

The NEAFC Secretariat presented document JAGDM 2019-01-03 number of messages and reports received by the NEAFC Secretariat. The NEAFC Secretariat informed participants that this table is also presented at PECMAC and that this presentation was inherited from the permanent committee, and continues to be presented for JAGDM. The document shows the number of messages and reports accepted by type in 2018. There were no specific question or discussion about these messages/document.

The NEAFC Secretariat presented document JAGDM 2019-01-11. The document is a summary of annual activity, showing number of vessels sending POS by month and vessel sending catch and activity report by month, in 2018. The NEAFC Secretariat pointed out that there seems to be unusual high number of vessels sending positions in March, however the Secretariat is not sure why that spike occurred. The NEAFC Secretariat have made basic checks to detect an error, and it seems that the number that is present in the system. In regards to the catch and activity reports they are similar as the Secretariat produced for 2017. The Secretariat noted that it did not, as last year, produce a list with number of vessel sending all messages per month, just in case if anyone want to make a comparison between this year and last year.

Finally, the NEAFC Secretariat presented document JAGDM 2019-01-04, analysis of return messages. This is design to give some better understanding how the system is performing overall. Messages and reports are split into three categories, Positions, catch and activity and registry messages (NEAFC Scheme Annex II) 2 Pie charts are presented for each category. The first shows the split of the return status (ack, ack with warning and ack with follow up). The second shows a split of the return errors according to NEAFC Scheme Annex IX D2 b. The first chart shows the return status for vessel positions in 2018. The overwhelming majority are ACK would be expected. The next chart shows the count of the return errors (follow up and warning) generated by position messages. There was quite a few generating warnings, vessel not notified and many with sequence error and again the future date and time which we came across last year as well. That is because in the case of the position messages they are always accepted if readable. Even if the mandatory fields are missing the message is accepted if it can be read. This has always been the practise to avoid rejecting primary data. Some FMCs are sending POS with DA/TI (date/time of message) but without RD/RT (date/time the message is forwarded from the FMC). Messages without both two time stamps generate a future time error (rather than NAK 104 mandatory data missing). This is what is happening with the largest part of these warnings. Norway asked about the date and time in the future and if that is for the VMS messages and the Secretariat answered yes. Then Norway asked is it date and time for the position messages? According to the Secretariat it is because the message is being sent without record date and record time. Norway then asked if there are 24.498 such messages, and if the FMC could not be contacted in that regard. DFG noted that this was a problem, however, it doesn't hinder the system for working and JAGDM should not spend too much time on it, especially if NEAFC is taking up a new system. The Chair mentioned that this might be something that could be inherit into the new system. EU mentioned that it would be best to find the source of this problem and try to address it.

JAGDM did not discuss this document in further detail.

5. NEAFC issues

a. Technical implications of the implementation of recommendations

(Recommendations adopted in 2019 with technical implications are listed below. An update will be given in a single information document.)

- i. A new annex XIX for formalising when information is required for designating ports.**
- ii. Changes to the Regulated Resources list – Annex I**
- iii. Changes to the data sent to ICES from NEAFC VMS**

The NEAFC Secretariat presented this standing item on the JAGDM Agenda. Due to the nature of the changes required for this year, this document was only a brief summary. The NEAFC Secretariat noted that it was hard to meaningfully include the very far reaching work of introducing ERS in a summary of this nature. For this reason, the NEAFC Secretariat put it at the end of the document despite not making an attempt to describe it, to ensure that these simultaneous efforts are at least recorded.

JAGDM did not discuss this any further.

b. Issues Raised by PECMAC

i. Confirming PSC Species

The NEAFC Secretariat presented document JAGDM 2019-01-05 Species listed in NEAFC EPSC Application but not in Scheme Annex V.

The extension of the scope of NEAFC PSC extended the number of different species which were required to be reported to NEAFC. Therefore, at its meeting in April 2015 NEAFC PECCOE (now PECMAC) agreed a system of automatically forwarding codes in use in NEAFC PSC application to JAGDM for assessment regarding their formal inclusion into the NEAFC Scheme of Control and Enforcement. Species lists in NEAFC systems have so far been linked to NEAFC Scheme Annex V. For some years the NEAFC Secretariat has not had any species to add, but for this year there has been a few requests for adding species codes again into the Scheme. Thus, the species mentioned in the table of this document have now been added to the PSC application since the last JAGDM meeting and therefore JAGDM is asked to decide if they are appropriate to be added to the species list in the NEAFC Scheme.

JAGDM discussed if a business questions like this should, in the long term, have a home in a technical group as JAGDM or not, or if there was a more suitable group (for example PECMAS) to make these decisions. EU noted that it depended on the exact goal, which is a little unclear. If the goal is to prevent the accidental reporting of species which do not exist in the area, then PECMAS should review it. However if the goal is maintain consistent species lists throughout NEAFC reporting systems, this does not require the input of scientists.

Canada had a look if the NAFO Scheme listed these species as well. The only species that was overlapping was the BFT (Blue Fin Tuna) and in the ASFIS list it is named Atlantic Blue Fin Tuna and in NAFO Northern Blue Fin Tuna. Therefore the NAFO Secretariat wondered if the best way forward was not to keep the list harmonised since Atlantic Blue Fin Tuna is the same as Northern Blue Fin Tuna. EU was on the same line as Canada in this respect. EU then proposed amendments of the species in document 05 to align it with ASFIS.

Following further discussion, JAGDM amended the name of the species in the table for more harmonisation. These amendments can be seen in an amended version of document JAGDM 2019-01-05 Rev. 1.

It was agreed: That the amended list should be sent to PECMAC for decision if these species should be listed in Annex V in the NEAFC Scheme.

ii. Duplicates in ERS system

The Chair opened the floor for Norway to present paper 2019-01-06 on Duplicates in NEAFC ERS System, where Norway noted that the discussion on how to implement duplicate checking in NEAFC ERS has been ongoing through NEAFC ERS working group and the issue had been referred to JAGDM in October 2018.

JAGDM discussed that the current NEAFC Scheme has a method for identifying duplicates based on duplicated content rather than on duplicated identifiers, however this concept is not part of the new ERS system, where there were no business rules defined (yet) in this regards. At the request of JAGDM the Secretariat also discussed this issue with the NEAFC Service provider and a decision was made that Trackwell would take part via Webex in the discussion at this meeting.

Previously JAGDM had agreed that it could be useful to check for duplicated content. All parties agreed that the best solution was to create the business rules, and return the status across the network to FMCs. However the time that this would take was considered a disadvantage. It was discussed that “hash values” could be used as a possible ‘quick/partial’ solution, at least to get experience of the extent of any problem, and asked the Secretariat to get some input on this from their Service provider, and for them to be available to answer questions from the group if possible. The necessary analysis was undertaken between the meetings and a conference call arranged for this meeting. At 14:00 Trackwell entered the meeting via Webex and updated

JAGDM that they have been looking at the duplicates and that creating Business rules was the best approach. Hash values could yield useful information, however in terms of time the more complicated nested structure of the FLUX reporting mean, in the opinion of the service provider, it would not be substantially more complicated to do the fundamental work for business rules, than it would be to work out the details of which values to strip and which values to hash in order to use the 'quick/partial' hash value approach. In summary, if the quick solution is not guaranteed to be that quick, it's better to just go for the full solution from the beginning. According to Trackwell, there is no need to cross-check all data field but only the most important ones, and that the table currently in NEAFC Scheme Annex IX D 2 C could still usefully be used as a basis. However, the issue in regards to duplicates will almost certainly not be included in the first version of the ERS system. The conversation with Trackwell ended at 14:25.

JAGDM discussed the issue of duplicates in further detail, where different methods being used were explained, by participants. Finally the following was agreed.

It was agreed: To follow the advice of Trackwell and build a robust set of business rules to identify duplicates. However, decision needed to be taken if this should belong to JAGDM or the ERS implementation Working Group. If details for duplication needed to be discussed in another session, by JAGDM this would most productively be a NEAFC only meeting.

c. NEAFC Information Security Management System (ISMS)

The NEAFC Secretariat presented three items under part C. – documents JAGDM 2019-01-14, JAGDM 2019-01-15 and JAGDM 2019-01-16.

i. Upgrade to ISO 27001:2013 version (ISMS article 4 last paragraph)

No update.

ii. Risk management (ISMS article 3) status of the work

The NEAFC Secretariat presented JAGDM 2019-01-14, but the document is not uploaded to www.jagdm.org. This document is an Executive Summary of the Application Penetration testing undertaken by the company Dionach at the request of the Secretariat. It was agreed at the previous JAGDM meeting that such a summary would be circulated to Security System Administrators (SSAs) for their comments when it was available. This was duly done, the SSAs were asked if they wanted to further discuss the results. The response was generally positive, but there were no requests for further information or a meeting. NEAFC started with the application testing of the EPSC system as a priority, as this has been classified as mc 'mission critical'. The classification has been made in the updated to the risk assessment provision within the NEAFC ISMS, which included a system classification which was adopted by the Commission in November.

In JAGDM 2019-01-14 there is a list of what was tested and what was identified. According to NEAFC, the risk was prioritised and it was very helpful exercise. The PSC application was tested in regards to the dev site rather than the production site, to ensure that production systems were not disrupted. The dev site is a mirror of the production site and so this approach does not compromise the integrity of the testing. The authentication system (CAS) of the www. and epsc sites included in the test, but not the other parts of the www. site.

The Chair asked if this testing included the JAGDM website, which was the reality according to the NEAFC Secretariat.

NAFO Secretariat asked if there was internal testing. The NEAFC Secretariat mentioned that there has not been any yet. The NAFO Secretariat informed JAGDM that they already did such a research, which was quite expensive.

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The Chair asked NAFO Secretariat if they had done some risk management. The NAFO Secretariat replied that they have not done that, however they were always interested into hear what the NEAFC Secretariat was doing in regards to risk issues.

Canada asked if there were any standards under the ISMS. The NEAFC Secretariat said no, as it is not in the nature of the standard to provide specific rules, which has to be applicable to all contexts. Secretariat confirmed that the company used by NEAFC were, Payment Card Industry (PCI) Security Standards compliant, and that this is a higher level of security compliance than is required at NEAFC, and so an easy rule of thumb is to use PCI accredited companies. The company chosen are also ISO 27001 compliant an approved supplier for the UK government ‘digital marketplace’.

The Chair noted the importance to set standard in regards to risk and get feedback from different companies.

iii. Annual Review of the NEAFC Inventory (ISMS article 7.1)

The NEAFC Secretariat went through the NEAFC Network Diagram (document 2019-01-15) as it is today and the significant changes this year to the private cluster which hosts NEAFC most important systems. Both the Chair and Norway asked in regards to the Diagram and if there were still servers hosted at the NEAFC HQ, with the response that there were no servers at NEAFC HQ, and that they had all been moved out prior to the move to Baker Street location.

The NEAFC Secretariat identified that the changes made to the inventory had increased the security level of the system according to the Security Level Definitions contained in Article 10 NEAFC ISMS. Therefore the parts of the ISMS reflecting the security of this system also needed to be updated. To this end the Secretariat presented 2019-01-16 with updated matrices for Article 10 (Communications and Operations Security, B) Data Transmission and Storage Security Matrix) and Article 14 (Business Continuity Management, 1) System Availability) of NEAFC ISMS. JAGDM went through the Matrix describing Data Transmission and Storage Security status of the NEAFC system October 2018, which included the updated levels for VMS/ERS system and a new component of the system for the FLUX TL. The Chair thoughts were that it was a right thing to do to list FLUX TL as a separate item in the ISMS Matrix.

EU agreed that the FLUX TL is a separate system component, in the same way as the HTTPS Gateway and therefore the risks should be described in the same way, although the levels may not be the same.

It was agreed: To make these changes proposed by the NEAFC Secretariat.

iv. Reflecting EU General Data Protection Regulation (GDPR) in NEAFC ISMS

No document was presented under this agenda point as there was nothing new since the last meeting. However, the Chair asked about the NEAFC service provider (Trackwell) and if JAGDM did know anything about their security measures and if they were certified according to the 27001 standard. The NEAFC Secretariat could not answer that. The Chair mentioned that because they were a very important part of this setup and he thought that JAGDM should ask them about their status on these security measures.

The Chair opened the floor for general discussion on the GDPR. The NEAFC Secretary mentioned that NEAFC did not admit that it was under the GDPR and that there is a statement already on the NEAFC website. The NAFO Secretariat informed JAGDM that they were careful about sending out information, however no clear procedures in this regard.

The Chair mentioned that this was generally applied towards more international companies such as Facebook, to protect the public for mis-use of information. However, EU said that this applied to all, including small companies and organisations. However, it is a still a bit floating and it has to be addressed.

EU noted that the VMS information is considered personal data in the EU and so GDPR would apply. For the Secretariat, this was the first time that the idea of VMS is being considered a GDPR issue had been mentioned by Contracting Parties in NEAFC working groups, although it had been identified as a possible GDPR risk in the risk report for NEAFC made by Positive Internet in summer 2018. VMS is commercially sensitive and classified within NEAFC as Restricted High (confidential), which is somewhat different to being personal, in the context of GDPR. Canada replied to the EU comment that VMS data in Canada is considered personal information however, VMS data can be shared as outlined in Fisheries and Oceans Canada's Vessel Monitoring Personal Information Bank (PIB).

According to the Treasury Board Secretariat, Government of Canada, "website Personal Information Banks (PIBs) are descriptions of personal information under the control of a government institution that is organized and retrievable by an individual's name or by a number, symbol or other element that identifies that individual. The personal information described in a PIB has been used, is being used or is available for an administrative purpose. The PIB describes how personal information is collected, used, disclosed, retained and/or disposed of in the administration of a government institution's program or activity." (<https://www.canada.ca/en/treasury-board-secretariat/services/access-information-privacy/access-information/information-about-programs-information-holdings/standard-personal-information-banks.html>)

The NAFO Secretariat highlighted that when they send out information about vessels, they cover for example the name of the vessel and radio call sign (anonymous).

The Chair asked if there were any possibility to follow this discussion inside the EU. The EU representative mentioned that GDPR is not his domain and he can therefore not reflect an official position of the EU in this. However, for him it is important to come to conclusion on these issues: It has to be clear (for the owner of the data) what will happen with the data when shared with other parties (ic. NEAFC).

Norway noted that the issue of the Master in regards to the ERS and that NEAFC data is supposed to be confidential. The Chair mentioned that if we would not get this data, we would not be functional. It was the understanding of all parties that GDPR is about the handling of such data rather than being allowed to have it or not. A clear statement of the legal base under which personal data is collected is fundamental to GDPR.

6. NAFO issues

a. Technical Implications of the implementation of recommendations

No update.

b. Recommendations for adopting an ISMS for NAFO

No update.

c. Issues raised by STACTIC

i. STACTIC request for JAGDM to review the work on the ERS system in NEAFC in the context of NAFO

Canada presented the questions put forward by STACTIC to JAGDM. However, since the questions were rather wide Canada suggested to address them with the three following questions:

1. Status of ERS within NEAFC
2. High level technical requirements for ERS (NAFO/FMCs)

3. Technical benefits of ERS

The Chair noted that there would be no documents produced in this respect. However, JAGDM would have general discussions where these questions would be addressed and NAFO delegates would take notes in order to draft a response to STACTIC.

It was agreed: That NAFO delegates would draft a response be sent to the JAGDM Chair and NEAFC for further review, before being delivered to the Chair of STACTIC.

ii. STACTIC request for JAGDM to discuss the possibility of transposing the NEAFC electronic system into NAFO for PSC1 and PSC2 forms.

The NEAFC Secretariat made a presentation for JAGDM about the Port State Control system within NEAFC, with a similar structure as the question created by Canada in regards to the ERS system.

The system is set up on a separate website or the Electronic Port State Control website (NEAFC EPSC). The Secretariat went through the development of the system, such as that extra modules were developed, using Content Management System (CMS) to manage the website and it operates on the popular web environment of Linux, Apache, mysql and php. The EPSC system built on the existing role based access control for individual users, which was already quite well developed in NEAFC sites. Thus, a decision was taken to operate the PSC system on the same CMS, so the Secretariat could use the same access control which is very flexible for user roles and permission and would be very well understood, using a single sign on to all of the NEAFC site.

The NEAFC Secretariat presented to JAGDM the human interface for the EPSC and how the users create the PSC forms and what they can see and do in the system. Thus, JAGDM was informed how the workflow worked from being submitted by the user, acknowledgement from the port State, the verification from the flag State and finally the authorisation from the port State. The system was launched in 2011 in parallel with the paper fax system and in 2013 the system became fully electronical however the paper based system can be used as a fall back procedure. In the beginning the system applied only to frozen fish products but in July 2015 it included fresh fish as well and today it applies to landing, transshipment and other port services.

In regards to the question if it is possible to transpose the system into NAFO context, the NEAFC Secretariat and NAFO Secretariat have discussed this possibility, and in short what NEAFC has anyone can use it since the environment is common. However, there are some fundamental differences between the RFMOs' network operating system, web servers, database servers, and software development technologies. Leveraging the intellectual property of NEAFC's PSC system, NAFO can develop a new application that will match the functionality of NEAFC's PSC system.

JAGDM discussed the possibility to enquiry the PSC database, which can be done where the NEAFC Secretariat use it in its compliance reports.

No further discussions took place under this item.

It was agreed: That NAFO delegates would draft a response be sent to the JAGDM Chair and NEAFC for further review, before being delivered to the Chair of STACTIC.

iii. Review of NAFO CEM Annexes

Canada presented its proposal in document JAGDM 2019-01-08 to amend NAFO CEM Annex II.D.C – Format for electronic exchange of fisheries monitoring information (The North Atlantic Format). Currently, Annex II.D.c defines the contents of the Fishing Gear data element as the FAO Code for gear. However, the type description for that field does not currently indicate the correct format for all FAO gear codes: the three-alpha codes, in some cases, are further defined by the addition of a hyphen and number, e.g. OTB-2 (as noted in Annex II.) j

footnote 1). Changing the field “Type” from Char*3 in the data element Fishing Gear to Char*5 would correct the type description to accommodate the longer codes.

JAGDM reviewed and proposed amendments to the NAFO CEM Annex II.D.C from the type description Char*3 to Char*5.

It was agreed: That the document JAGDM 2019-01-08 Rev. 1 would include amendments from the type description Char*3 to Char*5 and be submitted to STACTIC and PECMAC for consideration of the amendments.

Canada presented its proposal in document JAGDM 2019-01-09 to amend NAFO CEM Annex II.F – Cancel report.

Currently there is still confusion as to the appropriate date and time to include in the DA and TI fields, some reports erroneously include the DA and TI fields from the report that is to be cancelled, while others correctly provide the date and time of the CAN report’s transmission. Canada therefore proposed a change to the text of the Requirements for the field in regards to DA and TI data elements.

JAGDM reviewed and proposed amendments to the NAFO CEM Annex II.F as to the appropriate date and time to include in the DA and TI fields and that the same amendment would be made to the other Annexes as applicable to maintain consistency throughout the tables.

It was agreed: That the document JAGDM 2019-01-09 Rev. 1 should be submitted to STACTIC and PECMAC for consideration of the amendments.

Following text was agreed in regards to date: “Message detail; UTC date of transmission of this report from the vessel”.

Following text was agreed in regards to time: “Message detail; UTC time of transmission of this report from the vessel”.

7. Any other business

JAGDM 2019-01-10 List of JAGDM Outputs in 2018

8. Report to the Annual Meeting

No update.

9. Date and place of the next meeting

Date and place of the next meeting is to be decided.

The NAFO Secretariat offered to host an upcoming meeting and as an aside informed JAGDM that the NAFO Secretariat will move to new premises at the end of this year.

10. Closure of the meeting

The Chair closed the meeting and wished all participants a safe trip home.

Annex 1. List of Participants
(JAGDM 2019-01-02)

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Annex 2. Agenda
(JAGDM 2019-01-01)

1. Opening of the meeting
2. Appointment of the rapporteur
3. Discussion and adoption of the Agenda
4. Data Exchange Statistics
 - a. NAFO
 - b. NEAFC
5. NEAFC issues
 - a. Technical implications of the implementation of recommendations
(Recommendations adopted in 2019 with technical implications are listed below. An update will be given in a single information document.)
 - b. Issues Raised by PECMAC
 - i. Confirming PSC Species
 - ii. Duplicates in ERS system
 - c. NEAFC Information Security Management System (ISMS)
 - i. Upgrade to ISO 27001:2013 version (ISMS article 4 last paragraph)
 - ii. Risk management (ISMS article 3) status of the work
 - iii. Annual Review of the NEAFC Inventory (ISMS article 7.1)
 - iv. Reflecting EU General Data Protection Regulation (GDPR) in NEAFC ISMS
6. NAFO issues
 - a. STACTIC request for JAGDM to review the work on the ERS system in NEAFC in the context of NAFO
 - b. STACTIC request for JAGDM to discuss the possibility of transposing the NEAFC electronic system into NAFO for PSC1 and PSC2 forms.
7. Any other business
8. Report to the Annual Meeting
9. Date and place of the next meeting
10. Closure of the meeting

Northwest Atlantic Fisheries Organization



**Report of the NAFO Commission Working Group to Address the Recommendations of
the 2018 Performance Review Panel (WG-PR) Meeting**

03 April 2019
NAFO Secretariat
Dartmouth, Nova Scotia, Canada

NAFO
Dartmouth, Nova Scotia, Canada
2019

Report of the NAFO Commission Working Group to Address the Recommendations of the 2018 Performance Review Panel (WG-PR) Meeting

03 April 2019
NAFO Secretariat
Dartmouth, Nova Scotia, Canada

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Report of the NAFO Commission Working Group to Address the Recommendations of the 2018 Performance Review Panel (WG-PR) Meeting

03 April 2019
NAFO Secretariat
Dartmouth, Nova Scotia, Canada

1. Opening by the vice-Chair of the Commission, Temur Tairov

The meeting was opened at 09:30 hours on Wednesday, 03 April 2019 at the NAFO Secretariat in Dartmouth, Nova Scotia, Canada. The vice-Chair of the Commission, Temur Tairov (Russian Federation), welcomed representatives as the Commission Chair, Stéphane Artano (France-SPM), was unable to attend. Representatives were present from Canada, Denmark (in respect of Faroe Islands and Greenland), European Union, Norway and Iceland (Annex 1).

2. Appointment of Rapporteur

The NAFO Secretariat (Lisa LeFort, Senior Executive Assistant) was appointed rapporteur for this meeting.

3. Adoption of the Agenda

The agenda was adopted (Annex 2).

4. Consideration of the Terms of Reference of the Working Group

The Terms of Reference of the Working Group (COM Doc. 18-21 Revised) were considered, specifically:

- That the Performance Review recommendations “*shall be prioritized and Plans of Action developed that identify possible next steps*”.
- The Working Group shall also “*designate those recommendations that can be addressed immediately and for which Plans of Action can be established in the short, medium and long-term.*”

5. Review of proposed “Action Plan” to address the Performance Review recommendations

At the inaugural Working Group meeting on 26 November 2018, three (3) Contracting Parties (Canada, European Union and the United States of America) volunteered to draft the first proposal outlining prioritization, next steps and timelines as stated in the Terms of Reference using COM Doc. 18-21 (Revised) as a basis. It was agreed to include an additional column to the table that would indicate any ongoing work by NAFO following the 2018 Annual Meeting as well as a suggested designation of the particular NAFO Standing Committee and/or Working Group that should address a particular recommendation, using Annex 3 of GC Doc. 12-01 as a basis.

Prior to the meeting, a first draft of this proposal was circulated to the delegates by the NAFO Secretariat for review and consideration [COM PR-WP 19-01].

This Working Group discussed the proposed “*Draft Action Plan for the Implementation of the Recommendations from the 2018 Report of the NAFO Performance Review Panel*” on a recommendation-by-recommendation basis. Most of the ‘proposed actions’ were agreed with only minor changes. Deliberations focused on the proposed actions of three recommendations, specifically recommendations 12, 13 and 34.

- **Recommendation 12 – Proposed Action**

The Working Group felt that additional clarity was required in the proposed action for Recommendation 12 “*COM may consider the allocation of new fishing opportunities should NAFO establish TACs in the future for stocks not currently under its regulation (i.e. those stocks not currently included in Annexes I.A and I.B of the NAFO Conservation and Enforcement Measures).*” The Working Group recognized that in the event a new fishing opportunity was identified, e.g. Div. 3L Shrimp as noted by the Panel in its report, then there would be a clear need for the Commission to consider the allocations of such new fishing opportunities.

For that reason, the Working Group amended the wording of the proposed action from “*may*” to “*will*”.

- **Recommendation 13 – Second Proposed Action**

It was noted that the second proposed action of Recommendation 13 should reflect the same commitment as in Recommendation 8, namely that “*COM will continue to take decisions that are consistent with SC advice and implement its multi-annual management strategies and plans in a consistent manner.*”

For that reason, the second proposed action of Recommendation 13 was amended to read “*COM notes the Proposed Action of Recommendation 8 and will continue to consider appropriate conservation and management measures for Splendid Alfonsino in Subarea 6.*”

- **Recommendation 34 – Proposed Action**

The Working Group felt that the proposed action of Recommendation 34 did not adequately reflect the current and upcoming work being performed in NAFO, including recent Secretariat initiatives to assist the Western Central Atlantic Fishery Commission (WECAFC) and Southern Indian Ocean Fisheries Agreement (SIOFA).

For that reason, the proposed action was amended to read “*NAFO will continue to take part in capacity building initiatives inter alia, the sharing of NAFO knowledge and experience in fisheries management, science and governance.*”

6. Recommendations to forward to the Commission

The WG-PR recommends that:

- **The Draft Action Plan for the Implementation of the Recommendations from the 2018 Report of the NAFO Performance Review Panel (COM PR-WP 19-01 Revised) be adopted by the Commission at the 2019 Annual Meeting.**
- **The NAFO Secretariat, in cooperation with the Chairs and co-Chairs of the NAFO Constituent Bodies and Working Groups, report on the progress of proposed actions identified in the Action Plan (COM PR-WP 19-01 Revised) at subsequent NAFO Annual Meetings beginning in 2020.**

7. Other Business

No other business was raised under this agenda item.

8. Adoption of Report

The report was adopted via correspondence.

9. Adjournment

The Working Group noted the efficient work of the presiding Chair and acknowledged the NAFO Secretariat for its excellent preparation and support during the meeting.

The meeting was adjourned at 15:30 hours on Wednesday, 03 April 2019.

Annex 1. List of Participants

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Annex 2. Agenda

1. Opening by the vice-Chair of the Commission, Temur Tairov
2. Appointment of Rapporteur
3. Adoption of the Agenda
4. Consideration of the Terms of Reference of the Working Group
5. Review of proposed “Action Plan” to address the Performance Review recommendations
6. Recommendations to forward to the Commission
7. Other Business
8. Adoption of Report
9. Adjournment

Annex 3. Draft Action Plan for the Implementation of the Recommendations from the 2018 Report of the NAFO Performance Review Panel

COM PR-WP 19-01 (Revised)

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
		COM	SC	SEC	CPs			
III. Conservation and Management								
	In relation to the Ecosystem Approach Framework to Fisheries Management, the NAFO Performance Review Panel:							
1. III.2.a.1	<ul style="list-style-type: none"> Recommends the Commission, within a defined timeline, sets objectives and determines acceptable risks as outlined in the Ecosystem Approach Framework Roadmap to ensure its implementation. [pg. 16] 	X (COM/ WG-EAFFM)	X (WG-EAFFM)			LT	<p>The below recommendations from the Aug 2018 meeting of WG-EAFFM were adopted by COM and SC at the Sept. 2018 Annual Meeting, (COM-SC Doc. 18-06):</p> <ul style="list-style-type: none"> In relation to implementation of the EAF Roadmap, WG-EAFFM continues to make progress on the EAF Roadmap, acknowledging the general concepts of Ecosystem Production Potential (EPP) as a useful step towards implementation of EAFFM. The SC continue to refine its work under the ecosystem approach road map, including testing the reliability of the 	<ul style="list-style-type: none"> WG-EAFFM will continue to make progress on the EAF Roadmap and consider its potential utility in informing management decisions by the COM. WG-EAFFM will reconsider the terminology used in the Ecosystem Summary Sheets in order to provide clarity and avoid potential confusion with standard terminology in fisheries management. SC will continue to refine its work under the EAF Roadmap, including testing the reliability of the ecosystem production potential model and other related models, and report on

¹ Short-term (ST) is designated as 1-2 years, medium-term (MT) as 2-3 years, and long-term (LT) as more than 3 years; with ST in general being considered high priority items.

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
		COM	SC	SEC	CPs			
							<p>ecosystem production potential model and other related models, and to report on these results to the WG-EAFFM to further develop how it may apply to management decisions.</p> <ul style="list-style-type: none"> • WG-EAFFM work to reconsider the terminology used in the Ecosystem Summary Sheets in order to avoid potential confusion with standard terminology in fisheries management, as well as considering their potential ability to inform management decisions. • The WG-EAFFM met in October 2018. The WG discussed the terminology in the ESS and next steps in the process, which would include the exploration of how the ESS and its information can be useful and, as appropriate, how to integrate the information into decision making processes, i.e. identification of where the ambiguity lies and potential to inform management decisions in the framework of the ESS (COM-SC EAFFM-WP 18-10). 	<p>these results to the WG-EAFFM to further develop how it may apply to management decisions</p> <ul style="list-style-type: none"> • Note also the Proposed Action for Recommendation 2.
	In relation to the Precautionary Approach Framework, the NAFO Performance Review Panel:							

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
		COM	SC	SEC	CPs			
2. III.2.b.1	<ul style="list-style-type: none"> Recommends NAFO assigns a high priority, including a timeline, to the review of its Precautionary Approach Framework and urges NAFO to act with precaution while awaiting the completion of this review, in particular through a commitment to follow scientific advice. [pg. 17] 	X (WG-RBMS)	X (WG-RBMS)			ST	<p>The COM's request for SC advice on management in 2020 and beyond of certain stocks in Subareas 2, 3, and 4 and other matters (<u>COM Doc. 18-20</u>), requests SC to continue progression on the review of the NAFO PA Framework. It also requests SC to develop a 3-5 year work-plan to identify resources necessary to address issues/gaps in current scientific resources. This work-plan will consider the priority of the review of the PAF.</p>	<ul style="list-style-type: none"> COM and SC will review the steps to be undertaken in completing the review of the Precautionary Approach (PA) Framework and develop a timeline for its completion. CPs asked to provide resources to facilitate the SC review of the PA Framework.
3. III.2.b.2	<ul style="list-style-type: none"> Recommends that NAFO includes 'data-poor' stocks in the Precautionary Approach Framework. [pg. 17] 	X (WG-RBMS)	X (WG-RBMS)			MT/ST	<p>WG-RBMS, at its April 2015 meeting (<u>FC-SC Doc. 15-02</u>) recommended that SC gives a high priority to development of reference points for all stocks which lack them. This recommendation was adopted by FC and SC at the Sept. 2015 Annual Meeting (<u>FC-SC Doc. 15-04</u>)</p>	<ul style="list-style-type: none"> SC will continue to give high-priority to the development of reference points for all stocks which lack them (MT). WG-RBMS will consider the inclusion of data-poor stocks in its review of the PA Framework (ST).
	In relation to data collection and sharing, the NAFO Performance Review Panel:							
4. III.3.1	<ul style="list-style-type: none"> Recommends NAFO implements the applicable outcomes of the catch estimates methodology study once completed, continue the work of CESAG and utilize Scientific observer data. [pg. 20] 	X (CESAG)	X (CESAG)		X	ST	<p>CESAG will meet in late February 2019 to review and discuss the draft final report from MRAG Americas on the Catch Estimates Methodology Study.</p>	<ul style="list-style-type: none"> CESAG will continue to provide oversight in the implementation of the catch estimation strategy and provide recommendations to the COM on ongoing refinement. CESAG will consider the findings of the catch estimates methodology study and assess its applicability to the work of

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
		COM	SC	SEC	CPs			
								CESAG and other NAFO sub-bodies.
5. III.3.2	<ul style="list-style-type: none"> • Recommends NAFO agrees on a means to respond to instances of non-compliance by a Contracting Party with its reporting requirements, including logbook data. [pg. 20] 	X (STACTIC)				ST	A formal follow-up procedure regarding haul-by-haul submissions was adopted at the Sept. 2018 Annual Meeting (COM Doc. 18-27).	<ul style="list-style-type: none"> • SEC, working with STACTIC, will identify the key reporting requirements and develop a report on applicable submission rates, with a view to examining submissions by CPs and identifying instances of non-compliance. • SEC will implement the formal follow-up procedure adopted by the COM in Sept. 2018 with respect to late submissions or non-submissions of haul-by-haul data by CPs.
6. III.3.3	<ul style="list-style-type: none"> • Recommends NAFO implements measures to ensure that fisheries research data, including fisheries survey data used by the Scientific Council, is complete and available for peer review in accordance with established scientific publication standards. [pg. 20] 		X			ST		<ul style="list-style-type: none"> • SC will endeavor as part of its working procedures to have all of its scientific assessment input data held by the SEC.
7. III.3.4	<ul style="list-style-type: none"> • Recommends NAFO assesses whether the discard data collected on the basis of daily electronic catch reporting is sufficient in order to support a future discards policy. [pg. 20] 	X (WG-BDS/ STACTIC)				MT	<p>The report of the May 2018 meeting of the WG-BDS (COM Doc. 18-04) includes agreement that the SEC will prepare a work-plan for the bycatch and discard analyses of the available data.</p> <p>The chair of WG-BDS presented the WG-BDS/SEC work-plan to COM at</p>	<ul style="list-style-type: none"> • As per the Action Plan in the Management and Minimization of Bycatch and Discards (COM Doc. 17-26), SEC and WG-BDS will complete task 1.3, which pertains to data completeness and identification of gaps, by Sept. 2019.

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
		COM	SC	SEC	CPs			
							the Sept. 2018 Annual Meeting (COM BDS-WP 18-02) and indicated that a coordinated work plan is being developed with the STACTIC Chair.	<ul style="list-style-type: none"> To support task 1.3, the SEC will continue its analysis of the available bycatch and discard data, including haul by haul data (beginning from 2016), and identify trends, patterns, anomalies, and data gaps. The SEC will provide regular updates to the WG-BDS in the form of progress reports and seek clarification and direction from the WG-BDS as warranted. WG-BDS will provide guidance and direction to the SEC in completing its work-plan, as required, and review/consider the work-plan results once completed, including appropriate actions to refer to STACTIC.
	In relation to the consistency of conservation and management decisions with scientific advice, the NAFO Performance Review Panel:							
8. III.4.a.1	<ul style="list-style-type: none"> Recommends the Commission, as a matter of high priority, follows the Scientific Council advice and implements its multi-annual management strategies and plans in a consistent manner. [pg. 22] 	X				ST		<ul style="list-style-type: none"> COM will continue to take decisions that are consistent with SC advice and implement its multi-annual management strategies and plans in a consistent manner. Note also the Proposed Action for Recommendation 10.
9. III.4.a.2	<ul style="list-style-type: none"> Recommends NAFO adopts and implements a multi-annual schedule/planning for 	X	X			ST	The COM's request for SC advice on management in 2020 and beyond of certain stocks in Subareas 2, 3,	<ul style="list-style-type: none"> As per COM Doc. 18-20, SC will take the first steps to develop a 3-5 year work-plan, which

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
		COM	SC	SEC	CPs			
	the delivery of advice, applicable over a cycle of at least five (5) years, including timelines for the various tasks required. Requests for advice outside the agreed planning should only be accepted in exceptional circumstances. [pg. 22]						and 4 and other matters, requests SC to develop a 3-5 year work-plan to identify resources necessary to address issues/gaps in current scientific resources (<u>COM Doc. 18-20</u>).	reflects requests arising from the 2018 Annual Meeting, other multi-year stock assessments and other scientific inquiries already planned for the near future. The work plan should identify the resources necessary to successfully address these issues, gaps in current resources to meet those needs, and proposed prioritization by the SC of upcoming work based on those gaps. <ul style="list-style-type: none"> COM will continue to implement its multi-annual schedule/planning for the request and delivery of advice and consider adjustments to the schedule if warranted.
10. III.4.a.3	<ul style="list-style-type: none"> Recommends NAFO publishes annually a comparison between decisions adopted and the relevant scientific advice. [pg. 22] 			X		ST	<ul style="list-style-type: none"> SEC will publish a table on the NAFO website and/or in the NAFO Annual Report that compares the decisions adopted by the COM and the relevant scientific advice. Note also the Proposed Action for Recommendation 8. 	
	In relation to the adoption of consistent/compatible management measures, the NAFO Performance Review Panel:							
11. III.4.b.1	<ul style="list-style-type: none"> Recommends NAFO develops mechanisms for the application of Article VI.11 of 	X				LT	<ul style="list-style-type: none"> Coastal States to communicate to NAFO on management measures 	

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
		COM	SC	SEC	CPs			
	the Convention. [pg. 23]							important to ensuring the long-term conservation and sustainable use of the fishery resources in the Regulatory Area, as determined by the coastal State to facilitate the application of Article VI.11 of the Convention.
	In relation to the allocation of fishing opportunities, the NAFO Performance Review Panel:							
12. III.4.c.1	<ul style="list-style-type: none"> • Recommends NAFO revisits the allocation of new fishing opportunities, should a change in circumstances justify it. [pg. 24] 	X				LT		<ul style="list-style-type: none"> • CPs will continue to facilitate fishing opportunities using existing mechanisms within NAFO, such as chartering arrangements and quota transfers. • COM will consider the allocation of new fishing opportunities should NAFO establish TACs in the future for stocks not currently under its regulation (i.e. those stocks not currently included in Annexes I.A and I.B of the NAFO Conservation and Enforcement Measures).
	In relation to previously unregulated and exploratory fisheries, the NAFO Performance Review Panel:							
13. III.4.d.1	<ul style="list-style-type: none"> • Recommends NAFO establishes conservation and management measures for Splendid Alfonsino in Subarea 	X	X			ST	At the Sept. 2018 Annual Meeting, no consensus was reached by the COM on a new management measure for Splendid Alfonsino in	<ul style="list-style-type: none"> • SC will continue to provide scientific advice with respect to Splendid Alfonsino upon request by the COM.

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
		COM	SC	SEC	CPs			
	6, at the earliest opportunity. [pg. 24]						SA 6. In consideration of the scientific advice pertaining to this stock, a request was made to SC to provide the map and coordinates of the Kükenthal Peak in Division 6G, a part of the Corner Rise seamount chain, where alfonso fishing occurs.	<ul style="list-style-type: none"> COM notes the Proposed Action of Recommendation 8 and will continue to consider appropriate conservation and management measures for Splendid Alfonsino in Subarea 6.
	In relation to the conservation of marine biodiversity and the minimization of harmful fishing impacts on marine ecosystems, the NAFO Performance Review Panel:							
14. III.4.e.1	<ul style="list-style-type: none"> Recommends NAFO assesses means of minimizing or eliminating harmful impacts of fishing surveys on Vulnerable Marine Ecosystems within closed areas. [pg. 26] 	X (WG-EAFFM)	X (WG-EAFFM)			ST	<p>The following recommendation by WG-EAFFM was adopted by the COM in Sept. 2018 (<u>COM Doc.18-16</u>):</p> <ul style="list-style-type: none"> In relation to the evaluation of impact of scientific trawl surveys on VMEs in closed areas, Contracting Parties consider possible options for non-destructive regular monitoring within closed areas, bearing in mind cost implications and the utility of data collected for provision of advice. 	<ul style="list-style-type: none"> SC will continue its evaluation of the impact of scientific trawl surveys on VME in closed areas, and the effect of excluding surveys from these areas on stock assessments. As per <u>COM Doc. 18-16</u>, CPs will consider possible options for non-destructive regular monitoring within closed areas, bearing in mind cost implications and the utility of data collected for provision of advice.
15. III.4.e.2	<ul style="list-style-type: none"> Recommends NAFO establishes codes for Vulnerable Marine Ecosystem indicator species to facilitate 	X (WG-EAFFM/ STACTIC)	X (WG-EAFFM)	X		ST/MT	<p>The following recommendations were adopted by COM and SC in Sept. 2018 (<u>COM-SC Doc. 18-06</u>):</p>	<p>As per <u>COM-SC Doc. 18-06</u>:</p> <ul style="list-style-type: none"> In relation to FAO three letter codes for VME indicator species, the existing taxa list in Annex I.E. Part VI of the

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
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	reporting of encounters. [pg. 26]						<ul style="list-style-type: none"> In relation to FAO three letter codes for VME indicator species, the existing taxa list in Annex I.E. Part VI of the NCEM be updated with the FAO ASFIS codes as listed in Annex 4 of this report. The Scientific Council review the proposed revisions to Annex I.E. Part VI as reflected in COM-SC EAFFM-WP 18-01, and to compare the consistency of the list of taxa in that Annex to the VME species guide with a view to recommend updates, as necessary. The Secretariat to work with the FAO to develop new ASFIS codes, as necessary, for those taxa listed in Annex 1.E Part VI. 	<ul style="list-style-type: none"> NCEM will be updated with the FAO ASFIS codes as listed in <u>COM-SC Doc. 18-03 (ST)</u>. SC will review the proposed revisions to Annex I.E. Part VI as reflected in COM-SC EAFFM-WP 18-01 and compare the consistency of the list of taxa in that Annex to the VME species guide with a view to recommend updates, as necessary (ST). SEC will work with FAO to develop new ASFIS codes, as necessary, for those taxa listed in Annex 1.E Part VI (MT).
16. III.4.e.3	<ul style="list-style-type: none"> Recommends NAFO reviews data available from observers reports and other possible sources that would help identify why encounters with Vulnerable Marine Ecosystems have not been reported to date. [pg. 26] 	X (STACTIC)				ST	<ul style="list-style-type: none"> STACTIC will further examine and assess fishing activities of vessels in and around VMEs and whether these activities are accurately reported. Proposed actions for PRP recommendation #15 could potentially facilitate the catch reporting of VME indicator species. 	
	In relation to minimizing pollution, waste, discards, lost and abandoned gear and impacts on							

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	non-target species, the NAFO Performance Review Panel:							
17. III.4.f.1	<ul style="list-style-type: none"> Recommends NAFO ensures the implementation of the Action Plan on discards by the stipulated target date in 2021 and establishes measures in the shorter-term to minimize or eradicate high-grading practices. [pg. 27] 	X (WG-BDS/ STACTIC)	X	X		ST/MT	<p>The following WG-BDS recommendations were adopted by COM in Sept. 2018 (<u>COM Doc. 18-22</u>):</p> <ul style="list-style-type: none"> The Commission and Scientific Council, and their subsidiary bodies, as well as the Secretariat, move forward with full implementation of the Action Plan in the Management and Minimization of Bycatch and Discards (<u>COM Doc. 17-26</u>). Contracting Parties be encouraged to explore with their respective industry representatives the reasons for discards and bycatch and report back to the Working Group at its next meeting. To the extent possible, this information should seek to identify specific times, areas, fisheries and/or other factors. STACTIC review existing NAFO observer and haul-by-haul reporting requirements to consider enhancements that would provide specific information related to the rationale for discards. 	<p>As per <u>COM Doc. 18-22</u>:</p> <ul style="list-style-type: none"> COM and SC, and their subsidiary bodies, as well as the SEC, will move forward with the full implementation of the Action Plan (<u>COM Doc. 17-26</u>) (MT). CPs are encouraged to explore with respective industry representatives the reasons for discards and bycatch and report back to the WG-BDS at its next meeting. To the extent possible, this information should seek to identify specific times, areas, fisheries and/or other factors (ST). STACTIC will review existing NAFO observer and haul-by-haul reporting requirements to consider enhancements that would provide specific information related to the rationale for discards. (ST)
18. III.4.f.2	<ul style="list-style-type: none"> Urges NAFO gives effect to Article III of the amended Convention in respect of 	X (STACTIC/ WG-BDS)				ST/MT	<ul style="list-style-type: none"> STACTIC will continue discussions and deliberations on its work regarding garbage 	

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	minimizing other harmful impacts such as pollution and waste originating from fishing vessels, catch of species not subject to a directed fishery and impacts on associated or dependent species, in particular endangered species. [pg. 27]							disposal onboard fishing vessels (ST). • COM, STACTIC, and WG-BDS will consider the feasibility of measures to minimize bycatch and discards as part of the Action Plan in the Management and Minimization of Bycatch and Discards (COM Doc. 17-26) (MT).
	In relation to reporting requirements, the NAFO Performance Review Panel:							
19. III.6.1	• Recommends NAFO develop a user-friendly data manual. [pg. 29]	X (STACTIC)		X		ST		• SEC, working work with STACTIC, will compile an inventory of data reporting requirements.
IV. Compliance and Enforcement								
	In relation to flag State duties, the NAFO Performance Review Panel:							
20. IV.1.1	• Recommends NAFO calls on all Contracting Parties to carry out self-assessments of flag State performance in accordance with the criteria set out in the FAO Voluntary Guidelines for Flag State Performance. Reports of the self-assessments should be submitted to STACTIC in order for it to present a summary report to the Commission. [pg. 30]	X (STACTIC)			X	ST		• STACTIC will review criteria set out in FAO Voluntary Guidelines for Flag State Performance and provide input on this matter to COM.

