



Groundfish Newfoundland and Labrador Region

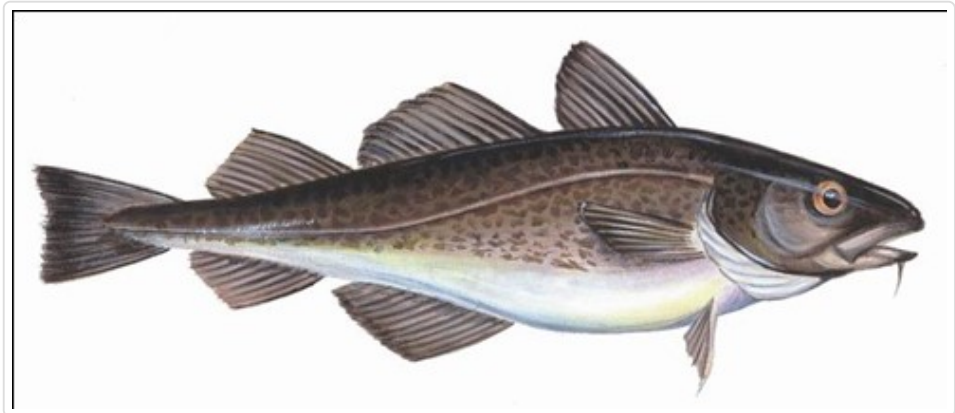
NAFO Subarea 2 + Divisions 3KLMNO

Foreword

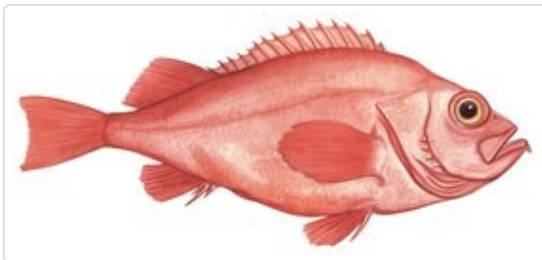
The purpose of this Integrated Fisheries Management Plan (IFMP) is to identify the main objectives and requirements for the

Newfoundland and Labrador Region groundfish fishery in NAFO Subarea 2 and Divisions 3KLMNO, as well as the management measures that will be used to achieve these objectives.

This document also serves to communicate basic information on the



Cod



Redfish



Greenland halibut

fishery and its management to Fisheries and Oceans Canada (DFO) staff, legislated co-management boards and



American plaice

committees, and other stakeholders. This IFMP provides a common understanding of the basic “rules” for the sustainable management of the fisheries resource.

This IFMP is not a legally binding instrument which can form the basis of a legal challenge. The IFMP can be modified at any time and does not fetter the discretionary powers of the Minister of Fisheries, Oceans and the Canadian Coast Guard (the “Minister”) set out in the *Fisheries Act*. The Minister can, for reasons of conservation or for any other valid reasons, modify any provision of the IFMP in accordance with the powers granted pursuant to the *Fisheries Act*.

Where DFO is responsible for implementing obligations under land claims agreements, the IFMP will be implemented in a manner consistent with these obligations. In the event that an IFMP is inconsistent with obligations under land claim agreements, the provisions of land claims agreements will prevail to the extent of the inconsistency.

As with any policy, the Minister retains the discretion to make exceptions to, or to change, this policy at any time. It is, however, DFO’s expectation and intention to follow the management process set out in this IFMP, with a view to contributing to increased certainty and direction for the groundfish fishery in Newfoundland and Labrador.

This IFMP will be in effect until it is replaced. While the elements of this plan will remain in effect indefinitely, quotas are subject to annual review and may be adjusted based on updated Science information. This could include changes to the TAC, as well as adjustments to annexes and website listings.

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Table of concurrence

The following updates and additions are included in this 2021 update to the 2020 2+3KLMNO Groundfish Integrated Fisheries Management Plan (IFMP):

Section	Notes
<u>Section 1.2</u>	The recreational fishery season dates were updated for 2020, as well as the FSC access section.
<u>Section 1.3</u>	The number of communal commercial and commercial participants was updated for 2020.
<u>Section 2.0</u>	Stock status updated for those stocks which have been assessed or are planned to be assessed by DFO Science (<u>Table 2</u>) or by NAFO Scientific Council (<u>Table 3</u>) since publication of the 2020 IFMP.
<u>Section 3.0</u>	Policy & Economic updated the socio-economic profile and dependency on groundfish information to reflect 2016-2020 data.
<u>Section 4.2</u>	Gear marking requirements added to Marine Mammal Interactions.
<u>Section 4.3</u>	Additional information on species at risk added.
<u>Section 4.4</u>	Marine conservation initiatives information has been updated to reflect new marine refuges and protected areas.
<u>Section 4.8</u>	The date under market access was updated from 2022 to 2023 due to one-year extension.
<u>Section 5.4</u>	2J3KL Atlantic cod Rebuilding Plan was added to the list of rebuilding plans.
<u>Section 6.1</u>	The Minister's commitment of the first 115,000t of Northern cod is now reflected in this section.
<u>Section 6.3</u>	The Northern Integrated Commercial Fisheries Initiative program was added and communal commercial fishery information was updated to reflect 2020 data.
<u>Section 7.1</u>	Total Allowable Catch decisions for 2021 and 2022 added to <u>Table 7</u> .
<u>Section 7.3</u>	New information on the Atlantic Fishery Regulation amendment that replaced PIIFCAF was added.
<u>Appendix 1</u>	Available CHPs were updated and Table was updated.

