

2021 Annual Report



Committed to **Conservation** and **Management** of **Fisheries** and **Ecosystems** in the Northwest Atlantic

NORTHWEST ATLANTIC FISHERIES ORGANIZATION



43rd NAFO
Virtual **Annual Meeting**
20-24 September 2021

©Artwork courtesy of Will Cooper

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NORTHWEST ATLANTIC FISHERIES ORGANIZATION

Annual Report 2021

This Annual Report summarizes and highlights discussions, decisions and events of NAFO during 2021. It does not replace the detailed NAFO meeting reports, such as *Scientific Council Reports and Meeting Proceedings of the Commission*, which are accessible on the NAFO Website.

www.nafo.int



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ISSN-0704-4798



Produced and distributed by:

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August 2022

A YEAR IN REVIEW



Fred Kingston, Executive Secretary

The second year of the global pandemic unfortunately continued to be a major issue for NAFO in 2021. For the second year in a row, all NAFO business was conducted virtually including the 2021 Annual Meeting.

Overall, NAFO held about twenty-five virtual meetings in 2021 and, thanks to the work of NAFO Chairs, the Organization was again able to address all NAFO core business. I also want to thank again my colleagues from Japan and the Republic of Korea for being willing to work into their late evenings to allow NAFO business to continue.

One benefit of using a virtual format is that members of the NAFO Secretariat were able to participate in more events and conferences that would not have been possible in more “normal times” because of limited travel budgets. This has allowed more opportunities to highlight some of the ground-breaking work that NAFO has undertaken, particularly regarding the ecosystem approach to fisheries management.

At the 2021 Annual Meeting, NAFO adopted a number of measures to enhance its protection of Vulnerable Marine Ecosystems (VMEs), in particular to significantly increase the protection of black corals and sea pens.

NAFO has now closed 27 designated VME areas to bottom fishing, including 15 areas to protect sponges, sea pens and corals and 12 seamount areas, making 372 201 km² (or 14%) of the NAFO Regulatory Area closed to bottom fishing. All seamount areas in the NAFO Regulatory Area at fishable depth (i.e. shallower than 4 000 metres) are now closed.

NAFO has also done extensive work in developing methods to assess ‘significant adverse impacts’ (SAI) on VMEs by fishing, using all six (6) of the criteria listed in Article 42 of the FAO International Guidelines for the Management of Deep-Sea Fisheries in the High Seas. This includes an analysis of VME functions, assessing connectivity between VME closures, modelling resilience of VME indicator species and determining fishery specific overlaps between VMEs and bottom trawling using the actual area of the seabed fished through detailed haul-by-haul fishing effort data.

Outside of its work on VMEs, NAFO is also exploring ways in which ecosystem considerations can be incorporated more into fisheries management decision-making through NAFO’s “Ecosystem Roadmap,” such as the use of ecosystem summary sheets. For this purpose, NAFO is organizing a dedicated “Ecosystem Roadmap Workshop” for fisheries managers and scientists to take place later in 2022. NAFO has also been doing extensive work to revise its “precautionary approach framework,” the results of which are expected in 2023.

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This year also mark changes in the leadership of both NAFO constituent bodies. Stéphane Artano (France, in respect of St. Pierre et Miquelon) completed a six-year tenure as NAFO President and Chair of the Commission and Carmen Fernandez (European Union) completed a two-year term as Chair of the Scientific Council. I wish to express my gratitude to both for their outstanding service to NAFO, particularly during the challenges of the pandemic. Temur Tairov (Russian Federation) takes over as NAFO President and Chair

of the Commission and Karen Dwyer (Canada) takes over as Chair of the Scientific Council. Also in the Scientific Council, Diana González-Troncoso (European Union) was elected vice-Chair and Chair of the Standing Committee on Research Coordination (STACREC), Mark Simpson (Canada) was elected Chair of the Standing Committee on Fisheries Science (STACFIS) and Rick Rideout (Canada) was elected Chair of the Standing Committee on Publications (STACPUB).

The Secretariat also said good-bye to Jana Aker, who has been a pillar of the Standing Committee on International control (STACTIC) for the past six years.

Fred Kingston,
Executive Secretary

CONTRACTING PARTIES OF NAFO



Canada



European Union



Republic of Korea



Cuba



France (in respect of St. Pierre and Miquelon)



Russian Federation



Denmark (in respect of the Faroe Islands and Greenland)



Iceland



Ukraine



United Kingdom



Japan



United States of America



Norway

ELECTED OFFICERS

Commission



President of NAFO &
Chair of the
Commission
Stéphane Artano
(France in respect of St.
Pierre et Miquelon)
Sep. 2019–Sep. 2021



vice-Chair of the
Commission
Temur Tairov
(Russian Federation)
Sep. 2019–Sep. 2021



Chair of STACFAD
Robert Fagan
(Canada)
Sep. 2020–Sep. 2022



vice-Chair of STACFAD
Jake Round
(United Kingdom)
Sep. 2021–Sep. 2023



Chair of STACTIC
Kaire Märtin
(European Union)
Sep. 2019–Sep. 2021



vice-Chair of STACTIC
Patrick Moran
(United States of America)
Sep. 2019–Sep. 2021

Scientific Council



Chair of the
Scientific Council
Carmen Fernandez
(European Union)
Sep. 2019–Sep. 2021



vice-Chair of Scientific
Council &
STACREC Chair
Karen Dwyer
(Canada)
Sep. 2019–Sep. 2021