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
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21. IV.1.2	<ul style="list-style-type: none"> Recommends NAFO amends the NAFO Conservation and Enforcement Measures in order to clarify, rectify and harmonize references to the duties of the Contracting Parties as flag States. [pg. 31] 	X (STACTIC)				ST		<ul style="list-style-type: none"> STACTIC will discuss how the NAFO Conservation and Enforcement Measures could be amended to clarify, rectify, and harmonize references to the duties of the CPs as Flag States.
	In relation to Monitoring Control and Surveillance, the NAFO Performance Review Panel:							
22. IV.3.1	<ul style="list-style-type: none"> Recommends NAFO evaluates and adopts appropriate measures to deter repeat serious non-compliance. [pg. 32] 	X (STACTIC)				ST		<ul style="list-style-type: none"> STACTIC will continue discussions and deliberations regarding measures to deter repeat non-compliance of serious infringements that could be considered for adoption by the COM.
23. IV.3.2	<ul style="list-style-type: none"> Recommends NAFO urges Contracting Parties to become parties to the International Labour Organization (ILO) Work in Fishing Convention No. 188. [pg. 32] 	X			X	ST		<ul style="list-style-type: none"> NAFO will encourage CPs to become parties to the International Labour Organization (ILO) Work in Fishing Convention No. 188.
	In relation to follow-up on infringements, the NAFO Performance Review Panel:							
24. IV.3.3	<ul style="list-style-type: none"> Recommends NAFO urges Contracting Parties to increase their efforts in ensuring timely follow-up to infringements. [pg. 33] 	X (STACTIC)			X	ST		<ul style="list-style-type: none"> COM will encourage CPs to ensure a timely and effective follow-up on infringements, and to report regularly on action taken as foreseen by Article 37 of NCEM. In cases where action is pending, CPs will provide regular and substantive

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
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								update reports to the extent possible. <ul style="list-style-type: none"> • STACTIC will continue to report on Dispositions of Apparent Infringements reported by Contracting Parties in its Annual Compliance Review.
V. Governance								
	In relation to transparency, the NAFO Performance Review Panel:							
25. V.3.1	<ul style="list-style-type: none"> • Recommends NAFO reorganizes its website library based on the topics covered. [pg. 36] 			X		ST		<ul style="list-style-type: none"> • SEC will continue its work to reorganize the NAFO website library based on the topics covered.
26. V.3.2	<ul style="list-style-type: none"> • Recommends NAFO makes all working documents publicly available, unless otherwise requested by a Contracting Party or subject to confidentiality rules. [pg. 36] 	X	X	X		ST	As noted in correspondence NAFO/19-036, the NAFO public website will now include GC documents and STACFAD working papers, with the exception of documents dealing with matters deemed confidential.	<ul style="list-style-type: none"> • SEC will make COM documents and STACFAD working papers publicly available on the NAFO website, with the exception of documents dealing with matters deemed confidential.
VI. Science								
	In relation to science, the NAFO Performance Review Panel:							
27. VI.2.1	<ul style="list-style-type: none"> • Recommends NAFO decides the level of acceptable risk regarding the outcomes of conservation and management measures, 	X (WG-RBMS)	X (WG-RBMS)			ST	The COM's request for SC advice on management in 2020 and beyond of certain stocks in Subareas 2, 3, and 4 and other matters, requests that in keeping with the NAFO PA	<ul style="list-style-type: none"> • In keeping with NAFO's PA Framework, SC should (where possible) provide advice as a range of management options and a risk analysis for each

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
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	following a dialogue between Commission and SC, to provide the latter with guidance in its advisory work. [pg. 44]						Framework, the advice should be provided as a range of management options and a risk analysis for each option (rather than a single TAC recommendation) and the actual risk level should be decided upon by managers (COM-Doc 18-20).	option, allowing managers to decide on appropriate risk levels on a case-by-case basis. <ul style="list-style-type: none"> COM will continue to provide SC guidance and clarity regarding the range of risk levels to be evaluated with respect to the outcomes of conservation and management measures.
28. VI.2.2	<ul style="list-style-type: none"> Recommends NAFO develops and publishes an advisory decision-making framework to ensure advice is linked explicitly to policy objectives, is consistent and its basis is transparent. [pg. 44] 	X	X			ST		<ul style="list-style-type: none"> COM will continue to include the SC advice on fish stocks and the record of COM decisions in the Annual Meeting reports, and additionally include the associated rationale for the decisions.
29. VI.2.3	<ul style="list-style-type: none"> Recommends NAFO, as a matter of high priority, develops a plan and implements steps to match the scientific resources to the workload. [pg. 44] 	X	X		X	ST	The COM's request for SC advice on management in 2020 and beyond of certain stocks in Subareas 2, 3, and 4 and other matters, requests SC to develop a 3-5 year work-plan to identify resources necessary to address issues/gaps in current scientific resources (COM Doc 18-20).	<ul style="list-style-type: none"> As per COM Doc. 18-20, SC will take the first steps to develop a 3-5 year work-plan, which reflects requests arising from the 2018 Annual Meeting, other multi-year stock assessments and other scientific inquiries already planned for the near future. The work plan should identify the resources necessary to successfully address these issues, gaps in current resources to meet those needs, and proposed prioritization by the SC of upcoming work based on those gaps.

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		COM	SC	SEC	CPs			
								<ul style="list-style-type: none"> COM will review the SC's work-plan once completed and use as a basis for informing the establishment of work priorities, reflective of the resources available to complete the work.
30. VI.2.4	<ul style="list-style-type: none"> Recommends NAFO implements a peer review process for the science underlying the SC advice and applies it consistently to all SC science used in advice. [pg. 44] 		X			ST		<ul style="list-style-type: none"> SC will continue to enhance the external peer-review of the methods and basis of SC advice to ensure consistency with best scientific practices.
31. VI.2.5	<ul style="list-style-type: none"> Recommends the Secretariat conducts a survey of usage and identify further improvements to the public outreach documents relating to the state of NAFO stocks and NAFO science available on the NAFO website. [pg. 44] 			X		ST		<ul style="list-style-type: none"> SEC will conduct a survey of usage and identify further improvements to the public outreach documents relating to the state of NAFO stocks and NAFO science available on the NAFO website.
VII. International Cooperation								
	In relation to cooperation with other international organizations, the NAFO Performance Review Panel:							
32. VII.2.1	<ul style="list-style-type: none"> Recommends NAFO strengthens and enhances cooperation with RFMOs and other relevant international organizations. [pg. 46] 	X	X	X		MT/ST		<ul style="list-style-type: none"> COM should consider appropriate mechanisms to strengthen and enhance cooperation with RFMOs and other relevant international organizations (MT).

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIORIT Y ¹	CURRENT STATUS	PROPOSED ACTION
		COM	SC	SEC	CPs			
								<ul style="list-style-type: none"> NAFO will maintain existing relationships and cooperation with RFMOs (ST). SEC will maintain existing dialogue with RFMOs and other relevant international organizations (ST).
33. VI.2.2	<ul style="list-style-type: none"> Recommends NAFO assesses how it can contribute its expertise to international developments, in particular the completion of the Aichi Targets and the Intergovernmental Conference on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. [pg. 46] 	X	X	X	X	ST/MT		<ul style="list-style-type: none"> SEC will continue to participate in relevant forums where feasible and contribute NAFO's expertise to international developments and will report to the COM on such participation (ST). CPs are encouraged to participate in relevant forums to share their expertise with respect to international developments (MT).
	In relation to special requirements of developing countries, the NAFO Performance Review Panel:							
34. VI.3.1	<ul style="list-style-type: none"> Recommends NAFO participates in capacity building initiatives for developing countries. [pg. 46] 	X		X		ST		<ul style="list-style-type: none"> NAFO will continue to take part in capacity building initiatives inter alia, the sharing of NAFO knowledge and experience in fisheries management, science and governance.
VIII. Finance and Administration								
	In relation to finance and administration, the NAFO Performance Review Panel:							

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35. VII.1	<ul style="list-style-type: none"> Recommends NAFO develops an annual operational plan for the NAFO Secretariat outlining key objectives and specifying resources required to meet these objectives. [pg. 48] 	X (STACFAD)		X		ST		<ul style="list-style-type: none"> SEC will develop a draft operational plan to be presented/discussed in STACFAD. The draft operational plan should be shared with CPs and STACFAD in advance of the Annual Meeting.
36. VII.2	<ul style="list-style-type: none"> Recommends NAFO initiates a process to design a new visual identity for NAFO that reflects the role and responsibilities of the Organization. [pg. 48] 	X (STACFAD)		X		ST		<ul style="list-style-type: none"> COM will request SEC to present options for a process to design a new visual identity for NAFO, including associated costs, and present these options to the COM/STACFAD for consideration.

In addition, considering that the cumulative impact of various human activities beyond the mandate of NAFO on the marine environment is mentioned by the 2018 Performance Review Panel among the significant external challenges for the long-term conservation and sustainable use of the fisheries resources, the **Commission recommends** that:

NUMBER/ CHAPTER REF.	RECOMMENDATION	LEAD NAFO BODY				PRIOR ITY	CURRENT STATUS	PROPOSED ACTION
		COM	SC	SEC	CPs			
	<ul style="list-style-type: none"> Contracting Parties be encouraged to share any relevant research they have completed with the Scientific Council; Scientific Council monitor and provide regular updates on relevant research related to the potential impact of activities other than fishing in the Convention Area, such as oil exploration, shipping and recreational activities, and how they may impact the stocks and fisheries as well as biodiversity in the Regulatory Area. 	X (WG-EAFFM)	X (WG-EAFFM)		X	ST	<ul style="list-style-type: none"> Contracting Parties encouraged to share relevant research they have completed with the Scientific Council. SC will monitor and provide regular updates on relevant research related to the potential impact of activities other than fishing in the Convention Area, such as oil exploration, shipping and recreational activities, and how they may impact the stocks and fisheries as well as biodiversity in the Regulatory Area. 	

Northwest Atlantic Fisheries Organization



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

10-12 April 2019
Brussels, Belgium

NAFO
Dartmouth, Nova Scotia, Canada
2019

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

10-12 April 2019
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10-12 April 2019
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1. Opening by the co-Chairs, Carmen Fernández (European Union) and Jacqueline Perry (Canada)

The meeting was opened at 09:00 hours on 10 April 2019 at the European Commission's Directorate-General for Maritime Affairs and Fisheries (DG-MARE) in Brussels, Belgium. The co-Chairs, Carmen Fernández (European Union) and Jacqueline Perry (Canada), welcomed representatives from Canada, the European Union, Norway and the United States of America (Annex 1).

2. Appointment of Rapporteur

The NAFO Secretariat (Tom Blasdale, NAFO Scientific Council Coordinator) was appointed as rapporteur.

3. Adoption of Agenda

The agenda was adopted as circulated (Annex 2).

4. 3M Cod Management Strategy Evaluation (MSE)

a. Review objectives for the current meeting, taking into account the MSE timeline agreed by the Commission in September 2018.

Meeting participants considered the agreed MSE timeline, including the intersessional work to be conducted by the 3M cod MSE technical team, the tasks assigned to the Scientific Council (SC) Cod Management Strategy Evaluation meeting held 28-31 January 2019 and the objectives for the present WG-RBMS meeting. It was noted that generally all tasks had been completed according to the timeline so far.

b. Presentation of the single overall “guiding and summary” document for the 3M cod MSE process.

The need for an overall “guiding and summary” document was proposed in the SC January 2019 MSE meeting, where it was agreed to produce a single document which would include all the work done by both SC and WG-RBMS. This document should capture the main points of agreement and associated rationale and refer to other documents, as appropriate, for technical details. The aim of the “guiding and summary” document would be to enable future reviewers to follow through the complete MSE process from beginning to end. The completion of this type of document was identified as a gap in the Greenland halibut MSE process and recognized as an important step to include in future MSE work. Each meeting agenda of this MSE process should include an item to agree on the summary points for inclusion in this document. The Secretariat will lead its preparation.

The Secretariat will retain all code and the datasets used in the MSE and consider options for sharing the code externally through an online open source platform (e.g. GitHub). It was noted that in order for the code to be practical for external users, it will require some degree of annotation. The intention is not to produce a software package for external users but at a minimum to provide code in a form that can be easily understood. The Secretariat will develop a plan for storing and sharing the code and datasets, which should be provided by the 3M cod MSE technical team.

c. Presentation of main results from the 3M cod MSE Scientific Council meeting, January 2019.

The SC Chair (Brian Healey) presented the work of the January SC meeting (SCS Doc. 19-04), including the two HCR types discussed at the meeting (trend and target based) and the initial agreed set of candidate OMs.

A summary of the trial specifications (HCR settings and OM settings) agreed at the SC January 2019 MSE meeting, together with abbreviations that have been used in the standardized nomenclature, is presented in Table 1. The agreed OM settings resulted in a total of 28 OM variants. These are as follows: three (3) options for natural mortality in historical years, three (3) options for recruitment in future years and three (3) options for biological parameters in future years. When combined, this results in 27 OMs (3x3x3), all of which use flat-shaped survey selectivity. One extra OM allowing for dome-shaped survey selectivity is also included in Table 1, in principle to be examined as a robustness trial using Base-Case settings (see Table 1) for all /other

variables. A full description of the OM settings can be found in the SC January 2019 MSE meeting report (SCS Doc. 19-04).

Table 1. Specifications of the scenarios. Base-Case OM in bold

	Variables	Scenarios		
HCR settings	HCR names	Model-Free Slope (MFS)	Model-Free Target (MFT)	
	α (tuning parameter in HCR)	1.0 (A10)	1.5 (A15)	
	Constraint on inter-annual TAC change	None (Cnone)	$\pm 20\%$ (C20)	
	Starting Point*	TAC(2019)=17500 t (SP0)	TAC(2019)-25%=13125 t (SP25)	
OM settings	Natural Mortality (until year 2017)	M vector (MV)	M GADGET (MG)	M Steps (MS)
	Recruitment (2018 onwards)	Bin Ricker (BR)	Hockey Stick (HS)	Low Bin Ricker (LBR)
	Biological parameters (2018 onwards)	Random walk (RW)	3 Years Mean (3Y)	Density Dependent (DD)
	Groups q (age groups for survey catchability)	Flat Shape (F)	Dome Shape (D)	

* When the management strategy is applied for the first time (i.e. for year 2020 in the MSE simulation), the TAC obtained from the HCR is calculated starting from this value instead of starting from the adopted 2019 TAC.

d. Review of initial MSE results based on the initial set of operating models (OM) and candidate harvest control rules (HCR) agreed in the January SC meeting.

The preliminary HCRs considered at the SC January 2019 MSE meeting were extended for the present WG-RBMS meeting so as to include tuning parameters, and are as described below. The biomass and recruitment indices used in the HCRs are calculated from the EU survey.

Model-Free Slope (MFS) HCR:

$$TAC_{y+1} = TAC_y [1 + \lambda_y \cdot slope_y], \text{ where}$$

$slope_y$ is the slope of a regression line fit to the four previous total biomass indices (indices in log-scale), and:

$$\lambda_y = \begin{cases} \min(\alpha, RR_y), & \text{if } slope_y \geq 0 \\ 2 - \min(\alpha, RR_y), & \text{if } slope_y < 0 \end{cases}, \text{ with } \alpha \in [1, 1.5] \text{ used as a tuning parameter.}$$

Model-Free Target (MFT) HCR:

$$TAC_{y+1} = TAC_y [1 + \lambda_y \cdot (J_y - 1)], \text{ where}$$

J_y is the ratio of recent (three-year) average of total biomass indices to a “target” biomass level, as follows:

$$J_y = \frac{1}{3} \cdot (I_{y-1} + I_{y-2} + I_{y-3}) / I_{target}, \text{ with } I_{target} = \left(\frac{1}{10}\right) \cdot \sum_{i=2008}^{2017} I_i, \text{ and}$$

$$\lambda_y = \begin{cases} \min(\alpha, RR_y), & \text{if } J_y \geq 1 \\ 2 - \min(\alpha, RR_y), & \text{if } J_y < 1 \end{cases}, \text{ with } \alpha \in [1, 1.5] \text{ used as a tuning parameter.}$$

In both HCRs, RR_y is computed from the age-1 survey abundance indices, as the ratio of recent recruitment (geometric mean of three previous years) to the geometric mean level over the 1988–2017 years, i.e.

$$RR_y = \frac{(R_{y-1} \cdot R_{y-2} \cdot R_{y-3})^{1/3}}{(\prod_{i=1988}^{2017} R_i)^{1/30}}$$

The variable λ_y controls the degree to which the TAC changes in response to changes in stock biomass (slope HCR) or the distance between recent and “target” stock biomass (target HCR). The parameter α , which was equal to 1 in the HCR version seen at the SC January 2019 MSE meeting, can be used as a tuning parameter, i.e. a range of values can initially be considered for α with its final value selected after examining the outcomes of relevant performance statistics from the MSE simulations.

An exploration of some of the properties of the HCRs, prior to their testing via MSE, is included in Annex 3 of this report. The analysis examines the magnitude of possible interannual TAC changes that may result when these rules are applied, and offers insights that can inform appropriate HCR settings, in terms of HCR performance, before conducting involved MSE simulation work.

The HCRs developed for the WG-RBMS meeting also consider the possible inclusion of constraints in interannual TAC changes and starting values for the first year of application of the HCR (which, in the MSE simulations, corresponds to setting the TAC for 2020) different from the 2019 TAC (see Table 1).

As done in the work presented at the SC January 2019 MSE meeting, a minimum TAC of 1000 t was incorporated in the MSE simulations, to avoid being trapped in a 0-TAC situation. Hence, whenever the HCR resulted in a TAC less than 1000 t, it was assumed that the TAC would be 1000 t, and this was the value used in the HCR when calculating the TAC for the following year.

The MSE simulations conducted so far assumed that the catch taken is equal to the TAC, except in the following circumstances, which result in catch lower than the TAC:

- if the TAC obtained from the HCR is bigger than 90% of the (“true”) stock biomass, then the catch taken is 90% of the stock biomass;
- if the TAC obtained from the HCR, or the catch obtained from the previous bullet point, corresponds to catch numbers larger than the population numbers for one or more of the ages, then the actual catch taken from such ages equals the population numbers of those ages.

Of all scenarios possible from Table 1 (combinations of 27 OM settings and 8 HCR settings for each of the 2 different HCRs, resulting in 432 scenarios, to which the robustness trial with the dome-shaped survey catchability OM is added), the 22 scenarios displayed in Table 2a had been run in advance of the WG-RBMS meeting and were available for examination at the meeting. In terms of OMs, these 22 scenarios are all based on MV and MG settings for natural mortality, BR and HS settings for recruitment, and RW and 3Y settings for future biological parameters, and were selected following the schedule agreed at the SC January 2019 MSE meeting and after further prioritisation emerging from subsequent discussion of the cod MSE technical team. Other scenarios, particularly those based on the OM settings MS, LBR and DD (right-most column of Table 1), will be run in the coming months.

During the present WG-RBMS meeting, 8 additional scenarios assuming no catch were run. The scenarios are described in Table 2b, where it should be noted that HCR settings, labelled “alfa”, “Constraint” and “Starting Point” in the table, are irrelevant when $F=0$. The $F=0$ scenarios had been agreed at the SC January 2019 MSE meeting for presentation at the June SC meeting. Such evaluations provide expected results if there is no fishing, allowing decisions on HCRs to be informed of the relative impact of the corresponding removals. However, after seeing the initial MSE results, the WG-RBMS meeting decided it was important to run them and examine their results during the present meeting (see discussion below).

Table 2. Scenarios with MSE results available at the WG-RBMS meeting.

a) Table 2a: Scenarios for slope and target HCRs

	HCR				alfa		Constraint		Starting Point		M			Q		R			BP			BU fl	
	MFS	MFT	F0	Trigger	A10	A15	C100	C20	SP0	SP25	MV	MG	MS	QF	QD	BR	HS	LBR	RW	3Y	DD		Y/ N
1. MFS_A10_Cnone_SPO_MV_QF_BR_RW	X				X		X		X		X			X		X			X				Y
2. MFS_A10_Cnone_SPO_MV_QF_BR_3Y	X				X		X		X		X			X		X			X				Y
3. MFS_A10_Cnone_SPO_MV_QF_HS_RW	X				X		X		X		X			X			X		X				Y
4. MFS_A10_Cnone_SPO_MV_QF_HS_3Y	X				X		X		X		X			X			X		X				Y
5. MFS_A10_Cnone_SPO_MG_QF_BR_RW	X				X		X		X			X		X		X			X				Y
6. MFS_A10_Cnone_SPO_MG_QF_BR_3Y	X				X		X		X			X		X		X			X				Y
7. MFS_A10_Cnone_SPO_MG_QF_HS_RW	X				X		X		X			X		X			X		X				Y
8. MFS_A10_Cnone_SPO_MG_QF_HS_3Y	X				X		X		X			X		X			X		X				Y
9. MFT_A10_Cnone_SPO_MV_QF_BR_RW		X					X		X		X			X		X			X				Y
10. MFT_A10_Cnone_SPO_MV_QF_BR_3Y		X					X		X		X			X		X			X				Y
11. MFT_A10_Cnone_SPO_MV_QF_HS_RW		X			X		X		X		X			X		X			X				Y
12. MFT_A10_Cnone_SPO_MV_QF_HS_3Y		X			X		X		X		X			X		X			X				Y
13. MFT_A10_Cnone_SPO_MG_QF_BR_RW		X			X		X		X			X		X		X			X				Y
14. MFT_A10_Cnone_SPO_MG_QF_BR_3Y		X			X		X		X			X		X		X			X				Y
15. MFT_A10_Cnone_SPO_MG_QF_HS_RW		X			X		X		X			X		X		X			X				Y
16. MFT_A10_Cnone_SPO_MG_HS_3Y		X			X		X		X			X		X		X			X				Y
17. MFS_A15_Cnone_SPO_MV_QF_BR_RW	X					X		X		X		X		X		X			X				Y
18. MFS_A10_C20_SPO_MV_QF_BR_RW	X					X		X	X		X			X		X			X				Y
19. MFS_A10_Cnone_SPO_MV_QF_HS_RW	X					X		X		X				X		X			X				Y
20. MFT_A15_Cnone_SPO_MV_QF_BR_RW		X				X		X		X				X		X			X				Y
21. MFT_A10_C20_SPO_MV_QF_BR_RW		X				X		X	X		X			X		X			X				Y
22. MFT_A10_Cnone_SPO_MV_QF_BR_RW		X				X		X		X	X			X		X			X				Y

b) Table 2b: Scenarios with F=0 (the HCR settings, labelled “alfa”, “Constraint” and “Starting Point”, are irrelevant when F=0)

	HCR				alfa		Constraint		Starting Point		M			Q		R			BP			
	MFS	MFT	F0	Trigger	A10	A15	C100	C20	SP0	SP25	MV	MG	MS	QF	QD	BR	HS	LBR	RW	3Y	DD	
01. F0_A10_Cnone_SPO_MV_QF_BR_RW			X		X		X		X		X			X		X			X			
02. F0_A10_Cnone_SPO_MV_QF_BR_3Y			X		X		X		X		X			X		X			X			
03. F0_A10_Cnone_SPO_MV_QF_HS_RW			X		X		X		X		X			X			X		X			
04. F0_A10_Cnone_SPO_MV_QF_HS_3Y			X		X		X		X		X			X			X		X			
05. F0_A10_Cnone_SPO_MG_QF_BR_RW			X		X		X		X			X		X		X			X			
06. F0_A10_Cnone_SPO_MG_QF_BR_3Y			X		X		X		X			X		X		X			X			
07. F0_A10_Cnone_SPO_MG_QF_HS_RW			X		X		X		X			X		X			X		X			
08. F0_A10_Cnone_SPO_MG_QF_HS_3Y			X		X		X		X			X		X			X		X			

The MSE simulations were developed using the FLBEIA software (Garcia et al., 2017), which was presented during the SC January 2019 MSE meeting. FLBEIA is a software to perform bio-economic evaluation of fisheries management strategies and is based on R and FLR libraries. It has been applied to several case studies in single stock as well as mixed fisheries contexts, with different conservation or management objectives, and was also previously used for 3M cod. The model can be downloaded from github (<https://github.com/flr/FLBEIA>) and tutorials are available at the web site (<http://www.flr-project.org/doc/index.html>).

Inputs to the MSE and results for the 22 + 8 scenarios in Tables 2a and 2b are presented in detail in Annex 4.

When examining the MSE inputs, it was noted that simulating future recruitment residuals by sampling historical recruitment residuals within SSB bins implied biased residuals within the SSB bins (for example, with the BR recruitment OM setting, the bin corresponding to SSB values larger than SSB₂₀₀₇ but smaller than SSB₂₀₁₀ resulted in a large proportion of simulated recruitments being above the Ricker curve); additionally, the small numbers of historical years from which to sample in each SSB bin led to large variations in the simulated future recruitment values. None of this was unexpected, given that simulation of future recruitment was discussed at length in the SC January 2019 MSE meeting and the current implementation was agreed then as a way forward. Some possible alternatives for future recruitment simulation discussed during the WG-RBMS meeting included dividing the past into low and high productivity “regimes” and sampling from those two “regimes” separately, or incorporating time autocorrelation in the future recruitment simulation. The WG-RBMS meeting agreed that further consideration of recruitment simulation was relevant and that alternative methods of generating recruitment values should be considered in future MSE work and presented to SC if the decision in September 2019 is to continue with the 3M cod MSE (see discussion below).

Some observed features in the MSE results were as follows: the HCRs often resulted in very low future catches and F values, which indicates a need for further exploration of alternative HCR settings. The MSE results need to be further analysed and understood. It was also observed that future uncertainty ranges were very wide (see e.g. Figure 1 for the slope HCR, or Figure 2 for F=0). The meeting was concerned about this large uncertainty and about the fact that all of the OMs resulted in more than 10% probability of the stock being below B_{lim} in



some future years when the slope or target HCRs are applied (see SSB/ B_{lim} panel in Figure 1, and Figures 3 and 4 in Section 4.e).

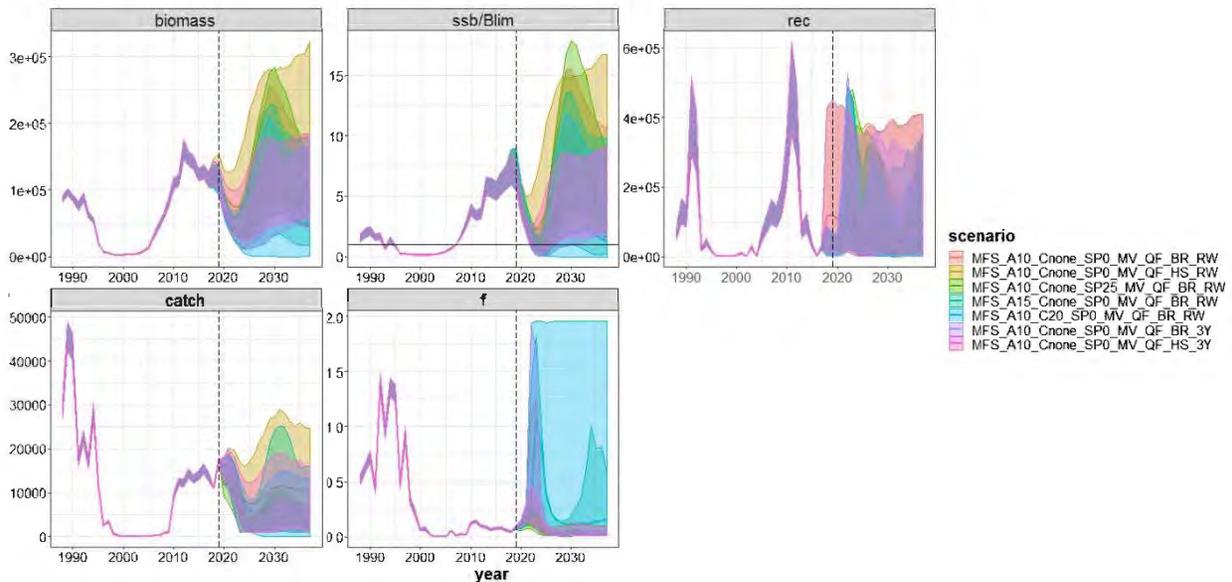


Figure 1. MSE results (10th to 90th percentile ranges) for the slope HCR (MFS), under alternative HCR and OM settings.

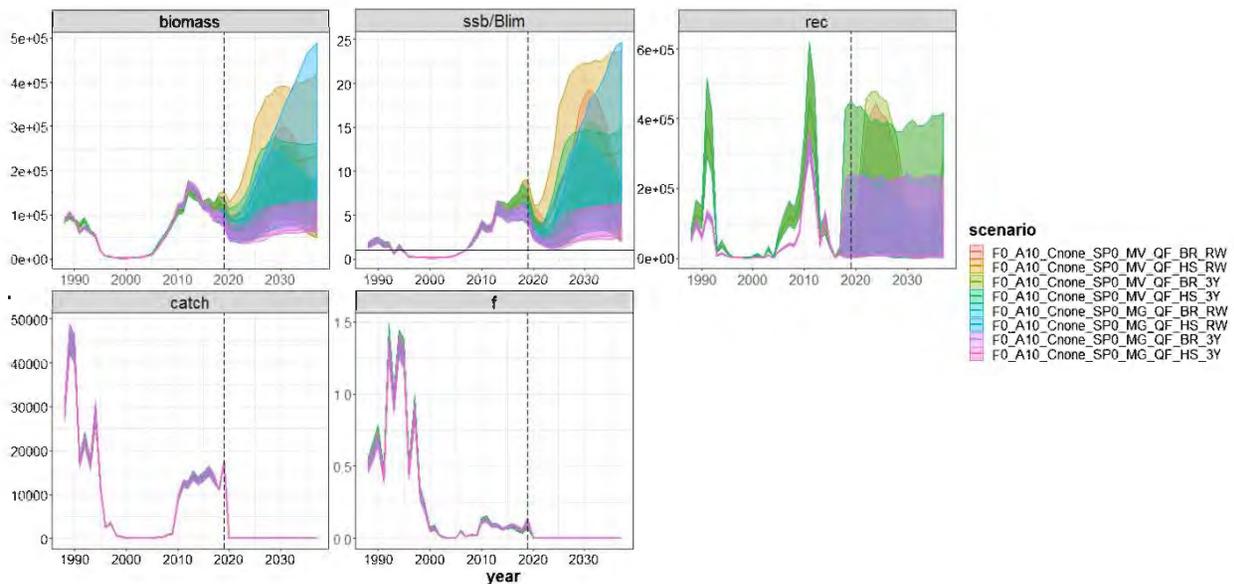


Figure 2. MSE results (10th to 90th percentile ranges) with $F=0$, under alternative OM settings.

e. Update and possibly finalization of Performance Statistics (PS) and associated risks levels.

The technical team of scientists working on the cod MSE presented an updated table of performance statistics and criteria for consideration and discussion at the WG-RBMS meeting (Table 3, with details provided in Annex 5).

With respect to the management objective “Restore to within a prescribed period of time or maintain at B_{MSY} ”, the following statement in the SC January 2019 MSE meeting report was noted: “Due to issues related to B_{MSY} estimates, no B_{MSY} value has been proposed as an a priori performance statistic. If managers need B_{MSY} as a target to meet convention obligations, then we would be able to calculate a value retrospectively corresponding to the management strategy that would give highest long-term yield values in the projections and the associated

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biomass.” Therefore no performance statistic involving B_{MSY} was included in the set of potential performance statistics presented by the technical team. It was proposed in the table that this level be achieved in the long term as required (2037) and that it is advisable to achieve it already in the medium term (2030). It was also noted in the table that it would be necessary to discuss which is the level of SSB that one wishes to reach in the future and how to estimate it.

As agreed during the SC January 2019 MSE meeting, the proportion of the cod stock biomass in the plus age group and the probability of stock collapse were included as potential performance statistics (see Table 3).

A “*Low risk of steep decline*” performance statistic, which was used in the Greenland halibut MSE, has not been considered for the 3M cod stock. The reason for not including it is that this cod stock changes very rapidly and steep stock decline, from its recent historical maximum, is expected in the near future regardless of any HCR that may be applied. One possibility might be to consider a statistic of this type, but evaluating it for the years after the current decline is expected to end (e.g. from about year 2025).

Following the presentation of the updated table, it was agreed to defer the discussion and finalization of the performance statistics in a subsequent working group meeting.

<p>PS5: For each year (2020-2037): Median $\left(\frac{\text{Biomass}_{y,t}}{\text{Biomass}_y}\right)$</p>		<p>Measure the proportion of stock biomass in the Plus Group</p>	<p>It would be convenient to show a table with the value of this PS year by year, to see its evolution over time.</p>
<p>PS6: $P(\text{SSBy} < \text{SSB}_{1997}$ for ALL years of the period 2032-2037)</p>	<p>Probability</p>	<p>Measure the number of crashed iterations.</p>	

The results of initial testing of both HCR types (slope and target) against the performance statistic PS1 for all 22 scenarios in Table 2a are shown in Figures 3 (for the 11 scenarios involving the slope HCR) and 4 (for the 11 scenarios involving the target HCR). There is a higher than 10% probability of going below B_{lim} in the short term with all 22 OMs under both HCR types. With the current HCR settings, the probability of being below B_{lim} in the long term remains higher than 10% in many of the scenarios, although it was noted that the HCRs will be refined in future MSE work, which may change the results.

PS1 results for the zero catch scenarios (Figure 5) showed that the probability of the stock biomass falling below B_{lim} was less than 10% for any of the OMs tested; however, the low recruitment OM (LBR setting in Table 1, not yet tested but expected in future work) will likely result in more than 10% probability of the stock biomass falling below B_{lim} .

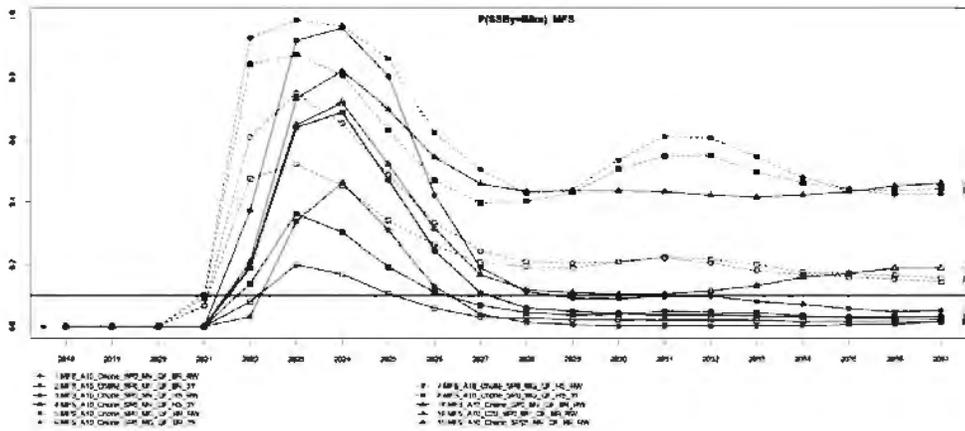


Figure 3. Yearly probabilities of the SSB being below B_{lim} , with the slope HCR. The horizontal line corresponds to 10% probability.

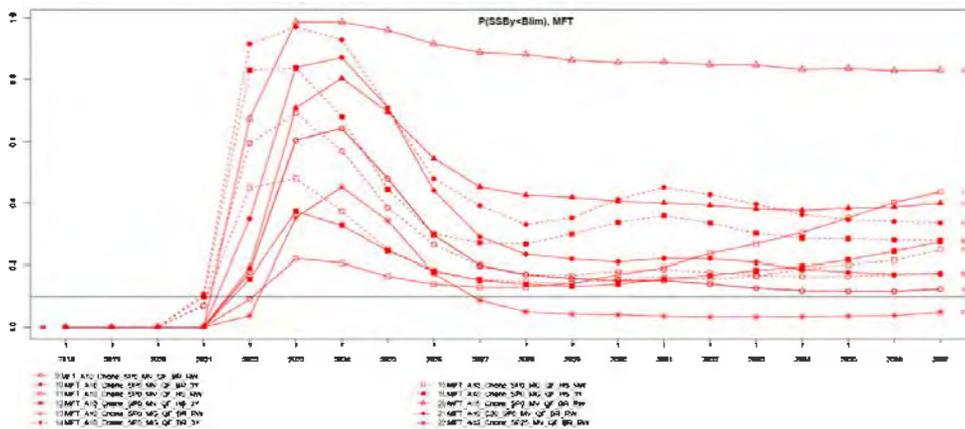


Figure 4. Yearly probabilities of the SSB being below B_{lim} , with the target HCR. The horizontal line corresponds to 10% probability.

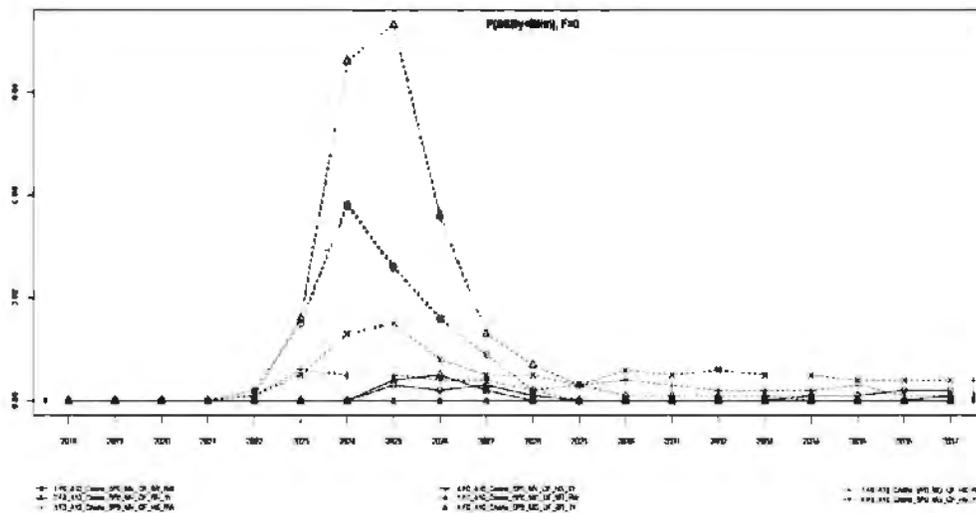


Figure 5. Yearly probabilities of the SSB being below B_{lim} , with $F=0$. Note that the vertical axis here goes up to approximately 0.08 whereas in Figures 3 and 4 it went up to 1. Here, all probabilities are smaller than 10%.

- f. **Identify where improvements in performance are most required to guide analysts in revising HCRs. In particular, identify desired features in terms of overall form of the HCR, potential ranges for maximum TAC change between years and starting TAC, indicating the order of priority.**

Given the WG-RBMS decision to review in September the appropriateness of continuing with the 3M cod MSE work at this stage, which will in any case imply a delay relative to the timeline agreed last year for the cod MSE (see discussion in Section 4.g below), this agenda item was not addressed in the present WG-RBMS meeting.

- g. **Review the MSE timeline going forward from this meeting.**

Initial testing of slope and target HCRs against the draft performance criteria showed that, in all scenarios, the probability of SSB dropping below B_{lim} was greater than 10% for at least one year (Figures 3 and 4). Only the $F=0$ scenario resulted in less than 10% probability of the stock falling below B_{lim} (Figure 5), although it is expected that the addition of a low recruitment OM (to be implemented in the coming months) will likely result in a greater than 10% probability of the stock biomass falling below B_{lim} even with $F=0$.

It was noted that in this stock biological parameters (weight and maturity at age) and recruitment have shown very high variability in the historical period. Projecting into the future without any obvious way of predicting how these variables will evolve in future years implies a very wide spectrum of possibilities for these variables in the future, which in turn results in very wide probability distributions (see e.g. Figures 1 and 2) and a high probability of failing the performance criteria.