Section	Notes
Appendix 6	The 2J3KL Atlantic Cod Rebuilding Plan was added as Appendix 6.
Appendix 7	The 3LN Redfish Harvest Control Rule for 2021 and 2022 was added.
Appendix 10	Conservation & Protection enforcement information was updated to reflect 2016-2020 data.

1. Overview of the fishery

1.1 History of the fishery

The groundfish fishery, and particularly the Atlantic cod fishery, has been a very important part of the history, economy and culture of Newfoundland and Labrador for centuries. Prior to the 1950s, the fishery was primarily conducted inshore with small vessels, using gillnets or jigging. In the post-World War II era, a larger-scale commercial fishery began for several groundfish species including cod, Atlantic halibut, Greenland halibut (turbot), pollock and redfish in Newfoundland and Labrador waters. This post-war period saw technological and geographic expansion of the fishery, with large foreign offshore trawling vessels and the otter trawl fleet beginning to fish in Newfoundland and Labrador and Nova Scotia waters. This resulted in a dramatic increase of groundfish landings by 1968. The Food and Agriculture Organization of the United Nations (FAO) has compiled [catch statistics](#) for NAFO Subarea 2 and Divisions 3KLMNO, back to 1950.

As fishing capacity increased throughout the 1960s and 1970s, the intensified fishing pressure began to have an impact on fish stocks and groundfish habitat in Atlantic Canada. In 1977, Canada signed on to the United Nations Convention on the Law of the Sea (UNCLOS), and extended its marine jurisdiction from 12 nautical miles from the coastline, to 200 nautical miles. Initially, some NAFO Contracting Parties were permitted to fish in Canadian fisheries waters with authorization from Canada, however

in recent decades all authorized NAFO fishing activity has been restricted to the NAFO Regulatory Area outside the 200 mile exclusive economic zone (EEZ).

Intensive fishing continued throughout the 1980s. For the 2J3KL cod stock, landings increased from approximately 151,750 t under a TAC of 155,000 t in 1980, to 238,000 t under a TAC of 235,000 t in 1989. A moratorium was implemented on the 2J3KL cod fishery in July 1992, due to substantial declines in catches and stock biomass. As most inshore fleets in Newfoundland and Labrador were primarily dependent on the cod fishery, the closure resulted in severe declines in revenue for those enterprises and significant economic impact within the province.

The 2J3KL cod moratorium was followed by reductions and closures of other groundfish stocks. In 1994 a moratorium was implemented for 3LNO American plaice, 3M American plaice, 3NO witch flounder, and 3LNO yellowtail flounder; followed by a moratorium on 3NO cod in 1995; 2GH cod in 1996; 2+3 grenadier in 1997; and 2+3K American plaice, 3LNO haddock, 2+3K redfish, and 2J3KL witch flounder in 1998. The moratoria on 3LNO yellowtail flounder and 3NO witch flounder were lifted in 1998 and 2015 respectively.

Since the establishment of the cod moratorium in 1992, other groundfish species have accounted for a significant proportion of the catch, and shellfish such as shrimp, snow crab and lobster have become highly valuable fisheries in Newfoundland and Labrador. From 2013 to 2017, more than 127,000 tonnes of groundfish (valued at over \$311 million), was caught in 2+3KLMNO. Since 2006, a small-scale inshore Stewardship Fishery of 2J3KL cod (Northern cod stock) has been permitted to allow fishers the opportunity to test their beliefs about the health of the stock. The information gained contributes to the stock assessment and future management of the stock.

Since the mid-2000s, changing marine environmental conditions appear to have resulted in an increase in groundfish resources in some areas around Newfoundland and Labrador, while shellfish resources in some areas have

declined. This shift may be signaling a return to a groundfish-dominated ecosystem, although the structure of that system may differ from that of the pre-moratorium period. This shift has resulted in increased participation in groundfish fisheries in recent years, and increased landings of some groundfish species.

1.2 Type of fishery

The groundfish fishery in 2+3KLMNO is primarily commercial, with recreational and Indigenous (Food, Social and Ceremonial) components.