Chair of STACFEN
Miguel Caetano
(European Union)
Jun. 2019–Sep. 2021



Chair of STACFIS
Katherine Sosebee
(United States of America)
Sep. 2019–Sep. 2021



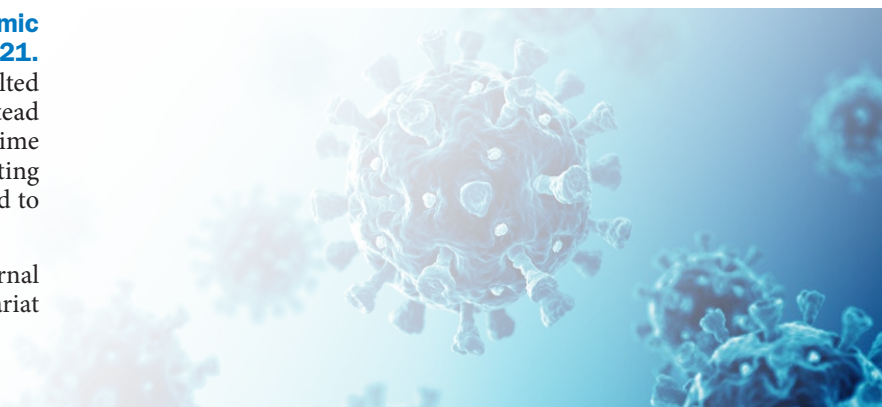
Chair of STACPUB
Margaret Treble
(Canada)
Sep. 2013–Sep. 2021

COVID-19 Pandemic

The global coronavirus (COVID-19) pandemic significantly impacted NAFO operations in 2021.

Since March 2020, the COVID-19 pandemic has resulted in multiple meetings moving to online formats, instead of the traditional face-to-face meetings. Due to time constraints, including the participation of Contracting Parties in various time zones, the meetings have had to continue with focused and prioritized agendas.

The NAFO Secretariat's participation in external relations and meetings as well as guests to the Secretariat were also significantly reduced.



ANNUAL MEETING

Virtual

NAFO's 43rd Annual Meeting was held 20–24 September 2021. Due to the ongoing pandemic, NAFO conducted the Annual Meeting virtually for the second time. During the opening session, delegates from all the NAFO Contracting Parties were welcomed to the meeting by NAFO President, Stéphane Artano.

Despite the limitations imposed by the pandemic, NAFO continued to have a productive meeting. NAFO made significant progress with key decisions on the sustainable management of NAFO-managed fish stocks, the protection of vulnerable marine ecosystems (VME) and its review of its Precautionary Approach Framework.

Notably, a number of measures were adopted to enhance its protection for Vulnerable Marine Ecosystems (VMEs), in particular to safeguard black coral and sea pens. These measures include:

- The addition of seven (7) new closed areas, as well as revisions to the boundaries of existing closures. With these additions, all seamounts at fishable depths (i.e. shallower than 4 000 metres) within the NAFO Regulatory Area are now protected,
- In addition to a five (5) year rollover of the current closures to protect VMEs in the NAFO Regulatory Area, five (5) further areas will be closed for this same duration,
- As a precautionary measure, an additional four (4) VMEs closed areas were adopted for two (2) years to allow the Scientific Council to conduct additional analysis incorporating the most recent fishery data.

NAFO ANNUAL MEETING - SEPTEMBER 2021



In addition, significant decisions were made regarding the following:

- Progress achieved to review NAFO's Precautionary Approach Framework.
- Continued additional conservation measures for cod in Div. 3M, including maintaining a port inspection effort and limiting bycatches during the first quarter closure of 2022.

- NAFO agreed on the closure of the shrimp fishery in Div. 3M for 2022 and will continue to work intersessionally to review the current management approach for this stock.

The 44th Annual Meeting will take place 19–23 September 2022, in Portugal.

Financial Status Update

The Standing Committee on Finance and Administration (STACFAD) oversees the budget and administrative matters of the Organization.

STACFAD was pleased to report that the overall financial affairs of the Organization continue to be in a stable position. Only one membership contribution was outstanding at the end of 2021 and its payment was received in early 2022.

The Relocation Fund which represents funds for the future recruitment and relocation costs of incoming and outgoing internationally recruited staff was increased to its maximum level of \$100,000. Also, the Performance Review Fund established for future costs associated with having an external performance review was increased by another \$15,000 to \$45,000.

The NAFO budget for 2021 was set at \$2.451 million (Table. 1) with actual expenditures coming in approximately \$300,000 under budget. The majority of the savings can once again be attributed to the COVID-19 pandemic reduction in meeting and travel costs with meetings being held virtually.



Baker Tilly Nova Scotia audited the 2021 financial statements for the first time in accordance with their appointment to audit NAFO'S financial records for the 2021–2025 fiscal periods.

The Committee put forward a budget proposal for the 2022 fiscal year of \$2.587 million, representing an increase of 5.6% over the 2021 budget. The increase in the 2022 budget can be attributed to routine economic and salary step increases for personnel, changes in personnel, and an increase to the monthly stipend for the internship budget.

Also, additional funds of \$45,000 were budgeted for independent experts to attend the NAFO WG-EAFFM Workshop of fisheries managers and scientists to draft ecosystem objectives as well as an external independent panel to conduct a scientific review of the NAFO Roadmap.

The recruitment process for the next NAFO Executive Secretary is expected to be launched in 2022 with an appointment for the 2023–2026 term.

Jake Round (United Kingdom) was nominated and elected as vice-Chair for a two-year term.

The next meeting of STACFAD will be held 19-23 September 2022, during the 44th Annual Meeting of NAFO in Portugal.