Considering the initial set of MSE results against the draft performance criteria and the high variability and biological parameters of the stock, WG-RBMS discussed the likelihood that the MSE will produce results that will satisfy the performance criteria and therefore the merit in continuing the MSE work for this stock. The WG-RBMS also noted that given the stock dynamics and characteristics, it may not be a suitable candidate for a MSE approach.

It was agreed that the technical team will continue its work, including the development of the DD model and the low recruitment scenario. The WG-RBMS will meet prior to the NAFO Annual Meeting to consider the results and determine appropriate next steps in the MSE process including a revised timeline if the decision is to continue development of the MSE. In the interim, it was agreed that the SC at its June 2019 meeting will provide

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advice for the stock in 2020, if the technical team has new results for some of the approved scenarios available in time for the June SC meeting, those results could be reviewed by the SC in June along with those presented in this meeting.

WG-RBMS will meet prior to the NAFO annual meeting (Saturday, 21 Sept) to review the updated technical work, consider next steps including a revised timeline, if required, and formulate recommendations to the Commission.

h. Include main results and conclusions from the WG-RBMS meeting in the single overall “guiding and summary” document for the 3M cod MSE process.

This agenda item was covered in Section 4.b in terms of process. In line with that, once the present WG-RBMS meeting report is finalised, relevant parts of it will be extracted (by the NAFO Secretariat together with the WG-RBMS co-chairs) for inclusion in the “guiding and summary” MSE document. The parts to be extracted will consist of a very brief summary of the MSE scenarios and results presented at this meeting, followed by the conclusions from Sections 4.g and 6.

5. Other Business

No other business was considered at this meeting.

6. Recommendations to forward to the Commission and Scientific Council

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

- Development of the MSE by the technical team should continue, with results of the candidate OMs approved in the 3M cod MSE meeting held in January 2019 to be presented to WG-RBMS in September 2019.
- WG-RBMS should meet in September 2019 to consider whether to proceed with the 3M cod MSE and, if the decision is to proceed, produce a revised timetable.
- Scientific Council at its June 2019 meeting should produce advice for 3M cod in 2020.

7. Date and Time of Next Meeting

The next meeting will be held on Saturday, 21 September 2019, in Bordeaux, France.

8. Adoption of Report

The report was adopted via correspondence.

9. Adjournment

The meeting was adjourned at 13:00 hours on 12 April 2019.

Literature cited

Garcia, D., S. Sánchez, et al. (2017). "FLBEIA: A simulation model to conduct Bio-Economic evaluation of fisheries management strategies." *SoftwareX* 6: 141-147.

Annex 1. List of Participants

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Annex 2. Agenda

1. Opening by the co-Chairs, Carmen Fernández (European Union) and Jacqueline Perry (Canada)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. 3M Cod Management Strategy Evaluation (MSE)
 - a. Review objectives for the current meeting, taking into account the MSE timeline agreed by the Commission in September 2018.
 - b. Presentation of the single overall “*guiding and summary*” document for the 3M cod MSE process.
 - c. Presentation of main results from the 3M cod MSE meeting held in January 2019.
 - d. Review of initial MSE results based on the initial set of operating models (OM) and candidate harvest control rules (HCR) agreed in the January SC meeting.
 - e. Update and possibly finalization of Performance Statistics (PS) and associated risks levels.
 - f. Identify where improvements in performance are most required to guide analysts in revising HCRs. In particular, identify desired features in terms of overall form of the HCR, potential ranges for maximum TAC change between years and starting TAC, indicating the order of priority.
 - g. Review the MSE timeline going forward from this meeting. Ability to achieve deliverables: (i) between April-June, (ii) at the June SC meeting, (iii) after the June SC meeting. Time and format of next WG-RBMS meeting.
 - h. Include main results and conclusions from the WG-RBMS meeting in the single overall “*guiding and summary*” document for the 3M cod MSE process.
5. Other Business
6. Recommendations to forward to the Commission and/or Scientific Council
7. Date and Time of Next Meeting
8. Adoption of Report
9. Adjournment

Annex 3. Examination of proposed Harvest Control Rules for 3M Cod

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I. Introduction

This report details a simple exploration of the formulation of the HCRs proposed for 3M cod. The intent is to understand how the computation of the TAC in the HCR responds to various parameters simply based on the mathematical description of the rule itself. The advantage of this approach is that in relying on simply the equations for the proposed rules, it is completely independent of the very complex and detailed process required for a Management Strategy Evaluation. This simple understanding can prove helpful for changing rule formulations and/or tuning the parameters used within the rules.

II. Harvest Control Rules

In the proposed Harvest Control Rules for 3M cod, the computed TAC for year $y+1$ is a function of three quantities:

- i) the TAC in year y ,
- ii) the relative change in the stock size, and,
- iii) one or more scaling parameters which controls the responsiveness of the rule to changes in stock size.

For the current MSE, two different rules are being considered. The difference between these rules is the metric is used in the HCR to represent the change in stock size. The full specification of each rule follows.

Model-Free Slope HCR

The first rule alters future TACs based upon recent trends in the survey biomass:

$$TAC_{y+1} = TAC_y [1 + \lambda_y \cdot slope_y], \text{ where}$$

$slope_y$ is the slope of a regression line fit to the four previous biomass indices (log-scale), with

$$\lambda_y = \begin{cases} \min(\alpha, RR_y), & slope_y \geq 0 \\ 2 - \min(\alpha, RR_y), & slope_y < 0 \end{cases}, \quad \text{for } \alpha \in [1, 1.5], \text{ and,}$$

$$RR_y = \frac{(R_{y-1} \cdot R_{y-2} \cdot R_{y-3})^{1/3}}{(\prod_{i=1988}^{2017} R_i)^{1/30}}$$

RR_y is the ratio of recent recruitment (three-year geometric mean) to the geometric mean level of recruitment, computed from the age 1 estimates of abundance in the EU Flemish Cap survey. Additionally, the parameter λ_y controls the responsiveness of TAC change to changes in stock size as measured by the slope.

Model-Free Target HCR

The first rule alters future TACs based upon how far current status is from a pre-set target biomass. In the proposed rule, the target biomass level is the average survey biomass over 2008-2017.

The rule is computed as follows:

$$TAC_{y+1} = TAC_y [1 + \lambda_y \cdot (J_y - 1)], \quad \text{where}$$

J_y is the ratio of recent (three-year) average of survey biomass to the target biomass level, i.e.,

$$J_y = \frac{1}{3} \cdot (I_{y-1} + I_{y-2} + I_{y-3}) / I_{target}, \text{ with}$$

$$I_{target} = 1/10 \cdot \sum_{y=2008}^{2017} I_y,$$

$$\lambda_y = \begin{cases} \min(\alpha, RR_y), & J_y \geq 1 \\ 2 - \min(\alpha, RR_y), & J_y < 1 \end{cases}, \text{ for } \alpha \in [1, 1.5], \text{ and,}$$

$$RR_y = \frac{(R_{y-1} \cdot R_{y-2} \cdot R_{y-3})^{1/3}}{(\prod_{i=1988}^{2017} R_i)^{1/30}}.$$

As with the Slope HCR, RR_y is the ratio of recent recruitment (three-year geometric mean) to the geometric mean level of recruitment (geometric mean; recruitment from survey). The parameter λ_y controls the responsiveness of TAC to changes in stock size measured by the current fraction of the target level.

III. 3M Cod data affecting HCR Calculations

Recruitment Ratio (RR)

Each of the rules detailed above includes an adjustment based on the “Recruitment Ratio”. In order to understand how this will impact TACs generated within the simulations, it is useful to examine the RR’s calculated from the existing survey recruitment observations. Figure 1 illustrates the values of RR_y over 1990–2017. As the HCRs have a “constraint” on how large of an RR_y value affects the HCR (see α parameter in equations above), the right panel of Figure 1 has RR_y values of that are less than or equal to 1.5.

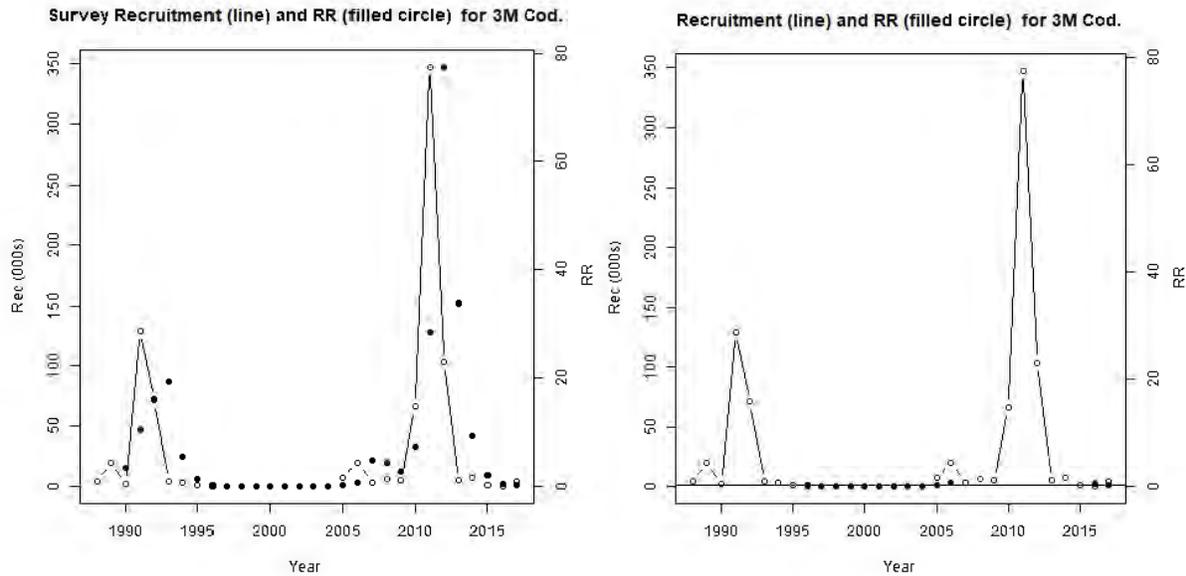


Figure 1. Left: Survey abundance at age 1 and Recruitment Ratio. Right: Survey abundance at age 1 and Recruitment Ratio values less than 1.5. Horizontal reference line in lower panel is the geometric mean recruitment.

Table 1. Summary statistics for RR.

Minimum	0.01
25 th Percentile	0.07
Median	1.79
Mean	8.21
75 th Percentile	7.88
Maximum	77.47

With the exception of two periods of large RR values corresponding to large recruitment events, the time-series shows that recruitment was much lower than average in most years and that the distribution of values is heavily skewed (Table 1).

Slope of recent survey values

For the slope-based HCR, the metric that reflects changes in stock size is the slope of the survey biomass index on the logarithmic scale. This slope is computed for the most recent four years. Figure 2 illustrates how this has varied based on the survey biomass time series from 1988-2017.

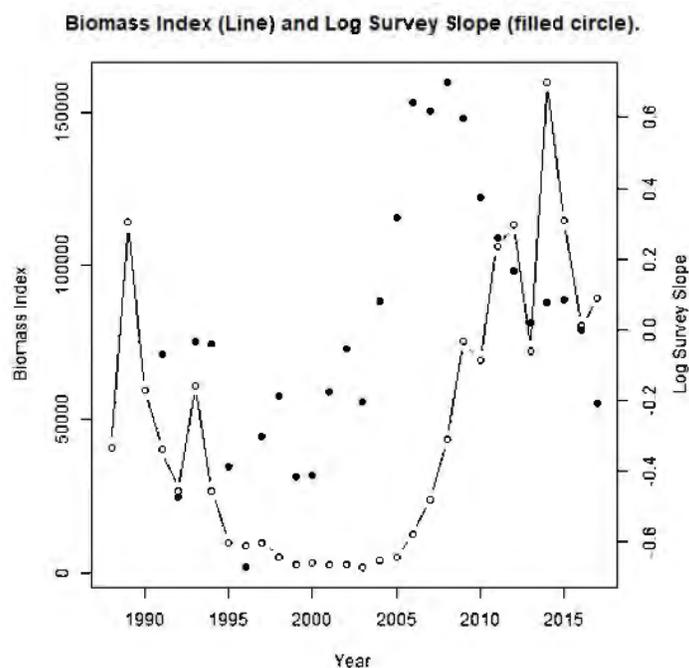


Figure 2. Survey Biomass Index and 4-year survey slope (regression on log biomass index).

Survey slopes are negative for the first half of the time series, followed by considerable increase when stock size improved dramatically in the early-mid 2000s. In the most recent years the trend has remained positive but the values are declining. The distribution of values is relatively symmetric (Table 2).

Table 2. Summary statistics for Slope.

Minimum	-0.67
25 th Percentile	-0.21
Median	-0.03
Mean	0.01
75 th Percentile	0.21
Maximum	0.7

Target: Survey biomass relative to Target Level

For the target-based HCR, the metric that reflects changes in stock size is ratio of current biomass for the most recent three years, to some reference or target level of biomass (J_y in the equations above). In this application, the target level is the average biomass over 2008-2017, inclusive. Figure 4 illustrates how this has varied based on the survey biomass time series of 1988-2017.

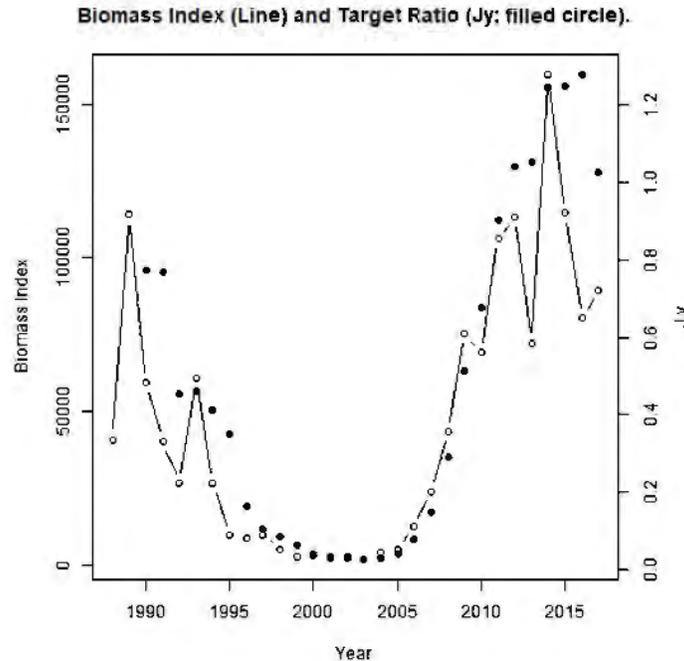


Figure 3. Survey Biomass index and J_y metric ('current' biomass relative to target level).

The target biomass metric, J_y , is below 1 (i.e. current below target level) in all but the final six years. During the collapsed period, the stock was at just 5-10% of this target level. The summary statistics for the target biomass metric J_y is shown in Table 3.

Table 3. Summary statistics for Target Biomass metric J_y .

Minimum	0.02
25 th Percentile	0.08
Median	0.38
Mean	0.48
75 th Percentile	0.81
Maximum	1.28

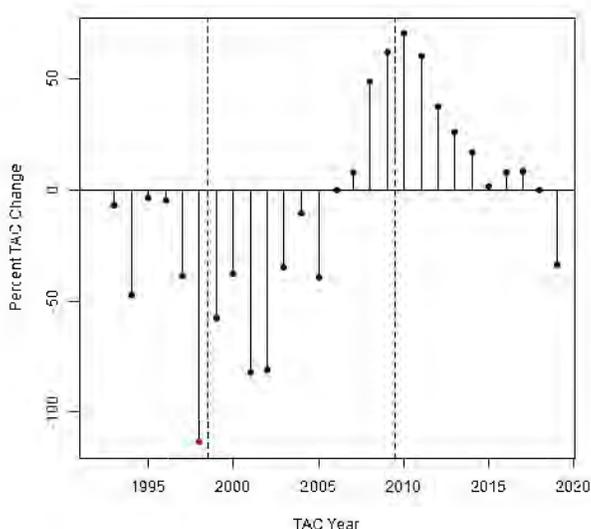
IV. HCR Rule Results - Previous observations

Next we explore the range of outcomes under each of the HCRs given the historic or observed ranges of the input parameters (i.e. each of RR_y , $slope_y$ and J_y). For the purposes of illustration, the parameter α is fixed at 1 in all subsequent calculations. For both the slope and the target rules, one can take the annual values of RR_y , $slope_y$ and J_y and compute what the inter-annual percentage change in the TAC would be under each rule. For the slope rule, which uses the four prior biomass index values, this can be computed over 1992-2018 and for the target rule - which uses a three year average to inform 'current' status - computed over 1991-2018.

These results suggest that a re-parameterization of both rules is necessary. The HCRs as structured are overly sensitive to the input parameters, with extreme inter-annual change. Figures 4 and 5 show the annual percent adjustment to TAC that would be applied annually. In addition to being very large, the values are predominantly negative. In some cases, the adjustments exceed a decrease of more than 100%, which implies a negative TAC. It is worth noting that the years for which negative values are generated include years outside the period corresponding to the closure of directed fishing following stock collapse.

Table 4. Summary statistics for percent change in TAC under the slope rule.

Minimum	-114%
25 th Percentile	-38%
Median	-3%
Mean	-9%
75 th Percentile	12%
Maximum	70%

**Figure 4.** Annual percent change in TAC using the historic values of RR_y and $slope_y$. Point highlighted in red indicates year in which TAC generated by the HCR would be negative. Dashed lines mark the beginning and end of the moratorium on directed fishing.**Table 5.** Summary statistics for percent change in TAC under the target rule.

Minimum	-192%
25 th Percentile	-175%
Median	-62%
Mean	-85%
75 th Percentile	19%
Maximum	25%

Under the observed conditions, the Target HCR as parameterized would only have yielded TAC increases in the most recent six years. For many of the years there is a greater than 100% reduction (i.e. negative TAC), and the magnitude of these negative values is excessive.

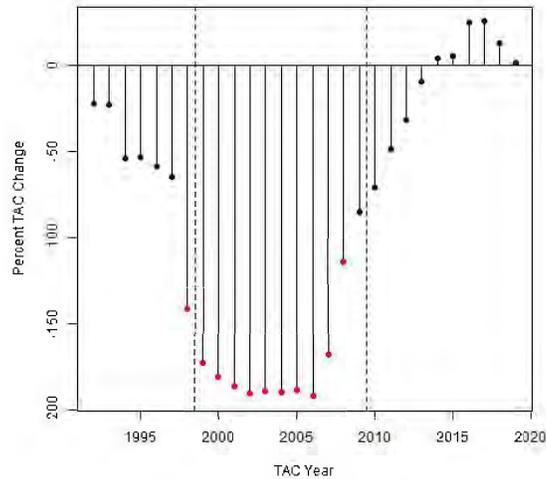


Figure 5. Annual percent change in TAC using the historic values of RR_y and J_y . Points highlighted in red indicate years in which TAC generated by the HCR would be negative. Dashed lines mark the beginning and end of the moratorium on directed fishing.

One suggested adjustment to mitigate this issue for both rules would be to add an additional parameter to each HCR to provide an ‘appropriate’ response to the slope and target metrics within each rule. This is consistent with discussions during the SC January 2019 MSE meeting (NAFO, 2019) and could be accomplished via:

$$TAC_{y+1} = TAC_y [1 + \beta \cdot \lambda_y \cdot slope_y] \text{ and } TAC_{y+1} = TAC_y [1 + \beta \cdot \lambda_y \cdot (J_y - 1)].$$

For the Target rule, an adjustment to target level (i.e. target could be redefined as x% of the 2008-2017 average) and/or the time period over which the target is defined could also be considered to produce a more ‘stable’ rule that seems appropriate.

V. HCR Rule Results – Wider view

Next we explore the HCR results computed across the entire observed range of RR_y and $slope_y$ for the slope rule, and of RR_y and J_y for the target rule. Specifically, across all possible combinations of these input parameters, compute what the inter-annual percentage change in the TAC generated from the HCRs would be. This yields the results illustrated below through the use of contour plots. The annual values of RR_y , $slope_y$ and J_y calculated from the existing survey time series are plotted (as points) within these contours for context. As in the previous section, the wide range of potential one-year TAC changes confirms that modifications of the rules within this MSE are required.

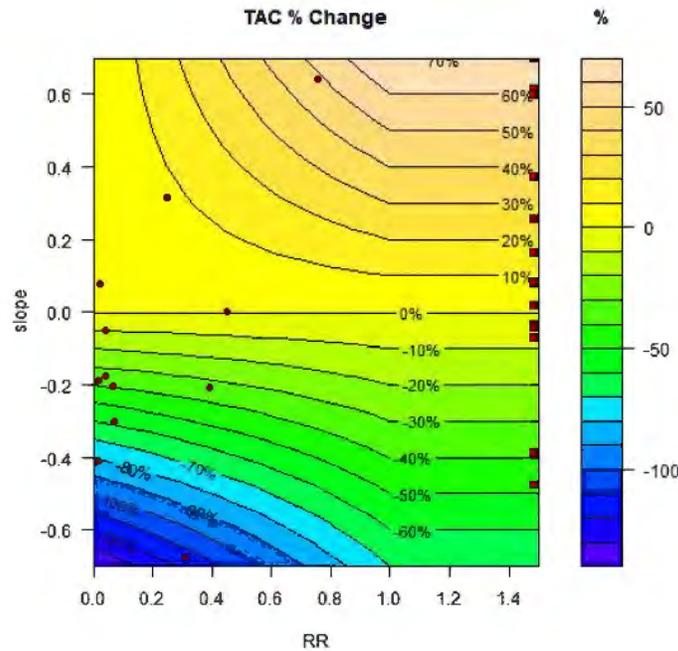


Figure 6. Slope-rule HCR results for values of RR_y and $slope_y$ across the range of historic observations. Lines show contours of TAC change (relative percent difference between TAC_{y+1} and TAC_y). Points correspond to values obtained over 1993-2019. Values shown as squares correspond to $(RR_y, slope_y)$ pairs for which $RR > 1.5$, and are plotted at $RR = 1.5$ for illustrative purposes.

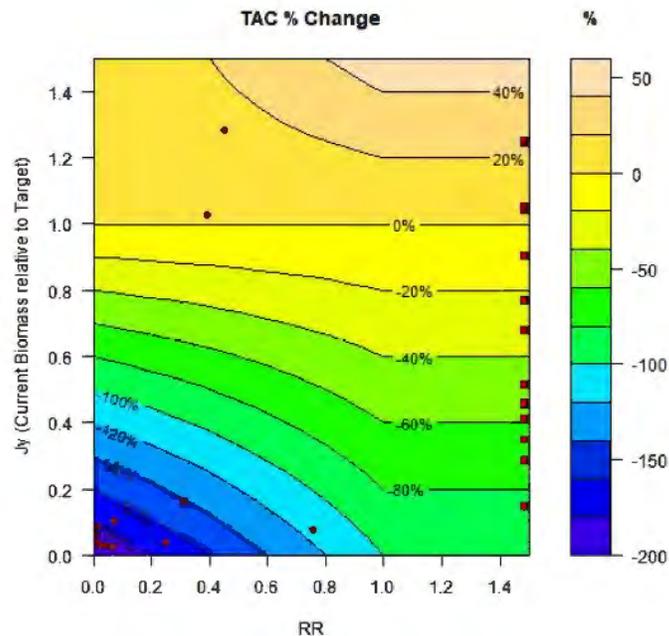


Figure 7. Target-rule HCR results for values of RR_y and J_y across the range of historic observations. Lines show contours of TAC change (relative percent difference between TAC_{y+1} and TAC_y). Points correspond to values obtained over 1992-2019. Values shown as squares correspond to (RR_y, J_y) pairs for which $RR > 1.5$, and are plotted at $RR = 1.5$ for illustrative purposes.

Annex 4. MSE: Inputs and Outputs

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Introduction

FLBEIA is the software used to develop the model with the MSE framework (Garcia *et al.*, 2017). FLBEIA is a software to perform bio-economic evaluation of fisheries management strategies and is developed based on R and FLR libraries. It has been applied to several case studies in single stock as well as mixed fisheries contexts, with different scientific or management objectives, and was also previously used for 3M cod. The model can be downloaded from github (<https://github.com/flr/FLBEIA>) and tutorials are available in the next web site <http://www.flr-project.org/doc/index.html>

The initial set of candidate OMs and HCRs to be run in the 3M cod MSE were discussed and agreed in the NAFO SC January 2019 meeting. The report of that meeting (NAFO SCS Doc. 19/04) includes the following table about the specifications of the different scenarios:

	Variables	Scenarios		
HCR settings	HCR names	Model-Free Slope (MFS)	Model-Free Target (MFT)	
	alpha	1.0 (A10)	1.5 (A15)	
	Constraint on inter-annual TAC change	None (Cnone)	±20% (C20)	
	Starting Point*	TAC(2019)=17500 t (SP0)	TAC(2019)-25%=13125 t (SP25)	
OM settings	Natural Mortality (until year 2017)	M vector (MV)	M GADGET (MG)	M Steps (MS)
	Recruitment (2018 onwards)	Bin Ricker (BR)	Hockey Stick (HS)	Low Bin Ricker (LBR)
	Biological parameters (2018 onwards)	Random walk (RW)	3 Years Mean (3Y)	Denso Dependent (DD)
	Groups q	Flat Shape (F)	Dome Shape (D)	

* When the management strategy is applied for the first time (i.e. for year 2020 in the MSE simulation), the TAC obtained from the HCR is calculated starting from this value instead of starting from the TAC in the previous year.

Harvest Control Rules (HCRs) tested

The first formulations of the HCRs were proposed to the SC in January 2019 (SCR 19/01). After the comments and recommendations made by SC to them (SCS 19/04) the final version of the HCRs that have been applied to the different scenarios presented in this document have the following formulation:

$$TAC_{y+1} = TAC_y (1 + \delta fy)$$

Where fy is some function of survey biomass in previous years (with the actual function being different for the slope and the target HCRs). Note that HCRs with larger values of δ imply larger interannual changes in TAC; by contrast, if $\delta=0$ then the TAC is constant.

HCR with tuning parameter α :

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If $fy \geq 0$, then $\delta = \delta_{up} = \min\{\alpha, RRY\} \leq \alpha$, $\alpha \in [1, 1.5]$

If $fy < 0$, then $\delta = \delta_{down} = 2 - \min\{\alpha, RRY\} \in [2 - \alpha, 2]$, $\alpha \in [1, 1.5]$

$RRY = \frac{GeoMeanRec(y-1, y-2, y-3)}{GeoMeanRec(1988-2017)}$, calculated using the age-1 survey abundance indices.

Slope HCR

In this case, fy is the slope of a regression line fit to the four previous biomass indices (log-scale):

$$TAC_{y+1} = TAC_y (1 + \delta \text{ slope}_y)$$

Target HCR

In this case, fy is calculated from the mean of the survey biomass of the three previous years divided by the mean survey biomass index for the period 2008-2017:

$$TAC_{y+1} = TAC_y (1 + \delta (J_y - 1))$$

where $J_y = \frac{(I_{y-3} + I_{y-2} + I_{y-1})/3}{I_{target}}$ and $I_{target} = \sum_{y=2008}^{2017} \frac{I_y}{10}$.

Harvest Control Rules (HCRs) parameters values presented

For both HCRs (slope and target):

- $\alpha = 1.0$ (A10)

- $\alpha = 1.5$ (A15)

- without reduction in the starting point, TAC 2019, 17500 t (SP0)

- 25% of reduction in the starting point, 13125 t (SP25)

- Interannual variability of the TAC constrained of 20% (C20)

A minimum TAC of 1000 t was incorporated in the MSE simulations, to avoid being trapped in a 0-TAC situation. Hence, whenever the HCR resulted in a TAC less than 1000 t, it was assumed that the TAC would be 1000 t, and this was the value used in the HCR when calculating the TAC for the following year.

Apart from that, it was agreed that scenarios with zero catch ($F=0$) should be included in the MSE as a robustness test, to see how the OMs would perform under no fishery and to allow managers to evaluate the differential impact of multiple HCRs.

Scenarios run

Among all the possible approved scenarios, it was agreed to define the following as priorities for presenting their results in the RBMS of April 2019: The base-case OM (MV, BR and RW combination), together with the MG, HS and 3Y alternative OM settings, for both MFS and MFT HCRs with $\alpha=1$, no constraint on interannual TAC change and using the 2019 TAC as starting point when first applying the HCR. Additionally, for the base-case OM, 3 more scenarios for each of the two HCRs, namely, a scenario with $\alpha=1.5$ (A15), another one with a constraint of 20% on the TAC interannual change (C20), and a third one with a different Starting Point (SP25) were run for testing. A total of 22 scenarios were run and they are described in Table 1.

Furthermore, eight of these scenarios were run with $F=0$ and they are described in Table 2.

MSE inputs for future years (starting from 2018):

Biological parameters (mean weights in the stock, mean weights in the catch and Natural mortality): Several approaches were proposed to the SC in January 2019 (SCR 19/01) to generate these parameters in the projection period. After the comments and recommendations made by the SC (SCS 19/04), it was decided to use an approach inspired on a “random walk” type of idea (RW) and the 3-year mean of 2015-2017 (3Y). Figure 1a shows the generated values for these parameters in the projection period (2018-2037) with the RW approach and Figure 1b with the 3Y approach.

Selectivity: It was decided to use, in all the scenarios, the mean of the years 2015-2017 due to the changes in the gears used in the fishery in recent years, with an increasing presence of longliners supposed to continue in the next years (Figure 2).

Recruitment: During the SC January 2019 MSE meeting (SCS 19/04) it was decided to use two different methods for generating future recruitment, a bin-Ricker (BR) approach with four different SSB bins for sampling recruitment residuals depending on the SSB value in the future, and a Hockey-Stick (HS) with two SSB bins separated at B_{lim} . Ricker and Hockey-Stick fits for the two OMs presented here (OMV and OMG) are shown in Figure 3. It was noted that simulating future recruitment residuals by sampling historical recruitment residuals within SSB bins implied biased residuals within the SSB bins (for example, with the BR recruitment setting, the bin corresponding to SSB values larger than SSB_{2007} but smaller than SSB_{2010} , resulted in a large proportion of simulated recruitments being above the Ricker curve); additionally, the small numbers of historical years from which to sample in each SSB bin led to big jumps up and down in the simulated future recruitment values.

Results

Figures 4-8 display MSE results. In all these figures, panel a) shows the median and panel b) the 10th and 90th percentiles.

Figure 4 corresponds to the scenarios with $F=0$. The biomass and SSB trends in the short term (2020-2025) are similar in almost all the scenarios analyzed with a fairly pronounced drop in biomass, mainly due to the poor recruitments that have been observed between 2014 and 2017. In the medium term, the trajectory of the biomass is different depending on how the biological parameters and future recruitments are simulated. If they are simulated with the 3Y approach and assuming a Hockey-Stick, the trajectory in the medium term has an increasing trend in almost all this period, while in the RW scenario assuming a Bin-Ricker the biomass grows in the medium term between 2025 and 2030, to fall again until 2037. The 10th percentile shows (Figure 4b) that the SSB is not far from B_{lim} in a large part of the analyzed scenarios even with no catches in the projection period. One of the approved management objectives for this stock is that the probability that the SSB falls below B_{lim} must be equal to or less than 10%. Therefore, most of the scenarios analyzed with $F=0$ are very close to this risk in the short term (2020-2025), as shown in Figure 4b.

The scenarios analyzed with the slope HCR (MFS) and M vector (MV) are presented in Figure 5, whereas Figure 6 shows the results of the scenarios analyzed for the same HCR (MFS) but with M GADGET (MG). In Figure 5 it can be seen that the trajectories of the biomass are very similar to those observed in the scenarios with $F=0$, which means that the catches have little influence on the trend of these biomass. The results in Figure 6 show different trends in the biomass, with a decrease in the period 2020-2025 and a subsequent increase in the period 2025-2037, much higher in the scenarios with the biological parameters generated through the RW approach than with the 3Y approach.

The catches resulting from applying the slope HCR in the MV scenarios are greater than in the MG scenarios. In all scenarios, these catches are quite lower than the level of catches observed for the period 2011-2017. The resulting level of F for the MV scenarios increases in the short term with respect to that observed in the period

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2011-2017 and then falls to levels considerably lower than those observed in this period. In the MG scenarios the level of F falls from the beginning and then remains at fairly small values.

In all the scenarios analyzed, in the short term (2020-2025) the risk of the biomass falling below B_{lim} is greater than the established 10%.

Figures 7 and 8 present the same scenarios as Figures 5 and 6 but for the target HCR (MFT). The trajectories of the biomass and F are similar to those described for the scenarios with the slope HCR. The catches and F of the scenarios with the target HCR are lower than those observed with the slope HCR, and this may be due to the fact that the established target biomass could be high and would have to be revised in subsequent analyses.

As is the case in the scenarios with the slope HCR, in all the scenarios analyzed with the target HCR in the short term (2020-2025) the risk of the biomass falling below the B_{lim} is greater than the established 10%. This happens in spite of the low catches and F of the scenarios where the target HCR is applied.

Discussion

The MSE results show that there is some risk that in the short / medium term the biomass will fall below B_{lim} even in the scenarios with $F=0$. This is mainly due to the low recruitments observed in the 2014-2017 period. This will make it very difficult to find a robust HCR that meets the management objectives already established in the agreed workplan. In particular, the objective that the biomass should not fall annually below B_{lim} with a risk higher than 10% will be very difficult to reach.

It is very likely that the current status of the stock of 3M cod as well as the great variability of the biological parameters and possible future recruitments will make it nearly impossible to find a robust HCR in the established period (September 2019) that meets the proposed management objectives.

Once all the MSE results of the scenarios agreed in the January 2019 SC meeting are available, we will have a clearer idea of the possible difficulties faced, which will allow us to review the new calendar possible for the 3M cod MSE.

References

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- González-Costas, F., D. González-Troncoso, C. Fernández, A. Urtizberea, R. Alpoim, A. Avila de Melo, J. De Oliveira, P. Apostolaki, T. Brunel, D. García, 2019. Potential Operating Models, Harvest Control Rules and Performance Statistics for the NAFO 3M Cod MSE. NAFO SCR Doc. 19/001. Serial No. N6903
- NAFO, 2019. Cod Stock Management Strategy Evaluation (MSE). NAFO SCS Doc. 19/04, Serial No. N6911.

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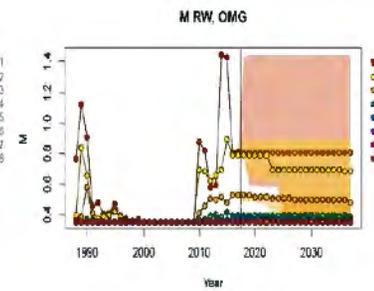
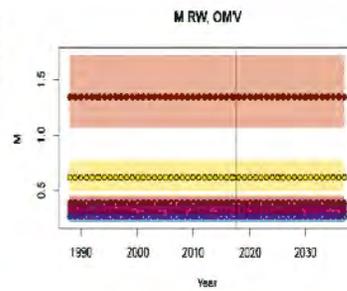
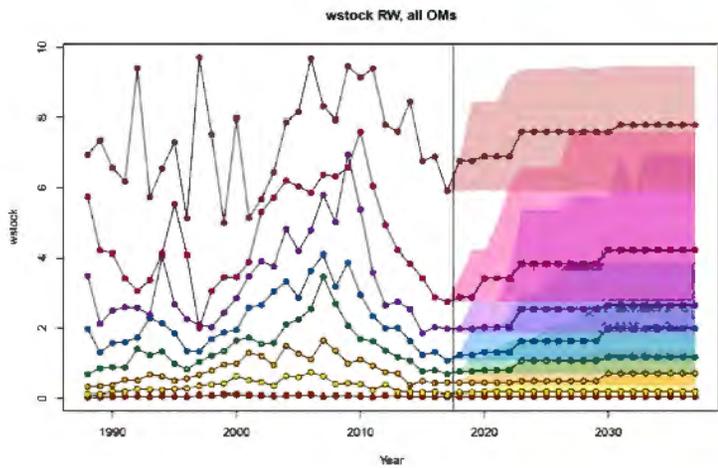
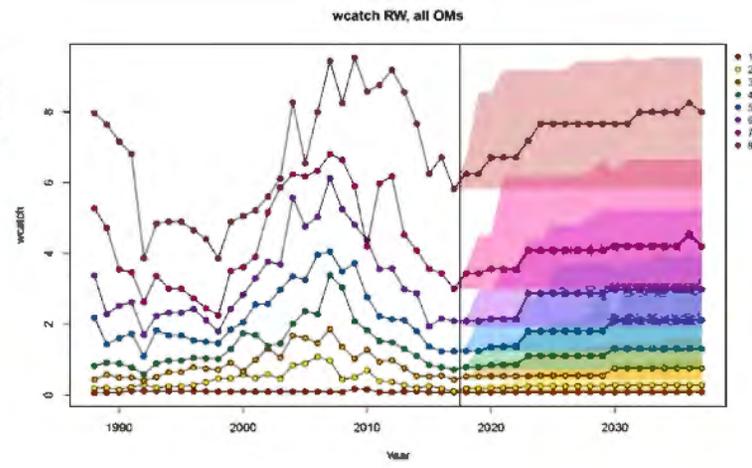
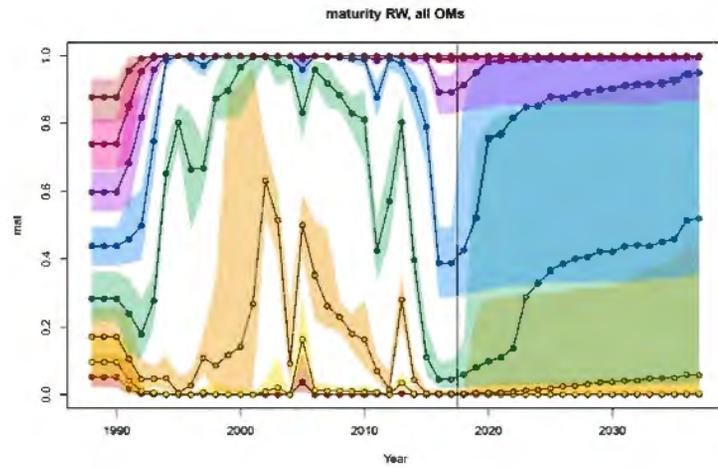
Table 1. List of scenarios run for the HCRs MFS and MFT

	HCR				alfa		Constraint		Starting Point		M			Q		R			BP			RU
	MFS	MFT	F0	Trigger	A10	A15	Cnone	C20	SP0	SP25	MV	MG	MS	QF	QD	BR	HS	LBR	RW	3Y	DD	Y/ N
1. MFS_A10_Cnone_SP0_MV_QF_BR_RW	X				X		X		X		X			X		X			X			y
2. MFS_A10_Cnone_SP0_MV_QF_BR_3Y	X				X		X		X		X			X		X			X			y
3. MFS_A10_Cnone_SP0_MV_QF_HS_RW	X				X		X		X		X			X			X		X			y
4. MFS_A10_Cnone_SP0_MV_QF_HS_3Y	X				X		X		X		X			X			X		X			y
5. MFS_A10_Cnone_SP0_MG_QF_BR_RW	X				X		X		X			X		X		X			X			y
6. MFS_A10_Cnone_SP0_MG_QF_BR_3Y	X				X		X		X			X		X		X			X			y
7. MFS_A10_Cnone_SP0_MG_QF_HS_RW	X				X		X		X			X		X			X		X			y
8. MFS_A10_Cnone_SP0_MG_QF_HS_3Y	X				X		X		X			X		X			X		X			y
9. MFT_A10_Cnone_SP0_MV_QF_BR_RW		X			X		X		X		X			X		X			X			y
10. MFT_A10_Cnone_SP0_MV_QF_BR_3Y		X			X		X		X		X			X		X			X			y
11. MFT_A10_Cnone_SP0_MV_QF_HS_RW		X			X		X		X		X			X			X		X			y
12. MFT_A10_Cnone_SP0_MV_QF_HS_3Y		X			X		X		X		X			X			X		X			y
13. MFT_A10_Cnone_SP0_MG_QF_BR_RW		X			X		X		X			X		X		X			X			y
14. MFT_A10_Cnone_SP0_MG_QF_BR_3Y		X			X		X		X			X		X		X			X			y
15. MFT_A10_Cnone_SP0_MG_QF_HS_RW		X			X		X		X			X		X			X		X			y
16. MFT_A10_Cnone_SP0_MG_HS_3Y		X			X		X		X			X		X		X			X			y
17. MFS_A15_Cnone_SP0_MV_QF_BR_RW	X					X	X		X		X			X		X			X			y
18. MFS_A10_C20_SP0_MV_QF_BR_RW	X				X			X	X		X			X		X			X			y
19. MFS_A10_Cnone_SP25_MV_QF_BR_RW	X				X		X			X	X			X		X			X			y
20. MFT_A15_Cnone_SP0_MV_QF_BR_RW		X				X	X		X		X			X		X			X			y
21. MFT_A10_C20_SP0_MV_QF_BR_RW		X			X			X	X		X			X		X			X			y
22. MFT_A10_Cnone_SP25_MV_QF_BR_RW		X			X		X			X	X			X		X			X			y

Table 2. List of scenarios run with F=0

	HCR				alfa		Constraint		Starting Point		M			Q		R			BP			
	MFS	MFT	F0	Trigger	A10	A15	C100	C20	SP0	SP25	MV	MG	MS	QF	QD	BR	HS	LBR	RW	3Y	DD	
01. F0_A10_Cnone_SP0_MV_QF_BR_RW			X		X		X		X		X			X		X			X			
02. F0_A10_Cnone_SP0_MV_QF_BR_3Y			X		X		X		X		X			X		X					X	
03. F0_A10_Cnone_SP0_MV_QF_HS_RW			X		X		X		X		X			X			X		X			
04. F0_A10_Cnone_SP0_MV_QF_HS_3Y			X		X		X		X		X			X			X				X	
05. F0_A10_Cnone_SP0_MG_QF_BR_RW			X		X		X		X			X		X		X			X			
06. F0_A10_Cnone_SP0_MG_QF_BR_3Y			X		X		X		X			X		X		X					X	
07. F0_A10_Cnone_SP0_MG_QF_HS_RW			X		X		X		X			X		X			X		X			
08. F0_A10_Cnone_SP0_MG_QF_HS_3Y			X		X		X		X			X		X			X				X	

a) RW scenario



b) 3Y scenario

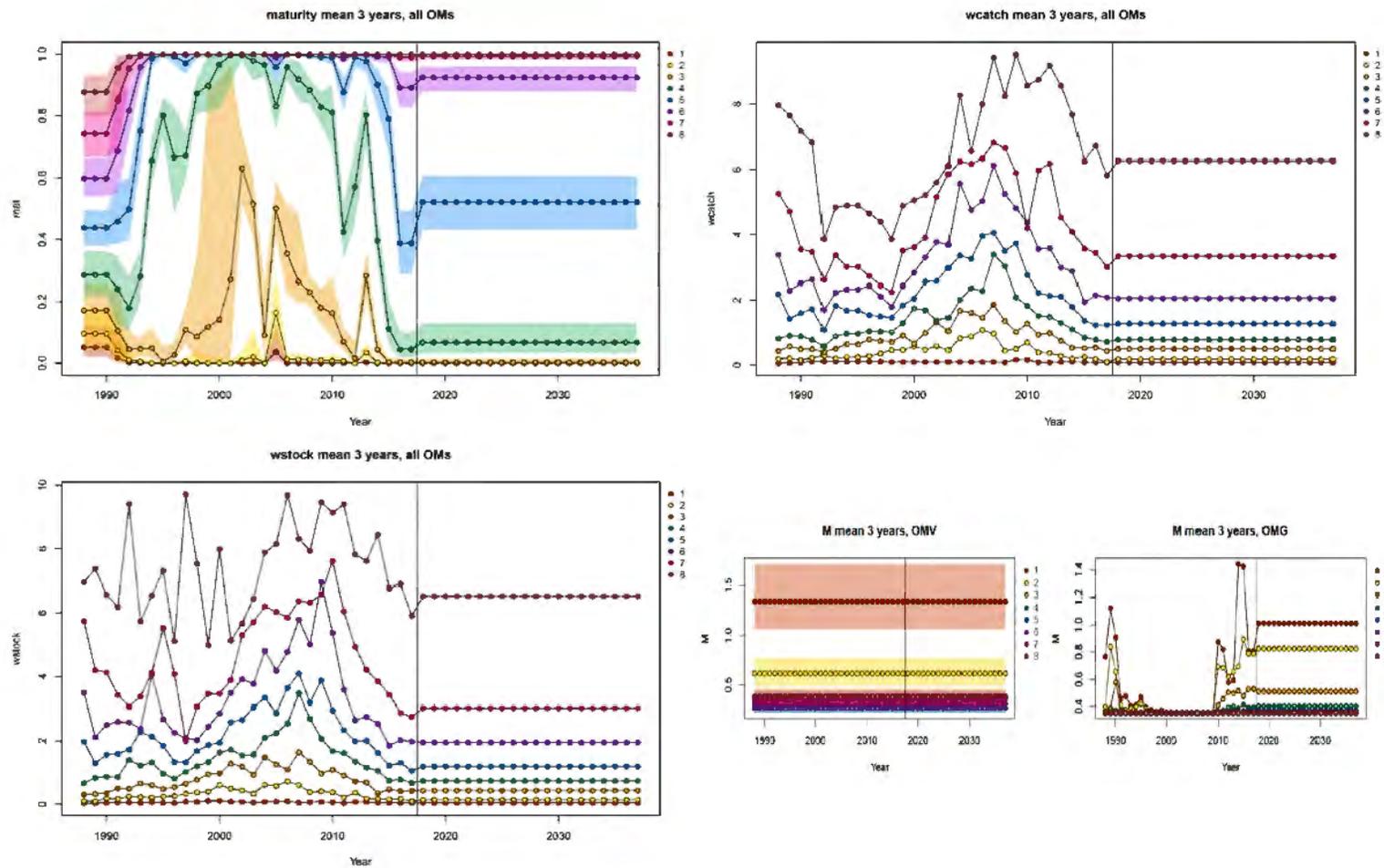


Figure 1. Biological parameters “observed” in the past and range of simulated future values. In the graphs, each colour represents one age. a): “Random Walk” (RW) scenario. b): “3 Years Mean” (3Y) scenario.