Commercial

The following species are currently taken in directed groundfish fisheries or as bycatch in 2+3KLMNO:

- American plaice
- Atlantic cod
- Atlantic halibut
- Greenland halibut (turbot)
- grenadier
- haddock
- lumpfish
- monkfish
- redfish
- skate
- white hake
- winter flounder (blackback)
- witch flounder (greyscale)
- yellowtail flounder

There are eight distinct domestic fleet sectors involved in the commercial groundfish fishery in 2+3KLMNO:

- offshore (vessels greater than 100' in length overall)
- Scandinavian longliners (greater than 100'), fixed gear

- midshore (65-100'), fixed gear
- midshore (65-100'), mobile gear
- nearshore (less than 89'), mobile gear
- nearshore (40-89'), fixed gear
- inshore (<40'), fixed gear
- commercial communal

The management of these sector groups is integrated, with all groups subject to at-sea and dockside monitoring. Most fleets and fisheries are subject to Enterprise Allocation (EA) or Individual Quota (IQ) management regimes; however, where these management regimes are not in place, similar management tools are often used, such as:

- weekly limits;
- trip limits;
- trip permits; and
- harvest caps.

Indigenous access to commercial fisheries is authorized via a communal commercial licence issued by DFO under the authority of the *Aboriginal Communal Fishing Licences Regulations*. These licences are issued communally to the respective Indigenous group, and not its individual harvesters. These licences are fished in a manner that is comparable to the general commercial fishery.

Recreational

Since 2006, a recreational groundfish fishery has been in place in Newfoundland and Labrador waters. Recreational fisheries are managed using season and bag limits. In 2021, the recreational groundfish fishery was open for a total of 39 days between July 3 and October 3. Refer to the *Fisheries Management Decision* for more details.

Indigenous

In the 1990 Sparrow decision, the Supreme Court of Canada ruled that where an Indigenous group has a right to fish for Food, Social, and Ceremonial (FSC) purposes, it takes priority, after conservation, over other uses of the resource.

Fisheries and Oceans Canada (DFO) negotiates time-limited fisheries agreements with eligible Indigenous organizations to set out fishing arrangements for FSC purposes. Licences are issued and contain conditions respecting a variety of fisheries management measures like, but not limited to, species, harvest limits, fishing areas and seasons. The agreements may also provide for fisheries related economic opportunities.

In 2021, Atlantic cod was the only 2+3KLMNO groundfish species for which a licence was issued to harvest for FSC purposes.

Aquaculture

DFO continues to support the research and development of the aquaculture sector. Under the Access to Wild Resources as it Applies to Aquaculture Policy, the Department will provide the aquaculture industry with reasonable access to the wild groundfish resource by scientific licence to assist with industry development (growth and diversification). Requests to access the wild resource will be contingent upon stakeholders providing detailed project proposals to DFO for review and approval.

1.3 Participants

Commercial

In 2020, there were a total of 1,804 licensed enterprises for groundfish in 2+3KLMNO (all fleets). These harvesters were primarily in northeastern and eastern Newfoundland coastal communities in NAFO Division 3L (53.9%) and 3K (39.5%), with a small number of harvesters based in Labrador in NAFO

Divisions 2J (6.5%) and 2H (0.1%). Of the total number of licenced enterprises, 1,426 (79%) were active in 2020 (as defined by having landings) and operated 1,616 vessels.

Recreational

A licence is currently not required for the recreational harvest of groundfish. The fishery is open to both residents and non-residents and the level of participation varies annually. Retention of Atlantic halibut, Spotted and Northern wolffish, and any species of shark is prohibited. Sculpins and cunners may be released.

Indigenous

As of December 2020, there were a total of thirty-seven (37) 2+3KLMNO groundfish communal commercial licences authorized in the Newfoundland and Labrador Region to the following Indigenous groups:

- Nunatsiavut Government (NG)
- Innu Nation
- NunatuKavut Community Council (NCC)
- Miawpukek First Nation (MFN)
- Qalipu First Nation (QFN)
- MAMKA (Aboriginal Aquatic Resource and Oceans Management Department composed of MFN and QFN representatives).

1.4 Location of the fishery

This IFMP covers groundfish fisheries taking place in NAFO Subarea 2 and Divisions 3KLMNO (refer to [Figure 1](#)), an area adjacent to Labrador and eastern Newfoundland, extending over the Nain Bank and Hamilton Bank in the north, and to the Grand Banks in the south. As shown in [Figure 1](#), part of divisions 2+3KLMNO extends beyond Canada's 200 nautical mile EEZ. For more details on governance, see [Section 1.6](#).