Table 1. NAFO Budget

	2021 Budget	2021 Actual Expenditures
Salaries and Benefits	\$1,892,000	\$1,896,527
Meeting and Travel	296,000	34,821
Computer Services	61,000	65,437
Professional Services	45,000	26,411
Fishery Monitoring	42,000	41,800
Other	115,000	85,045
Total	\$2,451,000	\$2,150,041

Contributions billed to NAFO Contracting Parties for 2021 are shown in Table 2. The NAFO Convention (Article IX.2) establishes a four-part cost sharing formula, including a proportion based on the nominal catches in the Convention Area.

Table 2. NAFO Contracting Parties Contributions

	2021 Member Contributions
Canada	\$795,042
Cuba	56,056
Denmark (in respect of Faroe Islands and Greenland)	247,030
European Union	201,750
France (in respect of St. Pierre et Miquelon)	60,157
Iceland	56,056
Japan	66,672
Norway	65,109
Republic of Korea	56,056
Russian Federation	92,223
Ukraine	56,056
United Kingdom	56,056
United States of America	250,319
Total	\$2,058,582

FISHERIES MANAGEMENT

2021 Fishing Effort

The fisheries in the NAFO Regulatory Area (NRA) are generally groundfish in Divisions 3LMNO and shrimp in Division 3M

In 2021, there were 41 fishing vessels spending approximately 4 788 days in the NRA. Smaller vessels tend to fish for yellowtail flounder and Atlantic halibut in Tail of the Grand Banks, and cod in the Flemish Cap using longline gears; and larger vessels go on much longer fishing trips using bottom trawls in the Nose and Tail of the Grand Banks and in the Flemish Cap directing for cod, Greenland halibut, redfish, and skates.



TOTAL ALLOWABLE CATCH (TAC) TABLE 2021 and 2022 (metric tons)

Stock/Year	2021	2022
3L Cod	0	0
3M Cod	1 500	4 000
3NO Cod	0	0
3LN Redfish	18 100	18 100
3M Redfish	8 448	10 933
3O Redfish	20 000	20 000
Sub-Area 2 and Div. 1F+3K Redfish	0	0
3LNO American plaice	0	0
3M American plaice	0	0
3LNO Yellowtail flounder	17 000	20 000
3L Witch flounder	0	0
3NO Witch flounder	1 175	1 175
3NO White hake	1 000	1 000
3NO Capelin	0	0
3LNO Skates	7 000	7 000
3LMNO Greenland halibut	12 225	11 755
Sub-areas 3+4 Squid (<i>Illex</i>)	34 000	34 000
3L Shrimp	0	0
3NO Shrimp	0	0
3M Shrimp	*0	*0
SA6 Alfonsino	0	0

The annual TACs are agreed by the Commission. TAC decisions are based on scientific advice of the Scientific Council which conducts regular assessment of the fishery stocks. Existing moratoria (TAC = 0) were extended to allow rebuilding of depleted stocks and quotas for other stocks were set by the Commission.

*At the 2021 NAFO Annual Meeting, the Commission decided to continue with the effort allocation scheme for the shrimp fishery in Division 3M for 2021 until it can meet in-person intersessionally to consider alternative means to manage this stock. This stock is regulated by effort (fishing days) The current effort allocation scheme is outlined in Annex I.B of the NAFO CEM.

COMPLIANCE

The Inspection and Surveillance Scheme is implemented to ensure compliance of NAFO-registered fishing vessels in the NAFO Regulatory Area. Inspectors are appointed by Contracting Parties and assigned to fishery patrol vessels tasked to carry out inspection duties at sea. In 2021, Canada and the European Union deployed five (5) patrol vessels in the NRA under the Scheme, collectively spending 342 patrol-days.

VULNERABLE MARINE ECOSYSTEMS (VMEs)

AREAS CLOSED TO BOTTOM FISHING

NAFO has now closed designated Vulnerable Marine Ecosystem areas (VMEs), including 15 areas to protect sponge, sea pen and corals and 12 seamount areas where bottom fishing is prohibited, making 372,201km² (or 14%) of the NAFO Regulatory Area closed to bottom fishing. All seamount areas in the NAFO Regulatory Area at fishable depth (i.e. shallower than 4 000 metres) are now closed (Figure 1)

Protocols for exploratory fishing in new fishing areas and for encountering VME species are elaborated in Chapter II of the NAFO Convention and Enforcement Measures (NCEM). These measures are reviewed by the Scientific Council and the Joint Commission–Scientific Council Working Group on the Ecosystem Approach Framework to Fisheries Management (WG-EAFFM) upon availability of new scientific information. The complete review of the VME areas scheduled for 2020 was postponed until 2022 as a result of the COVID-19 pandemic.

TOOLS AND APPLICATIONS

The NAFO Monitoring, Control, and Surveillance (MCS) website (<https://mcs.nafo.int>) continues to be a valuable tool for retrieving current information for compliance and inspection activities. In 2021, based on feedback from the Standing Committee on International Control (STACTIC), enhancements had been made to the Vessel Trip Mapping page.