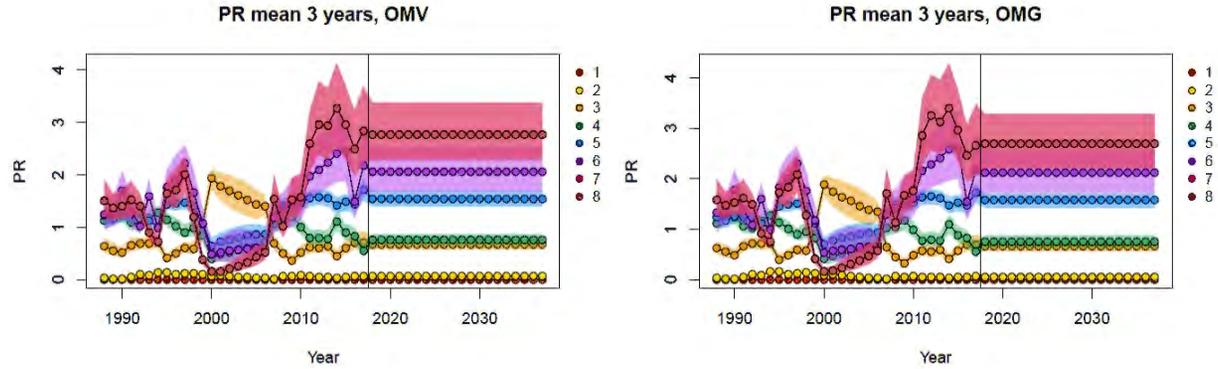


Figure 2. Selectivity for the future. In the graphs, each colour represents one age.

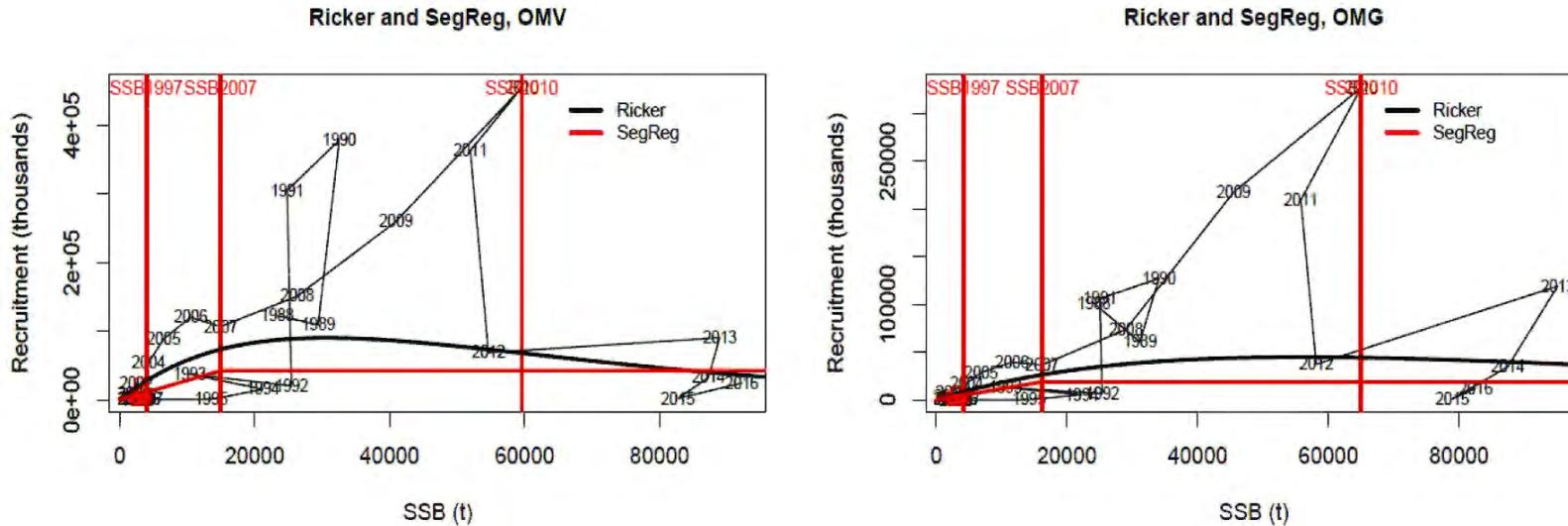
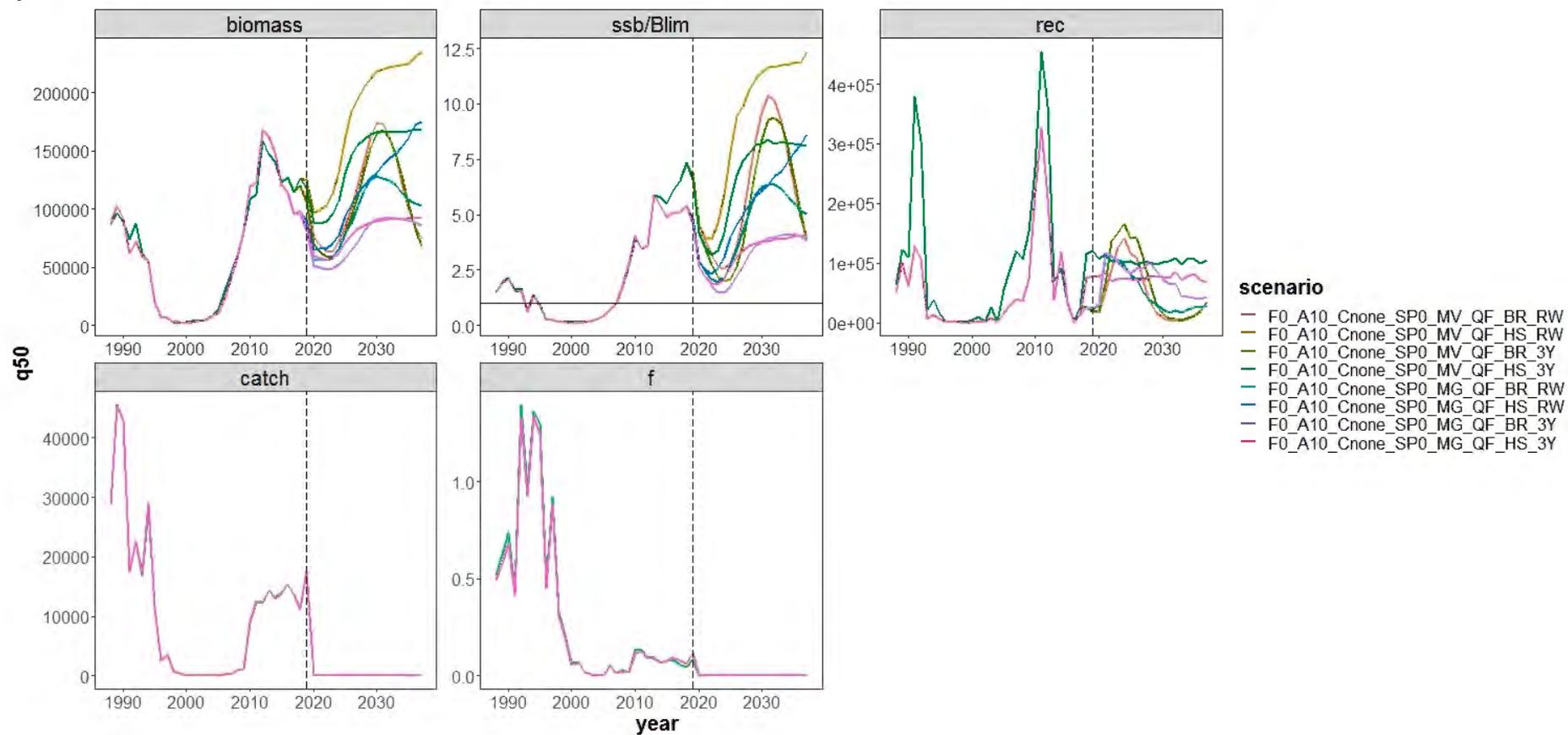


Figure 3. Stock-recruitment fits to (SSB, Recruitment) historical estimates from OMV and OMG: Ricker was fitted to pairs with SSB above SSB₁₉₉₇ and Hockey Stick was fitted to all historical estimates. The vertical lines mark the SSB values used to define the bins for future recruitment simulation in the BR setting.

a)



b)

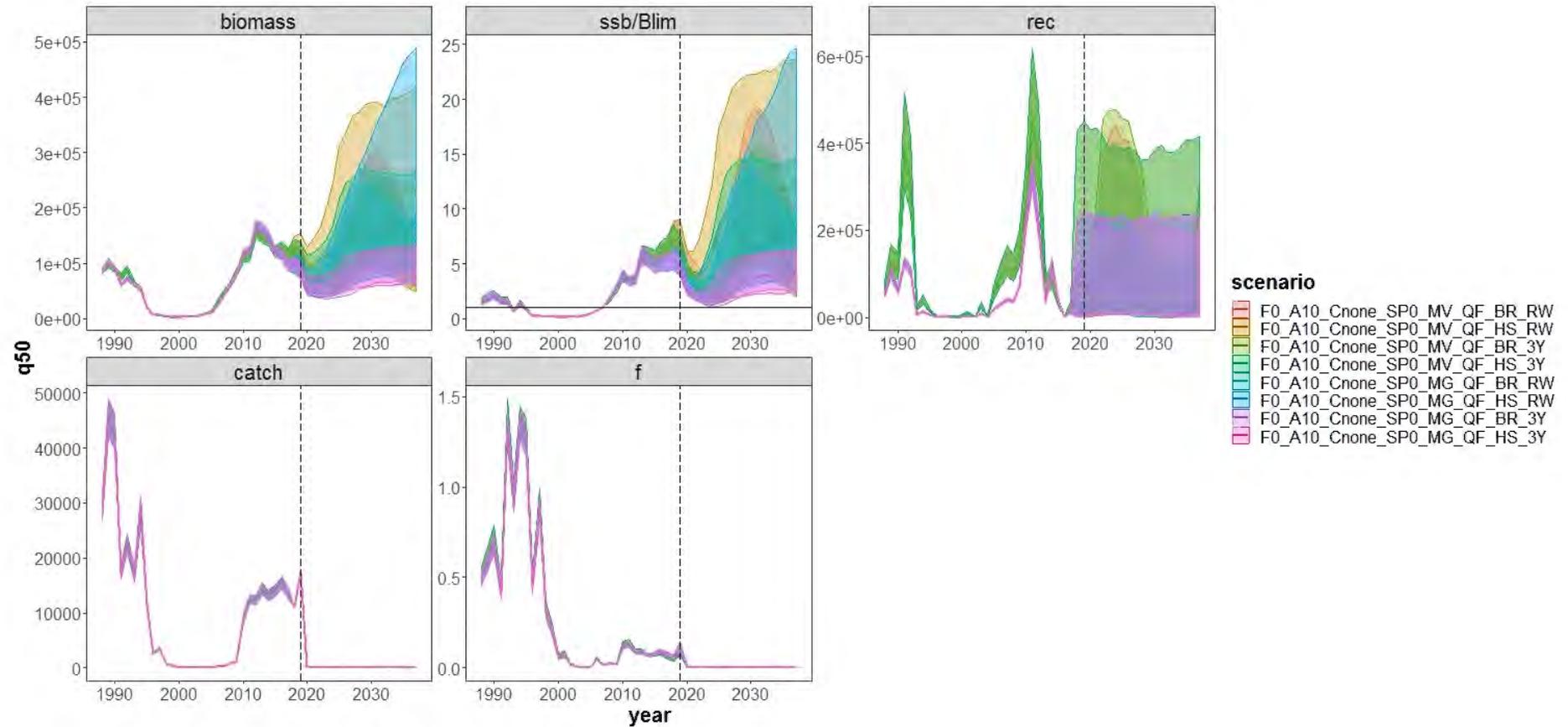
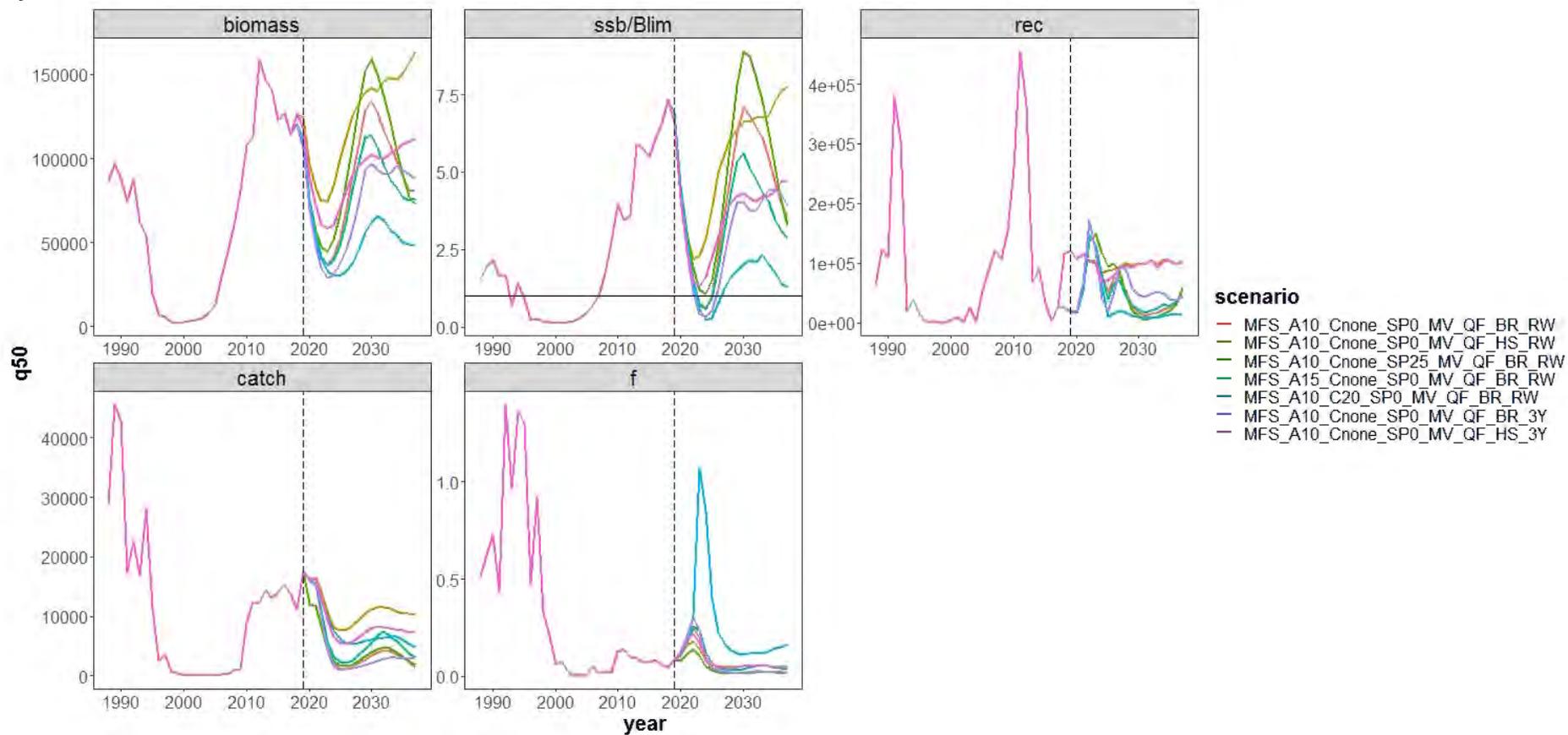


Figure 4. Results of the MSE simulations with $F=0$. a) Median. b) 80% CI (10th-90th percentiles)

a)



b)

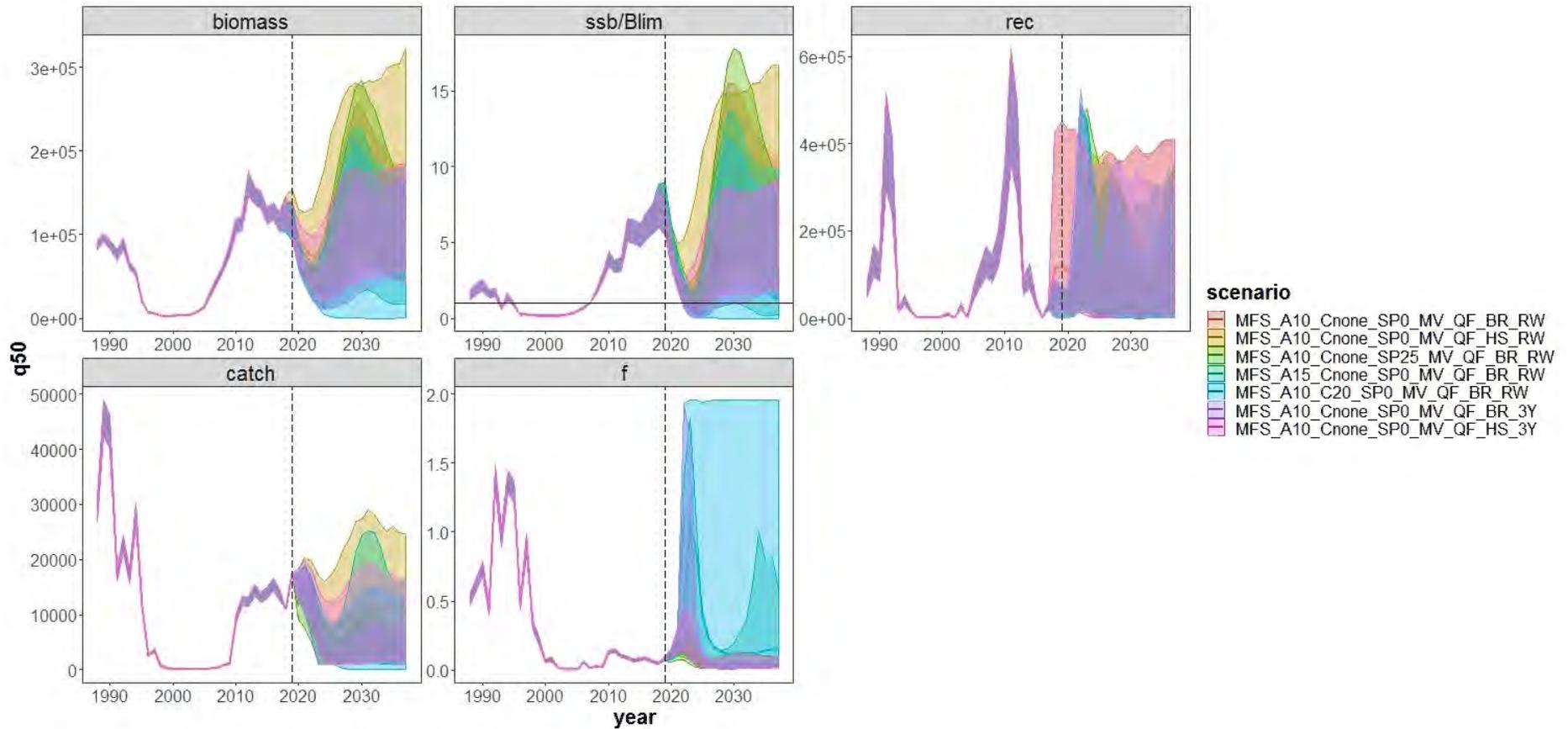
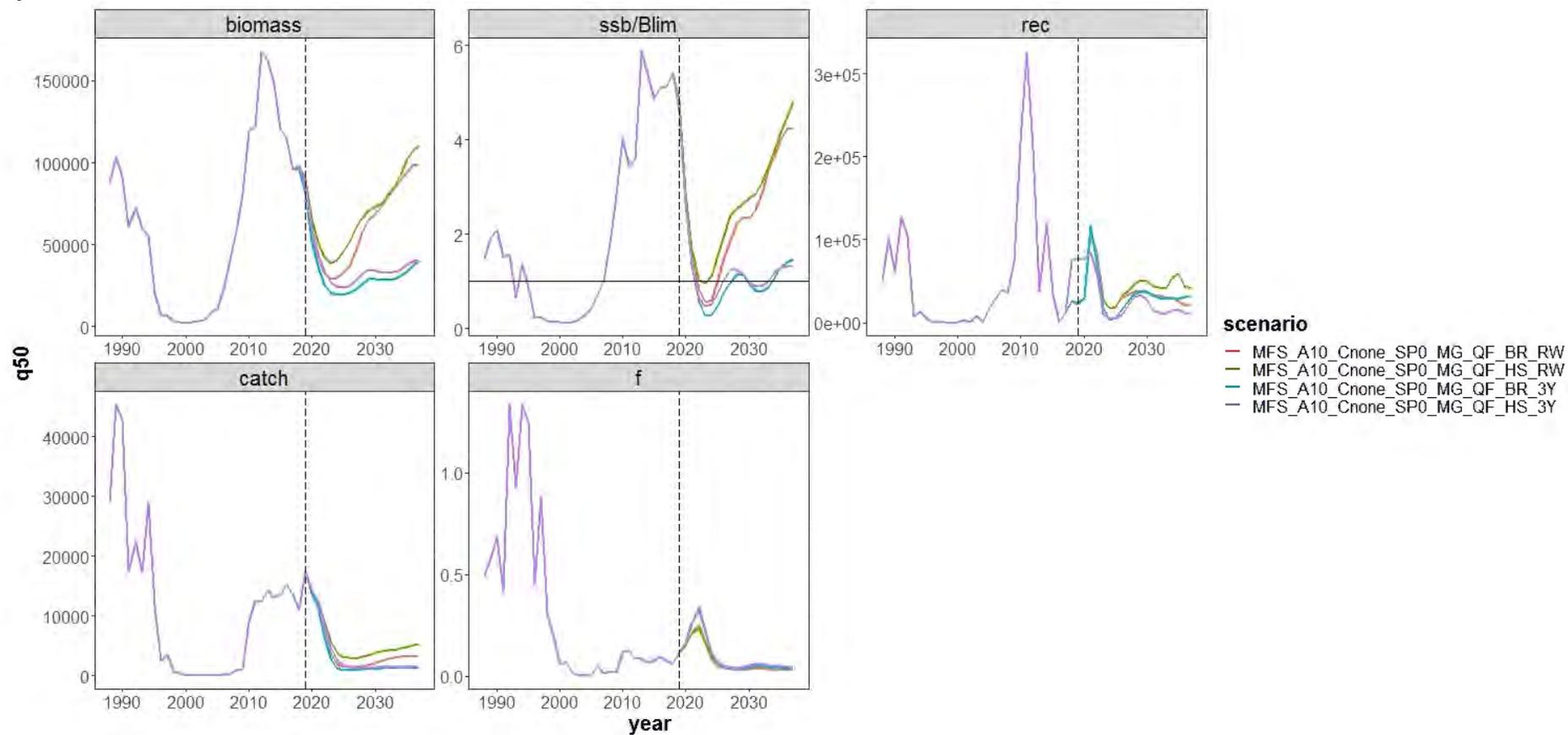


Figure 5. Results of the MSE simulations with the HCR MFS and OMV. a) Median. b) 80% CI (10th-90th percentiles)

a)



b)

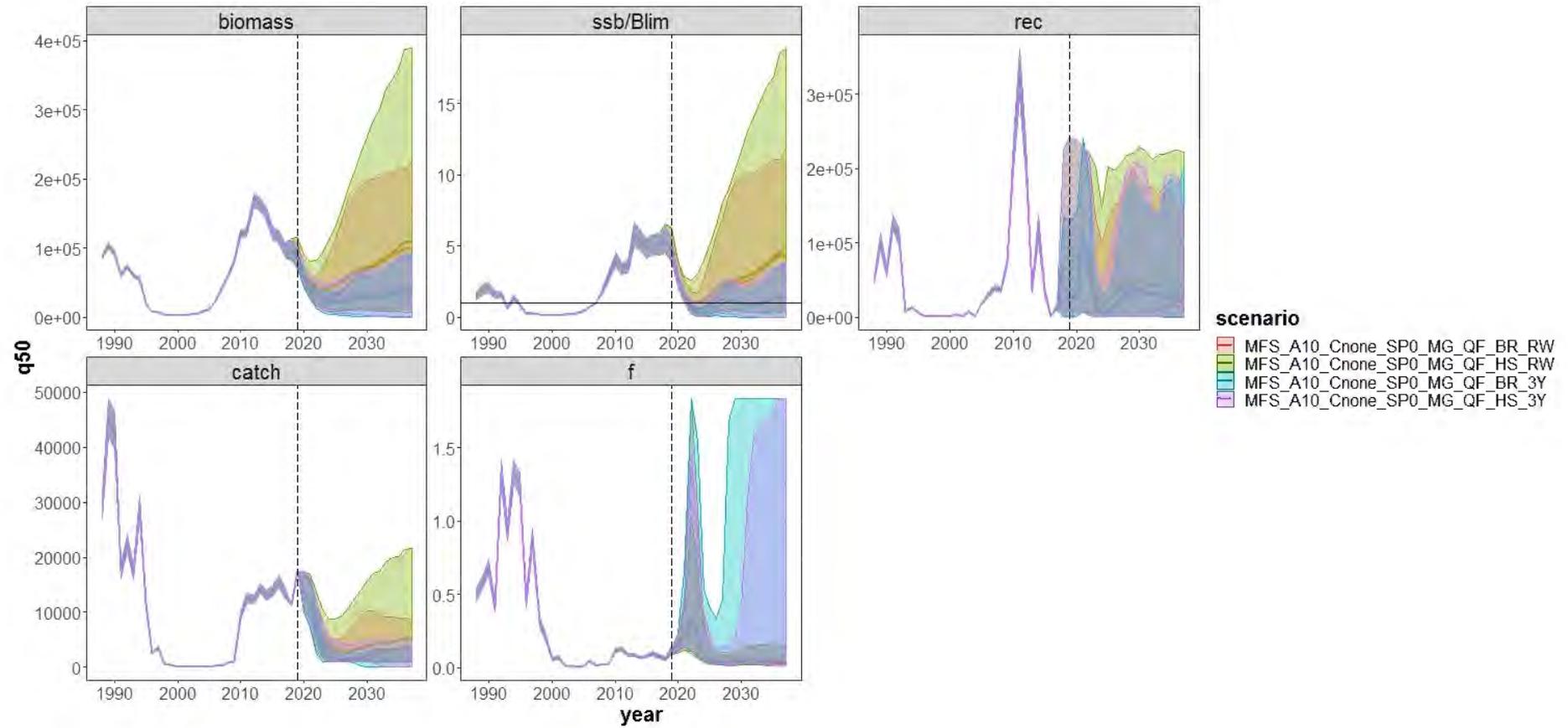
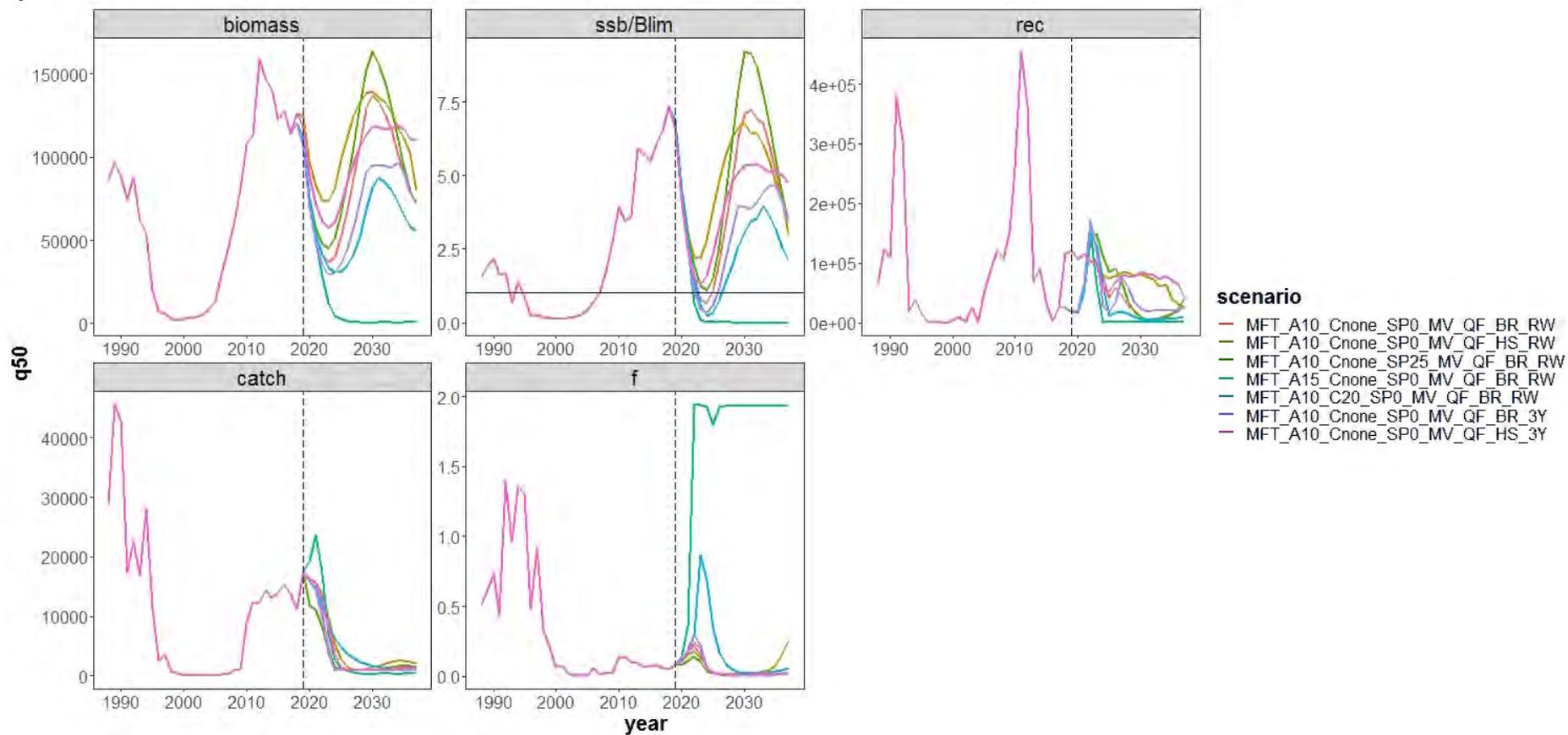


Figure 6. Results of the simulations with the HCR MFS and OMG. a) Median. b) 80% CI (10th-90th percentiles)

a)



b)

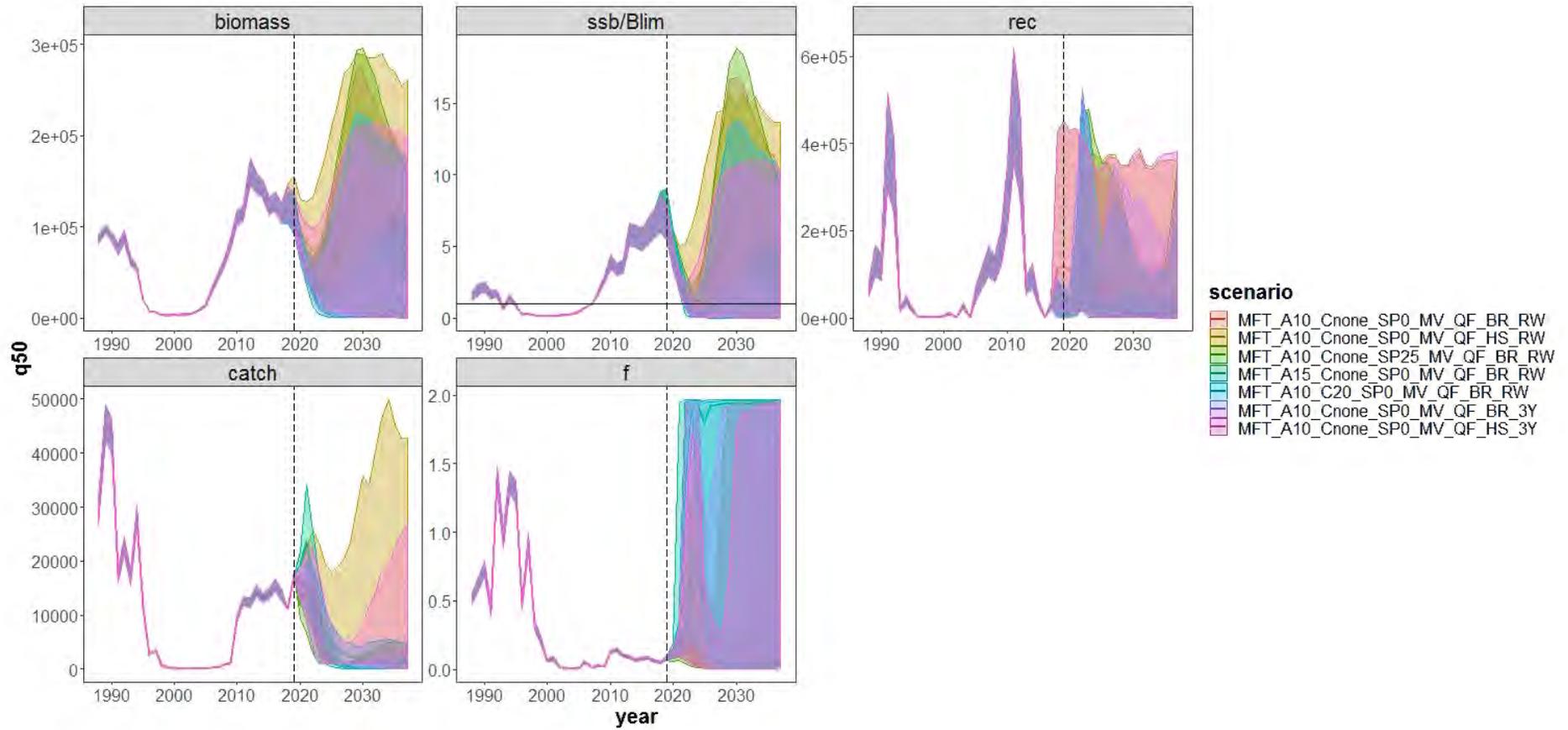
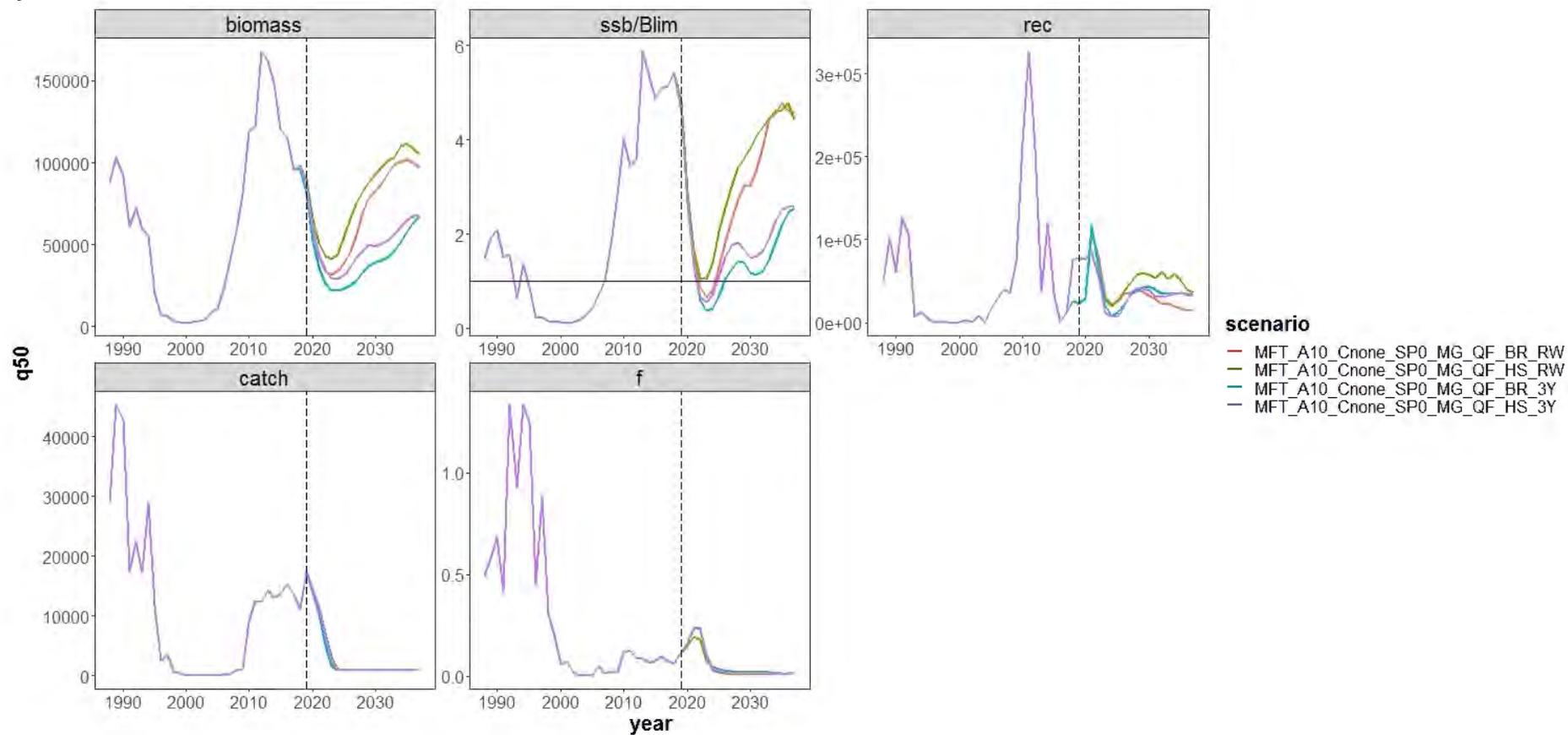


Figure 7. Results of the simulations with the HCR MFT and OMV. a) Median. b) 80% CI (10th-90th percentiles)

a)



b)

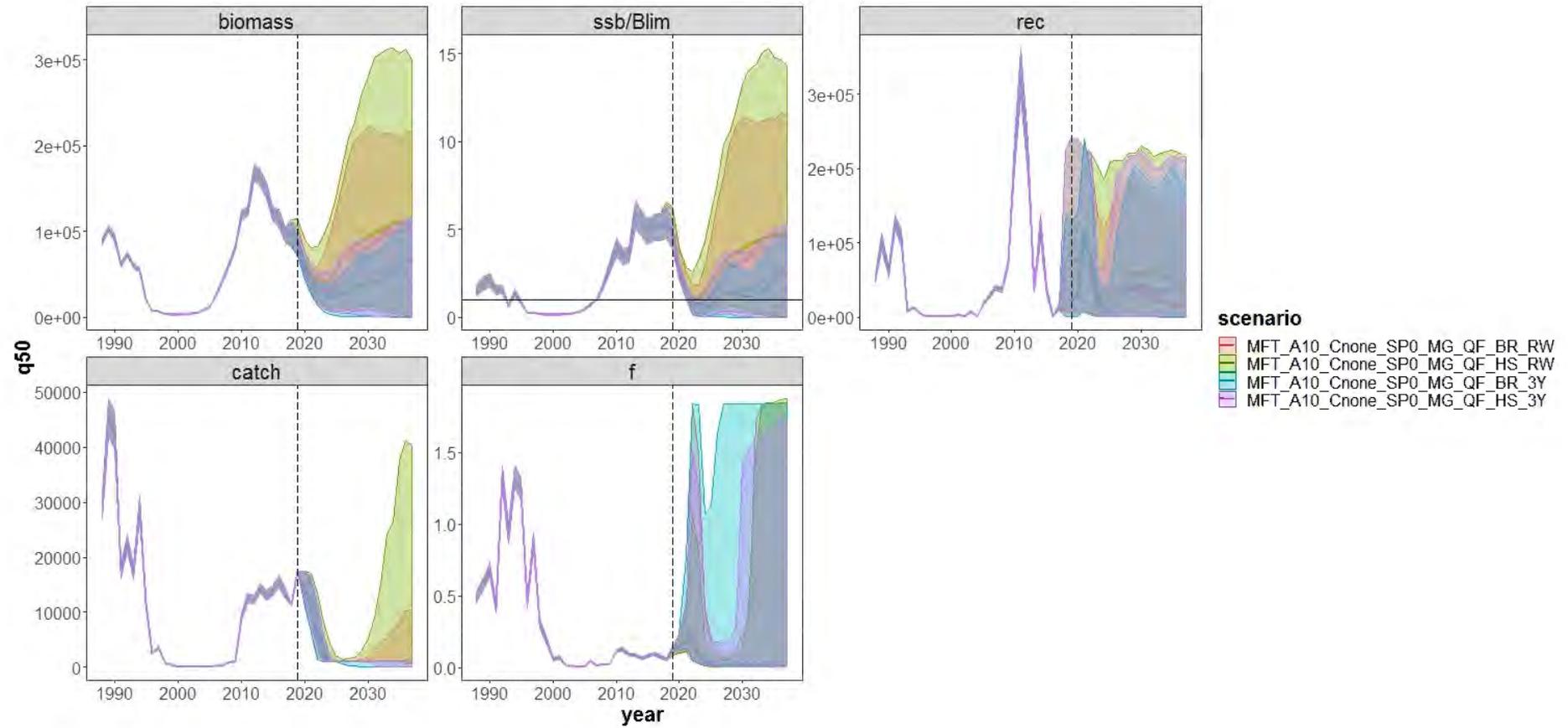


Figure 8. Results of the simulations with the HCR MFT and OMG. a) Median. b) 80% CI (10th-90th percentiles)

Annex 5. Performance Statistics: definitions and results

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Introduction

The discussion of the Management Objectives (MO) and the Performance Statistics (PS) for the Management Strategy Evaluation (MSE) of the NAFO 3M cod began at the WG-RBMS meeting in August 2018. The report of that meeting (NAFO/COM-SC Doc. 18-02) included the following paragraphs about this subject:

b. Development of Management Objectives, Performance Statistics and associated Risk Thresholds for Cod in Div. 3M

Performance Statistics and Criteria agreed as required/desirable during the development of the Greenland halibut MSE in 2017 (FC-SC Doc. 17-03, Table 2) were taken as a starting point for the development of equivalent objectives for the 3M Cod MSE. The WG-RBMS agreed that the Greenland halibut MSE elements were not being endorsed as a template. However, it was accepted they could inform the 3M Cod process recognizing there may be specific considerations for the management of each species and therefore may be considered individually.