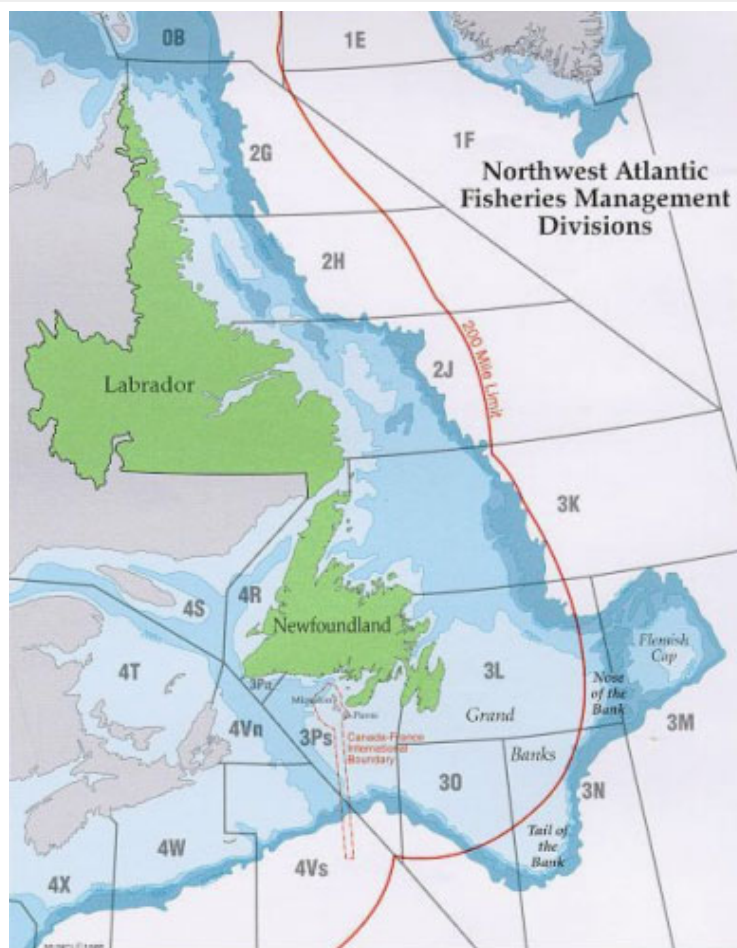


Figure 1: Map of Northwest Atlantic Fisheries Organization (NAFO) Management Divisions in Newfoundland and Labrador Region and surrounding area.

Catch weight for 2014 to 2016 of groundfish in 2+3KLMNO is shown in [Figure 2](#) below based on logbook data. Note that each grid square is 10 Km by 10 Km. Only records that are georeferenced could be included; some records were excluded due to privacy regulations.