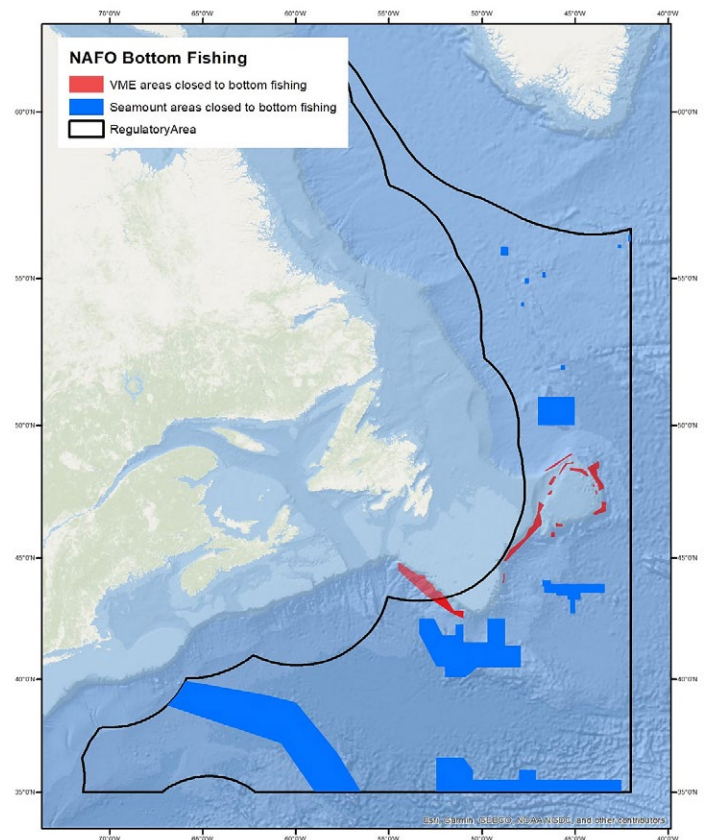


Figure 1. The NAFO VME closures that were adopted at the 2021 Annual Meeting

JOINT COMMISSION-SCIENTIFIC COUNCIL

Working Groups

In 2021, the NAFO Joint Commission–Scientific Council Working Group on Catch Estimation Strategy Advisory Group (CESAG), the Working Group on Risk-Based Management Strategies (WG-RBMS), and the Working Group on Ecosystem Approach Framework to Fisheries Management (WG-EAFFM) met virtually throughout the year. These Working Groups provide a forum for an improved dialogue

between fishery managers and scientists while addressing major issues concerning ecosystem approach to fisheries management, risk-based management strategies and catch reporting in a more holistic manner.

Meeting reports from the joint Working Groups can be found on the [NAFO website](https://www.nafo.int)

SCIENTIFIC COUNCIL

As a result of the COVID-19 pandemic, the 2021 Scientific Council (SC) June meeting was held virtually for a second year, with a somewhat reduced format.

Agenda items were prioritized, with highest priority being given to stock assessments and to requests that had been identified by the Commission as high priority at the 2020 Annual Meeting. A number of agenda items were deferred to be addressed during the 2021 Annual Meeting or the 2022 June SC meeting. Nevertheless, a considerable amount of work was achieved under very challenging circumstances.

During the June meeting, Scientific Council carried out full assessments for cod and redfish in Division 3M, white hake in Divisions 3LNO and Subdivision 3Ps, cod and capelin in Divisions 3NO, and American plaice and yellowtail flounder in Divisions 3LNO. Full details of all these assessments can be found in the Scientific Council June report (SCS Doc. 21/14).

As required by the Management Strategy (MS) for Greenland halibut stock in Subarea 2 + Divisions 3KLMNO, adopted by NAFO in 2017, Scientific Council was requested to monitor the status of this stock to determine whether Exceptional Circumstances were occurring. Scientific Council advised that Exceptional Circumstances were not occurring in 2021, but disruptions in surveys will trigger Exception Circumstances in 2022.

Based on the work of the Working Group on Ecosystem Science and Assessment (WG-ESA) in 2020 and at an additional meeting in March 2021, Scientific Council completed its five-yearly assessment of the risk of Significant Adverse Impacts (SAIs) from bottom fishing activities on VMEs in the NRA. The results indicated that small gorgonian, black coral, erect bryozoan and sea squirt VMEs have a high overall risk of SAI, whereas the large-sized sponges and large gorgonian



Bathypathes patula - Black coral colony (Antipatharia)
Photo credit: Bedford Institute of Oceanography (BIO)



Virgularia mirabilis - Sea pens
(Photo credit: Nick Hopgood)

VMEs have a low overall risk. The sea pen VME was assessed as having an intermediate risk of SAI. At the request of the commission, SC provided input and analysis of potential management options to address the outcome of the SAI assessment. Measures recommended by SC included ten extensions to existing closures and the creation of three new closures. If fully implemented, the proposed management options would result in NAFO achieving 'good' VME protection status for six VMEs and 'limited' protection status for one VME. Additionally, SC recommended changes to the existing boundaries for the Fogo, Newfoundland and Corner Rise Seamount closures, as well as the implementation of seven new individual seamount closures in the NRA north of Orphan Knoll.

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Scientific Council

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At its September 2021 meeting Scientific Council addressed new requests from the Commission as well as requests that had been deferred from the June 2021 meeting. Scientific Council also provided a progress update on the NAFO PA Framework Review, in addition to its initial considerations to address the Commission's request for an "independent scientific review of Tier 1 and its proposed application" of the NAFO roadmap. At this meeting, Scientific Council was also pleased to present a Scientific Merit Award to Carmen Fernández (EU-Spain), to acknowledge her four years of leadership and service as Chair of Scientific Council, Chair of STACREC, and co-Chair of WG-RBMS. Scientific Council also

present a Scientific Merit Award to Pierre Pepin to recognize his contributions in advancing the development and implementation of an ecosystem approach to fisheries withing NAFO and his tenure as WG-ESA co-Chair from 2016–2021.