The required performance statistic, performance criterion and relevant management objectives were provisionally adapted. They are included in Table 1 below. There was no agreement on the content highlighted in grey and it was recognized that further discussion on these aspects is required before they serve as the basis of any evaluation. These details have been left in the table for illustrative purpose only.

Table 1. Performance Statistics and Criteria development for 3M Cod MSE.

This table was adapted from one developed during the Greenland halibut MSE. Content highlighted in grey has not been agreed to apply to 3M Cod but has been left in for illustrative purposes.

REQUIRED PERFORMANCE STATISTICS/CRITERIA		
Performance statistic	Performance criterion	Relevant management objective
$P(B_{201Y} < B_{MSY})$	$P \leq 0.5$	Restore to within a prescribed period of time or maintain at B_{MSY}
To be determined	Count	Low risk of exceeding F_{lim} (currently F_{MSY})
To be determined	$P \leq 0.1$ Count	Very low risk of going below an established threshold [e.g. B_{lim} or B_{lim} proxy].
DESIRABLE SECONDARY PERFORMANCE STATISTICS/CRITERIA		
Performance statistic	Performance criterion	Relevant management objective
$P(B_{2022} < B_{2018})$	$P \leq \alpha$ Where: $\alpha = 0.10$ if $B_{2018} < 0.3B_{MSY}$; 0.25 if $0.3B_{MSY} < B_{2018}$	The risk of failure to meet the B_{MSY} target and interim biomass targets within a prescribed period of time should be kept moderately low
C_{2019} C_{2020} $\sum_{y=2018}^{2022} C_y / 5$ $\sum_{y=2018}^{2027} C_y / 10$ $\sum_{y=2018}^{2037} C_y / 20$		Maximize yield in the short, medium and long term
For each year, y $P\left(\frac{C_y - C_{y-1}}{C_{y-1}} > 0.15\right)$ $AAV_{2018-2022} = \frac{1}{5} \sum_{y=2018}^{2022} \frac{ C_y - C_{y-1} }{C_{y-1}}$ and $AAV_{2018-2037} = \frac{1}{20} \sum_{y=2018}^{2037} \frac{ C_y - C_{y-1} }{C_{y-1}}$	$P \leq 0.15$	Keep inter annual TAC variation below "an established threshold"

It was agreed that short medium and long-term objectives will be evaluated over 5, 10 and 20-year periods but that this may vary to some extent depending on the specific statistic.

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One of the tasks assigned to the analysts team in charge of developing the 3M cod MSE was to develop a proposal for a full set of MO/PS/Risks table. The following sections present the proposal for such a table based on the WG-RBMS 2018 agreements. The results of these PSs applied to the scenarios presented during the April 2019 RBMS meeting ([COM-SC RBMS-WP 19-01](#)) are also included in the sections below. The first year for measuring the PSs was taken as the year 2020, which is the first year that the TAC is calculated with the HCR.

The MSE simulations conducted so far assumed that the catch taken is equal to the TAC, except in the following circumstances, which result in catch lower than the TAC:

- if the TAC obtained from the HCR is bigger than 90% of the (“true”) stock biomass, then the catch taken is 90% of the stock biomass;
- if the TAC obtained from the HCR, or the catch obtained from the previous bullet point, corresponds to catch numbers larger than the population numbers for one or more of the ages, then the actual catch taken from such ages equals the population numbers of those ages.

Specifications of the PSs**REQUIRED PERFORMANCE STATISTICS/CRITERIA**

Even considering the following PS as required and necessary, probably they do not all have the same priority. A possible prioritization could be the following:

Performance statistic	Performance criterion	Relevant management objective	Notes
for $y = 2020$ to 2037 ; $count_y[P(B_y < B_{lim}) > 0.1]$ i.e. count for how many years in the period 2020-2037 the $P(B_y < B_{lim})$ is bigger than 0.1.	Count	Very low risk of going below an established threshold [e.g. B_{lim} or B_{lim} proxy]. Currently $B_{lim} = SSB_{2007}$.	It would be convenient to show a table with the value of $P(B_y < B_{lim})$ year by year to see its evolution over time.

The Scientific Council (SC) agreed in their January 2019 meeting to establish B_{lim} as the SSB_{2007} level, by OM and iteration.

Performance statistic	Performance criterion	Relevant management objective	Notes
for $y = 2025$ to 2029 ; $count_y[P(F_y > F_{MSY}) > 0.3]$ i.e. count for how many years in the period 2025-2029 the $P(F_y > F_{MSY})$ is bigger than 0.3. for $y = 2030$ to 2037 ; $count_y[P(F_y > F_{MSY}) > 0.3]$ i.e. count for how many years in the period 2030-2037 the $P(F_y > F_{MSY})$ is bigger than 0.3.	Count	Low risk of exceeding F_{lim} (currently $F_{lim} = F_{30\%SPR}$)	It would be convenient to show a table with the value of $P(F_y > F_{MSY})$ year by year to see its evolution over time.

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It was agreed in the January 2019 SC meeting that $F_{lim}=F_{30\%SPR}$ estimated with the 3 most recent years mean of the inputs (running mean), would be used as proxy for F_{MSY} . Within each OM, this will give an F_{lim} value for each projected year and each iteration. The objective of this PS is to set a low probability of exceeding F_{lim} as a requirement in the medium (2025-2029) and long (2030-2037) terms.

Performance statistic	Performance criterion	Relevant management objective	Notes
	$P \leq 0.5$	Restore to within a prescribed period of time or maintain at B_{MSY} Long term	Initially, and as agreed by the SC, a PS is not proposed to measure this objective. It would be necessary to discuss which is the level of SSB that one wishes to reach in the future and how to estimate it. It would be proposed that this level be achieved in the long term as required (2037) and that it is advisable to achieve it already in the medium term (2030).

The January 2019 SC meeting (NAFO SCS Doc. 19/04) agreed that “Due to issues related to B_{MSY} estimates, no B_{MSY} value has been proposed as an a priori performance statistic. If managers need B_{MSY} as a target to meet convention obligations, then we would be able to calculate a value retrospectively corresponding to the management strategy that would give highest long term yield values in the projections and the associated biomass”.

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Performance statistic	Performance criterion	Relevant management objective	Notes
	$P \leq 0.5$	Restore or maintain the Biomass in the medium term at B_{MSY}	Initially, and as agreed by the SC, a PS is not proposed to measure this objective. It would be necessary to discuss which is the level of SSB that one wishes to reach in the future and how to estimate it. It would be proposed that this level be achieved in the long term as required (2037) and that it is advisable to achieve it already in the medium term (2030).

The idea is to put this Management Objective as *Desirable* in the medium-term and *required* in the long term, in line with how it was done for GHL.

Performance statistic	Performance criterion	Relevant management objective	Notes
for $y = 2020$ to 2024 ; $count_y[P(F_y > F_{MSY}) > 0.3]$ i.e. count for how many years in the period 2020-2024 the $P(F_y > F_{MSY})$ is bigger than 0.3.	Count	Low risk of exceeding F_{lim} in the short term (currently F_{MSY})	It would be convenient to show a table with the value of this PS year by year to see its evolution over time.

The idea is to put this PS as *Desirable* in the short-term and *required* in the medium and long terms.

Performance statistic	Performance criterion	Relevant management objective	Notes
$\sum_{y=2020}^{2024} C_y / 5$ $\sum_{y=2020}^{2029} C_y / 10$ $\sum_{y=2020}^{2037} C_y / 18$ i.e. average catch over the stated period of years.		Maximize yield in the short, medium and long term.	It would be advisable to show this PS by making a graph with the median and the percentiles (10, 90) of the distribution of average catch in each of the 3 time-periods considered. The plot would include the different HCRs and OMs, for ease of comparison.

Performance statistic	Performance criterion	Relevant management objective	Notes
For each year (2020-2037), for the scenarios without constraint on inter-annual TAC change, calculate: $P\left[\left(\frac{ TAC_y - TAC_{y-1} }{TAC_{y-1}}\right) > 0.10\right]$ $P\left[\left(\frac{ TAC_y - TAC_{y-1} }{TAC_{y-1}}\right) > 0.15\right]$ $P\left[\left(\frac{ TAC_y - TAC_{y-1} }{TAC_{y-1}}\right) > 0.20\right]$	Probability Probability Probability	Keep inter annual TAC variation below "an established threshold"	Graph showing, for each of the 3 values (10%, 15%, 20%), the probability per year. This would give information on appropriate levels for the inclusion of a TAC constraint as part of the HCR.

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<p>i.e. probability that the TAC changes by more than 10%, 15% or 20% (relative to the TAC of the previous year).</p> <p>The following PS is for all scenarios:</p> $\text{iter_mean} = \frac{1}{18} \sum_{y=2020}^{2037} \left(\frac{ TAC_y - TAC_{y-1} }{TAC_{y-1}} \right)$ <p>i.e. average inter-annual TAC change over the years 2020-2037.</p>	<p>Mean(iter_mean)</p>	<p>Minimize annual TAC variation in the long term</p>	<p>For each iteration in the MSE simulation, an average inter-annual TAC change over the period 2020-2037 is estimated. Then a mean (i.e. an average) is taken over the MSE iterations. This will allow us to compare different HCRs for a given OM.</p>
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The idea is, first, to examine inter-annual TAC change with different values in the HCR without constraint with the first PS to obtain information on what could be an appropriate level to insert as a constraint in the HCR. The second PS measures the average inter-annual TAC change over the entire period.

The next two PSs were recommended by the SC in the 2019 January meeting (NAFO SCS Doc. 19/04).

Performance statistic	Performance criterion	Relevant management objective	Notes
<p>For each year (2020-2037)</p> $\text{Median} \left(\frac{\text{Biomass}_{y,8+}}{\text{Biomass}_y} \right)$		<p>Measure the proportion of stock biomass in the Plus Group</p>	<p>It would be convenient to show a table with the value of this PS year by year, to see its evolution over time.</p>

This PS would be calculated each year of the projection.

Performance statistic	Performance criterion	Relevant management objective	Notes
<p>$P(\text{SSB}_y < \text{SSB}_{1997}$ for ALL years of the period 2032-2037)</p>	<p>Probability</p>	<p>Measure the number of crashed iterations.</p>	

“Crash” was defined as the stock biomass being below the SSB_{1997} value, for ALL years of the period 2032-2037.

Complete proposal for the PERFORMANCE STATISTICS/CRITERIA Table.

REQUIRED PERFORMANCE STATISTICS/CRITERIA			
Performance statistic	Performance criterion	Relevant management objective	Notes
<p>PS1: for $y = 2020$ to 2037; $count_y[P(B_y < B_{lim}) > 0.1]$</p> <p>i.e. count for how many years in the period 2020-2037 the $P(B_y < B_{lim})$ is bigger than 0.1.</p>	Count	Very low risk of going below an established threshold [e.g. B_{lim} or B_{lim} proxy].	It would be convenient to show a table with the value of $P(B_y < B_{lim})$ year by year to see its evolution over time.
<p>PS2: for $y = 2025$ to 2029; $count_y[P(F_y > F_{MSY}) > 0.3]$</p> <p>i.e. count for how many years in the period 2025-2029 the $P(F_y > F_{MSY})$ is bigger than 0.3.</p> <p>for $y = 2030$ to 2037; $count_y[P(F_y > F_{MSY}) > 0.3]$</p> <p>i.e. count for how many years in the period 2030-2037 the $P(F_y > F_{MSY})$ is bigger than 0.3.</p>	Count Count	Low risk of exceeding F_{lim} (currently $F_{lim} = F_{30\%SPR}$)	It would be convenient to show a table with the value of $P(F_y > F_{MSY})$ year by year to see its evolution over time.
	$P \leq 0.5$	<i>Restore to within a prescribed period of time or maintain at B_{MSY}</i> Long term	<i>Initially, and as agreed by the SC, a PS is not proposed to measure this objective. It would be necessary to discuss which is the level of SSB that one wishes to reach in the future and how to estimate it.</i> <i>It would be proposed that this level be achieved in the long term as required (2037) and that it is advisable to achieve it already in the medium term (2030).</i>

DESIRABLE SECONDARY PERFORMANCE STATISTICS/CRITERIA			
Performance statistic	Performance criterion	Relevant management objective	Notes
	$P \leq 0.5$	<i>Restore or maintain the Biomass in the medium term at B_{MSY}</i>	<p><i>Initially, and as agreed by the SC, a PS is not proposed to measure this objective. It would be necessary to discuss which is the level of SSB that one wishes to reach in the future and how to estimate it.</i></p> <p><i>It would be proposed that this level be achieved in the long term as required (2037) and that it is advisable to achieve it already in the medium term (2030).</i></p>
<p>PS2: for $y = 2020$ to 2024; $count_y[P(F_y > F_{MSY}) > 0.3]$</p> <p>i.e. count for how many years in the period 2020-2024 the $P(F_y > F_{MSY})$ is bigger than 0.3.</p>	Count	Low risk of exceeding F_{lim} in the short term (currently F_{MSY})	It would be convenient to show a table with the value of this PS year by year to see its evolution over time.
<p>PS3:</p> $\sum_{y=2020}^{2024} C_y / 5$ $\sum_{y=2020}^{2029} C_y / 10$ $\sum_{y=2020}^{2037} C_y / 18$ <p>i.e. average catch over the stated period of years.</p>		Maximize yield in the short, medium and long term.	It would be advisable to show this PS by making a graph with the median and the percentiles (10, 90) of the distribution of average catch in each of the 3 time-periods considered. The plot would include the different HCRs and OMs, for ease of comparison.

Results

The list of OMs and the slope and target HCR settings applied, for which MSE results are available, is presented in Table 1 of COM-SC RBMS-WP 19-01, resulting in 22 scenarios. The present document shows (in Tables 1-6 and Figures 1-6) the results of applying the proposed PSs to the 22 scenarios. *Note: PS 5 is not implemented yet.*

Several additional scenarios with $F=0$ were also run (see Table 2 of COM-SC RBMS-WP 19-01). Results of the proposed PSs for these scenarios are shown in Tables 7-12 of the present document. *Note: PS 5 is not implemented yet.*

Table 1, Figure 1 (top and middle) and Figure 2 (top) show the results of PS1 ($P(SSB < B_{lim})$) by year for the 22 scenarios with the Slope or Target HCRs. We can see that in the medium term (2022-2025) none of the scenarios reach the proposed objective of having a risk equal or less than 10% of $SSB < B_{lim}$. Many scenarios reach values close to a probability of 1 of SSB being below B_{lim} in some of those years, which is due to the drop in biomass in the first years due to the poor recruitments between 2014 and 2017. The more positive scenarios are the ones with Hockey Stick recruitment, and the one in which the Starting Point is lower, but they still have a risk of more than 10%.

In the medium term, the value of the PS1 varies depending on the scenario. Most of the scenarios do not reach the objective in any of the projected years. The two scenarios tested with starting point equal to the 75% of the 2019 TAC (SP25 scenarios) reach the objective of less than 10% risk of $SSB < B_{lim}$ from 2027 till 2037. This objective was also reached in the medium/long term in the scenarios with MFS_A10_Cnone_SPO_MV, with a slope HCR.

With regards to PS2 ($P(F > F_{lim})$) (Table 2, Figures 3 and 4), the figure is similar to that for the PS1; none of the presented scenarios have less than the proposed risk of 30% in the short term (2022-2025). The better behavior in this case is the one with a lower starting point, allowing the SSB to recover slightly. In the medium term, almost all the scenarios reach the objective, except five scenarios with different configurations.

PS3, that is the average annual catch over different periods, is presented in Table 3 and Figure 5. There are differences if we choose to maximize the catches in the short, medium and long term. In general, the Slope HCR gives catches higher than the Target HCR. Overall, these catches are quite lower than the level of catches observed during 2011-2017.

The average interannual TAC change (PS4) is presented in Table 4 and Figure 6. The lower change is in scenarios 14 and 16, combining the Target HCR, the M GADGET (MG) and three years mean (3Y). The highest interannual TAC change is when we choose a Hockey-Stick (HS) with a Random Walk (RW). Overall, the change is of about 20%.

PS5 (Table 5 and Figure 7 top), which measures the proportion of stock biomass in the plus group (8+), has not been implemented yet.

The proportion of crashed iterations, defined as the stock biomass being below the SSB_{1997} value, for all years of the period 2032-2037 (PS6), is presented in Table 6 and Figure 8 (top). With regards to this PS, the best behavior is with the Slope HCR and the OM vector, with the starting point in the 2019 TAC and α equal to 1. The scenario that crashes more times is, as in the PS4, when we change in the Target HCR the value of α from 1 to 1.5.

For the $F=0$ scenarios, the results are quite different and all the scenarios result in a risk less than 10% of $SSB < B_{lim}$ (Table 7 and Figures 1 (bottom) and 2 (bottom)). Although the probability that the stock biomass drops below B_{lim} is higher between years 2023 and 2027, especially for the OMs with MG and BR, it is less than 10%. PS2, PS3 and PS4 do not apply in the $F=0$ scenarios as these PSs measure F or catches, which are always 0 in these scenarios. PS5 (Table 8 and Figure 7 bottom) has not been implemented yet. The number of crashed iterations in the period 2032-2037 (PS6, Table 9 and Figure 8 bottom) is 0 for all the $F=0$ scenarios.

Discussion

The results show that there is some risk that in the short /medium term the biomass will fall below B_{lim} . This is mainly due to the low recruitments observed in the 2014-2017 period. This is going to make it very difficult to find a robust HCR that meets the management objectives already established in the agreed work plan. Mainly the objective that the biomass does not fall annually below B_{lim} with a risk higher than 10% will be very difficult to reach in the scenarios with catches.

It is very likely that the current status of the 3M cod stock as well as the great variability of the biological parameters and the complexity of simulating possible future recruitments make it difficult to test and find a robust HCR in the established period (September 2019) that meets the proposed management objectives.

Once all the results of the scenarios agreed in January 2019 are available, we will have a clearer idea of the possible difficulties we face to find an HCR robust to the uncertainties observed in this stock, which will allow us to decide and review the possible new 3M cod MSE calendar.

References

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- NAFO, 2019. Cod Stock Management Strategy Evaluation (MSE). NAFO SCS Doc. 19/04, Serial No. N6911.
- Urtizberea, A., D. González-Troncoso, F. González-Costas and C. Fernández, 2019. 3M cod MSE: Results of the Scenarios. COM-SC RBMS-WP 19/01.

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Table 1. PS1: $P(SSB < B_{lim})$ by year. In red, the cases in which $P(SSB < B_{lim}) > 0.1$. The final column counts the number of years of the 2020-2037 period in which $P(SSB < B_{lim}) > 0.1$.

Year/OM	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Number
1.MFS_A10_Cnone_SPO_MV_QF_BR_RW	0.00	0.00	0.00	0.00	0.19	0.64	0.69	0.47	0.25	0.11	0.06	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	6
2.MFS_A10_Cnone_SPO_MV_QF_BR_3Y	0.00	0.00	0.00	0.00	0.37	0.92	0.96	0.80	0.42	0.19	0.11	0.09	0.09	0.10	0.10	0.08	0.07	0.06	0.05	0.05	7
3.MFS_A10_Cnone_SPO_MV_QF_HS_RW	0.00	0.00	0.00	0.00	0.08	0.20	0.17	0.11	0.06	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	3
4.MFS_A10_Cnone_SPO_MV_QF_HS_3Y	0.00	0.00	0.00	0.00	0.14	0.36	0.30	0.19	0.11	0.07	0.05	0.04	0.04	0.05	0.05	0.04	0.04	0.03	0.03	0.02	5
5.MFS_A10_Cnone_SPO_MG_QF_BR_RW	0.00	0.00	0.00	0.07	0.61	0.75	0.65	0.49	0.33	0.25	0.21	0.21	0.21	0.22	0.21	0.18	0.17	0.16	0.15	0.15	16
6.MFS_A10_Cnone_SPO_MG_QF_BR_3Y	0.00	0.00	0.00	0.10	0.93	0.99	0.97	0.86	0.62	0.51	0.43	0.44	0.54	0.61	0.61	0.55	0.48	0.44	0.42	0.43	17
7.MFS_A10_Cnone_SPO_MG_QF_HS_RW	0.00	0.00	0.00	0.07	0.48	0.52	0.45	0.34	0.26	0.21	0.19	0.19	0.21	0.23	0.22	0.20	0.18	0.17	0.17	0.16	16
8.MFS_A10_Cnone_SPO_MG_QF_HS_3Y	0.00	0.00	0.00	0.09	0.84	0.87	0.81	0.63	0.47	0.40	0.40	0.43	0.51	0.55	0.55	0.50	0.46	0.44	0.44	0.44	16
9.MFT_A10_Cnone_SPO_MV_QF_BR_RW	0.00	0.00	0.00	0.00	0.18	0.61	0.64	0.48	0.30	0.20	0.17	0.16	0.15	0.15	0.14	0.13	0.12	0.12	0.12	0.12	16
10.MFT_A10_Cnone_SPO_MV_QF_BR_3Y	0.00	0.00	0.00	0.00	0.35	0.84	0.87	0.71	0.44	0.29	0.23	0.22	0.21	0.22	0.22	0.21	0.19	0.18	0.17	0.17	16
11.MFT_A10_Cnone_SPO_MV_QF_HS_RW	0.00	0.00	0.00	0.00	0.09	0.22	0.21	0.17	0.14	0.13	0.13	0.14	0.17	0.19	0.24	0.27	0.31	0.35	0.40	0.44	15
12.MFT_A10_Cnone_SPO_MV_QF_HS_3Y	0.00	0.00	0.00	0.00	0.16	0.37	0.33	0.25	0.18	0.15	0.14	0.13	0.14	0.16	0.17	0.18	0.20	0.22	0.24	0.27	16
13.MFT_A10_Cnone_SPO_MG_QF_BR_RW	0.00	0.00	0.00	0.07	0.60	0.69	0.57	0.39	0.27	0.20	0.17	0.17	0.18	0.19	0.18	0.17	0.17	0.17	0.17	0.18	16
14.MFT_A10_Cnone_SPO_MG_QF_BR_3Y	0.00	0.00	0.00	0.11	0.91	0.97	0.93	0.71	0.48	0.39	0.33	0.35	0.41	0.45	0.43	0.40	0.36	0.35	0.34	0.34	17
15.MFT_A10_Cnone_SPO_MG_QF_HS_RW	0.00	0.00	0.00	0.07	0.45	0.48	0.37	0.25	0.18	0.16	0.15	0.14	0.16	0.16	0.16	0.17	0.19	0.20	0.21	0.25	16
16.MFT_A10_Cnone_SPO_MG_QF_HS_3Y	0.00	0.00	0.00	0.10	0.83	0.84	0.68	0.45	0.30	0.27	0.27	0.30	0.34	0.36	0.34	0.30	0.29	0.29	0.28	0.28	16
17.MFS_A15_Cnone_SPO_MV_QF_BR_RW	0.00	0.00	0.00	0.00	0.19	0.65	0.72	0.52	0.31	0.17	0.12	0.11	0.10	0.11	0.12	0.13	0.16	0.17	0.19	0.19	16
18.MFS_A10_C20_SPO_MV_QF_BR_RW	0.00	0.00	0.00	0.00	0.21	0.73	0.82	0.70	0.55	0.46	0.43	0.44	0.44	0.43	0.42	0.42	0.42	0.43	0.45	0.46	16
19.MFS_A10_Cnone_SP25_MV_QF_BR_RW	0.00	0.00	0.00	0.00	0.03	0.34	0.46	0.31	0.13	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	4
20.MFT_A15_Cnone_SPO_MV_QF_BR_RW	0.00	0.00	0.00	0.00	0.67	0.99	0.99	0.96	0.92	0.89	0.88	0.86	0.85	0.86	0.85	0.85	0.83	0.84	0.83	0.83	16
21.MFT_A10_C20_SPO_MV_QF_BR_RW	0.00	0.00	0.00	0.00	0.19	0.71	0.80	0.69	0.55	0.45	0.43	0.42	0.41	0.40	0.39	0.38	0.38	0.38	0.39	0.40	16
22.MFT_A10_Cnone_SP25_MV_QF_BR_RW	0.00	0.00	0.00	0.00	0.04	0.35	0.45	0.34	0.17	0.09	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.04	0.04	0.05	4



Table 2. PS2: $P(F > F_{lim})$ by year. In red, the cases in which $P(F > F_{lim}) > 0.3$. The final columns count the number of years in which $P(F > F_{lim}) > 0.3$ for different periods.

Year/OM	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Number 2020-2037	Number 2025-2029	Number 2030-2037	Number 2020-2024
1.MFS_A10_Cnone_SP0_MV_QF_BR_RW	0.00	0.00	0.07	0.54	0.72	0.53	0.23	0.05	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	3	0	0	3
2.MFS_A10_Cnone_SP0_MV_QF_BR_3Y	0.00	0.00	0.09	0.79	0.87	0.68	0.27	0.08	0.05	0.04	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.03	0.04	3	0	0	3
3.MFS_A10_Cnone_SP0_MV_QF_HS_RW	0.00	0.00	0.05	0.46	0.56	0.39	0.14	0.04	0.01	0.01	0.02	0.02	0.03	0.04	0.03	0.02	0.02	0.02	0.02	0.02	3	0	0	3
4.MFS_A10_Cnone_SP0_MV_QF_HS_3Y	0.00	0.00	0.07	0.74	0.81	0.59	0.21	0.03	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.03	0.02	0.02	0.02	3	0	0	3
5.MFS_A10_Cnone_SP0_MG_QF_BR_RW	0.00	0.06	0.43	0.67	0.70	0.49	0.21	0.10	0.07	0.07	0.07	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.09	4	0	0	4
6.MFS_A10_Cnone_SP0_MG_QF_BR_3Y	0.00	0.06	0.61	0.87	0.84	0.68	0.34	0.18	0.15	0.14	0.15	0.16	0.18	0.20	0.21	0.21	0.21	0.22	0.22	0.23	5	0	0	5
7.MFS_A10_Cnone_SP0_MG_QF_HS_RW	0.00	0.06	0.44	0.69	0.70	0.48	0.21	0.10	0.07	0.06	0.06	0.07	0.08	0.09	0.09	0.10	0.09	0.10	0.10	0.10	4	0	0	4
8.MFS_A10_Cnone_SP0_MG_QF_HS_3Y	0.00	0.06	0.64	0.90	0.90	0.75	0.34	0.15	0.10	0.10	0.10	0.11	0.14	0.16	0.19	0.20	0.21	0.22	0.23	0.26	5	0	0	5
9.MFT_A10_Cnone_SP0_MV_QF_BR_RW	0.00	0.00	0.07	0.48	0.63	0.52	0.32	0.17	0.13	0.11	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.11	4	0	0	4
10.MFT_A10_Cnone_SP0_MV_QF_BR_3Y	0.00	0.00	0.09	0.69	0.73	0.57	0.34	0.21	0.18	0.16	0.15	0.15	0.15	0.16	0.16	0.15	0.16	0.16	0.16	0.16	4	0	0	4
11.MFT_A10_Cnone_SP0_MV_QF_HS_RW	0.00	0.00	0.06	0.44	0.54	0.39	0.23	0.16	0.13	0.14	0.16	0.19	0.22	0.27	0.29	0.35	0.39	0.44	0.48	0.51	8	0	5	3
12.MFT_A10_Cnone_SP0_MV_QF_HS_3Y	0.00	0.00	0.08	0.64	0.68	0.49	0.25	0.15	0.12	0.12	0.12	0.13	0.14	0.16	0.18	0.22	0.25	0.27	0.31	0.35	5	0	2	3
13.MFT_A10_Cnone_SP0_MG_QF_BR_RW	0.00	0.06	0.44	0.62	0.52	0.28	0.14	0.10	0.10	0.09	0.09	0.10	0.10	0.10	0.11	0.11	0.12	0.14	0.15	0.17	3	0	0	3
14.MFT_A10_Cnone_SP0_MG_QF_BR_3Y	0.00	0.06	0.65	0.82	0.65	0.40	0.20	0.17	0.14	0.14	0.14	0.15	0.17	0.18	0.19	0.19	0.19	0.19	0.20	0.20	4	0	0	4
15.MFT_A10_Cnone_SP0_MG_QF_HS_RW	0.00	0.06	0.45	0.64	0.52	0.26	0.10	0.08	0.07	0.07	0.07	0.08	0.09	0.11	0.13	0.16	0.19	0.22	0.26	0.29	3	0	0	3
16.MFT_A10_Cnone_SP0_MG_QF_HS_3Y	0.00	0.06	0.67	0.87	0.69	0.38	0.14	0.11	0.10	0.10	0.11	0.11	0.12	0.14	0.14	0.15	0.16	0.17	0.17	0.17	4	0	0	4
17.MFS_A15_Cnone_SP0_MV_QF_BR_RW	0.00	0.00	0.07	0.55	0.74	0.59	0.38	0.20	0.12	0.09	0.08	0.08	0.10	0.13	0.16	0.18	0.17	0.17	0.16	0.16	4	0	0	4
18.MFS_A10_C20_SP0_MV_QF_BR_RW	0.00	0.00	0.07	0.61	0.86	0.93	0.85	0.69	0.54	0.47	0.45	0.44	0.44	0.42	0.42	0.42	0.44	0.44	0.45	0.46	17	5	8	4
19.MFS_A10_Cnone_SP25_MV_QF_BR_RW	0.00	0.00	0.00	0.17	0.35	0.22	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1	0	0	1
20.MFT_A15_Cnone_SP0_MV_QF_BR_RW	0.00	0.00	0.34	0.94	1.00	0.99	0.97	0.91	0.85	0.82	0.80	0.80	0.80	0.80	0.81	0.81	0.80	0.80	0.80	0.80	18	5	8	5
21.MFT_A10_C20_SP0_MV_QF_BR_RW	0.00	0.00	0.08	0.55	0.83	0.87	0.79	0.63	0.49	0.43	0.40	0.38	0.38	0.37	0.37	0.37	0.37	0.37	0.38	0.38	17	5	8	4
22.MFT_A10_Cnone_SP25_MV_QF_BR_RW	0.00	0.00	0.00	0.17	0.38	0.34	0.17	0.06	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	2	0	0	2



Table 3. PS3: Average annual catch over different periods. Median, 10th and 90th percentiles.

Year/OM	10%	50%	90%	10%	50%	90%	10%	50%	90%
	2020-2037	2020-2037	2020-2037	2020-2024	2020-2024	2020-2024	2020-2029	2020-2029	2020-2029
1.MFS_A10_Cnone_SPO_MV_QF_BR_RW	3708	5031	8120	7381	9910	12577	4757	6071	8575
2.MFS_A10_Cnone_SPO_MV_QF_BR_3Y	3428	4432	6790	7160	9494	11543	4489	5608	7127
3.MFS_A10_Cnone_SPO_MV_QF_HS_RW	5498	11642	20851	9812	13186	17215	6770	11006	18499
4.MFS_A10_Cnone_SPO_MV_QF_HS_3Y	4455	9024	15050	9345	12319	15631	6060	9199	14409
5.MFS_A10_Cnone_SPO_MG_QF_BR_RW	2639	4230	8210	5282	7882	10786	3441	5002	8275
6.MFS_A10_Cnone_SPO_MG_QF_BR_3Y	2254	3026	4319	5139	7458	9533	3164	4371	5582
7.MFS_A10_Cnone_SPO_MG_QF_HS_RW	2959	5683	14311	6512	9168	12428	4182	6219	11094
8.MFS_A10_Cnone_SPO_MG_QF_HS_3Y	2532	3593	6089	6252	8623	11036	3815	5248	7248
9.MFT_A10_Cnone_SPO_MV_QF_BR_RW	2599	3724	5323	5701	9641	14349	3430	5383	7739
10.MFT_A10_Cnone_SPO_MV_QF_BR_3Y	2471	3442	4407	5565	9227	13010	3304	5102	6943
11.MFT_A10_Cnone_SPO_MV_QF_HS_RW	3687	10112	25989	7477	12536	21378	4499	8011	24722
12.MFT_A10_Cnone_SPO_MV_QF_HS_3Y	3140	5128	16479	7368	11543	18014	4249	6523	11730
13.MFT_A10_Cnone_SPO_MG_QF_BR_RW	2040	2841	6147	4450	6653	10491	2737	3860	5826
14.MFT_A10_Cnone_SPO_MG_QF_BR_3Y	1920	2443	3157	4349	6519	9475	2675	3712	5129
15.MFT_A10_Cnone_SPO_MG_QF_HS_RW	2295	3321	24946	5219	7603	11813	3166	4374	6908
16.MFT_A10_Cnone_SPO_MG_QF_HS_3Y	2137	2685	3518	5215	7332	10477	3108	4121	5654
17.MFS_A15_Cnone_SPO_MV_QF_BR_RW	3979	7030	14309	7551	10259	13604	4968	6853	12101
18.MFS_A10_C20_SPO_MV_QF_BR_RW	3601	7928	12060	9956	12179	14814	6237	8789	11799
19.MFS_A10_Cnone_SP25_MV_QF_BR_RW	3382	4642	7115	5764	7766	9834	3919	5134	7319
20.MFT_A15_Cnone_SPO_MV_QF_BR_RW	3402	4500	6876	11221	14434	19504	5867	7621	10757
21.MFT_A10_C20_SPO_MV_QF_BR_RW	3651	4746	7223	9412	11594	16110	6248	7185	10125
22.MFT_A10_Cnone_SP25_MV_QF_BR_RW	2204	3317	4832	4363	7538	11666	2752	4341	6477

Table 4. PS4: Probability that the interannual TAC change exceeds 10% (top), 15% (middle) or 20% (bottom). The right-most column of the top table is the average interannual TAC change over the 2020-2037 period (the values in the column should be multiplied by 100 to express this change as a percentage).