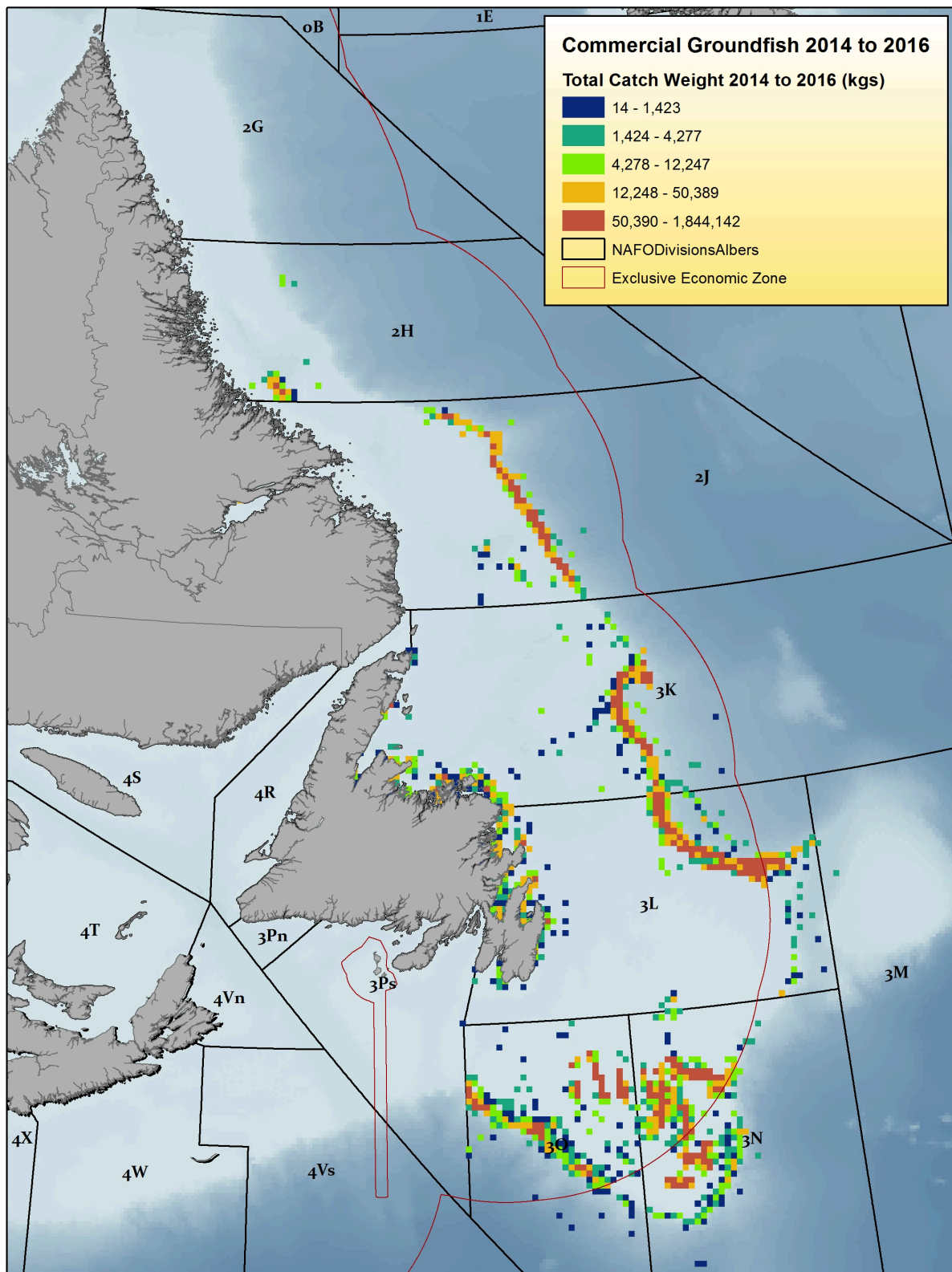


Figure 2: Map illustrating distribution of catch weight of groundfish in NAFO Subarea 2 and Divisions 3KLMNO for 2014 to 2016 period.

These data indicate that highest catch weight occurs on the nose and tail of the Grand Banks, and the continental shelf edge of NAFO Division 2J, 3K, 3L, 3N and 3O.

1.5 Fishery characteristics

Groundfish is harvested in 2+3KLMNO using both fixed and mobile gear to target a number of species, with several stocks under moratorium (refer to [Table 1](#)). The fixed gear fishery uses primarily gillnets, as well as handlines, longlines, and cod pots to a lesser extent. The mobile gear fishery uses primarily bottom otter trawl. The specific authorized gear used varies by fishery, and is specified in licence conditions provided to fish harvesters. Fleet sectors are based on vessel size and gear type (described in [Section 1.2](#)).

Table 1: Directed 2+3KLMNO groundfish fisheries and species currently under moratorium.

Species	Directed fishery	Moratorium
American plaice		2+3K/ 3LNO* / 3M*
Atlantic halibut	3NO ¹	
Cod	3M*	2GH/ 2J3KL ² / 3NO*
Greenland halibut	2+3K* / 3LMNO*	
Grenadier		2+3
Haddock		3LNO
Lumpfish	2GHJ / 3KL	
Monkfish	3LNO	
Redfish	3LN* / 3M*/3O*	2+3K
Skate	3LNO*	
White hake	3NO*	
Winter flounder	3KL	
Witch flounder	3NO*	2J3KL

Species	Directed fishery	Moratorium
Yellowtail flounder	3LNO*	

Notes:

*Stock is NAFO-managed

¹ This is a portion of the broader 3NOPs4VWX5c Atlantic halibut stock, managed by DFO-Maritimes region. For further details on the management of this fishery please refer to the [4VWX5 Groundfish IFMP](#).

² Stock is under moratorium; inshore Stewardship fishery.

Conservation Harvesting Plans (CHPs) describe fishery-specific information such as permitted gear types, season dates, and other management measures. There are several management measures that apply across fisheries, including specified season dates, area closures, small fish protocols, incidental catch protocols, and dockside monitoring. As well there are requirement to use gear tags, vessel monitoring systems (VMS), logbooks, hailing, and at-sea observers in some fisheries (refer to [Section 7](#) for further details on management measures). Additional stock-specific measures from CHPs are outlined in [Appendix 1, Table 8](#).

1.6 Governance

Several groundfish stocks in NAFO Subarea 2 and Divisions 3KLMNO are managed exclusively by Canada, with TACs and other management measures established by DFO. Some other groundfish stocks that straddle Canada's 200-mile limit and discrete stocks on the Flemish Cap (3M) are managed by the Northwest Atlantic Fisheries Organization (NAFO). NAFO is a regional fisheries management organization consisting of Canada and eleven other Contracting Parties, with an overall purpose to ensure the long term conservation and sustainable use of the fishery resources in the Convention Area and, in so doing, to safeguard the marine ecosystems in which these resources are found. While the NAFO Convention Area includes the 200-mile exclusive economic zones of coastal states jurisdiction (Canada, Denmark in respect of the Faroe Islands and Greenland, France in respect of

St. Pierre et Miquelon, and USA), its regulatory action is limited to those parts of the Convention Area beyond areas of national jurisdiction, defined as the NAFO Regulatory Area (NRA). A list of the stocks managed by Canada and those managed by NAFO are provided in Table 1 (refer to notes).

The current management cycle for groundfish in Subarea 2 and Divisions 3KLMNO, with respect to both Canadian-managed and NAFO-managed stocks, runs from January 1 to December 31. Canadian groundfish fisheries are governed by the Fisheries Act, regulations made pursuant to the Act, and DFO policies. The Fisheries Licencing Policy of Newfoundland and Labrador Region provides details on the various licensing policies that govern the commercial fishing industry in the Newfoundland and Labrador Region (please note that DFO should be consulted for all purposes of interpreting this document). Other key regulations and policies that apply include, but are not limited to:

- Aboriginal Communal Fishing Licences Regulations
- Atlantic Fishery Regulations 1985
- Fishery (General) Regulations
- Commercial Fisheries Licencing Policy for Eastern Canada, 1996

DFO has established a Groundfish Advisory Committee as a forum to discuss issues with stakeholders and Indigenous groups related to the management of the groundfish fishery in Subarea 2 and Divisions 3KLMNO. The Committee's purpose is to seek input and advice from members to inform the sustainable use of groundfish resources. The Committee meets semi-annually, once in the spring to discuss northern cod, and a separate meeting in the fall to discuss other groundfish stocks. The Terms of Reference are found in Appendix 7. With respect to NAFO, DFO seeks the advice and input from stakeholders and Indigenous groups on Canada's priorities through a separate NAFO Advisory process.