At the request of the Commission, Scientific Council in conjunction with the NAFO/ICES *Pandalus* Assessment Group (NIPAG) drafted advice for northern shrimp in Div. 3M during an additional Webex meeting held immediately prior to the Annual Meeting. The assessment indicated that the stock is now below B_{lim} and has now entered the collapsed zone defined by the NAFO PA Framework. The improved recruitment in 2020 did not translate into an increase in stock biomass.

SC and NIPAG also met by Webex during November 2021 where advice was produced for northern shrimp in Subarea 1 and Div. 0A and northern shrimp in Denmark Strait and off East Greenland in response to requests from coastal States.

The Working Group on Ecosystem Science and Assessment (WG-ESA) met by Webex in November. Like other Scientific Council meetings in 2021, it was not possible to fully address all the items on the agenda, but considerable progress was made, particularly in the work on the sustainability of catches aspect of the Ecosystem Roadmap including work to develop models that support implementation of Tier 2 of the Roadmap.

SCIENTIFIC COUNCIL - SEPTEMBER 2021



SCIENTIFIC COUNCIL - JUNE 2021



MEETINGS

Webex

Due to the ongoing pandemic, NAFO continued their use of Webex to conduct meetings throughout 2021. This year, breakout sessions in Webex meetings were added. These breakout sessions allowed delegations to meet in intimate groups either before, during and after the meeting.

- 15 January 2021, NAFO Scientific Council Meeting for the selection of experts for the NAFO PAF review
- 25 February 2021, NAFO Joint Commission–Scientific Council Catch Estimation Strategy Advisory Group (CESAG) Meeting
- 10–11 March 2021, NAFO Working Group on Ecosystem Science and Assessment (WG-ESA) Meeting
- 18 March 2021, NAFO Working Group on Improving Efficiency of NAFO Working Group Process (E-WG)
- 13 April 2021, NAFO Joint Commission–Scientific Council Catch Estimation Strategy Advisory Group (CESAG) Meeting
- 28 April 2021, NAFO Heads of Delegation Meeting regarding 2021 Annual Meeting
- 03 May 2021, NAFO Scientific Council Standing Committee on Research Coordination (STACREC) Meeting
- 10–13 May 2021, NAFO Standing Committee on International Control (STACTIC) Intersessional Meeting
- 26 May 2021, Joint Advisory Group on Data Management (JAGDM) Meeting
- 27 May–11 June 2021, NAFO Scientific Council and its Standing Committees Meeting
- 12–13 July 2021, NAFO Commission Ad Hoc Working Group on Bycatches, Discards and Selectivity (WG-BDS) in NAFO Regulatory Area Meeting
- 14–16 and 20–21 July 2021, NAFO Joint Commission–Scientific Council Working Group on Ecosystem Approach Framework to Fisheries Management (WG-EAFFM) Meeting
- 17 August, 14 May, 08 April and 26 February 2021, NAFO Scientific Council Precautionary Approach Framework Working Group (PA-WG) Meetings
- 24–26 August 2021, NAFO Joint Commission–Scientific Council Working Group on Risk-based Management Strategies (WG-RBMS) Meeting
- 25 August 2021, NAFO Ad hoc Working Group on STACTIC Participation (WG-SP) Meeting
- 08–09 September 2021, NAFO STACTIC Ad Hoc Working Group on the issue of bycatch, directed fisheries, discards, and consideration of the elements necessary to adopt a landing obligation policy in NAFO Meeting
- 08–09 September 2021, NAFO/ICES *Pandalus* Assessment Group (NIPAG) Meeting
- 20–24 September 2021, NAFO 43rd Annual Meeting
- 07 October 2021, NAFO WG-EAFFM Workshop – ‘Ecosystem Approach Framework Open Dialogue’ Meeting
- 26 October 2021, Joint Advisory Group on Data Management (JAGDM) Meeting
- 28 October 2021, NAFO Scientific Council meeting for the selection of reviewers for NAFO roadmap tiers 1 and 2
- 04 November 2021, NAFO STACTIC Editorial Drafting Group of the NAFO CEM (EDG) Meeting
- 01–05 November 2021, NAFO/ICES *Pandalus* Assessment Group (NIPAG) Meeting
- 16–25 November 2021, NAFO Working Group on Ecosystem Science and Assessment (WG-ESA) Meeting

Meeting reports of all NAFO meetings can be found on the NAFO website.

EXTERNAL MEETINGS

FAO Transshipment meeting, Monday, 11 January 2021

Executive Secretary, Fred Kingston and Senior Fisheries Management Coordinator, Dr. Ricardo Federizon, participated in the virtual meeting.

NEAFC Security Policy Review Group, 28 January 2021

Database Developer/Programmer Analyst, DJ Laycock, and IT Manager, Matt Kendall, attended the virtual meeting.

34th Session of the Committee on Fisheries, 01–05 February 2021

Executive Secretary, Fred Kingston, attended the virtual meeting.

8th meeting of the Regional Fishery Body Secretariats' Network (RSN-8), 24–25 February 2021

Executive Secretary, Fred Kingston, attended the virtual meeting.

International Fisheries Commission Pension Society (IFCPS) Meeting, 14–16 April 2021

Executive Secretary, Fred Kingston, and Deputy Executive Secretary & Senior Finance & Staff Administrator, Stan Goodick, participated in the virtual meeting.

NEAFC 2nd Security Policy Review Meeting, 06 May

Database Developer/Programmer Analyst, DJ Laycock, and IT Manager, Matt Kendall, attended the virtual meeting.