Case		10																	
Year/OM	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Mean
1.MFS_A10_Cnone_SPO_MV_QF_BR_RW	0.48	0.32	0.81	0.94	0.85	0.57	0.46	0.66	0.67	0.67	0.64	0.62	0.58	0.56	0.58	0.56	0.53	0.49	0.22
2.MFS_A10_Cnone_SPO_MV_QF_BR_3Y	0.48	0.34	0.91	0.97	0.83	0.52	0.39	0.52	0.47	0.52	0.60	0.68	0.62	0.58	0.59	0.56	0.56	0.54	0.20
3.MFS_A10_Cnone_SPO_MV_QF_HS_RW	0.44	0.36	0.62	0.77	0.75	0.66	0.62	0.65	0.66	0.63	0.62	0.64	0.63	0.61	0.63	0.62	0.63	0.62	0.18
4.MFS_A10_Cnone_SPO_MV_QF_HS_3Y	0.44	0.33	0.70	0.84	0.81	0.67	0.56	0.56	0.57	0.58	0.57	0.60	0.55	0.57	0.58	0.56	0.59	0.56	0.16
5.MFS_A10_Cnone_SPO_MG_QF_BR_RW	0.73	0.64	0.94	0.92	0.79	0.52	0.46	0.45	0.47	0.52	0.55	0.57	0.57	0.54	0.57	0.59	0.53	0.54	0.20
6.MFS_A10_Cnone_SPO_MG_QF_BR_3Y	0.73	0.71	0.98	0.95	0.79	0.45	0.28	0.20	0.20	0.27	0.35	0.43	0.39	0.35	0.38	0.34	0.35	0.38	0.16
7.MFS_A10_Cnone_SPO_MG_QF_HS_RW	0.71	0.57	0.87	0.86	0.81	0.62	0.52	0.49	0.48	0.52	0.54	0.53	0.55	0.56	0.54	0.52	0.51	0.53	0.18
8.MFS_A10_Cnone_SPO_MG_QF_HS_3Y	0.71	0.63	0.95	0.94	0.87	0.63	0.40	0.31	0.27	0.30	0.35	0.41	0.37	0.38	0.37	0.32	0.30	0.33	0.15
9.MFT_A10_Cnone_SPO_MV_QF_BR_RW	0.51	0.53	0.74	0.95	0.87	0.56	0.17	0.06	0.11	0.18	0.23	0.25	0.24	0.20	0.17	0.17	0.23	0.26	0.16
10.MFT_A10_Cnone_SPO_MV_QF_BR_3Y	0.51	0.54	0.79	0.98	0.83	0.49	0.04	0.01	0.02	0.06	0.12	0.17	0.19	0.17	0.15	0.18	0.19	0.22	0.14
11.MFT_A10_Cnone_SPO_MV_QF_HS_RW	0.49	0.55	0.71	0.85	0.91	0.84	0.64	0.48	0.44	0.47	0.53	0.58	0.60	0.62	0.62	0.61	0.60	0.57	0.37
12.MFT_A10_Cnone_SPO_MV_QF_HS_3Y	0.49	0.55	0.73	0.91	0.96	0.86	0.56	0.31	0.24	0.27	0.33	0.40	0.42	0.47	0.49	0.51	0.50	0.48	0.24
13.MFT_A10_Cnone_SPO_MG_QF_BR_RW	0.75	0.81	0.96	0.93	0.72	0.27	0.07	0.06	0.10	0.14	0.15	0.19	0.22	0.22	0.25	0.30	0.33	0.34	0.18
14.MFT_A10_Cnone_SPO_MG_QF_BR_3Y	0.76	0.86	0.98	0.92	0.66	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.11
15.MFT_A10_Cnone_SPO_MG_QF_HS_RW	0.74	0.80	0.93	0.98	0.89	0.48	0.19	0.13	0.15	0.19	0.25	0.29	0.32	0.36	0.40	0.43	0.45	0.47	0.31
16.MFT_A10_Cnone_SPO_MG_QF_HS_3Y	0.73	0.83	0.97	0.99	0.87	0.32	0.04	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.04	0.05	0.05	0.11
17.MFS_A15_Cnone_SPO_MV_QF_BR_RW	0.48	0.32	0.76	0.91	0.82	0.55	0.52	0.66	0.64	0.64	0.62	0.61	0.59	0.59	0.59	0.58	0.54	0.53	0.24
18.MFS_A10_C20_SPO_MV_QF_BR_RW	0.48	0.32	0.81	0.96	0.97	0.92	0.82	0.79	0.77	0.75	0.73	0.71	0.69	0.63	0.62	0.59	0.60	0.57	0.14
19.MFS_A10_Cnone_SP25_MV_QF_BR_RW	1.00	0.32	0.79	0.92	0.86	0.62	0.53	0.71	0.81	0.77	0.70	0.61	0.58	0.52	0.54	0.57	0.55	0.48	0.23
20.MFT_A15_Cnone_SPO_MV_QF_BR_RW	0.53	0.74	0.52	0.69	0.98	0.88	0.64	0.28	0.06	0.04	0.04	0.05	0.06	0.07	0.08	0.09	0.09	0.09	0.16
21.MFT_A10_C20_SPO_MV_QF_BR_RW	0.51	0.53	0.74	0.96	1.00	1.00	0.99	0.98	0.96	0.93	0.89	0.85	0.78	0.62	0.50	0.40	0.33	0.29	0.15
22.MFT_A10_Cnone_SP25_MV_QF_BR_RW	1.00	0.53	0.74	0.93	0.85	0.56	0.21	0.08	0.14	0.23	0.31	0.33	0.31	0.24	0.19	0.19	0.25	0.30	0.17

Case		15																	
Year/OM	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
1.MFS_A10_Cnone_SPO_MV_QF_BR_RW	0.37	0.20	0.73	0.91	0.82	0.51	0.37	0.55	0.60	0.58	0.53	0.50	0.49	0.46	0.50	0.49	0.45	0.41	
2.MFS_A10_Cnone_SPO_MV_QF_BR_3Y	0.37	0.20	0.83	0.95	0.81	0.47	0.30	0.43	0.41	0.42	0.46	0.56	0.50	0.44	0.47	0.44	0.43	0.43	
3.MFS_A10_Cnone_SPO_MV_QF_HS_RW	0.30	0.18	0.43	0.67	0.64	0.54	0.49	0.53	0.53	0.49	0.48	0.49	0.49	0.45	0.47	0.46	0.46	0.47	
4.MFS_A10_Cnone_SPO_MV_QF_HS_3Y	0.30	0.14	0.53	0.75	0.71	0.54	0.41	0.41	0.43	0.44	0.44	0.45	0.41	0.42	0.43	0.41	0.42	0.39	
5.MFS_A10_Cnone_SPO_MG_QF_BR_RW	0.63	0.47	0.88	0.88	0.75	0.43	0.35	0.36	0.37	0.40	0.43	0.46	0.44	0.41	0.45	0.46	0.42	0.41	
6.MFS_A10_Cnone_SPO_MG_QF_BR_3Y	0.62	0.54	0.95	0.92	0.75	0.39	0.19	0.14	0.13	0.15	0.25	0.30	0.26	0.22	0.24	0.21	0.24	0.26	
7.MFS_A10_Cnone_SPO_MG_QF_HS_RW	0.57	0.37	0.78	0.80	0.73	0.52	0.42	0.39	0.38	0.42	0.42	0.41	0.42	0.42	0.42	0.39	0.38	0.41	
8.MFS_A10_Cnone_SPO_MG_QF_HS_3Y	0.57	0.43	0.90	0.89	0.82	0.55	0.32	0.21	0.19	0.19	0.24	0.27	0.26	0.26	0.26	0.22	0.21	0.22	
9.MFT_A10_Cnone_SPO_MV_QF_BR_RW	0.39	0.39	0.66	0.93	0.86	0.55	0.15	0.05	0.09	0.16	0.21	0.20	0.19	0.16	0.13	0.13	0.18	0.21	
10.MFT_A10_Cnone_SPO_MV_QF_BR_3Y	0.39	0.41	0.72	0.97	0.82	0.46	0.04	0.01	0.01	0.05	0.11	0.15	0.15	0.14	0.11	0.13	0.14	0.17	
11.MFT_A10_Cnone_SPO_MV_QF_HS_RW	0.34	0.39	0.57	0.76	0.86	0.80	0.58	0.43	0.39	0.44	0.49	0.55	0.57	0.58	0.59	0.58	0.57	0.53	
12.MFT_A10_Cnone_SPO_MV_QF_HS_3Y	0.34	0.39	0.59	0.85	0.93	0.84	0.52	0.28	0.21	0.24	0.28	0.35	0.39	0.42	0.44	0.47	0.45	0.45	
13.MFT_A10_Cnone_SPO_MG_QF_BR_RW	0.65	0.72	0.93	0.92	0.71	0.24	0.06	0.05	0.09	0.12	0.14	0.16	0.18	0.18	0.22	0.26	0.28	0.30	
14.MFT_A10_Cnone_SPO_MG_QF_BR_3Y	0.64	0.76	0.97	0.91	0.65	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	
15.MFT_A10_Cnone_SPO_MG_QF_HS_RW	0.59	0.65	0.89	0.97	0.87	0.46	0.16	0.12	0.13	0.18	0.22	0.27	0.29	0.34	0.37	0.40	0.42	0.44	
16.MFT_A10_Cnone_SPO_MG_QF_HS_3Y	0.59	0.70	0.94	0.99	0.87	0.30	0.04	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.04	
17.MFS_A15_Cnone_SPO_MV_QF_BR_RW	0.37	0.19	0.65	0.85	0.75	0.45	0.41	0.58	0.57	0.57	0.54	0.53	0.51	0.50	0.52	0.50	0.47	0.45	
18.MFS_A10_C20_SPO_MV_QF_BR_RW	0.37	0.20	0.73	0.94	0.96	0.88	0.75	0.71	0.71	0.69	0.66	0.62	0.61	0.55	0.55	0.52	0.52	0.49	
19.MFS_A10_Cnone_SP25_MV_QF_BR_RW	1.00	0.20	0.69	0.87	0.81	0.54	0.41	0.61	0.72	0.69	0.61	0.51	0.46	0.41	0.46	0.48	0.48	0.42	
20.MFT_A15_Cnone_SPO_MV_QF_BR_RW	0.31	0.62	0.40	0.58	0.96	0.87	0.64	0.28	0.05	0.03	0.03	0.04	0.05	0.06	0.07	0.08	0.08	0.08	
21.MFT_A10_C20_SPO_MV_QF_BR_RW	0.39	0.39	0.67	0.94	1.00	1.00	0.99	0.97	0.94	0.91	0.86	0.80	0.74	0.55	0.43	0.35	0.27	0.25	
22.MFT_A10_Cnone_SP25_MV_QF_BR_RW	0.99	0.39	0.65	0.90	0.83	0.55	0.20	0.07	0.11	0.20	0.27	0.29	0.26	0.19	0.15	0.15	0.20	0.25	

Case		20																	
Year/OM	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
1.MFS_A10_Cnone_SPO_MV_QF_BR_RW	0.26	0.10	0.62	0.87	0.79	0.45	0.27	0.48	0.53	0.52	0.43	0.41	0.40	0.37	0.40	0.41	0.39	0.34	
2.MFS_A10_Cnone_SPO_MV_QF_BR_3Y	0.26	0.11	0.73	0.93	0.78	0.42	0.23	0.35	0.33	0.33	0.37	0.44	0.39	0.34	0.37	0.33	0.33	0.31	
3.MFS_A10_Cnone_SPO_MV_QF_HS_RW	0.20	0.09	0.28	0.54	0.54	0.43	0.36	0.41	0.41	0.39	0.35	0.36	0.37	0.33	0.35	0.33	0.32	0.34	
4.MFS_A10_Cnone_SPO_MV_QF_HS_3Y	0.18	0.06	0.36	0.65	0.62	0.43	0.29	0.30	0.33	0.31	0.31	0.30	0.29	0.27	0.31	0.29	0.31	0.27	
5.MFS_A10_Cnone_SPO_MG_QF_BR_RW	0.51	0.33	0.81	0.82	0.70	0.35	0.26	0.29	0.30	0.32	0.34	0.35	0.34	0.33	0.34	0.35	0.32	0.32	
6.MFS_A10_Cnone_SPO_MG_QF_BR_3Y	0.51	0.38	0.91	0.89	0.72	0.34	0.14	0.09	0.09	0.09	0.17	0.19	0.17	0.14	0.13	0.12	0.17	0.16	
7.MFS_A10_Cnone_SPO_MG_QF_HS_RW	0.45	0.22	0.67	0.72	0.65	0.42	0.32	0.31	0.31	0.32	0.32	0.32	0.31	0.31	0.32	0.30	0.29	0.28	
8.MFS_A10_Cnone_SPO_MG_QF_HS_3Y	0.43	0.26	0.80	0.83	0.77	0.48	0.24	0.14	0.12	0.11	0.17	0.18	0.16	0.16	0.18	0.14	0.13	0.14	
9.MFT_A10_Cnone_SPO_MV_QF_BR_RW	0.28	0.29	0.58	0.89	0.85	0.52	0.13	0.04	0.08	0.14	0.18	0.17	0.16	0.13	0.10	0.10	0.15	0.17	
10.MFT_A10_Cnone_SPO_MV_QF_BR_3Y	0.28	0.31	0.65	0.96	0.81	0.45	0.03	0.01	0.01	0.04	0.09	0.13	0.13	0.10	0.09	0.10	0.13	0.14	
11.MFT_A10_Cnone_SPO_MV_QF_HS_RW	0.21	0.25	0.43	0.67	0.80	0.76	0.53	0.37	0.36	0.40	0.46	0.51	0.55	0.55	0.55	0.55	0.53	0.50	
12.MFT_A10_Cnone_SPO_MV_QF_HS_3Y	0.20	0.23	0.48	0.79	0.89	0.80	0.47	0.24	0.18	0.21	0.26	0.32	0.35	0.39	0.41	0.43	0.42	0.42	
13.MFT_A10_Cnone_SPO_MG_QF_BR_RW	0.52	0.59	0.90	0.91	0.69	0.22	0.05	0.04	0.08	0.11	0.13	0.14	0.16	0.16	0.19	0.23	0.24	0.25	
14.MFT_A10_Cnone_SPO_MG_QF_BR_3Y	0.52	0.63	0.94	0.91	0.63	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	
15.MFT_A10_Cnone_SPO_MG_QF_HS																			

Table 5. [not yet available]**PS5:** Proportion of stock biomass in the plus group:**Table 6.** **PS6:** Proportion of crashed iterations (out of 1000 iterations) in the period 2032-2037. The values in the table should be divided by 10 to convert to percentage of crashed iterations.

OM	Number
1.MFS_A10_Cnone_SP0_MV_QF_BR_RW	0.015
2.MFS_A10_Cnone_SP0_MV_QF_BR_3Y	0.033
3.MFS_A10_Cnone_SP0_MV_QF_HS_RW	0.005
4.MFS_A10_Cnone_SP0_MV_QF_HS_3Y	0.012
5.MFS_A10_Cnone_SP0_MG_QF_BR_RW	0.088
6.MFS_A10_Cnone_SP0_MG_QF_BR_3Y	0.214
7.MFS_A10_Cnone_SP0_MG_QF_HS_RW	0.086
8.MFS_A10_Cnone_SP0_MG_QF_HS_3Y	0.204
9.MFT_A10_Cnone_SP0_MV_QF_BR_RW	0.107
10.MFT_A10_Cnone_SP0_MV_QF_BR_3Y	0.153
11.MFT_A10_Cnone_SP0_MV_QF_HS_RW	0.167
12.MFT_A10_Cnone_SP0_MV_QF_HS_3Y	0.136
13.MFT_A10_Cnone_SP0_MG_QF_BR_RW	0.099
14.MFT_A10_Cnone_SP0_MG_QF_BR_3Y	0.196
15.MFT_A10_Cnone_SP0_MG_QF_HS_RW	0.088
16.MFT_A10_Cnone_SP0_MG_QF_HS_3Y	0.151
17.MFS_A15_Cnone_SP0_MV_QF_BR_RW	0.058
18.MFS_A10_C20_SP0_MV_QF_BR_RW	0.375
19.MFS_A10_Cnone_SP25_MV_QF_BR_RW	0.000
20.MFT_A15_Cnone_SP0_MV_QF_BR_RW	0.782
21.MFT_A10_C20_SP0_MV_QF_BR_RW	0.364
22.MFT_A10_Cnone_SP25_MV_QF_BR_RW	0.028

Table 7. HCR: F=0: PS1: $P(SSB < B_{lim})$ by year. In red, the cases in which $P(SSB < B_{lim}) > 0.1$. The right-most column is the number of years in which $P(SSB < B_{lim}) > 0.1$.

Year/OM	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Number
1.F0_A10_Cnone_SP0_MV_QF_BR_RW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.002	0.003	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.002	0.002	0
2.F0_A10_Cnone_SP0_MV_QF_BR_3Y	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.005	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0
3.F0_A10_Cnone_SP0_MV_QF_HS_RW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
4.F0_A10_Cnone_SP0_MV_QF_HS_3Y	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
5.F0_A10_Cnone_SP0_MG_QF_BR_RW	0.000	0.000	0.000	0.000	0.002	0.015	0.038	0.026	0.016	0.009	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
6.F0_A10_Cnone_SP0_MG_QF_BR_3Y	0.000	0.000	0.000	0.000	0.001	0.016	0.066	0.073	0.036	0.013	0.007	0.003	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0
7.F0_A10_Cnone_SP0_MG_QF_HS_RW	0.000	0.000	0.000	0.000	0.001	0.006	0.005	0.005	0.004	0.004	0.002	0.003	0.004	0.003	0.002	0.002	0.002	0.003	0.001	0.001	0
8.F0_A10_Cnone_SP0_MG_QF_HS_3Y	0.000	0.000	0.000	0.000	0.001	0.005	0.013	0.015	0.008	0.005	0.005	0.003	0.006	0.005	0.006	0.005	0.005	0.004	0.004	0.004	0

Table 8. [not yet available]**HCR: F=0:** PS5: Proportion of SSB in the plus group:**Table 9. HCR: F=0:** PS6: Crashed iterations in the period 2032-2037

OM	Number
01.F0_A10_Cnone_SP0_MV_QF_BR_RWS	0
02.F0_A10_Cnone_SP0_MV_QF_BR_3Y	0
03.F0_A10_Cnone_SP0_MV_QF_HS_RW	0
04.F0_A10_Cnone_SP0_MV_QF_HS_3Y	0
05.F0_A10_Cnone_SP0_MG_QF_BR_RW	0
06.F0_A10_Cnone_SP0_MG_QF_BR_3Y	0
07.F0_A10_Cnone_SP0_MG_QF_HS_RW	0
08.F0_A10_Cnone_SP0_MG_QF_HS_3Y	0

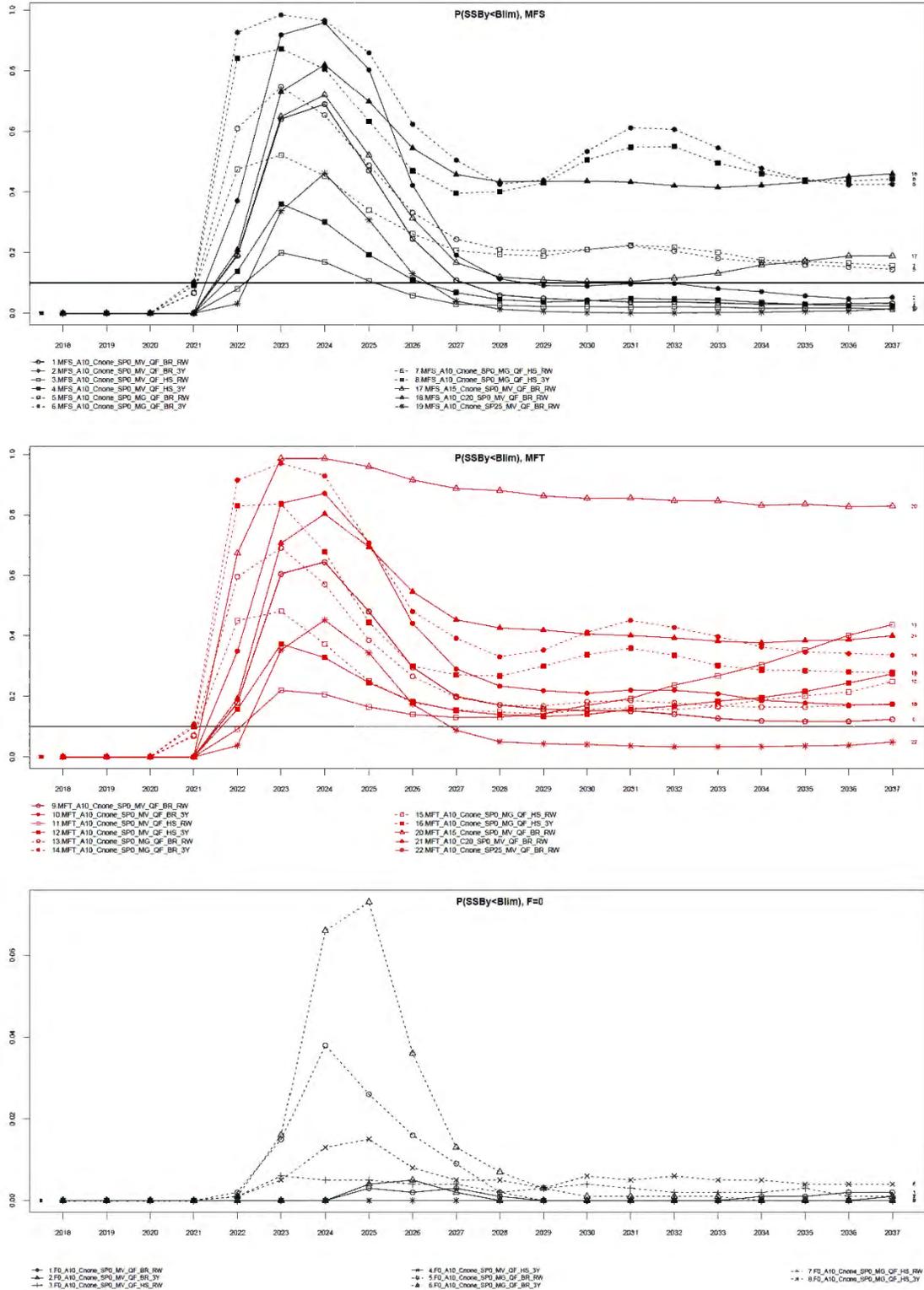


Figure 1. Results of PS1 for MFS HCR (top), MFT HCR (middle) and F=0 (bottom). The horizontal line indicates the 10% level. Note that in the bottom plot, 10% is outside the y-axis range.

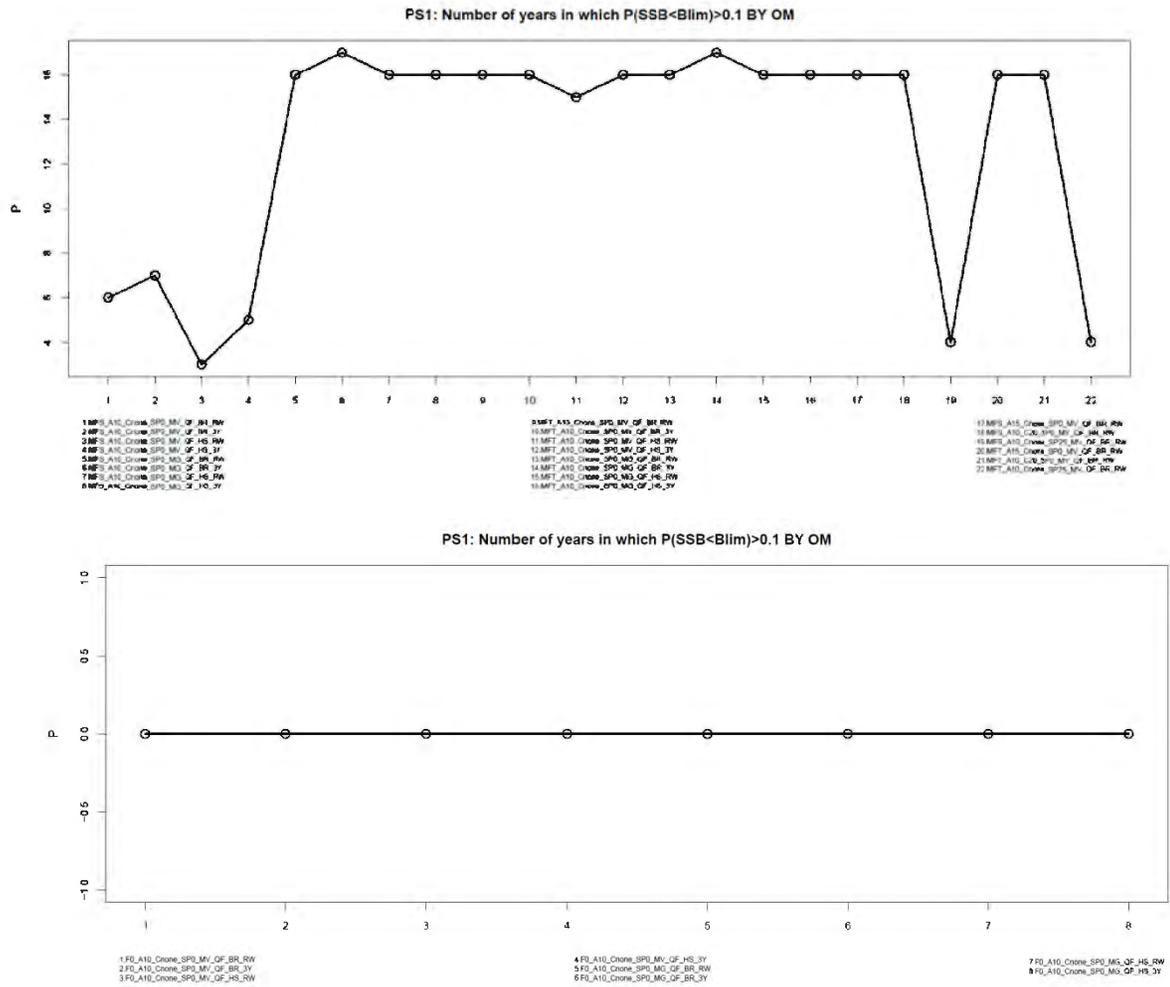


Figure 2. PS1: Number of years of the 2020-2037 period in which $P(SSB < B_{lim}) > 0.1$, for MFS and MFT HCRs (top) and F=0 (bottom).



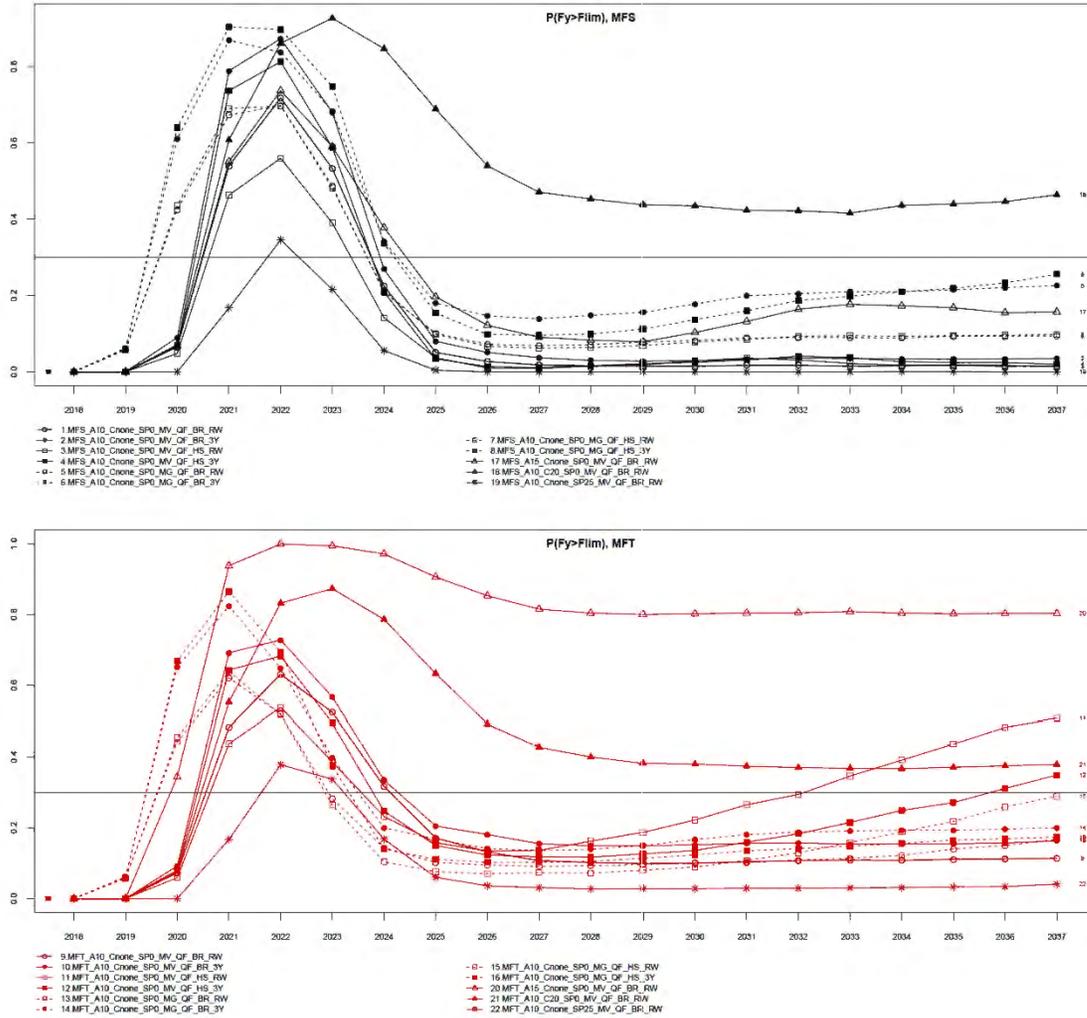


Figure 3. Results of PS2 for MFS (top) and MFT (bottom). The vertical line indicates the 30%.

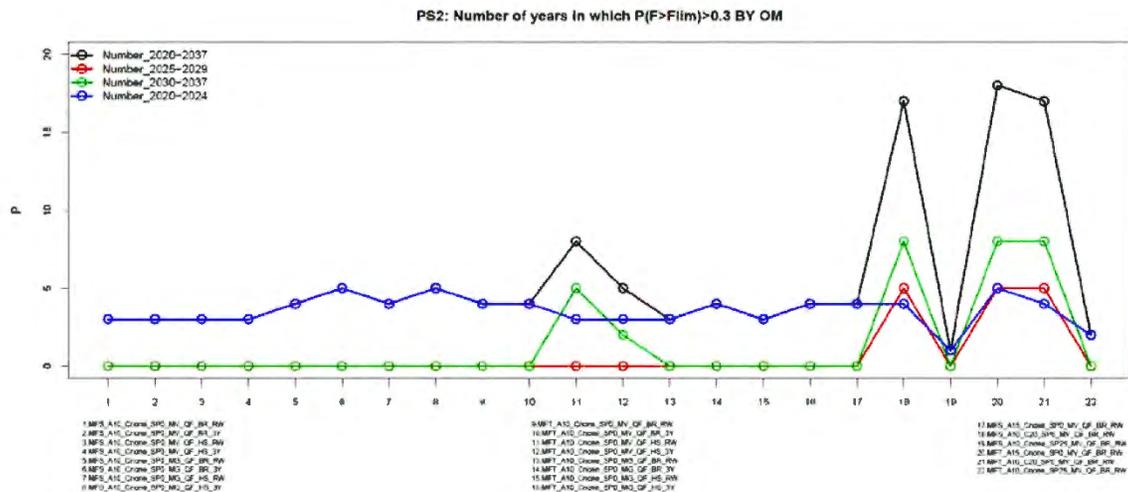


Figure 4. PS2: Number of years in which $P(>F_{im})>0.3$. Results for MFS and MFT.

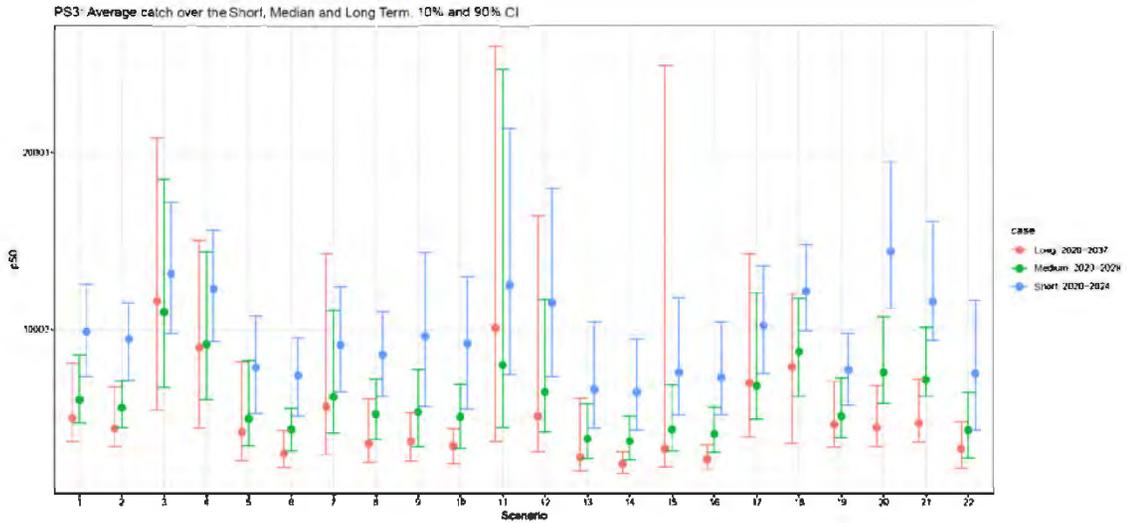


Figure 5. Average catch over the short, medium and long terms for MFS and MFT for the 22 scenarios. Scenario numbers are as in Figure 4 (top).

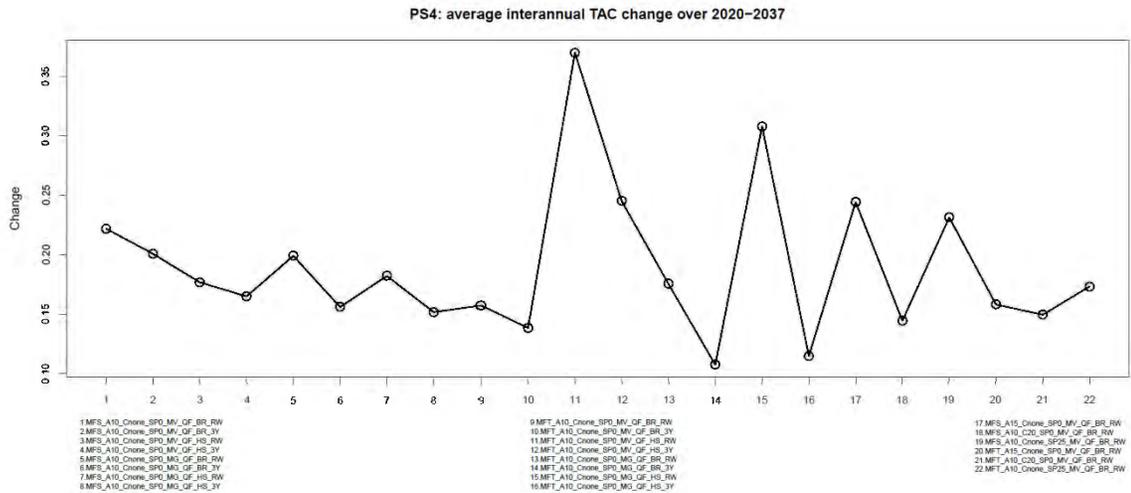


Figure 6. PS4: Average interannual TAC change over 2020-2037 for MFS and MFT.

Figure 7. [not yet available]

PS5: Proportion of stock biomass in the plus group (8+). Results for MFS and MFT (top) and F=0 (bottom).



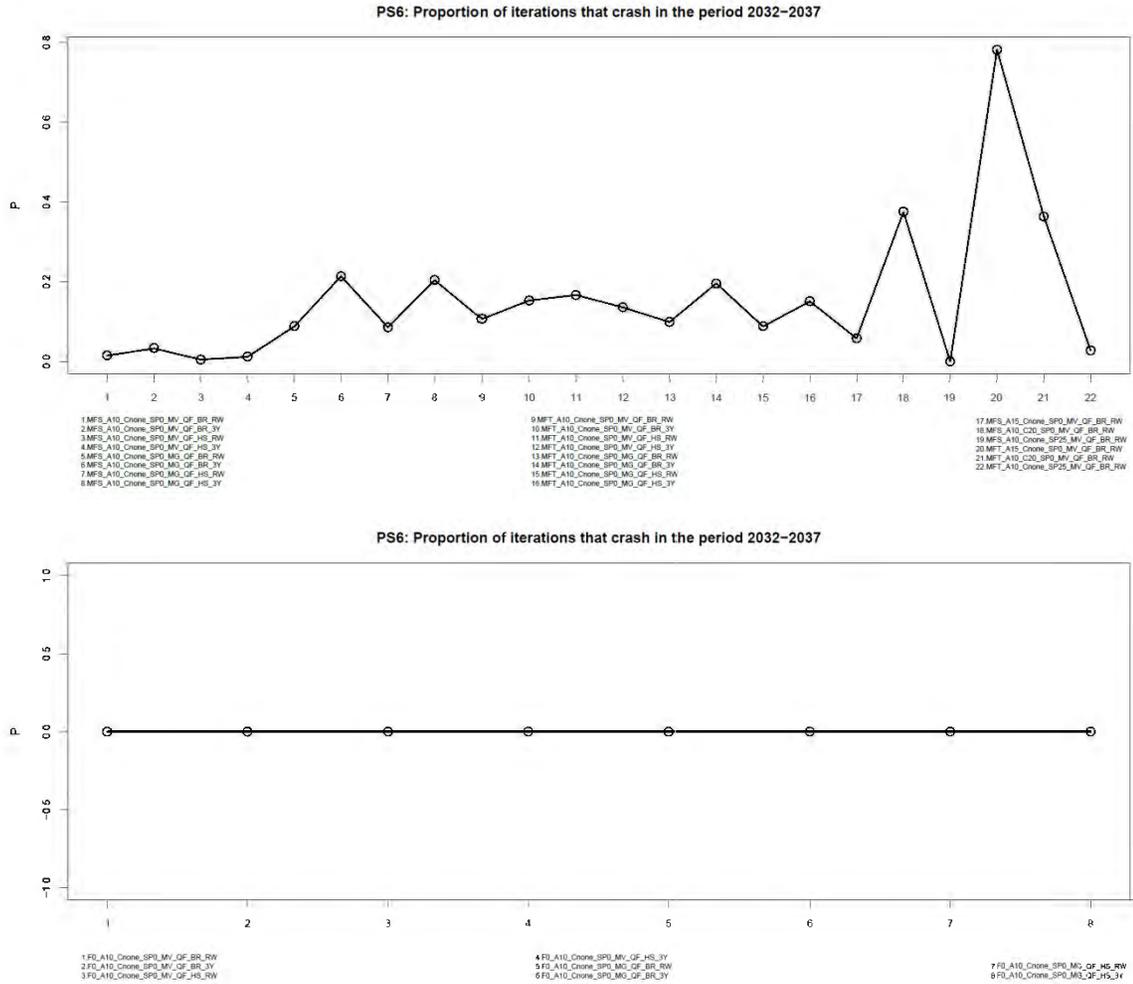


Figure 8. PS6: Number of iterations (out of 1000 iterations) that crash in the period 2032-3027 by scenario. Results for MFS and MFT (top) and F=0 (bottom).

Northwest Atlantic Fisheries Organization



**Report of the NAFO Joint Commission-Scientific Council Catch Estimation Strategy
Advisory Group (CESAG) Meeting**

30 April 2019
via WebEx

NAFO
Dartmouth, Nova Scotia, Canada
2019

**Report of the NAFO Joint Commission-Scientific Council Catch Estimation Strategy
Advisory Group (CESAG) Meeting**

30 April 2019
via WebEx

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Report of the NAFO Joint Commission-Scientific Council Catch Estimation Strategy Advisory Group (CESAG) Meeting

30 April 2019
via WebEx

1. Opening by the co-Chairs

The NAFO Joint Commission-Scientific Council Catch Estimation Strategy Advisory Group (CESAG) met via WebEx on 30 April 2019. The meeting was opened at 10:10 hours (Atlantic Daylight Time) by co-Chairs, Katherine Sosebee (USA) and Temur Tairov (Russian Federation), and participants were welcomed to the meeting (Annex 1).

2. Appointment of Rapporteur

The NAFO Secretariat (Ricardo Federizon, Senior Fisheries Management Coordinator) was appointed as rapporteur.

3. Adoption of the Agenda

Agenda item 4 in the provisional agenda that was previously circulated was revised by inserting the word “draft” to indicate that the MRAG Americas, Inc. (MRAG) report was not final.

The revised agenda was adopted (Annex 2).

4. Review and finalization of comments to the MRAG Americas, Inc. draft final report – *Catch Estimates Methodology Study*

The draft final report was presented by MRAG during the March WebEx meeting (COM-SC CESAG-WP 19-01) and at that time it was agreed then that participants would provide written comments on this draft. CESAG participants, without the contractor present, would then discuss the submissions and develop an agreed upon set of comments and direction to be forwarded to MRAG.

A document incorporating all comments received from CESAG participants was drafted. Noting this document would comprise the formal feedback and direction to be provided from CESAG to MRAG, the following next steps were agreed upon by CESAG:

- The draft CESAG feedback and direction (COM-SC CESAG-WP 19-07) will be circulated to participants for comments by 03 May.
- The Secretariat will forward the final CESAG feedback and direction to MRAG.
- The Secretariat will coordinate with MRAG with regards to the time requirement for MRAG to accommodate the CESAG feedback and direction, and report to CESAG on the developments.
- A doodle poll will be used to determine the time and date of the next CESAG meeting.

5. Review and finalization of the 2018 Catch Estimates of the NAFO Managed Stocks in the NAFO Regulatory Area derived following the Catch Estimation Strategy.

The Secretariat presented the catch estimates of all NAFO TAC-managed stocks for 2018 using the CESAG Method (COM-SC CESAG-WP 19-03). This represents the core task that was assigned to the Secretariat – applying the Catch Estimation Strategy in deriving the catch estimates (see Annex 1 of COM-SC Doc. 17-08).

There was no substantive comment.

Canada indicated that it will provide supplementary catch data on 2+3K Greenland halibut and 3+4 Squid. The working paper will be revised to include the supplementary data and to address some formatting suggestions and minor points for clarification. The revised working paper (COM-SC CESAG-WP 19-03 Revised) is expected to be circulated to CESAG Participants and forwarded to the Scientific Council by the 01 May deadline as specified in the Terms of Reference.

Report of CESAG,
30 April 2019

The Secretariat also presented two working papers pertaining to:

- Availability of catch amounts by division in port inspections for all NAFO TAC-managed for 2018 (COM-SC CESAG-WP 19-04),
- Percentage of catch (from daily catch reports) for species by weight that was inspected in port for 2018 (COM-SC CESAG-WP 19-05).

It was noted that the compilation of the information contained in these working papers is in alignment with Recommendation 3 from the 2017 meetings and with the Revised Catch Estimation Strategy (COM-SC Doc. 17-08).

6. Review of the Catch Data Comparison prepared by the Secretariat

The Secretariat presented COM-SC CESAG-WP 19-06. It provides a comparison of catch data sources for all NAFO TAC-managed stocks (as well as alfonosinos and roughhead grenadier) by Division.

It was noted that the information contained in this working paper is helpful when calculating catch estimates using the Revised Catch Estimation Strategy (COM-SC Doc. 17-08).

7. Recommendations

The CESAG recommends that:

- the Secretariat forward the CESAG feedback and direction as contained in COM-SC CESAG-WP 19-07 to MRAG Americas, Inc. following the 03 May deadline for comments.
- the Secretariat forward the 2018 catch estimates as contained in COM-SC CESAG-WP 19-03 (Revised) to the Scientific Council.
- the Secretariat continue deriving information as contained in COM-SC CESAG-WP 19-03 to COM-SC CESAG-WP 19-06 for the subsequent years.
- CESAG re-iterates its 2017 Recommendation 5: *that the Commission request that STACTIC review current measures relating to reporting of catch by NAFO Division to identify and implement improvements which ensure the most reliable information is available for catch estimation, recognizing its importance in stock assessments* and agreed that the data analyses completed in COM-SC CESAG-WPs 19-04, 19-05 and 19-06 be forwarded to STACTIC for information.

8. Other Business

No other business was discussed under this item.

9. Date and Time of Next Meeting

The date and time of the next meeting will be determined via doodle poll. The date is contingent on the time requirement for MRAG to accommodate the CESAG feedback and direction after it receives the CESAG comments on the Catch Estimates Methodology Study draft report.

10. Adjournment

The meeting adjourned at 11:20 hours (Atlantic Daylight Time).

Annex 1. Participant List

Tairov, Temur (Russian Federation) Sosebee, Katherine (USA)	co-Chairs
Dwyer, Shelley Fagan, Robert Hurley, Mike Milburn, Derrick Slaney, Lloyd	Canada
Alpoim ,Ricardo Błażkiewicz, Bernard Fernandez Llana, Carmen Gonzales, Fernando Granell, Ignacio Ribeiro, Cristina	European Union
Aker, Jana Blasdale, Tom Federizon, Ricardo Goodick, Stan Guijarro Sabaniel, Javier Kingston, Fred	NAFO Secretariat

Annex 2. Agenda

1. Opening by the co-Chairs
2. Appointment of Rapporteur
3. Adoption of the Agenda
4. Review and finalization of comments to the MRAG Americas, Inc draft report – *Catch Estimates Methodology Study*
5. Review and finalization of comments to the 2018 Catch Estimate of the NAFO Managed Stocks in the NAFO Regulatory Areas derived following the Catch Estimation Strategy
6. Review of catch Data Comparison prepared by the Secretariat
7. Other Business
8. Recommendations
9. Date and Time of Next Meeting
10. Adjournment

Northwest Atlantic Fisheries Organization



**Report of the NAFO Standing Committee on International Control (STACTIC)
Intersessional Meeting**

07-09 May 2019
Lisbon, Portugal

NAFO
Dartmouth, Nova Scotia, Canada
2019

Report of the NAFO Standing Committee on International Control (STACTIC) Intersessional Meeting

07-09 May 2019
Lisbon, Portugal

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Report of the NAFO Standing Committee on International Control (STACTIC) Intersessional Meeting

07-09 May 2019
Lisbon, Portugal

1. Opening of the meeting

The vice-Chair of STACTIC, Aronne Spezzani (European Union) opened the meeting at 09:30 hours on 07 May 2019 at the Instituto Português do Mar e da Atmosfera (IPMA) in Lisbon, Portugal. The vice-Chair welcomed representatives from the following Contracting Parties (CPs) – Canada, Denmark (in respect of the Faroe Islands and Greenland), the European Union, Iceland, Japan, Norway, and the United States of America (Annex 1). The president of IPMA, Jorge Miguel Alberto de Miranda, welcomed participants to the Institute and Contracting Parties thanked the president and Portugal for hosting the meeting. The Chair (Judy Dwyer, Canada) was delayed in arriving to the meeting and Contracting Parties agreed that Gene Martin (USA) would serve as acting Chair until the arrival of the Chair.

2. Appointment of Rapporteur

The NAFO Secretariat (Jana Aker) was appointed as rapporteur.

3. Adoption of Agenda

The following amendments were made to the agenda under agenda item 19 – Other Business:

- a. Presentation of registration formula for by-catches of Greenland shark
- b. CESAG working papers
- c. Closure of 3M Redfish fishery
- d. NAFO Inspectors Workshop

4. Compilation of fisheries reports for compliance review (2018), including review of Apparent Infringements

The NAFO Secretariat highlighted the Compliance table in STACTIC WP 19-01 (Draft Compilation of Fisheries Reports 2018) and noted that Contracting Parties should provide any updates or corrections to the working paper prior to the circulation of the final version on 21 June 2019.