1.7 Approval process

This Integrated Fisheries Management Plan document is approved by the DFO Regional Director General of the Newfoundland and Labrador Region. Opening and closing dates for specific areas and gear types and other issues that arise through the fishery are addressed by DFO staff in consultation with industry. Any significant changes to management measures are generally tabled by DFO officials at the advisory meeting.

The intent is to manage the fishery based on the measures outlined in this IFMP, unless there are conservation issues. Stakeholders seeking new management measures should table their requests through their representative as part of the Groundfish Advisory Committee process.

2. Stock assessment, science and traditional knowledge

To inform sound management decisions for groundfish resources in Subarea 2 and Divisions 3KLMNO, DFO Science provides peer-reviewed information and advice, through both the domestic and NAFO scientific advisory processes, on the status of the resource and anticipated results of management options.

DFO Science conducts routine data collection, analysis, and specialized research on the general biology of groundfish in support of stock assessment which feeds into the CSAS and NAFO processes described above, including:

- collection and archiving of catch data from fish harvester logs, at-sea observers, electronic logs, and unloading slips;
- collection of biological and demographic data from dockside, at-sea and research vessel surveys; and,
- archiving of biological data collected from DFO and contract sources.

The annual research vessel survey includes the collection of biological data and physical oceanographic data (e.g. water temperature, salinity), and provides critical fishery-independent data for undertaking stock assessments. DFO Science has carried out stratified random research vessel surveys in portions of NAFO Subareas 2+3 since the early 1970s. The research vessel survey of Divisions 2HJ3KLNO is conducted in the fall between mid-September and mid-December, although in some years the survey has extended into January. From 2011 to 2018, 674 sets were allocated over the survey area. During each set, fish collected by the bottom trawl are weighed and counted and these data are used to develop biomass and abundance indices for individual fish stocks. For some species (including Atlantic cod, American plaice, Greenland halibut, Atlantic halibut, white hake, yellowtail flounder) otoliths are collected for age estimation. Data from these samples form the basis of age based-population models used in the assessment of some stocks. Data and samples are also collected to assess maturity stage, and trends in fish diet over time.

2.1 Biological characteristics

As a group, groundfish live and feed in association with the ocean floor, but individual species exhibit a wide range of biological characteristics.

Generally, groundfish have relatively long life spans with many species living for two to three decades, while redfish are known to live up to 75 years.

Reproductive patterns differ between species. Some species such as Atlantic cod release pelagic eggs and have planktonic larvae that float independently in the water column, while monkfish deposit eggs in a mucous sheet that floats near the surface, and lumpfish deposit egg masses directly on rocky bottoms that are defended by the males. Redfish have an entirely different reproductive pattern as they are live bearers, releasing larvae that may be transported large distances before settling toward the bottom.

Juvenile groundfish may settle to bottom habitats and remain relatively stationary throughout their life or migrate large distances annually for feeding, spawning or overwintering. The diet of juvenile groundfish typically

consists of invertebrates such as copepods and euphausiids. As they grow, some species will consume small fish but continue to feed on invertebrates either in the water column (e.g. redfish) or on the bottom (e.g. American plaice), while other species switch to a mostly fish-based diet.

American plaice

American plaice (*Hippoglossoides platessoides*) is a benthic marine flatfish with an elongated, strongly laterally compressed body. On the Grand Banks and Labrador shelf, American plaice consists of three stocks: 2+3K; 3LNO; and 3M. American Plaice are usually considered a cold-water species; they are most numerous within a temperature range from just below zero to around -1.5°C. Once settled, adults and juveniles frequently inhabit the same areas over depths ranging from 20 to 700 m with a preference for depths in the range of 100 to 300 m.

American plaice are generally a slow-growing and moderately long-lived species that exhibit sexual dimorphism; females grow faster and are larger than the males for any given age. American Plaice are highly opportunistic feeders throughout their life cycle, feeding on whatever prey items are available in appropriate sizes for ingestion and varying with fish size, locality and seasonally. Adults and juveniles feed on polychaetes, echinoderms, molluscs, crustaceans and fish (capelin, sand lance, other flatfish, etc.).