Third Meeting to the Parties to the 2009 FAO Agreement on Port State Measures, 31 May–04 June 2021

Executive Secretary, Fred Kingston and Senior Fisheries Management Coordinator, Dr. Ricardo Federizon, participated in the virtual meeting.

Joint Coordinating Working Party on Fishery Statistics (CWP) Task Group meeting: catch concepts/fishing effort, 06–09 July 2021



Senior Fisheries Management Coordinator, Dr. Ricardo Federizon, participated in the virtual meeting.

International MCS Network's 1st Virtual Global Fisheries Enforcement Training Workshop (GFETW), 13–14 July 2021

Executive Secretary, Fred Kingston, attended the virtual meeting.

FAO Webinar on the use of still and video cameras to record deepwater shark and VME indicator catches by scientific observers, 31 August 2021

Database Developer/Programmer Analyst, DJ Laycock, attended the virtual meeting and gave a presentation.

FAO Deep Seas Fisheries (DSF) Project validation workshop, 7 September 2021

Executive Secretary, Fred Kingston, participated in the virtual workshop.

Aquatic Sciences and Fisheries Abstracts (ASFA) Advisory Board Meeting, 13–17 September 2021

Senior Publications/Web Manager, Alexis Pacey, attended the virtual meeting.

Annual Conference of the Fisheries Council of Canada (FCC), 12, 19 and 26 October 2021

Executive Secretary, Fred Kingston, attended the virtual conference.

Second (Virtual) Meeting of the WECAFC/OSPESCA/CRFM/CITES/CRFM Working Group on Shark Conservation and Management, 20–22 October 2021

Executive Secretary, Fred Kingston, attended the virtual meeting and gave a presentation.

CWP 28th meeting of the Fisheries Subjects, 02–05 November 2021

Senior Fisheries Management Coordinator, Dr. Ricardo Federizon, participated in the virtual meeting.

Inter-Sessional Meeting of the West Greenland Commission, 15 December 2021

Executive Secretary, Fred Kingston, attended the virtual meeting.

SECRETARIAT ACTIVITIES

Secretariat Staff Members 2021



Back row - left to right: Jana Aker, Fred Kingston, Ricardo Federizon, Tom Blasdale, Matthew Kendall, Alexis Pacey, Lisa LeFort.

Front row - left to right: Dayna Bell MacCallum, Stan Goodick, DJ Laycock, Sarah Guile.

In 2021, the Secretariat was comprised of the following employees:

Executive Secretary	Fred Kingston
Deputy Executive Secretary and Senior Finance and Staff Administrator	Stan Goodick
Senior Fisheries Information Administrator	Jana Aker (to 24 September)
Fisheries Information Administrator	Fiona McAllister (from 01 December)
Scientific Information Administrator	Dayna Bell MacCallum (on leave from mid-April)
Scientific Information Administrator (term)	Fiona McAllister (from mid-April)
Scientific Council Coordinator	Tom Blasdale
Senior Fisheries Management Coordinator	Ricardo Federizon
Office Administrator	Sarah Guile
IT Manager	Matthew Kendall
Database Developer/Programmer Analyst	DJ Laycock
Senior Executive Assistant to the Executive Secretary	Lisa LeFort
Senior Publications/Web Manager	Alexis Pacey

INTERNSHIPS

The NAFO Intern Program was put on hold since 2020 due to the ongoing global pandemic.

WELCOME & FAREWELL



Fiona McAllister

Fiona McAllister was welcomed to the NAFO team as the Scientific Information Administrator (term) in Spring 2021 then the Fisheries Information Administrator on 01 December.

The Secretariat wishes Jana Aker, Senior Fisheries Information Administrator, success in her future endeavours. She left at the conclusion of the NAFO Annual Meeting in September. Her contributions during her six years at NAFO will be missed.



Jana Aker

Outreach

MEDIA

The Secretariat circulated its annual press releases to a dedicated NAFO media contact list following the closing of the Annual Meeting. The Secretariat continues to try to increase its outreach including outreach initiatives with various groups and universities and by updating its various social media platforms.

EXTERNAL RELATIONS

During the past year, the NAFO Secretariat has participated in meetings to discuss NAFO-related issues, including the following:

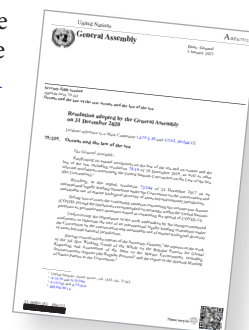
- 06 October 2021 – Executive Secretary, Fred Kingston, provided a virtual presentation on NAFO's ecosystem approach framework to fisheries management to the Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS) Webinar.
- 08 November 2021 – Executive Secretary, Fred Kingston, attended the virtual Workshop 'Setting the scene' aimed at improving Synergies in Shark Conservation and Management focussing on improving cooperation between regional fishery organisations and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) organized by the German Ministry for the Environment, Nature, Conservation and Nuclear Safety.
- 10 December 2021 – Executive Secretary, Fred Kingston, gave a virtual presentation on NAFO to an international fisheries law class at the University of Hamburg

INFORMATION REQUESTS

The NAFO Secretariat regularly responds to requests from various international sources. During the last year the Secretariat has responded specifically request for input on:

- Contribution to the report of the Secretary-General on oceans and the law of the sea, as mandated by **UNGA resolution 75/239 of 31 December 2020, entitled "Oceans and the law of the sea"**
- Contribution to the Regional Fishery Body Secretariats Network (RSN) **Magazine n. 20**

Throughout the year various informal requests are made to the Secretariat regarding specific information, procedures of NAFO, etc. by students, educational institutes, RFMOs, Contracting Parties representatives or other organizations. These are answered to the best of the ability and as time permits by various members of the NAFO Secretariat.