The NAFO Secretariat presented STACTIC WP 19-02 (NAFO 2018 Fisheries and Compliance). Contracting Parties thanked the Secretariat for the presentation and offered the suggested enhancements below to be incorporated into the Compliance Review document that will be presented at the 2019 Annual Meeting.

1. Discussion of whether or not to include the tables in slides 13-15
2. Use trips as the proxy for submission rate coverage rather than fishing days throughout
3. Include a reference to the 15% coverage requirement in the table heading on slide 20
4. Separate out the trips that operated under Article 30.A from those that operated under Article 30.B in slide 21

Contracting Parties also noted that the bycatch analysis from slides 7-11 in the compliance review presentation should not be included in the final written report. Contracting Parties requested the NAFO Secretariat further enhance this analysis by determining compliance with the move along provisions and adjusting the bycatch limits analysis to only include Annex I.A species. This analysis should be presented to STACTIC at the 2020 Intersessional Meeting.

The NAFO Secretariat noted that the table on slide 23 is taken from STACTIC WP 19-03 (Summary of Inspection Information for 2018) and the tables from slides 24-28 were taken from STACTIC WP 19-39 (Apparent Infringements and their Disposition 2014-2018). Contracting Parties requested that going forward, this information should only be presented in the working papers to avoid duplication. Contracting Parties also

agreed that the headings outlined in Article 40.2, which suggest additional detail, be used in the tables in addition to the information on the disposition to clarify the status of each infringement. Contracting Parties noted that NEAFC has a similar labelling system for reporting on the disposition of infringements, and that perhaps STACTIC could consider aligning the terms between the two organizations in the future.

Contracting Parties continued discussion on STACTIC WP 19-03, noting that there were some infringements that did not have the disposition included. The relevant Contracting Parties agreed to provide updates to the NAFO Secretariat, and these are reflected in STACTIC WP 19-03 (Revised). The European Union highlighted the importance of this working paper and raised concerns about the varying degrees of penalties issued for the same or similar infringements across Contracting Parties. The United States expressed interest in having Contracting Parties identify cases where there have been varying penalties for similar infringements, so that the parties can engage in an informed discussion and address any potential inequities.

During the compliance review presentation, Contracting Parties raised concerns relating to the submission rates of the haul by haul data for 2018. The NAFO Secretariat highlighted the process for following up on haul by haul submission rates that was adopted by the Commission at the 2018 Annual Meeting in COM Doc. 18-27. Contracting Parties agreed that the NAFO Secretariat should follow-up with the Contracting Parties that have not submitted haul by haul data for 2018 following this process.

The European Union raised the issue of increased reporting of Greenland shark in the NAFO Regulatory Area and expressed concern that this increased reporting may be a result of the mis-recording of shark species. Denmark (in respect of the Faroe Islands and Greenland) noted that they will be presenting a paper on Greenland sharks under agenda item 19, and the Chair noted that this discussion should continue when DFG presents the paper.

It was **agreed** that:

- **The NAFO Secretariat would incorporate the above-mentioned enhancements into the Compliance Review for presentation at the 2019 Annual Meeting.**
- **The NAFO Secretariat would complete an analysis of compliance with the move along provisions for presentation at the 2020 Intersessional Meeting.**
- **The NAFO Secretariat should follow-up with the relevant Contracting Parties following the process outlined in COM Doc. 18-27.**

5. Measures concerning repeat non-compliance of serious infringements in the NAFO Regulatory Area

Canada provided an update on the status of the work being done on the proposal to address repeat non-compliance of serious infringements in the NAFO Regulatory Area. Canada agreed to present the proposal at the 2019 Annual Meeting.

It was **agreed** that:

- **Canada will continue work on a proposal for addressing repeat non-compliance of serious infringements in the NAFO Regulatory Area and present it at the 2019 Annual Meeting.**

6. New and pending proposals on enforcement measures: Possible revisions of the NAFO CEM

Canada presented STACTIC WP 19-04 (Definitions of Bycatch (Article 6)) noting that there was a need for clarity on the bycatch calculations that are being used. The European Union raised concerns with the changes being proposed to Article 6.9, and Canada agreed to discuss this proposal with the European Union and present a revision at the 2019 Annual Meeting.

Japan presented STACTIC WP 19-18 (Proposal for amendment to the NAFO CEM Annex II.M Format of observer trip reports), and noted that this was an editorial change to the observer reporting format in Annex II.M to align with the revisions that were adopted to the NAFO Observer Program (Article 30) in 2018. The European Union and Canada thanked Japan for their paper and noted that there were likely further changes required for this annex, in addition to the changes that Japan highlighted. Canada noted that they had started working on these changes, and the European Union offered to draft a proposal to modify Annex II.M to align with the revised Article 30 with the inclusion of input from Japan and Canada.

Canada presented STACTIC WP 19-25 (Adjustments to Multiple flap-type topside chafer (Annex III.B)) outlining a proposal to modify the existing measures to address the issue that the current chafer system allows for the obstruction of mesh in the codend. Several Contracting Parties noted that they have a ban on topside chafers in their domestic fisheries and questioned why these attachments were necessary in NAFO. Contracting Parties agreed to defer this working paper for discussion at the 2019 Annual Meeting.

Canada presented STACTIC WP 19-27 (Fishing Logbook, Production Logbook and Stowage Plans Updated to the time of inspection (Article 28)). Contracting Parties expressed concerns with the proposed wording and noted that in some situations, it would not be possible for the Master to have up to date information if the inspection occurs directly after a haul has been taken onboard. Canada agreed to reflect on the wording and bring a revised proposal to the 2019 Annual Meeting for discussion.

The European Union and Canada jointly presented STACTIC WP 19-28 (Introduction of Trans-Boundary Reporting (COB) for 3NO Redfish (Article 28.6.d)) and STACTIC WP 19-29 (Restriction of Cross Divisional Tows/Sets (Article 28.1)). These proposals came out of the inspectors workshop and respond to the CESAG recommendation in COM-SC Doc. 17-08, that states that "*STACTIC review current measures relating to reporting of catch by NAFO Division to identify and implement improvements which ensure the most reliable information is available for catch estimation, recognizing its importance in stock assessments*". The European Union and Canada noted that the proposals could facilitate more accurate reporting of catch data. Contracting Parties discussed these working papers extensively and raised concerns, noting that further time to review the proposals was necessary. Contracting Parties agreed to submit comments on these working papers, or alternative approaches, to the European Union and Canada by 14 June 2019 to facilitate further discussions at the 2019 Annual Meeting. Denmark (in respect of the Faroe Islands and Greenland) noted that Russia, a key player in this fishery, was absent from this meeting which hampered a fulsome discussion on this issue.

The European Union presented STACTIC WP 19-30 (Amendment of MZZ in Article 28.6.g and Addition of fish mince in Article 27.4.d and Annex II.K) but requested to defer the discussion on this paper to the 2019 Annual Meeting.

The European Union and Canada jointly presented STACTIC WP 19-31 (Revisions to Inspection Form (Articles 36 and 37, Annex IV.B) noting that the inspection form (Annex IV.B) was redrafted in 2017. Inspectors reported on their experience with the updated form and made suggestions for improvements. Contracting Parties agreed to forward the proposal in STACTIC WP 19-31 to the Commission for adoption.

Canada presented a discussion paper in STACTIC WP 19-34 (Including the Discards Field (RJ) in the Catch on Exit (COX) Report). Canada explained that vessels leaving the NAFO Regulatory Area are required to include their catch for that day as well as the total catch onboard in the COX report, but are not able to include the discards (RJ). As a result, vessels have to wait until the next day to submit a new CAT message in order to include the discards for the previous day. To provide a more effective process that would require only one report (COX) rather than two reports. Canada recommended adding a discards (RJ) field to the COX report and agreed to draft a proposal for the 2019 Annual Meeting, in consultation with the NAFO Secretariat on the technical aspects of the change.

The European Union highlighted the work that is currently being done on the DNA analysis project in NAFO and noted that a proposal is close to being complete for endorsement by ICES.

It was **agreed** that:

- **Canada would collaborate with the European Union on STACTIC WP 19-04 and present a revised version of the proposal at the 2019 Annual Meeting.**
- **The European Union, in collaboration with Japan and Canada, would draft a revision of Annex II.M for presentation at the 2019 Annual Meeting.**
- **Discussions on STACTIC WP 19-25 be deferred to the 2019 Annual Meeting.**
- **Canada would continue to work on the proposal outlined in STACTIC WP 19-27 and present a revision at the 2019 Annual Meeting.**
- **Contracting Parties would submit their comments on STACTIC WP 19-28 and STACTIC WP 19-29 to the European Union and Canada by 14 June 2019 to facilitate further discussions on these proposals at the 2019 Annual Meeting.**
- **Discussions on STACTIC WP 19-30 be deferred to the 2019 Annual Meeting.**
- **The proposed changes to the NAFO CEM outlined in STACTIC WP 19-31 be forwarded to the Commission for adoption.**
- **Canada would draft a proposal based on the discussions outlined in STACTIC WP 19-34 for presentation at the 2019 Annual Meeting.**

7. NAFO website and application development

The NAFO Secretariat presented STACTIC WP 19-05 (MCS Website Enhancements) and noted Secretariat staff had an opportunity in early 2019 to meet with the Canadian and European Union at-sea inspectors and discuss potential enhancements to the MCS website that would facilitate inspections. The enhancements are outlined in the working paper and Contracting Parties agreed that the NAFO Secretariat could begin work on including these enhancements to the website.

The European Union presented STACTIC WP 19-23 (New process to post information on the NAFO MCS website, and related Access Rights) and highlighted proposed changes in the process for posting information to the MCS Website. The paper proposes new access rights to facilitate access to relevant information for port inspections. Japan noted that there were square brackets around “*all Contracting Parties*” and “*Accredited Inspectors*” throughout the document and highlighted a need to select an appropriate term. Canada also identified concerns about expanding access to the MCS website to all Contracting Parties, noting that the levels of access would need to be clearly defined, and further advice would have to be sought on the issue. Iceland pointed out that STACTIC has recognized the need for port State access to information to be able to fulfill the requirement of port State Control for NAFO. The European Union noted that these changes would also have to be paired with a process to define who has access within each Contracting Party to the MCS website, as well as a process for ensuring that the confidentiality rules are respected. The European Union agreed to update the proposal in STACTIC WP 19-23 for the 2019 Annual Meeting to remove the square brackets and bring a new proposal to outline the processes for receiving access and for ensuring confidentiality measures are being met. Iceland noted that it would be useful to review who has access to the MCS website at the 2019 Annual Meeting.

It was **agreed** that:

- **The NAFO Secretariat would begin working on the enhancements to the MCS Website outlined in STACTIC WP 19-05.**
- **The European Union would revise the proposal outlined in STACTIC WP 19-23 for presentation at the 2019 Annual Meeting.**
- **The European Union would draft proposals outlining the processes for individuals within Contracting Parties to obtain access to the MCS Website and ensuring confidentiality measures are met for presentation at the 2019 Annual Meeting.**
- **The NAFO Secretariat would present a report at the 2019 Annual Meeting on the current levels of access granted to the MCS Website for Contracting Party delegates.**

8. Report and recommendations of the Editorial Drafting Group (EDG)

The Chair highlighted that the EDG meeting report is available in STACTIC EDG-WP 19-03 for information.

The Chair presented STACTIC WP 19-06 (Suggestions for changes in CEM), which outlined editorial revisions to various measures in the CEM for clarification. The European Union inserted a clarification under Article 6.3.d and Contracting Parties agreed to forward STACTIC WP 19-06 (Revised) to the Commission for adoption.

The Chair presented STACTIC WP 19-07 (Addition of footnote to Annex I.C of the NAFO CEM) and highlighted that the EDG proposed a reference to the FAO ASFIS list for species codes that are not available in Annex I.C. Contracting Parties agreed to forward STACTIC WP 19-07 to the Commission for adoption.

The NAFO Secretariat presented STACTIC WP 19-10 (Revised) (Greenland halibut port inspection coverage) and noted that this paper was in response to a request from the EDG to review the port inspection levels for Greenland halibut. Canada sought clarification from Contracting Parties on their interpretation of engaged in the Greenland halibut fishery with respect to Article 10.4. Canada indicated that they conduct inspections of all vessels carrying Greenland halibut, but explained that it was Canada's interpretation that PSC3s were only required for vessels directing for Greenland halibut. Denmark (in respect of the Faroe Islands and Greenland) noted that they do not always inspect vessels carrying small amounts of Greenland halibut that were caught as bycatch, and seek clarification of Article 10. The European Union stated that failing to systematically inspect in port vessels carrying Greenland halibut is contrary to the NAFO CEM Article 10.4 and, consequently, has to be considered as a serious compliance issue given that Contracting Parties appear to be interpreting the NAFO CEM provisions differently. The European Union also stated that it currently inspects all vessels landing any quantity of Greenland halibut. The United States agreed with the European Union, noting that it is not an effective measure if it is being interpreted differently between Contracting Parties. The Chair highlighted the need to continue this discussion at the 2019 Annual Meeting to work toward a consistent interpretation of this measure amongst Contracting Parties.

The Chair highlighted STACTIC WP 19-11 (Editorial changes in the CEM that require discussion in STACTIC) noting that these changes were flagged by the EDG but were outside of the mandate of the EDG and required review by STACTIC. The European Union noted that the changes to Article 28.3.b in this working paper are being addressed in STACTIC WP 19-21. Contracting Parties agreed to review the remaining changes intersessionally and discuss this working paper at the 2019 Annual Meeting.

The European Union presented STACTIC WP 19-21 (Reference to "*the smallest geographical area*" in Article 28.2.a and 28.3.b) and noted that this change is to clarify what is meant by the concept of the smallest geographical area by changing this wording to "*division*". Contracting Parties agreed to forward this working paper to the Commission for adoption.

The United States presented STACTIC WP 19-38 (Identification of Incompatible Measures for Longline Vessels in the NAFO CEMs) and noted that this was an exercise to highlight throughout the NAFO CEM areas where the measures do not align with the use of longline gear. The Chair thanked the United States for the review and sought clarification on the way forward for this proposal. The United States highlighted that they had drafted some text to address some of the issues and presented STACTIC WP 19-41 to Contracting Parties for discussion. Contracting Parties agreed to provide comments to the United States on the proposal before the Annual Meeting and the United States agreed to continue to develop the draft for presentation at the 2019 Annual Meeting.

It was **agreed** that:

- **STACTIC WP 19-06 (Revised) be forwarded to the Commission for adoption.**
- **STACTIC WP 19-07 be forwarded to the Commission for adoption.**

- **Contracting Parties would review STACTIC WP 19-11 intersessionally for discussion at the 2019 Annual Meeting.**
- **STACTIC WP 19-21 be forwarded to the Commission for adoption.**
- **Contracting Parties would provide comments on STACTIC WP 19-41 to the United States prior to the 2019 Annual Meeting.**
- **The United States would continue work on STACTIC WP 19-41 for presentation at the 2019 Annual Meeting.**

9. Half-year review of the implementation of new NAFO CEM measures

The NAFO Secretariat presented STACTIC WP 19-12 (Half-year review of the implementation of the new measures in the 2019 NAFO CEM) highlighting some questions on the required fields in the OBR report. Canada also presented STACTIC WP 19-24 (A Consideration of the PR field of the Observer Report (Annex II.D.c and II.G) relating to the PR field in the OBR report. Contracting Parties discussed the utility of these fields. The European Union noted that under the revised Article 30, the purpose of the OBR was to offer an independent source of information comparable with the CAT (same fields / same transmission frequency), therefore at a minimum, the fields of the CAT should be present in the OBR and that the current CAT should remain unchanged. Canada and Denmark (in respect of the Faroe Islands and Greenland) indicated a preference to keep the PR field as they utilize the data reported through it. The European Union highlighted that the NAFO Secretariat is also currently developing the Observer reporting application and any changes to the OBR report should be made in consideration of the IT developments and the results of the pilot project testing the application and equipment necessary currently underway in NAFO. Canada agreed to work in consultation with the NAFO Secretariat to propose changes to the OBR report for presentation at the 2019 Annual Meeting.

The Chair highlighted the lack of clarity with the implementation of Article 37.5, referring to the notification of infringements to all Contracting Parties. Canada offered to prepare draft language for presentation at the 2019 Annual Meeting to provide clarification.

It was **agreed** that:

- **Canada, in consultation with the NAFO Secretariat, would draft a proposal to modify the OBR report for presentation at the 2019 Annual Meeting.**
- **Canada would prepare a proposal to clarify the language in Article 37.5 for presentation at the 2019 Annual Meeting.**

10. Review and evaluation of Practices and Procedures

The NAFO Secretariat presented STACTIC WP 19-13 (Practices and Procedures) and noted that there have been no new additions since the last meeting.

Denmark (in respect of the Faroe Islands and Greenland) requested to defer the presentation of their quota monitoring system to the 2019 Annual Meeting.

The European Union highlighted that they are currently developing some risk assessment tools for inspections and noted that once completed, they will upload to the Practices and Procedures webpage.

It was **agreed** that:

- **Denmark (in respect of the Faroe Islands and Greenland) would present their quota monitoring system at the 2019 Annual Meeting.**

11. Review of current IUU list

The NAFO Secretariat presented STACTIC WP 19-14 (NAFO IUU List Update) and noted that the name of the vessel Maine had been updated in accordance with the recommendation from the 2018 Annual Meeting.

12. Review of data reporting requirements in the NAFO CEM

a. Review of the reporting of haul by haul data (Article 28.8.b)

The discussions on the review of the reporting of haul by haul data are reflected under agenda item 4.

b. Review of the reporting of Provisional Monthly Catch (Article 28.8.a)

The European Union presented STACTIC WP 19-22 (Monthly Catch report (CEM Art 28.8.a)) proposing to remove the obligation to submit the monthly reporting obligation for those Contracting Parties that submit daily CAT reports. Canada noted a need for further discussion on the language, and Denmark (in respect of the Faroe Islands and Greenland) questioned if the electronic reporting system (ERS) could replace this requirement in the coming years.

It was **agreed** that:

- **The European Union, Canada and Denmark (in respect of the Faroe Islands and Greenland) would work together on this issue in advance of the 2019 Annual Meeting.**

13. Bycatches and discards

Norway presented STACTIC WP 19-17 regarding measures to minimize or eliminate discards in NAFO fisheries. Norway noted that there are several Contracting Parties in NAFO that have a discard ban in their domestic regulations and that NAFO has been discussing this issue for a number of years. The working paper outlined a proposal 1. to amend the CEM to exempt the discard obligations for Contracting Parties with discard bans and 2. for a template to evaluate the NAFO fisheries, assessing problems with bycatches and discards and how to address them. Contracting Parties noted that the NAFO Commission Ad Hoc Working Group on Bycatches, Discards and Selectivity (WG-BDS) was tasked to start working on these analyses in 2014 but there have not been substantial results. The European Union stated that this issue of an exemption for Contracting Parties with a discard ban should be a discussion in the Commission and that the role of STACTIC is to come up with practical solutions to the problems with bycatches and discards in NAFO, but that the WG-BDS has to flag the specific issues for STACTIC to address. A WG-BDS participant noted that work is ongoing and that the next meeting is taking place in July 2019. The Chair highlighted the outcomes of the meeting of the Chairs of STACTIC, WG-BDS, and Scientific Council that took place in January 2019 (COM-SC WP 19-01), and the discards overview analysis that was asked of the Secretariat in STACTIC WP 19-40. Contracting Parties discussed the possibility of having a joint meeting of STACTIC, WG-BDS and the Scientific Council as outlined in the action plan (COM Doc. 18-18) to analyze the bycatch and discards issues in NAFO. It was suggested that any future meeting should include STACTIC expertise, as well as participation from managers and scientists. Canada suggested that, as an alternative to the joint meeting, STACTIC would discuss the potential for a small working group and the terms of reference for such a group at the 2019 Annual Meeting. It was agreed to defer discussions on STACTIC WP 19-17 to the 2019 Annual Meeting.

Denmark (in respect of the Faroe Islands and Greenland) presented COM WP 18-26, which was a proposal on bycatches and discards originally presented at the 2018 Annual Meeting. The European Union highlighted that this proposal contradicts the definition of bycatch in Article 6. Contracting Parties expressed concerns with the term "*living resources*" in the proposal, noting that NAFO has no mandate for sedentary species in the NAFO Regulatory Area, and highlighting the complexities of aligning the quota allocation and licencing systems. Denmark (in respect of the Faroe Islands and Greenland) thanked Contracting Parties for the comments and stated they would reflect on the comments and may make a revision for presentation at the 2019 Annual Meeting.

It was **agreed** that:

- **Discussions on STACTIC WP 19-17 be deferred to the 2019 Annual Meeting.**
- **STACTIC would discuss the potential for a small working group and the terms of reference for such a group at the 2019 Annual Meeting.**
- **Denmark (in respect of the Faroe Islands and Greenland) would reflect on the comments provided on COM WP 18-26, and possibly present a revision at the 2019 Annual Meeting.**

14. Discussion of data classification and access rights

The United States presented STACTIC WP 19-15, a proposal to improve transparency by requiring all STACTIC working papers to be published in the public portion of NAFO's website unless the working paper contains confidential information. The United States clarified that the default would be that all STACTIC working papers would get posted to the public website prior to meetings unless a Contracting Party requested, at the time of submission, that a specific working paper remain confidential. The NAFO Secretariat indicated that the current process is that only working papers that have been adopted by the Commission get posted to the NAFO website, and NEAFC members noted that they have the same process. Contracting Parties expressed concerns about the proposed process, and some noted that it was more appropriate for discussion in the Commission. The United States stated that it intends to consult with their Commission delegation in relation to this proposal prior to the 2019 Annual Meeting.

The NAFO Secretariat presented STACTIC WP 19-16, an update from the NAFO Ad hoc Virtual NAFO Website Re-design Working Group, requesting that STACTIC review the fisheries information available on the NAFO Members paggers and determine if this information should be posted to the NAFO public website. Contracting Parties agreed to the concept of posting the information to the public website, in particular the vessel registry, as most other RFMOs have this information publicly available, but requested more time to review the detailed information before making a decision on the items. The NAFO Secretariat agreed to provide a detailed presentation of the information at the 2019 Annual Meeting.

It was **agreed** that:

- **The NAFO Secretariat would provide a detailed presentation of the information outlined in STACTIC WP 19-16 to facilitate the decision to move some or all of this information to the NAFO public website.**

15. Report and advice of the Joint Advisory Group on Data Management (JAGDM)

The vice-Chair of JAGDM (Natasha Barbour, Canada) presented STACTIC WP 19-37, a summary of meeting highlights from the JAGDM meeting in March 2019. The vice-Chair also presented a letter from the JAGDM Chair to the STACTIC Chair (STACTIC WP 19-35) providing a response to STACTIC on their requests relating to an update on the ERS system in NEAFC and the electronic PSC forms. Contracting Parties thanked the vice-Chair for the presentation and noted that NEAFC and JAGDM have provided a lot of information relating to the ERS system that will be very useful to NAFO if it decides to adopt an ERS in the future. Contracting Parties also noted that the responses relating to the electronic PSC system were encouraging and agreed that the NAFO Secretariat should begin work on developing this system for NAFO.

In response to the recommendation from the 2016 Annual Meeting that JAGDM continue reviewing the NAFO CEM Annexes for clarity, the vice-Chair presented STACTIC WP 19-19 to clarify the number of characters in the GE data element in Annex II.D of the NAFO CEM to align with footnote 1 of Annex II.J. The European Union noted that the codes in footnote 1 of Annex II.J are no longer relevant, and proposed deleting the footnote rather than amending Annex II.D. Contracting Parties agreed with this suggestion, and the vice-Chair agreed to forward this information to the JAGDM chair for presentation at PECMAC. The vice-Chair also presented STACTIC WP 19-20 which highlighted a clarification to the DA and TI fields in the annexes of the NAFO CEM. Contracting Parties agreed to forward this working paper to the Commission for adoption.

It was **agreed** that:

- **The NAFO Secretariat would begin work on electronic PSC reporting in NAFO.**
- **STACTIC WP 19-19 be revised to delete footnote 1 in Annex II.J of the NAFO CEM.**
- **The vice-Chair of JAGDM forward the decisions of NAFO to the JAGDM Chair for presentation in PECMAC.**
- **STACTIC WP 19-20 be forwarded to the Commission for adoption.**

16. Discussion on garbage disposal and labour conditions onboard vessels

The European Union presented STACTIC WP 19-33 proposing measures in the NAFO CEM to address the issue of garbage disposal at sea. Japan thanked the European Union for the proposal but requested that the language that is currently in the SIOFA measures be included in NAFO to allow an exemption for the accidental discharge of garbage at sea. The European Union agreed to amend the proposal to include the language provided by Japan. Japan also sought clarification from Canada on whether they would accept the garbage from Japanese vessels landing in Canadian ports, and Canada confirmed that there is a process in place for this. Norway indicated that there is a meeting of the IMO Environmental Protection Committee (MEPC) taking place next week and that the IMO has developed an Action Plan to Address Marine Plastic Litter from Ships, and suggested that any decisions from NAFO on this issue should await the outcomes from this meeting. It was highlighted that the IMO was considering binding actions that could directly impact Contracting Parties' fisheries management; STACTIC members were encouraged to follow the discussions at the MEPC. Contracting Parties agreed to delay discussions on this working paper to the 2019 Annual Meeting.

Norway also noted under this agenda item that they had agreed, at the 2018 Annual Meeting, to develop a proposal with regard to lost gear, however, decided to await the outcomes of the IMO meeting as lost and abandoned fishing gear is also being discussed at that meeting.

The Chair highlighted the discussion of labour conditions and noted that Denmark (in respect of the Faroe Islands and Greenland) had requested the circulation of a Purple Notice from Interpol on human trafficking and forced labour in fishing vessels and the IMO Cape Town Agreement. Iceland recalled the decision at the 2018 Annual Meeting for Contracting Parties to submit a Single Point of Contact (SPOC) to the NAFO Secretariat to post to the MCS Website and the Chair encouraged Contracting Parties to submit this information. Contracting Parties noted the importance of the discussions on labour conditions in order to identify how NAFO can contribute to this matter. It was agreed that the suggestions made in the Purple Notice for inspectors to note indications of human trafficking could require duties not specified in the NAFO CEM. Canada suggested that it would also have to consider other departments and authorities. The European Union suggested that contact could be made by NAFO and the ILO/IMO on how NAFO Inspectors could approach this issue.

It was **agreed** that:

- **Discussions on STACTIC WP 19-33 be deferred to the 2019 Annual Meeting.**
- **Contracting Parties would continue to submit their Single Point of Contact (SPOC) to the NAFO Secretariat to post on the MCS Website.**

17. Catch estimates methodology study

This agenda item was deferred.

18. STACTIC Participation

Contracting Parties discussed the guidance from the Commission at the 2018 Annual Meeting to seek a solution to the issue of STACTIC participation by non-government representatives.

The United States stated that the NAFO Convention provides that Contracting Parties are free to select experts and advisors as members of their delegation, and, therefore, such advisors may attend meetings of STACTIC.

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Japan concurred with the United States view on this matter. The United States reminded STACTIC that it had suggested at last year's Annual Meeting possible alternative processes for addressing Contracting Parties concerns about the presence of industry advisors at STACTIC meetings but did not receive any support for such suggestions. The United States further stated that it does not intend at this time to offer any further suggestions on this issue because it is fully authorized by the NAFO Convention to continue to invite industry advisor members of its delegation to STACTIC.

As, no consensus could be found toward a solution, it was determined that STACTIC should return to the Commission for further guidance.

It was **agreed** that:

- **STACTIC would seek further guidance from the Commission on the issues of STACTIC participation by non-government representatives.**

19. Other Business

a. Presentation of registration formula for by-catches of Greenland shark

Denmark (in respect of the Faroe Islands and Greenland) presented STACTIC WP 19-36 outlining the presentation of a registration formula for by-catches of Greenland shark. DFG noted that this was prepared in collaboration with a biologist at the Greenland Institute of Natural Resources. Contracting Parties thanked Greenland for the information and Canada and the United States indicated that they have also been working on identification and reporting methods for Greenland sharks. Contracting Parties agreed that all of the information that has been completed to date should be posted to the Practices and Procedures webpage, and the NAFO Secretariat would notify participants when information has been updated. The European Union highlighted the importance of proper identification of Greenland sharks in light of the increased reporting of this species in NAFO.

During the meeting, other working papers were highlighted as being relevant to include in a general discussion relating to sharks. The NAFO Secretariat presented STACTIC WP 19-09 which identified the shark species that have been reported in the CAT messages for information. Canada presented STACTIC WP 19-32 (Revised) (Defining a Directed Fishery – Discussion Paper) under this agenda item. Iceland suggested that STACTIC explore methods to address the problem, such as an exemption from calculations for determining directed fisheries for individuals over a certain weight and the European Union suggested to move the observer task in Article 12.1.b to Article 30 as a new duty for observers. The Chair highlighted STACTIC WP 19-08, which was a proposal from the EDG to clarify the provision in Article 12.1.e of the NAFO CEM relating to conducting a directed fishery for Greenland shark. Norway and Iceland expressed concerns with the proposed changes because fishing activities includes other activities, such as landing, they could not agree to as a matter of principle, due to their landing obligation. The European Union noted that an exemption for large individuals in the calculation to identify the directed fishery in accordance with Article 5 would contradict the current wording in Article 12.1.e. It was agreed that Canada, Denmark (in respect of the Faroe Islands and Greenland), and the United States would work together to exchange information with a goal of identifying a single methodology, where possible, for observers to collect information as required by Article 12.1.b for Greenland sharks. These Contracting Parties agreed to provide an update at the 2019 Annual Meeting. The Chair stated that it would be beneficial to consider all of this information further and as a package.

It was **agreed** that:

- **Contracting Parties would submit relevant information relating to the recording of Greenland sharks to the NAFO Secretariat to include on the Practices and Procedures webpage.**
- **The NAFO Secretariat would notify STACTIC participants when information is posted to the practices and procedures webpage.**

- **It was agreed that Canada, Denmark (in respect of the Faroe Islands and Greenland), and the United States would work together to exchange information with a goal of identifying a single methodology, where possible, for observers to collect information as required by Article 12.1.b for Greenland sharks. These Contracting Parties agreed to provide an update at the 2019 Annual Meeting.**

b. CESAG working papers

The NAFO Secretariat highlighted the latest working papers (COM-SC CESAG-WP 19-04 (Calculation of the availability of catch amounts on a division basis in port inspections for all NAFO managed stocks for 2018), COM-SC CESAG-WP 19-05 (Calculation of the percentage of catch (CAT) for species by weight that was inspected in port for 2018), and COM-SC CESAG-WP 19-06 (Revised)(Comparison of catch data sources for 2018 data available to the NAFO Secretariat)) from the Catch Estimation Advisory Group (CESAG) for information.

c. Closure of 3M Redfish fishery

The European Union noted that there are still issues with the process for closing the 3M Redfish fishery, specifically, the need for a time of closure when the Secretariat provides a quota uptake projection date, i.e. midnight on the day previous. The European Union will draft a proposal for presentation at the 2019 Annual Meeting.

It was **agreed** that:

- **The European Union would draft a proposal on the 3M Redfish fishery closure for presentation at the 2019 Annual Meeting.**

d. NAFO Inspectors Workshop

The European Union informed Contracting Parties that the next NAFO Inspectors Workshop will take place in the Azores, Portugal, possibly in October 2019, but the dates are yet to be confirmed. At sea and port inspectors from all Contracting Parties are welcome to participate in this workshop.

It was **agreed** that:

- **The European Union would provide an update on details of the NAFO Inspectors Workshop to STACTIC participants when they are confirmed.**

20. Time and Place of next meeting

The next STACTIC meeting will be held in Bordeaux, France from 23-27 September 2019.

The Chair reminded Contracting Parties that there will be an election of the Chair and vice-Chair of STACTIC at the 2019 Annual Meeting.

21. Adoption of Report

The report was adopted on 09 May 2019, prior to the adjournment of the meeting.

22. Adjournment

The meeting was adjourned at 13:35 hours on 09 May 2019. The Chair thanked Portugal for hosting the meeting and the NAFO Secretariat for their support during the meeting. She also thanked the meeting participants for their cooperation and input. The participants likewise expressed their thanks and appreciation to the Chair for her leadership.

Annex 1. Participant List

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Annex 2. Agenda

1. Opening of the meeting
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Compilation of fisheries reports for compliance review (2018), including review of Apparent Infringements
5. Measures concerning repeat non-compliance of serious infringements in the NAFO Regulatory Area
6. New and pending proposals on enforcement measures: Possible revisions of the NAFO CEM
7. NAFO website and application development
8. Report and recommendations of the Editorial Drafting Group (EDG)
9. Half-year review of the implementation of new NAFO CEM measures
10. Review and evaluation of Practices and Procedures
11. Review of current IUU list
12. Review of data reporting requirements in the NAFO CEM
 - a. Review of the reporting of haul by haul data (Article 28.8.b)
 - b. Review of the reporting of Provisional Monthly Catch (Article 28.8.a)
13. Bycatches and discards
14. Discussion of data classification and access rights
15. Report and advice of the Joint Advisory Group on Data Management (JAGDM)
16. Discussion on garbage disposal and labour conditions onboard vessels
17. Catch estimates methodology study
18. STACTIC Participation
19. Other Business
 - a. Presentation of registration formula for by-catches of Greenland shark
 - b. CESAG working papers
 - c. Closure of 3M Redfish fishery
 - d. NAFO Inspectors workshop
20. Time and Place of next meeting
21. Adoption of Report
22. Adjournment



Northwest Atlantic Fisheries Organization



Report of the NAFO Commission Ad Hoc Working Group on Bycatches, Discards and Selectivity (WG-BDS) in the NAFO Regulatory Area Meeting

15 July 2019
NAFO Secretariat
Dartmouth, Nova Scotia, Canada

NAFO
Dartmouth, Nova Scotia, Canada
2019

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15 July 2019

Report of the NAFO Commission Ad Hoc Working Group on Bycatches, Discards and Selectivity (WG-BDS) in the NAFO Regulatory Area Meeting

15 July 2019
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Dartmouth, Nova Scotia, Canada

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Report of the NAFO Commission Ad Hoc Working Group on Bycatches, Discards and Selectivity (WG-BDS) in the NAFO Regulatory Area Meeting

15 July 2019
NAFO Secretariat
Dartmouth, Nova Scotia, Canada

1. Opening by the Chair, Temur Tairov (Russian Federation)

The meeting was opened at 09:30 hours on Monday, 15 July 2019 at the NAFO Secretariat in Dartmouth, Nova Scotia, Canada by the Chair, Temur Tairov (Russian Federation). Representatives were present from Canada, Denmark (in respect of Faroe Islands and Greenland), European Union, Japan, Iceland and the United States of America (Annex 1).

2. Appointment of rapporteur

The NAFO Secretariat (Ricardo Federizon, Senior Fisheries Management Coordinator) was appointed rapporteur for this meeting.

3. Adoption of agenda

The provisional agenda previously circulated was revised with the insertion of the new agenda item 4 and three sub-items under Other Business. Also, the word "*Preliminary*" was inserted in agenda item 8. The adopted agenda is reflected in Annex 2.

4. Review of the Working Group recommendations from the 2018 Meeting

The six recommendations (COM Doc. 18-04) were adopted by the Commission (COM Doc. 18-28). The Working Group reviewed the status of implementation of the recommendations:

1. The Commission and Scientific Council, and their subsidiary bodies, as well as the Secretariat, move forward with full implementation of the Action Plan in Management and Minimization of Bycatch and Discards (COM Doc. 17-26).

In January 2019, the Chairs of STACTIC, Scientific Council (SC) and this Working Group had a meeting to discuss the Working Group 2018 recommendations and the implementation of a coordinated workplan in support of COM Doc. 17-23, COM Doc. 17-26 and COM Doc. 18-18. Furthermore, guidance was provided to the Secretariat by the Chairs with regards to the completion of the bycatch and discard analysis (see COM-SC WP 19-01).

2. The Commission considers a means of formal follow-up with Contracting Parties to address non-compliance with the requirement to submit haul by haul data.

At the 2019 meeting, the Commission adopted a follow-up procedure outlined in COM Doc. 18-27. The Secretariat received the missing haul by haul reports from one Contracting Party (CP) upon the follow-up communication. The Secretariat has now received haul by haul reports covering 102 trips of the 105 identified in 2018. Another CP is investigating its three missing reports.

3. Contracting Parties be encouraged to explore with their respective industry representatives the reasons for discards and bycatch.

STACTIC circulated a questionnaire to CPs concerning domestic practices. The survey responses would in part reflect feedback received from industry representatives (see agenda item 6). It was agreed that additional feedback from industry representatives, as available, may be able to further inform ongoing analysis.

4. The Commission includes in its request for advice to Scientific Council at the 2018 meeting the task identified under Section 2.2 of the Action Plan in the Management and minimization of Bycatch and Discards (COM Doc. 17-26).

Request item 6 in COM Doc. 18-20 specifically addressed this recommendation. At its June 2019 meeting, SC prepared its response affirming its role in Section 2.2 of the Action Plan (see SCS Doc. 19-20).

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5. STACTIC reviews existing NAFO observer and haul-by-haul reporting requirements to consider enhancements that would provide specific information related to the rationale for discards.

There is discourse in STACTIC regarding the revision and enhancement of Annex II.M and Annex N of the NAFO Conservation and Enforcement Measures (NCEM) to improve the reporting facility concerning discards. Annex II.M is the reporting form used in the at-sea observers operating under the scheme outlined in Article 30; Annex II.N is the form used by fishing masters in reporting logbook information by haul.

6. The Secretariat, in conjunction with STACTIC and WG-EAFFM, develop tools to cross-reference the relevant FAO-3-alpha code with the VME indicator species, set out in Annex I.E of the NCEM to facilitate their inclusion in observer and haul by haul catch reports.

The Secretariat identified the VME species with existing FAO 3-alpha code in July 2018. The VME species list in Annex I.E was updated by SC in June 2019. In accordance with the SC recommendation, the Secretariat would continue to communicate with FAO to request for the creation of 3-alpha codes for the remaining species (see SCS Doc. 19-20). The WG-EAFFM will meet in July 2019 and is expected to endorse the SC recommendation to the Commission.

5. Review of the data analysis completed by the NAFO Secretariat

In support of Task 1.3 of the Action Plan, the Secretariat, as instructed by the Working Group, performed bycatch and discard analysis of available data, including the haul by haul data (beginning from 2016). The analysis included 1) bycatch and discards quantities, 2) bycatch threshold frequencies, and 3) finely grained mapping on a geographical and temporal scales to identify “hotspots” (COM Doc. 18-04).

The results of the analysis, presented in the form of summary tables and maps, are contained in COM BDS-WP 19-01 (Revised). The analysis focused on the bycatch of moratoria species (see Article 6.2.b of the NCEM) of three directed species/stocks, namely 3LMNO Greenland halibut, 3LNO Yellowtail flounder and 3LNO Skates.

The Working Group expressed its gratitude to the Secretariat for its work and satisfaction with the Secretariat’s methodology of the bycatch analysis. It afforded the Working Group to identify preliminary trends and some of the data gaps that are needed to be further addressed or investigated. It also recognized the importance of fishery specific solutions given the multispecies nature of NAFO groundfish fisheries.

The Working Group provided guidance on the format and presentation for the subsequent analysis. It also identified specific lines of further enquiry:

- For Yellowtail flounder fishery in 3LNO, quartiles with higher levels can be refined to monthly period to enable the scrutiny of cod bycatch in the months April-July and of American plaice bycatch in June-July.
- For Skates in 3LNO, the analysis should be refined to monthly, instead of quarterly, intervals.
- For all directed fishery species/stocks under consideration including Skates in 3LNO, discards should be identified to species level whenever possible.
- The bycatch and discard analysis should include all species/stocks listed in Annex I.

The Secretariat committed to perform further analysis taking into account feedback and direction from the Working Group on the most recent analysis. The analysis should be available at least 30 days in advance of the next meeting of the Working Group. It was noted that STACTIC is continuing its work on possible refinements to the definition of a directed fishery that would be useful to these discussions and, to that end, they were encouraged to continue that work.

Concerning data gaps, it was noted that the priority of the bycatch and discard analysis has been the moratoria species/stocks and two species/stocks not listed in Annex IA, witch flounder and skates in the Flemish Cap. The Working Group discussed the collection of by-catch data for other species, such as marine mammals and sea turtles, and is seeking direction from the Commission on whether to expand the list of species (from Annex I.C and Annex II.E.VI) for which bycatch data is currently collected.

Additionally, the Secretariat presented an overview analysis of discards for 2018 from the daily catch reports (CATs). The overview is contained in the working paper COM BDS-WP 19-04 which was first presented in STACTIC as STACTIC WP 19-04. Some CPs had questions about data anomalies, particularly for Greenland sharks, between the CAT and Haul by Haul data, and noted that these issues may be reconsidered at a later meeting.

The discard overview is one of the agreed items of meeting of the Chairs in January 2019 (see COM-SC WP 19-01). The Working Group noted the discard overview and its importance as it complements the information gathering under Task 1.3.

The Working Group also highlighted the importance of coordinating with other NAFO bodies, including STACTIC and SC to avoid any duplication of effort and ensure a systematic implementation of the Action Plan (COM Doc. 17-26). A recommendation to this effect was formulated (see agenda item 10).

6. Review of Contracting Party responses to the questionnaire relating to domestic practices for bycatches and discards

A questionnaire was sent out to CPs concerning domestic practices and technical measures used to reduce or eliminate discards. The technical measures include gear selectivity, area closures, and other measures such as move on rules and minimum catch size. Seven CPs provided responses to the questionnaire, which are compiled in COM BDS-WP 19-02 (Rev. 2).

The Chair noted that the survey was one of the agreed items during the meeting of the Chairs in January 2019 (see COM Doc. 18-18 and COM-SC WP 19-01). The Working Group noted the importance of the CP feedback in making informed decisions concerning bycatch and discards in the NAFO Regulatory Area.

7. Discussion of bycatch of species other than moratoria species

The Working Group discussion was held in the context of Tasks 1 and 2 of the Action Plan (COM Doc. 17-26), specifically the continuing analysis conducted by the Secretariat including 3M Witch founder and 3M Thorny skate. A recommendation pertaining to this item was formulated (see agenda item 10).