Atlantic cod

Atlantic cod (*Gadus morhua*) is a gadoid fish that inhabits water on both sides of the North Atlantic. On the Grand Banks and Labrador shelf, Atlantic cod consists of four stocks: 2GH; 2J3KL; 3M; and 3NO. Cod that inhabit the northeast Newfoundland Shelf and Labrador shelves typically mature between five and seven years of age. Since the late-1980s females have been maturing at about age five, which is earlier than in previous years. The number of eggs produced by a single female in a single breeding season typically ranges from between 300,000 and 500,000 at maturity to several million eggs for females greater than 75 cm in length. Atlantic cod typically spawn over a period of less than three months in water that may vary in

depth from tens to hundreds of metres. During the larval stage, the young feed on phytoplankton and small zooplankton in the upper 10 to 50 metres of the water column. After the larval stage, the juveniles swim, or 'settle', to the bottom, where they appear to remain for a period of 1 to 4 years. These settlement areas are known to range from very shallow (< 10 m to 30 m) coastal waters to moderately deep (50 to 150 m) waters on offshore banks. After this settlement period, it is believed that the fish begin to undertake the often-seasonal movements (apparently undirected swimming in coastal waters) and migrations (directed movements to and from specific, highly predictable locations) characteristic of adults. Adult cod feed on a wide variety of prey, and can also be cannibalistic. In the Northwest Atlantic, capelin are an important prey source. Cod off Labrador and eastern Newfoundland grow slowly and are less productive compared with populations in the eastern Atlantic, the Flemish Cap (3M), and further south in the western Atlantic.

Historically much of the Northern cod stock (2J3KL) was highly migratory. They over-wintered near the edge of the continental shelf and migrated in spring/summer to shallow waters along the coast and onto the plateau of Grand Bank. By the mid-1990s these offshore over-wintering components were barely detectable, but at the same time, there were aggregations of cod in the inshore in Division 3L and southern part of Division 3K. These inshore components appeared to be more productive during the 1990s than those in the offshore. Inshore components were small relative to the components that historically migrated into the inshore from the offshore during spring/summer. The shoreward seasonal migration pattern observed prior to the moratorium did take place in recent years. Overwintering inshore aggregations, such as those observed in Smith Sound, Trinity Bay, have diminished and most of the stock now appears to overwinter in the offshore, similar to the pre-moratorium period. The offshore biomass of cod has increased in most of the stock area in the past decade, except in southern Division 3L. The current contribution of offshore cod to the inshore during summer is likely substantial.

Greenland halibut

Greenland halibut (*Reinhardtius hippoglossoides*) is a deep-water flatfish species with a circumpolar distribution through the north Atlantic and Pacific oceans. The species is widely distributed in the northwest Atlantic ranging stock in Subarea 2 and Divisions 3KLMNO is considered to be part of a biological stock complex, which includes Subareas 0 and 1. Greenland halibut are late maturing and relatively long lived. Off Newfoundland and Labrador, Greenland halibut have shown changes in distribution across decades of changing temperature, moving to deeper, warmer water associated with the cold period of the mid-1980s to mid-1990s.

Redfish

There are two species of commercial interest in the genus *Sebastes* with overlapping distributions in several areas of the northwest Atlantic, namely the Gulf of St. Lawrence, Laurentian Channel, off Newfoundland and south of Labrador Sea: the deep sea redfish (*Sebastes mentella*), typically higher in abundance at depths greater than 350m, and Acadian redfish (*Sebastes fasciatus*), preferring waters of less than 300m. They are currently commercially fished on the slopes of the Grand Bank, both in Division 3LN (north-south east) and Division 3O (south-west).

Redfish (*Sebastes* spp.) are viviparous, long living and slow growing, with females attaining size of 50% maturity at 30-34 cm. For both species, settlement to the bottom is a long process. Older redfish may also be associated with the bottom, but dense aggregations are also observed in pelagic (open ocean) habitats. The external characteristics of the two species are very similar, making them difficult to distinguish. Therefore they are reported collectively as "redfish" in the commercial fishery statistics. *S. mentella* and *S. fasciatus* are also treated as a single species in the Grand Bank surveys carried out by Canada, Russia and EU-Spain, and are commonly referred to as "Beaked redfish". In Division 3LN, neither redfish species belong to isolated local populations, but rather are part of a large Northwest Atlantic population complex ranging from the Gulf of Maine to south of Baffin Island.

Within the 3LN management unit, relative abundance of *S. mentella* – *S. fasciatus* may vary with the recruitment level and survival of juveniles from either species, though *S. fasciatus* tend to be more abundant in the south (Division 3N) while *S. mentella* is more abundant in Division 3L. Over 2011-2015, most of Canadian spring and autumn surveys found larger redfish concentrations more frequently in Division 3N, despite the major proportion of the being taken annually from Division 3L.

Witch flounder

Witch flounder (*Glyptocephalus cynoglossus*) is a long lived, right-eye flounder found across the North Atlantic, with distribution in the western Atlantic that extends from Labrador to North Carolina. In NAFO Divisions 2J3KL, individuals have been aged to over 30 years old, but the number of age groups in this area was substantially reduced from the mid-1970s to early-1980s, with fish older than 15 years rarely seen in the survey or fishery catch in after the early-1980s. Aging information has been unavailable for this species on the Newfoundland and Labrador Shelves since 1994.