GUESTS TO THE SECRETARIAT



On 15 December 2021 the Chief of Protocol for the government of Nova Scotia, Christopher McCreery, paid a courtesy visit to the NAFO Secretariat.

On 15 September 2021, Minister Counselor for Economic Affairs, Embassy of the USA to Canada, Karen Choe-Fichte, paid a courtesy visit to the NAFO Secretariat



Networking & Information Management

INTERNET & SECURITY

In 2021, NAFO continued to significantly upgrade their security systems. All areas of security have been enhanced including Perimeter, Network, Endpoint, Application, and Data.

BACKUP

We upgraded our tape backup system to the latest technology in 2021. This gives us more capacity, faster backup speeds and the latest security and bug fixes.

PUBLICATIONS

In addition to the many meeting documents and working papers for NAFO meetings, the NAFO Secretariat prepared, posted to the web and/or printed the following publications in 2021:

- *Journal of Northwest Atlantic Fisheries Science*, Volume 52, 2021 (62 pages)
- *NAFO Conservation and Enforcement Measures*, 2022 (200 pages)
- *NAFO Annual Report*, 2020 (20-page booklet)
- *Meeting Proceedings of the Commission*, September 2020–August 2021 (256 pages)
- *NAFO Scientific Council Reports*, 2020 (462 pages)

All publications and documents are available on the NAFO website: www.nafo.int/Publications

JOURNAL OF NORTHWEST ATLANTIC FISHERY SCIENCE

The *Journal of Northwest Atlantic Fishery Science*, Vol. 52, 2021 was published online. The decision to discontinue print copies was adopted by the Standing Committee on Publications (STACPU) in September 2021. To submit articles, or view past publications, please visit the JNAFS website at <https://journal.nafo.int/>.



ASFA (AQUATIC SCIENCES AND FISHERIES ABSTRACTS)

ASFA inputting and indexing took place during summer, autumn and winter for 2021 documents and publications. New application software, OpenASFA, was developed for inputting records. It was released in the spring of 2021 and is part of the D4 Science infrastructure at FAO. Based on this new software application, FAO created a new free online portal to display the records created and published

in OpenASFA. The records can be viewed here: <https://www.fao.org/fishery/en/openasfa>

ProQuest, ASFA's publishing partner are planning on ingesting records in early 2022. All records prior to 2021 are on the ProQuest database and are available through your institution. Future developments for OpenASFA include indexing datasets.

The Aquatic Sciences and Fisheries Abstracts (ASFA) database is the premier reference in the field of fisheries, aquatic and marine sciences. Input to the ASFA database is provided by a growing international network of information centers monitoring over 3,000 serial publications, in addition to books, reports, conference proceedings, translations and grey literature covering the science, technology and management of marine, brackish water, and freshwater environments. More information about ASFA is available at: <https://www.fao.org/fishery/en/asfa>

APPENDIX I.

Comparison of Scientific Advice on NAFO Fish Stocks and the Management Measures decided by the Commission

Most recent scientific advice and year of provision			Management Measures Applied to 2022 and Beyond
FISH STOCKS	SCIENTIFIC ADVICE	YEAR	MANAGEMENT MEASURES
Cod in Division 3M	Yield of less than or equal to 5000 tonnes in 2022 results in a very low probability (=10%) of SSB being below B_{lim} in 2023 and a very low probability of exceeding F_{lim} . However, given the present low level of the SSB and projected decline of total biomass under any fishing scenario, in order to promote growth in SSB, Scientific Council advises catches of no more than 3 000 tonnes in 2022.	2021	To reach consensus, the Commission agreed on the TAC of 4 000 tonnes for 2022. The TAC represents a compromise among the TAC proposals which ranged from 3 000 to 5 000 tonnes. The flanking measures, such as time-area fishing limitations, port landing inspections and use of sorting grids designed to protect the spawning stock and juvenile cod were extended to 31 December 2022.
Cod in Divisions 3NO	No directed fishing in 2022 to 2024 to allow for stock rebuilding.	2021	It was agreed to maintain the moratorium applicable to 2022, 2023, and 2024.
Redfish in Divisions 3LN	Scientific Council conducted an update assessment of Redfish in Division 3LN followed by five-year projections (2021 to 2025) to evaluate the impact of annual removals at 18 100 tonnes on stock biomass and fishing mortality in relation to B_{lim} , B_{msy} and F_{msy} by 2026. At the beginning of 2020 the stock was in the safe zone, with a probability of biomass being above $B_{msy} > 90\%$, and with the probabilities of biomass being below B_{lim} and fishing mortality being above F_{msy} less than 1%. Annual catch of 18 100 tonnes during 2021–2025 will maintain biomass above B_{msy} at the beginning of 2026 with very high probability ($> 90\%$). Also, the probability of $B_{2026} < B_{lim}$ or $F_{2025} > F_{msy}$ is $< 1\%$ if the 2020 HCR TAC is maintained during 2021–2025.	2020	Consistent with the SC projection and in accordance with the WG-RBMS recommendation, it was agreed to set the TAC at 18 100 tonnes, applicable to 2021 and 2022.
Redfish in 3M	SC advises that catches do not exceed $F_{0.1}$ level, given the life history of the stock. This corresponds to a TAC of 10 933 tonnes in 2022 and 11 171 tonnes in 2023.	2021	It was agreed on the TAC corresponding to the $F_{0.1}$ scenario, i.e., 10 933 tonnes in 2022 and 11 171 tonnes in 2023.
Redfish in 3O	Catches have averaged about 12 000 tonnes since the 1960s and over the long term, catches at this level appear to have been sustainable. SC was unable to advise on an appropriate TAC for 2020, 2021 and 2022.	2019	The Commission agreed to rollover the TAC of 20 000 tonnes applicable to 2020, 2021 and 2022. Based on STATLANT 21A data, average annual catch for 2014–2018 was 10 088 tonnes.
Pelagic <i>Sebastes mentella</i> (oceanic redfish) in Subarea 2 + Divisions 1F and 3K	ICES advises that when the precautionary approach is applied, there should be zero catch in each of the years 2022, 2023, and 2024.	2021	The Commission agreed to rollover the TAC, which is set at zero, noting that the TAC might be adjusted in accordance with footnote 3 of the Quota Table.