8. Preliminary Discussions of the recommendations from the WG-PR

At the 2018 Annual Meeting, CPs adopted the recommendations of the 2018 NAFO Performance Review Panel (COM Doc. 18-21 Revised). Consequently, the Working Group to Address the Recommendations of the 2018 Performance Review Panel (WG-PR) identified the lead NAFO bodies implement the PRP recommendations.

The Working Group noted the relevant 2018 NAFO Performance Review Panel recommendations, *i.e.* Recommendations 7, 17 and 18, and the corresponding WG-PR recommendations which will be presented to the Commission for adoption in September 2019.

9. Other Business

a. Greenland sharks

The Working Group takes note of the SC response to the Commission request pertaining to temporal and special occurrence of Greenland sharks (see SCS Doc. 19-20). The SC response indicated data availability and uncertainty issues. In this context, the Secretariat noted that it is looking at the digitization of NAFO at-sea observer data.

In reference to the Commission request, the Secretariat mapped the occurrence of Greenland shark in the NRA based on the 2016-2018 haul by haul reports. It is presented in COM BDS-WP 19-03, for information.

b. VME species

Discussion on the VME species is reflected in agenda item 4 of this report.

c. Status update on the Action Plan

The Working Group recalled the discussions in agenda items 4-7 as they give indication of the status of the Action Plan outlined in COM Doc. 17-26. It was determined that the Action Plan is currently meeting deadlines and deliverables and recognized that considerable additional work already is underway to

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support future year deliverables identified in the Action Plan. CPs noted that initiating related efforts in other working groups or committees at this time may reduce efficiency and delay the important progress the Working Group is making to fulfill the goals and deadlines laid out in the Action Plan.

10. Recommendations to forward to the Commission

To support the continued full implementation of the Action Plan (COM Doc. 17-26), the WG-BDS recommends that:

- 1. That the Secretariat continue its analysis of bycatch and discard information to include all NAFO Annex I.A and Annex 1.B species as well as 3M Witch flounder and 3M Thorny skate.**
- 2. The Commission include in its request for advice at the 2019 Annual meeting, the tasks identified under Section 2.2, particularly on the identification of discard species/stocks listed in Annex I.A and Annex I.B of the NCEM with high survivability rates.**
- 3. The Chair of the WG-BDS continue to coordinate with the Chairs of SC and STACTIC on matters related to the implementation of the Action Plan.**

11. Adoption of Report

The meeting report was adopted through correspondence.

12. Adjournment

The meeting was adjourned at 15:30 hours on Monday, 15 July 2019.

Annex 1. List of Participants

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Annex 2. Agenda

1. Opening by the Chair, Temur Tairov (Russian Federation)
2. Appointment of rapporteur
3. Adoption of agenda
4. Review of the Working Group recommendations from the 2018 Meeting
5. Review of the data analysis completed by the NAFO Secretariat
6. Review of Contracting Party responses to the questionnaire relating to domestic practices for bycatches and discards
7. Discussion of bycatch of species other than moratoria species
8. Preliminary Discussions of the recommendations from the WG-PR
9. Other Business
 - a. Greenland sharks
 - b. VME species
 - c. Status update on the Action Plan
10. Recommendations to forward to the Commission
11. Adoption of Report
12. Adjournment

Northwest Atlantic Fisheries Organization



**Report of the NAFO Joint Commission-Scientific Council Working Group on the
Ecosystem Approach Framework to Fisheries Management (WG-EAFFM) Meeting**

16-18 July 2019
NAFO Secretariat
Dartmouth, Nova Scotia, Canada

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2019

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Report of the NAFO Joint Commission-Scientific Council Working Group on the Ecosystem Approach Framework to Fisheries Management (WG-EAFFM) Meeting

16–18 July 2019
NAFO Secretariat
Dartmouth, Nova Scotia, Canada

1. Opening by the co-Chairs, Andrew Kenny (European Union) and Elizabethann Mencher (USA)

The meeting was opened by the co-Chairs, Andrew Kenny (European Union) and Elizabethann Mencher (USA), at 09:30 hours on Tuesday, 16 July 2019 at the NAFO Headquarters in Dartmouth, Nova Scotia, Canada.

The co-Chairs welcomed representatives from Canada, European Union, Iceland, Japan, Russian Federation, and United States of America. Two delegates participated via teleconference WebEx (Annex 1).

2. Appointment of Rapporteur

The NAFO Secretariat (Senior Fisheries Management Coordinator and Scientific Council Coordinator) were appointed co-Rapporteurs of this meeting.

3. Adoption of Agenda

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

4. Review of Commission response to recommendations of the 2018 WG-EAFFM meeting

The five recommendations from the 2018 meeting pertain to:

1. Impact of scientific trawl surveys on VMEs closed areas,
2. Implementation of the Ecosystem Approach Roadmap and the Ecosystem Summary Sheets,
3. Review of closed areas including area 14,
4. FAO criteria in assessing significant adverse impacts (SAI) on Vulnerable Marine Ecosystems (VMEs), and
5. FAO three-alpha codes for VME indicator species (See COM-SC Doc. 18-03).

These recommendations were adopted during the Joint Commission-Scientific Council (SC) session of the Annual Meeting in September 2018 (COM Doc. 18-28).

In response, the Commission requested advice from SC on these matters (requests 5, 8-11 in COM Doc. 18-20). At its meeting in June 2019, SC formulated its response to the Commission request (see SCS Doc. 19-20).

Review of the implementation of the recommendations are reflected in agenda item 6 below. Follow-up recommendations were made, and they are reflected in agenda item 9.

5. Report from the Secretariat on ongoing global processes

a. Intergovernmental Conference on Biodiversity Beyond National Jurisdiction (BBNJ)

The Executive Secretary informed the WG-EAFFM of progress in the UN Preparatory Committee to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (BBNJ). The Intergovernmental Conference is scheduled to meet for four sessions. The first session was held in September 2018 and the second during March/April 2019. Further sessions will take place in August 2019 and the first half of 2020.

Draft text of an agreement under the United Nations Convention on the Law of the Sea has been prepared and will be further developed during the coming meetings.

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Four main elements are expected to be addressed in these negotiations:

- marine genetic resources, including questions on the sharing of benefits;
- measures such as area-based management tools, including marine protected areas;
- environmental impact assessments; and
- capacity-building and the transfer of marine technology.

WG-EAFFM thanked the Executive Secretary for his presentation, noting that there is considerable overlap between this process and other initiatives already underway. While the current draft contains alternative text that provides a broad scope, it is clear that the final agreement could have important implications for NAFO. WG-EAFFM noted that this was a state-led process and suggested that flag state participants should inform their respective NAFO delegations.

b. International Seabed Authority

The Executive Secretary informed WG-EAFFM of recent communication with the International Seabed Authority (ISA).

During the 2015 Annual Meeting of NAFO, the Secretariat was instructed “*to explore the establishment of mechanisms for dialogue and engagement*” between NAFO and the ISA. To this end, the Executive Secretary initiated communication with the ISA, who responded with suggestions for further cooperation through ‘*an informal dialogue and exchange of non-confidential information on matters of mutually beneficial interest to promote a better understanding of each organization’s activities.*’

Suggestions from the ISA included:

- meeting, where practicable, on the sidelines of international conferences and meetings;
- an invitation to NAFO to participate in relevant ISA-workshops, meetings and conferences; and
- informal notification to NAFO of relevant new applications for exploration for polymetallic nodules, polymetallic sulphides and cobalt-rich ferromanganese crusts in the Area.

WG-EAFFM thanked the Executive Secretary for his presentation and agreed that work to develop informal coordination mechanisms should continue. It was suggested that SC might consider inviting ISA to participate in WG-ESA or something similar. It was agreed that the Secretariat should move forward with the informal coordination mechanisms proposed by the ISA. It was further agreed that the Commission, through the WG-EAFFM, should consider the development of communication channels between ISA and NAFO, including for example development of a Memorandum of Understanding (MOU), with the understanding that any mechanism not be overly cumbersome or costly.

c. Other regional and global processes

The Executive Secretary informed WG-EAFFM of recent actions by the Secretariat to maintain dialogue with relevant organizations and explore mechanisms to improve the exchange of information.

The Secretariat has used meetings organized under the Areas Beyond National Jurisdiction (ABNJ) Deep Seas Project to further dialogue with Project partners, including the Convention on Biological Diversity (CBD) Secretariat. The Executive Secretary attended the Project’s Fourth Steering Committee (PSC) Meeting in La Reunion, France (23 – 25 January 2019), as well as the Project’s Deep Sea Meeting in Rome (07-09 May). NAFO’s Senior Fisheries Management Coordinator also gave a presentation on NAFO’s practices on quota allocation and quota transfer to a workshop on rights-based management organized by the Project in Rome (10-12 April 2019).

The ABNJ Deep Seas Project has presented opportunities for the Secretariats of all the so-called ‘*deep sea RFMOs*’, namely General Fisheries Commission for the Mediterranean (GFCM), NAFO, North-East Atlantic Fisheries Commission (NEAFC), North Pacific Fisheries Commission (NPFC), South-East Atlantic Fisheries Organization (SEAFO), South Indian Ocean Fisheries Agreement (SIOFA) and South Pacific Regional Fisheries management Organization (SPRFMO), as well as Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR), to meet and discuss issues of common concern in the margins of both COFI and PSC

meetings. The Project has also recently supported some exchanges amongst deep sea RFMOs, including sending the Science Manager of the NPFC to observe the June 2019 meeting of the NAFO Scientific Council and sending NAFO's Fisheries Information Administrator to assist the SIOFA Secretariat and to train rapporteurs at SIOFA's Compliance Committee Meeting and Sixth Meeting of the Parties (27 June – 05 July 2019).

The Executive Secretary also attended the fourteenth round of Informal Consultations concerning the United Nations Fish Stocks Agreement (UNFSA) organized by United Nations Division for Ocean Affairs and the Law of the Sea (UN-DOALOS), focusing on the topic of "*Performance reviews of regional fisheries management organizations and arrangements*", in New York, New York, USA (02 – 03 May 2019) and gave a presentation on NAFO's 2018 performance review process. The Executive Secretary also gave presentations on NAFO at a meeting organized by the Sargasso Sea Commission, entitled "*Next steps for stewardship of the Sargasso Sea*", in Bermuda (13-14 March 2019) and at a meeting organized by the Western Central Atlantic Fishery Commission (WECAFC) at its first preparatory meeting concerning the transformation of WECAFC into a RFMO in Bridgetown, Barbados (25-26 March 2019).

6. Presentation and discussion on Scientific Council response to Commission request for advice in 2019:

VME related

a. Evaluation of the impact of scientific trawl surveys on VME in closed areas, and the effect of excluding surveys from these areas on stock assessments (request #5 in COM. Doc. 18-20)

The Commission requests that Scientific Council continue its assessment of scientific trawl surveys on VME in closed areas, and the effect of excluding surveys from these areas on stock assessment metrics.

Scientific Council Response:

SC notes that work planned to complete this task did not occur as a result of other work commitments. Based on previous analysis, SC reiterates its ongoing recommendation that until this issue is fully resolved scientific bottom trawl surveys in existing closed areas be avoided if possible and additional work be expedited to complete the evaluation of excluding RV surveys in closed areas on stock assessment metrics.

WG-ESA co-Chair Andrew Kenny informed WG-EAFFM of work that has been completed and previously presented to WG-EAFFM in 2017. Work already completed includes analysis of the impacts of surveys in closed areas and analysis of the effects of removing surveys on stock assessment (for the Canadian Spring and Autumn RV surveys only). Further work is required to extend this analysis to EU surveys.

It was noted by several WG-EAFFM participants that the numbers of tows in the closed areas appear to be decreasing, possibly as a result of an informal agreement by Contracting Parties to avoid surveying in closed areas. WG-EAFFM endorsed the Scientific Council's recommendation that until this issue is fully resolved scientific bottom trawl surveys in existing closed areas be avoided if possible and additional work be expedited to complete the evaluation of excluding RV surveys in closed areas on stock assessment metrics (see section 9 recommendation 2). WG-EAFFM agreed that the European Union and Canada will examine recent survey data and evaluate the extent to which trawls have impinged on closed VME areas in recent years and the number of trawl survey sets which have recorded significant concentrations of VME indicator species from closed areas. These results will be presented at the 2019 Annual Meeting.

b. Progress towards the 2020 re-assessment of VME closures and the 2021 re-assessment of the impacts of NAFO bottom fisheries (request #9 and #11 in COM. Doc. 18-20)

i) re-assessment of VME closures

The Commission requests Scientific Council to conduct a re-assessment of VME closures by 2020, including area #14 irrespective of a decision to continue or not-continue this closure after 2018.

Scientific Council Response:

SC has agreed to a workplan to review the VME fishery closures to be concluded by 2020. This review will provide the basis for the reassessment of bottom fishing activities with respect to impacts on VMEs currently scheduled for 2021.

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SC notes that changes in the availability of CP resources directed to undertake this work are likely to impact SC's capacity to fully address the planned activities in support of the review of VME fishery closures.

WG-ESA co-Chair Andrew Kenny informed WG-EAFFM of the workplan for the reassessment of VME fishery closures that was agreed by SC in its June 2019 meeting (SCS Doc. 19-20).

WG-EAFFM thanked Dr. Kenny for his presentation and noted that the reassessments will still be completed and analyzed even if not all of the elements of the ambitious workplan are finalized. WG-EAFFM noted that reassessment would be considered under the larger discussion at the Annual Meeting on the SC's work plan and prioritization process and further suggested that this work be a priority within those discussions, with the understanding that NAFO has other priorities. WG-EAFFM noted the importance of understanding the Commission's expectations (i.e. what material is needed to allow for/ensure informed decisions).

ii) re-assessment of the impacts of NAFO bottom fisheries

In relation to the assessment of NAFO bottom fisheries, the Commission endorsed the next re-assessment in 2021 and that SC should:

- 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 significant adverse impacts and the risk of future adverse impacts;*
- c. *Maintain efforts to assess all of the six FAO criteria (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);*
- d. *Continue to work on non-sponge and coral VMEs (for example bryozoan and sea squirts) to prepare for the next assessment.*

Scientific Council Response:

SC made further progress in assessing the overlap of NAFO fisheries with VME through an analysis of haul-by-haul log-book data in combination with VMS data for 2017. Such analysis significantly improves the spatial definition of specific fishing areas within the NAFO footprint. This approach will be used for re-assessment for years for which haul by haul data logbook are available, otherwise the previously adopted approach will be applied.

Furthermore, SC has made progress in developing models and methodological approaches which assess the functional significance of VMEs and the estimation of recovery rates of different VME indicator species. This provides valuable insight to assess the level of VME connectivity between different areas.

Updated analysis (including new data) has been performed on non-coral and non-sponge VME indicator species and further work is planned.

SC notes that changes in the availability of CP resources directed to support this work are likely to impact SCs capacity to fully address the planned activities in support of the reassessment of bottom fisheries by 2021.

In relation to part a) of the request, Mar Sacau (IEO, European Union) presented recent work developed under the EU-funded NERIEDA project to assess the overlap of NAFO fisheries with VME to evaluate fishery specific impacts in addition to the cumulative impacts using VMS data combined with fishing start and end times from haul-by-haul logbook data. It was noted that the meaning of the start and end times recorded in the logbooks is ambiguous: it is unclear whether these refer to the time the gear enters the water or when it reaches the seabed. For the purposes of this and any other SC analysis, it should be the latter. WG-EAFFM encouraged SC to continue its analysis of logbook and VMS data to clarify if any fishing activity is occurring within closed areas, and if so to send that information to STACTIC.

In relation to part c) Mariano Koen-Alonso (Fisheries and Oceans, Canada) presented WG-ESA's recent work on Agent-Based Modelling (ABM) of sea pen communities, and Andy Kenny (CEFAS, European Union) presented work carried out under the NEREIDA project on Sea Pen Empirical-Based Modelling (EBM) and VME Functional Analysis.

WG-EAFFM noted the ongoing work to look at the functional aspect of VMEs, *e.g.* sea pens, in relation to the reassessment will further advance the work toward a full evaluation of the FAO criteria for Significant Adverse Impacts on VMEs. One Contracting Party questioned the rationale for including non-sponge and non-coral VMEs in the 2020/2021 reassessments as the two new taxa – byozoans and sea squirts – have distinct characteristics from the other VME indicators used for the reassessment as they occur mainly in shallow water. In response, other Contracting Parties noted that NAFO has listed these taxa as VME indicator species.

c. Revisions to VME taxa in CEM Annex I.E, Part VI (request #10 in COM. Doc. 18-20)

Review the proposed revisions to Annex I.E, Part VI as reflected in COM-SC EAFFM-WP 18-01, for consistency with the taxa list annexed to the VME guide and recommend updates as necessary.

Scientific Council Response:

SC noted the last VME indicator species list was compiled in 2011 and in preparation for the review of closures in 2020, an update of the Annex 1.E list of VME indicator species is required, including the addition of the three letter FAO species codes where appropriate.

The nomenclature of some species has also been revised, and several large sponges have now been described at the species level. SC recommends that Annex 1.E, Part VI, list of VME indicator species be replaced with the list provided here (with the addition of FAO codes where they are currently lacking, provided by the Secretariat prior to the 2019 annual Meeting if possible).

WG-EAFFM endorsed the recommendation of SC with a view that the updated list as reflected in SCS Doc. 19-20 and in Annex 3 of this report replaces Annex I.E, Part VI of the NCEM (COM Doc. 19-01). It was agreed that the Secretariat would request the FAO produce new three-alpha codes for VME indicator species, as necessary.

Roadmap

d. Work under the Ecosystem Approach road map, including testing the reliability of the ecosystem production potential model and other related models (request #8 in COM. Doc. 18-20)

WG-ESA co-Chair, Pierre Pepin presented progress in the development of Ecosystem Summary Sheets and the development of draft ecosystem-level objectives.

Ecosystem Summary Sheets (ESS) are analogous to current Stock Summary Sheets and intended to provide a synoptic perspective on the state of NAFO ecosystems and their management regime. They are based on the general principles adopted by NAFO in the chapter III of its Convention and it is intended that they be updated every 3-5 years. The goal of ESS is to inform decision making for both managers and industry as well as help identify objective hazards. Their development will apply a modular approach and will consider additional information as it becomes available.

ESS were initially drafted by WG-ESA in 2017, further developed by SC in June 2018 and presented to WG-EAFFM in August 2018. In response to a recommendation from WG-EAFFM in 2018, Scientific Council revised the terminology used in Ecosystem Summary Sheets in order to avoid potential confusion with standard terminology in fisheries management, review their structure to address concerns raised by WG-EAFFM, as well as consider their potential to inform management decisions and responses (WG-EAFFM recommendation 2018). SC has redrafted the ESS accordingly (SCS Doc. 19-20). In particular, the term “*Total Catch Ceiling*” is replaced with “*Total Catch Indices*” to make clear that it is not intended to be a hard limit.

WG-EAFFM thanked Dr. Pepin and SC for addressing their concerns over language in the ESS. WG-EAFFM voiced support for the changes to the language as provided by SC.

In relation to ecosystem-level objectives, WG-EAFFM agreed that it is necessary for managers and scientists to engage in the development and practical implementation of these objectives. Issues to be addressed should include how best to operationalize the ecosystem principles detailed in the amended Convention, a vision for how current and future ecosystem and stock scientific advice would inform possible management actions and

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how this advice is integrated and presented to the Commission. It is expected that the presentation of advice may evolve based on those objectives.

Development of objectives will benefit from feedback from experts that have already implemented these types of management strategies (*e.g.* Norway, USA, and possibly other countries). One Contracting Party noted that it has initiated a domestic process to develop and implement an ecosystem approach and this work will inform its position in NAFO. In order to advance the development of objectives, it was suggested that a workshop be held prior to WG-EAFFM's meeting in 2020, where invited experts, as well as managers and scientists, would address the issues detailed above with the goal of drafting ecosystem-level objectives and any related guidance that may be required.

WG-EAFFM noted the challenges inherent in multi-national, multi-stock, fisheries negotiations, but highlighted the benefits of the roadmap process to informing not only decision makers but also industry in providing long-term understanding of stock/ecosystem trends.

Other issues

e. Update on relevant research related to the potential impact of activities other than fishing in the Convention Area (request #15 in COM. Doc. 18-20)

Pablo Durán Muñoz (IEO, European Union) presented work completed under the Atlas project, a Trans-Atlantic assessment and deep-water ecosystem-based spatial management plan for Europe. Case study 11 under this project was a theoretical exercise in marine spatial planning (MSP) based on the Flemish Cap and Flemish Pass area (NAFO Divisions 3LM). The goals and objectives set for this plan were to develop 'blue growth' in the spatially managed area (SMA). Information on existing activities within the SMA was collated and mapped using GIS tools and the impact of these on natural ecosystem components assessed. This was used to inform the analysis of the spatial overlap of the distribution of human activities and ecosystem components and enable the identification of existing or potential conflicts.

An additive spatial model was developed. This involved identification of relevant ecosystem components and anthropogenic stressors and mapping them on a common rectangular grid. Semi-quantitative sensitivity weightings were applied, and the sum of their products used to provide an estimate of cumulative impacts. The value of this work is very useful to address Commission request #15 in COM Doc 18-20).

The WG-EAFFM noted the SC response to request #15. SC has advised that they are unable to address the request on other activities without significant additional resources. SC participants clarified that the key concern is the lack of expertise in areas such as oil and gas. To help address these issues, Contracting Parties noted the need for greater clarity on what is being asked of SC. The WG-EAFFM reiterated the importance of focusing on scientific cooperation as well as understanding the impacts of other activities, such as oil/gas, shipping, mining, etc. on VMEs and other NAFO resources.

One Contracting Party reminded parties of existing and ongoing information exchange mechanisms regarding activities on the Extended Continental Shelf, and opportunities for additional engagement. Other Contracting Parties requested additional scientific information, in particular on impact assessments of these activities. The Secretariat will continue establishing/strengthening lines of communication with relevant organizations within established mandates.

7. Discussion on other matters: Scope and direction of WG-EAFFM for 2020-2023

a. Preparations for the Review of Vulnerable Marine Ecosystems (VMEs) in Chapter II of the NAFO CEM

It was discussed whether and how the WG-EAFFM will review Chapter II of the CEM. It was noted that the purpose of the review would not be to impact or override existing processes (such as the review of closed areas or the review of VMEs) but rather to consider the effectiveness of the chapter as a whole. It was suggested that the first step will be to check whether the existing language is still sufficient to address the objectives of the chapter.

Some Contracting Parties commented that the review would present an opportunity to:

- revisit the Terms of Reference of the WG-EAFFM;
- develop a document that summarizes existing deliverables and timelines;

- identify gaps and develop objectives, deliverables and timelines that help progress the operationalization of the ecosystem approach to management in alignment with the amended Convention; and
- consider if the CEM should reflect the ongoing work under the Roadmap.

However, one Contracting Party has raised concerns over the mandate of the WG to engage in such revision in particular the mandate of the Working Group who are members of the Scientific Council. It was agreed that the co-Chairs of the WG-EAFFM will draft a document for consideration of the Working Group laying out a workplan for the review of Chapter II, per Article 24. The document will be developed and reviewed prior to the 2019 Annual Meeting. The co-Chairs will coordinate with Chairs of other relevant bodies, including STACTIC and SC on the development of this workplan. As part of the presentation on the WG-EAFFM meeting to the Commission, the co-Chairs will solicit additional direction from the Commission on the goal of this review process.

b. Other (discussion)

The WG-EAFFM referred to the April 2019 meeting report of the Working Group to Address the Recommendations of the 2018 Performance Review Panel (WG-PR) (COM Doc. 19-03). The WG-EAFFM took note of the specific recommendations, namely recommendations 1, 14, 15, 32, and an additional un-numbered one (adopted by the Commission, but not a recommendation of the Performance Review Panel report, pertaining to non-fishing anthropogenic activities in the NRA), where WG-EAFFM was preliminarily identified as the lead body in implementing the recommendations of the Panel.

Regarding the non-fishing anthropogenic activities, representatives of SC noted the need for additional guidance on what is being asked of them, as noted earlier. There were discussions as to whether WG-EAFFM would need a stronger mandate to be able to address the recommendation.

8. Other Business

a. ABNJ Global Oceans Project

Two FAO initiatives were presented to inform the WG-EAFFM.

Daniela Octaviani (FAO) presented a PowerPoint *Economic Valuation of Ecosystems Severs from the Deep Sea* (COM-SC EAFFM-WP 19-05 Rev. 2). The initiative is one of the components of the FAO ABNJ Deep Sea Project. The presentation centered on how the economic valuation can be used as a tool in the cost-benefit analysis and trade-off assessment and help in the discussion on ecosystem management. The presentation provided an example of economic valuation of deep-sea sponges, particularly the joint research effort on the ecology and economic assessment of deep-sea sponge removal by bottom trawling in the Flemish Cap. A scientific paper on this was recently submitted to a peer-reviewed journal for publication consideration.

Tony Thompson (FAO) presented via WebEx a PowerPoint *ABNJ Deep Seas Project (September 2014-August 2019) and Development of next phase* (COM-SC EAFFM-WP 19-06 Rev.). Dr. Thompson highlighted the accomplishments in the first phase and the concepts in the development of the next phase. The Executive Secretary also informed the WG-EAFFM that NAFO has been a collaborating partner on this project from the outset, with “*in-kind*”, contributions from NAFO scientists and Secretariat members in sharing expertise in the field of fisheries science and fisheries management with FAO and other deep-sea RFMOs. The implementation of the second phase is expected to commence in 2021.

The WG-EAFFM thanked FAO for its reporting. Regarding the next phase of the ABNJ project, the Secretariat was requested to clarify with FAO the timelines and opportunities for NAFO’s engagement.

b. OSPAR Commission proposal ‘North Atlantic Current and Evlanov Seamount Marine Protected Area’

The Executive Secretary relayed the communication from OSPAR seeking views from NAFO pertaining to the Evlanov Seamount, particularly on the provision of additional information concerning seabird ecosystems, current or potential future activities and management actions (COM-SC EAFFM-WP 19-07).

The WG-EAFFM suggested that the Executive Secretary contacts OSPAR for additional information on the proposal itself, including timeframes and deadlines. The Executive Secretary was requested to reach out to

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relevant Contracting Parties so that they have the opportunity to comment. The Secretariat shall post the OSPAR response and any other related information to the WG-EAFFM SharePoint website. It was noted that while the proposed Marine Protected Area lies outside the NAFO Regulatory Area, there may be overlap in the range of certain shared species.

9. Recommendations to forward to the Commission and/or Scientific Council

The WG-EAFFM recommends that:

1. In relation to coordination with the International Seabed Authority (ISA), the Secretariat move forward with the informal coordination mechanisms proposed by the ISA. The Commission, through the WG-EAFFM, consider the development of communication channels between ISA and NAFO, including the possible development of a Memorandum of Understanding (MOU) or other appropriate tools, while avoiding any overly cumbersome or costly processes.
2. In relation to scientific surveys in VME closed areas, Contracting Parties are encouraged to continue to avoid closed areas in their scientific trawl surveys, as far as practicable. Further, that SC finalize its work to determine the effect of excluding surveys from these areas on stock assessments as soon as practicable, in accordance with Scientific Council's workplan, and contracting parties should be encouraged to ensure the correct scientific expertise supports this SC process.
3. In relation to the 2020 re-assessment of VME closures and the 2021 re-assessments of the impacts of NAFO bottom fishing, Contracting Parties support the necessary participation of relevant experts to ensure these processes are completed in a timely fashion, bearing in mind resource needs and constraints.
4. In relation to data required under CEM Article 28, reported in accordance with Annex II.N Fishing Logbook Information by Haul, STACTIC clarify how start and end time are defined for bottom contact gear
5. The CEM Annex I.E. Part VI is amended to reflect the correct taxa names and FAO alpha codes.
6. Commission request that the Scientific Council present the Ecosystem Summary Sheet for 3LNO to the Commission at the 2020 Annual Meeting, with a view of informing decision-making processes.
7. Commission develop ecosystem level objectives to inform the Scientific Council's development of the EAF Roadmap, including through a possible intersessional workshop.
8. Commission request that the Scientific Council continues its work to develop the EAF Roadmap.
9. Contracting Parties strongly support participation by the necessary scientific expertise in these processes.

10. Adoption of Report

The report was adopted via correspondence.

11. Adjournment

The meeting was adjourned at 13:00 hours on Thursday, 18 July 2019.

Annex 1. List of Participants

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Annex 2. Agenda

1. Opening by the co-Chairs, Andrew Kenny (European Union) and Elizabethann Mencher (USA)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Review of Commission response to recommendations of the 2018 WG-EAFFM meeting
5. Report from the Secretariat on ongoing global processes
 - a. Intergovernmental Conference on Biodiversity Beyond National Jurisdiction (BBNJ)
 - b. International Seabed Authority
 - c. Other regional and global processes
6. Presentation and discussion on Scientific Council response to Commission request for advice in 2019:

VME related

 - a. Evaluation of the impact of scientific trawl surveys on VME in closed areas, and the effect of excluding surveys from these areas on stock assessments (request #5 in COM. Doc. 18-20)
 - b. Progress towards the 2020 re-assessment of VME closures and the 2021 re-assessment of the impacts of NAFO bottom fisheries (request #9 and #11 in COM. Doc. 18-20)
 - c. Revisions to VME taxa in CEM Annex I.E, Part VI (request #10 in COM. Doc. 18-20)

Roadmap

 - d. Work under the Ecosystem Approach road map, including testing the reliability of the ecosystem production potential model and other related models (request #8 in COM. Doc. 18-20)

Other issues

 - e. Update on relevant research related to the potential impact of activities other than fishing in the Convention Area (request #15 in COM. Doc. 18-20)
7. Discussion on other matters: Scope and direction of WG-EAFFM for 2020-2023
 - a. Preparations for the Review of Vulnerable Marine Ecosystems (VMEs) in Chapter II of the NAFO CEM
 - b. Other (discussion)
8. Other Business
 - a. ABNJ Global Oceans Project
 - b. OSPAR Commission proposal '*North Atlantic Current and Evlanov Seamount Marine Protected Area*'
9. Recommendations to forward to the Commission and/or Scientific Council
10. Adoption of Report
11. Adjournment

Annex 3. Updated List of VME Indicator Species for inclusion in Annex I.E of the NCEM**Table 1.** Updated List of VME Indicator Species for inclusion in Annex I.E of the NAFO CEM. Also included are the FAO ASFIS 3-alpha codes. Codes for the genus level are indicated in parenthesis. Blank entries indicate that no code exists for that taxon. Those taxa marked with an asterisk were documented exclusively from the NAFO seamount closures.

Common Name and FAO ASFIS 3- ALPHA CODE	Taxon	Family	FAO ASFIS 3-ALPHA CODE
	<i>Asconema foliatum</i>	Rossellidae	ZBA
	<i>Aphrocallistes beatrix</i>	Aphrocallistidae	
	<i>Asbestopluma</i> (<i>Asbestopluma</i>) <i>ruetzleri</i>	Cladorhizidae	ZAB (<i>Asbestopluma</i>)
	<i>Axinella</i> sp.	Axinellidae	
	<i>Chondrocladia grandis</i>	Cladorhizidae	ZHD (<i>Chondrocladia</i>)
	<i>Cladorhiza abyssicola</i>	Cladorhizidae	ZCH (<i>Cladorhiza</i>)
	<i>Cladorhiza kenningtonae</i>	Cladorhizidae	ZCH (<i>Cladorhiza</i>)
	<i>Craniella</i> spp.	Tetillidae	ZCS (<i>Craniella</i> spp.)
	<i>Dictyaulus romani</i>	Euplectellidae	ZDY (<i>Dictyaulus</i>)
	<i>Esperiopsis villosa</i>	Esperiopsidae	ZEW
	<i>Forcepia</i> spp.	Coelosphaeridae	ZFR
	<i>Geodia barrette</i>	Geodiidae	
	<i>Geodia macandrewii</i>	Geodiidae	
	<i>Geodia parva</i>	Geodiidae	
Large-Sized Sponges (PFR - Porifera)	<i>Geodia phlegraei</i>	Geodiidae	
	<i>Haliclona</i> sp.	Chalinidae	ZHL
	<i>Iophon piceum</i>	Acarnidae	WJP
	<i>Isodictya palmata</i>	Isodictyidae	
	<i>Lissodendoryx</i> (<i>Lissodendoryx</i>) <i>complicata</i>	Coelosphaeridae	ZDD
	<i>Mycale (Mycale) lingua</i>	Mycalidae	
	<i>Mycale (Mycale) loveni</i>	Mycalidae	
	<i>Phakellia</i> sp.	Axinellidae	
	<i>Polymastia</i> spp.	Polymastiidae	ZPY
	<i>Stelletta normani</i>	Ancorinidae	WSX (<i>Stelletta</i>)
	<i>Stelletta tuberosa</i>	Ancorinidae	WSX (<i>Stelletta</i>)
	<i>Stryphnus fortis</i>	Ancorinidae	WPH
	<i>Thenea muricata</i>	Pachastrellidae	ZTH (<i>Thenea</i>)
	<i>Thenea valdiviae</i>	Pachastrellidae	ZTH (<i>Thenea</i>)
	<i>Weberella bursa</i>	Polymastiidae	
Stony Corals (CSS - Scleractinia)	<i>Enallopsammia rostrata*</i>	Dendrophylliidae	FEY
	<i>Lophelia pertusa*</i>	Caryophylliidae	LWS

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	<i>Madrepora oculata*</i>	Oculinidae	MVI
	<i>Solenosmilia variabilis*</i>	Caryophylliidae	RZT
	<i>Acanella arbuscula</i>	Isididae	KQL (Acanella)
	<i>Anthothela grandiflora</i>	Anthothelidae	WAG
	<i>Chrysogorgia</i> sp.	Chrysogorgiidae	FHX
Small Gorgonians (GGW)	<i>Metallogorgia melanotrichos*</i>	Chrysogorgiidae	
	<i>Narella laxa</i>	Primnoidae	
	<i>Radicipes gracilis</i>	Chrysogorgiidae	CZN
	<i>Swiftia</i> sp.	Plexauridae	
	<i>Acanthogorgia armata</i>	Acanthogorgiidae	AZC
	<i>Calyptrophora</i> sp.*	Primnoidae	
	<i>Corallium bathyrrubrum</i>	Coralliidae	COR (Corallium)
	<i>Corallium bayeri</i>	Coralliidae	COR (Corallium)
	<i>Iridogorgia</i> sp.*	Chrysogorgiidae	
	<i>Keratoisis</i> cf. <i>siemensii</i>	Isididae	
	<i>Keratoisis grayi</i>	Isididae	
	<i>Lepidisis</i> sp.*	Isididae	QFX (Lepidisis)
	<i>Paragorgia arborea</i>	Paragorgiidae	BFU
	<i>Paragorgia johnsoni</i>	Paragorgiidae	BFV
Large Gorgonians (GGW)	<i>Paramuricea grandis</i>	Plexauridae	PZL (Paramuricea)
	<i>Paramuricea placomus</i>	Plexauridae	PZL (Paramuricea)
	<i>Paramuricea</i> spp.	Plexauridae	PZL (Paramuricea)
	<i>Parastenella atlantica</i>	Primnoidae	
	<i>Placogorgia</i> sp.	Plexauridae	
	<i>Placogorgia terceira</i>	Plexauridae	
	<i>Primnoa resedaeformis</i>	Primnoidae	QOE
	<i>Thouarella (Euthouarella) grasshoffi*</i>	Primnoidae	
	<i>Anthoptilum grandiflorum</i>	Anthoptilidae	AJG (Anthoptilum)
	<i>Distichoptilum gracile</i>	Protoptilidae	WDG
	<i>Funiculina quadrangularis</i>	Funiculinidae	FQJ
	<i>Halipterus</i> cf. <i>christii</i>	Halipteridae	ZHX (Halipterus)
Sea Pens (NTW – Pennatulacea)	<i>Halipterus finmarchica</i>	Halipteridae	HFM
	<i>Halipterus</i> sp.	Halipteridae	ZHX (Halipterus)
	<i>Kophobelemnion stelliferum</i>	Kophobelemnidae	KVF
	<i>Pennatula aculeata</i>	Pennatulidae	QAC
	<i>Pennatula grandis</i>	Pennatulidae	
	<i>Pennatula</i> sp.	Pennatulidae	

	<i>Protoptilum carpenteri</i>	Protoptilidae	
	<i>Umbellula lindahli</i>	Umbellulidae	
	<i>Virgularia mirabilis</i>	Virgulariidae	
Tube-Dwelling Anemones	<i>Pachycerianthus borealis</i>	Cerianthidae	WQB
Erect Bryozoans (BZN – Bryozoa)	<i>Eucratea loricata</i>	Eucrateidae	WEL
Sea Lilies (CWD – Crinoidea)	<i>Conocrinus lofotensis</i>	Bourgueticrinidae	WCF
	<i>Gephyrocrinus grimaldii</i>	Hyocrinidae	
	<i>Trichometra cubensis</i>	Antedonidae	
Sea Squirts (SSX – Asciacea)	<i>Boltenia ovifera</i>	Pyuridae	WBO
	<i>Halocynthia aurantium</i>	Pyuridae	
Unlikely to be observed in trawls; <i>in situ</i> observations only:			
Large xenophyophores	<i>Syringamina</i> sp.	Syringamminidae	

Northwest Atlantic Fisheries Organization



**Report of the NAFO Joint Commission-Scientific Council Catch Estimation Strategy
Advisory Group (CESAG) Meeting**

23 July 2019
via WebEx

NAFO
Dartmouth, Nova Scotia, Canada
2019

Report of the NAFO Joint Commission-Scientific Council Catch Estimation Strategy Advisory Group (CESAG) Meeting

23 July 2019
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Report of the NAFO Joint Commission-Scientific Council Catch Estimation Strategy Advisory Group (CESAG) Meeting

23 July 2019
via WebEx

1. Opening by the co-Chairs, Katherine Sosebee (USA) and Temur Tairov (Russian Federation)

The NAFO Joint Commission-Scientific Council Catch Estimation Strategy Advisory Group (CESAG) met via WebEx on 23 July 2019. The meeting was opened at 10:00 hours (Atlantic Daylight Time) by co-Chair Katherine Sosebee (USA) as Temur Tairov (Russian Federation) was unable to attend. Representatives from NAFO Contracting Parties (Canada and the European Union) and MRAG Americas, Inc. were in attendance (Annex 1).

2. Appointment of Rapporteur

The NAFO Secretariat was appointed rapporteur for this meeting.

3. Adoption of the Agenda

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

4. Presentation of the revised final report of the *Catch Estimates Methodology Study* by MRAG Americas, Inc.

At the WebEx meeting on 14 March, a draft final report was presented by MRAG Americas, Inc. (COM-SC CESAG-WP 19-01). At that meeting, it was agreed then that CESAG participants would provide written comments on this draft.

At the WebEx meeting on 30 April, CESAG participants reviewed the comments to provide clear feedback and direction to MRAG Americas, Inc. for the revision of the draft final report (COM-SC Doc. 19-02). The feedback and direction were forwarded to MRAG Americas, Inc. in COM-SC CESAG-WP 19-07 (Revised).

MRAG Americas, Inc. presented the revised draft final report *Catch Estimates Methodology Study* that was circulated to meeting participants on 08 July 2019.

Following the presentation by MRAG Americas, Inc. CESAG noted its satisfaction with the amendments made to the current revised draft final report. A few amendments were suggested in order to finalize the report. Contracting Parties agreed to submit any additional suggested amendments to the Secretariat by Thursday, 25 July to be immediately forwarded to MRAG Americas, Inc. for incorporation into the final report, as appropriate.

As Contracting Parties noted these amendments would be non-substantive, it was agreed that another meeting is not required, and the co-Chairs would review the final report for approval.

CESAG agreed on the following next steps:

- CESAG participants will provide final written comments to the NAFO Secretariat by 25 July 2019.
- The Secretariat will compile the comments and forward to MRAG Americas, Inc. by 26 July 2019 for incorporation in the final report, as appropriate.
- MRAG Americas, Inc. will submit the final report by 06 August
- This final report to be provided to the CESAG co-Chairs for final review and approval.

- Once the approval is received from the CESAG co-Chairs, the final invoice to be prepared to process for the payment.

Subsequent to this meeting, the course of action and timeline outlined above were followed.

The co-Chairs indicated that the final version of the report was in accordance with the scope of the project contract and all concerns and suggestions of CESAG were addressed in the final report.

In August 2019, the co-Chairs sought guidance from CESAG members through correspondence regarding the further distribution of the final report. CESAG recommended that the report be made public – to be circulated to all Contracting Parties and be published on the NAFO public website.

5. Potential enhancements to the CESAG method based on advice from the Scientific Council

The Catch Estimation Strategy (CESAG method), as outlined in Annex 1 of COM-SC Doc. 17-08, has been applied by the Secretariat since 2017. The estimates are forwarded to Scientific Council to inform its fish stock assessment work, as per the CESAG Terms of Reference (COM-SC Doc. 17-09). At its June 2019, the Scientific Council recommended that *CESAG review the Catch Estimation Strategy to consider potential refinements, such as the inclusion of gear type, mesh size, and quarter into the strategy.*

CESAG discussed the Scientific Council recommendation and agreed to consider these potential refinements. As an initial step, the co-Chair (Katherine Sosebee, USA) and the Secretariat will explore the possible inclusion these potential refinements. These findings will be reviewed and considered by CESAG prior to completing its catch estimates for 2019.

6. Other Business

No other matters were raised under this agenda item.

7. Recommendations

CESAG recommends that:

1. **The *Catch Estimates Methodology Study* report prepared by MRAG Americas, Inc. be accepted and made available as a public document.**
2. **The NAFO Secretariat, in coordination with the CESAG co-Chair, will consider the potential refinements to the Catch Estimation Strategy in response to the recommendation from the Scientific Council.**

8. Date and Time of Next Meeting

The date and time of the next meeting to be determined following the 2019 Annual Meeting of NAFO in September.

9. Adjournment

The meeting was adjourned at 11:00 hrs.

Annex 1. Participant List

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Alpoim, Ricardo Błażkiewicz, Bernard Granell, Ignacio Ribeiro, Cristina	European Union
Harford, Bill Moir Clark, James Parkes, Graeme Sissenwine, Michael Swasey, Jill Watson, Andy	MRAG Americas, Inc.
Kingston, Fred Aker, Jana Blasdale, Tom Federizon, Ricardo Goodick, Stan LeFort, Lisa	NAFO Secretariat

Annex 2. Provisional Agenda

1. Opening by the co-Chairs, Katherine Sosebee (USA) and Temur Tairov (Russian Federation)
2. Appointment of Rapporteur
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