Appendix I. cont'd

Most recent scientific advice and year of provision			Management Measures Applied to 2022 and Beyond
FISH STOCKS	SCIENTIFIC ADVICE	YEAR	MANAGEMENT MEASURES
American plaice in Divisions 3LNO	In accordance with the rebuilding plan, there should be no directed fishing on American plaice in Divs. 3LNO in 2022, 2023 and 2024. Bycatch of American plaice should be kept to the lowest possible level and restricted to unavoidable bycatch in fisheries directing for other species.	2021	It was agreed to maintain the moratorium applicable to 2022, 2023, and 2024.
American plaice in Division 3M	No directed fishing in 2021, 2022, and 2023.	2020	It was agreed to maintain the moratorium applicable to 2021, 2022, and 2023.
Yellowtail flounder in Divisions 3LNO	Fishing mortality up to 85% F_{msy} , corresponding to catches of 22 100 t, 20 800 t, and 19 900 tonnes in 2022 to 2024 respectively, have risk of no more than 30% of exceeding F_{lim} .	2021	The Commission agreed on a TAC of 20 000 tonnes, applicable to 2022 and 2023.
Witch flounder in Divisions 3NO	Scientific Council considers that there is not sufficient evidence that the stock would be able to sustain a fishery at this time and recommends that there be no directed fishing in 2021 and 2022.	2021	<p>From the Report of the NAFO Commission, 21–25 September 2020 (NAFO/COM Doc. 20-19): <i>The Commission recalled that the 2021 TAC for this stock has been decided at the 41st Annual Meeting in Bordeaux, France. No further action was undertaken.</i></p> <p>From the Report of the NAFO Commission, 23–27 September 2019, Bordeaux, France (NAFO/COM Doc. 19-34 Revised): <i>The Commission agreed to rollover the TAC of 1 175 tonnes, applicable to 2020 and 2021. Several Contracting Parties noted the critical importance of the PA Framework Review planned the 2020 WG-RBMS meeting for future decisions related to the management of this stock.</i></p> <p>From the Report of the NAFO Commission, 17–21 September 2018, Tallin, Estonia (NAFO/COM Doc. 18-28): <i>“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. The Commission agreed to maintain its decision that was made in 2017.”</i></p>
White hake in Divisions 3NO	For 2022–2023, catches of white hake in 3NO should not increase. Average annual total catches of the most recent five years were around 400 tonnes.	2021	It was agreed to rollover the TAC of 1 000 tonnes applicable to 2022 and 2023.
Capelin in Divisions 3NO	For 2022–2024, no directed fishery.	2021	It was agreed to maintain the moratorium applicable to 2022, 2023, and 2024.

Appendix I. cont'd

Most recent scientific advice and year of provision			Management Measures Applied to 2022 and Beyond
FISH STOCKS	SCIENTIFIC ADVICE	YEAR	MANAGEMENT MEASURES
Skates in Divisions 3LNO	The stock has been stable at recent catch levels (approximately 3 511 tonnes, 2015–2019 average). SC advises no increase in catches. Applicable for 2021–2022.	2020	The Commission agreed to rollover the TAC for two years, i.e., 7 000 tonnes applicable to 2021 and 2022. Footnote 13 of the Quota Table was updated.
Greenland halibut in Subarea 2 and Divisions 3KLMNO	The TAC for 2022 derived from the HCR is 15 864 tonnes.	2021	As calculated by SC and consistent with the MSE and HCR, it was agreed to set the TAC at 15 864 tonnes in 2+3KLMNO, 11 755 tonnes of which is allocated to the fishery in 3LMNO.
Northern shortfin squid in Subareas 3+4	TAC of no more than 34 000 tonnes per year for 2020, 2021, and 2022.	2019	The Commission agreed to rollover the TAC of 34 000 tonnes applicable to 2020, 2021 and 2022.
Northern Shrimp in Divisions 3LNO	No directed fishery in 2022 and 2023 as the stock is below B_{lim} with no indication of short-term recovery.	2021	It was agreed to maintain the moratorium applicable to 2022 and 2023.
Splendid alfonsino in Subarea 6	The substantial decline in CPUE and catches on the Kükenthal peak in the past year indicates that the stock may be depleted. Scientific Council advises to close the fishery until biomass increases to exploitable levels.	2019	In accordance with the scientific advice, the Commission decided to ban the fishing of this stock in the NAFO Regulatory Area.
Shrimp in Division 3M	To be consistent with the precautionary approach, SC advises that no directed fishery should occur in 2022.	2021	It was agreed to impose a moratorium on the fishing of this stock for 2022.