Witch flounder are most commonly associated with shelf slope waters and deeper channels, but are present at a wide range of depths, from <100 m to well over 1,000 m. This species prefers soft substrates such as sand, clay or mud. Historically, the highest abundance of 2J3KL witch flounder was found in the Hawke Channel. The 3NO witch flounder stock is mainly distributed in Division 3O along the southwestern slope of the Grand Bank, at depths ranging from 60-200 m.

Spawning of witch flounder in the Northwest Atlantic occurs over a prolonged period from March through to September; the highest intensity is considered to occur from March to May in 2J3KL.

2.2 Ecosystem interactions

The Newfoundland and Labrador (NL) Shelves bioregion can be described in terms of four ecosystem production units: the Labrador Shelf (2GH), the Newfoundland Shelf (2J3K), the Grand Bank (3LNO), and southern Newfoundland (3Ps). Trends in the fish community in these ecosystem units are typically summarized from DFO research vessel surveys data in terms of fish functional groups defined by general fish size and feeding habits: small, medium, and large benthivores, piscivores, plank-piscivores, planktivores, and shellfish.

Commercial groundfish species encompass several of these functional groups. For example, Atlantic cod, Greenland halibut, and Atlantic halibut are included in the piscivores functional group, American plaice, haddock, and thorny skate are large benthivores, yellowtail flounder and witch flounder are among the medium benthivores, while redfishes are considered plank-piscivores. This broad distribution among functional groups is an indication that the aggregate referred to as commercial groundfish is not conformed by ecologically similar species. However, some commonalities among these species include adult stages that can be deemed as medium to large in size (maximum sizes >50cm), and medium to high trophic positions in the food web.

Groundfish species experience many life history changes as they develop. They generally begin with pelagic juvenile stages with a higher incidence of zooplankton in the diet, and change to more demersal habits as they grow, and their diet becomes more reliant on forage fishes (e.g. capelin, sandlance, herring) and/or larger invertebrates (e.g. shrimp, crabs). While a diet signature can be coarsely described for each groundfish species for general characterizations (i.e. a "typical/average" diet composition), actual diets vary in space and time based on food availability. For example, in the case of 2J3KL Atlantic cod, capelin was the dominant prey species prior to its collapse in the early 1990s, but northern shrimp became its primary prey from the mid-1990s until the early 2010s. Capelin did increase its dominance in the cod diet in the early-to-mid 2010s, but did not reach the 1980's level.

Consistent signals in diet composition were also documented for Greenland halibut, reflecting the changes in relative availability of capelin and northern shrimp in the environment. Since the mid-2010s capelin and northern shrimp have shown clear reductions in their contributions to the diets of groundfish species like Atlantic cod, Greenland halibut and American plaice.

Food sources can impact individual condition, fitness and/or survival, and overall productivity, both in terms of quality (e.g. energy rich prey such as capelin vs energy poor prey such as shrimp), and quantity (availability of prey). For example, capelin availability has been shown to be a significant driver of Atlantic cod in 2J3KL.

Ongoing work by DFO Science in Newfoundland and Labrador (Ecosystem Research Program) which has been presented at scientific assessment meetings, has shown that the fish functional groups for which commercial groundfish species are dominant components are also important predators in these ecosystem units. The food consumption by these functional groups coarsely represents around 60-70% of the total food consumption estimated for the entire fish community (this estimation includes all finfishes and commercial shellfish, but does not include other invertebrates, and underestimates consumption by forage fishes; it is considered a first approximation to total consumption), and can exert important predation pressure. Predation mortality by these fishes has played an important role in the decline of northern shrimp in 2J3KL.

In terms of trends, the ecosystem units in the NL Shelves bioregion were historically dominated by groundfish, most typically Atlantic cod, which were also the main target of fisheries. Fishing pressure on these ecosystems was very high during the 1960s and early 1970s, with overall fishing catches above the capacity of these ecosystems to sustain. Even though catches were lower in the 1980s, many stocks had not recovered from the previous decade of exploitation, and some continued to be overfished at a time when environmental conditions were becoming less favorable for demersal fishes.

During the late 1980s and early 1990s, the entire bioregion underwent an abrupt shift in community structure. Changes were observed earlier and were more dramatic in the north than in the south, but were evident all around. These changes involved major declines in groundfish and pelagic fishes, and involved both commercial and non-commercial species alike. Capelin, a key forage species, collapsed in 1991, and has yet to rebuild to its pre-1991 levels. During this period, the cold environmental conditions together with the reduced predation pressure from groundfishes, allowed the build-up of shellfish species, like northern shrimp and snow crab. Even though changing environmental conditions were important drivers of this abrupt ecosystem change, the overfishing experienced by many important fish stocks is believed to have weakened the ability of these ecosystems to tolerate environmental changes.

By the mid-late 2000s, warmer environmental conditions (more favourable to demersal fish than shellfish production), coupled with some modest improvements in capelin levels prompted an overall build-up of fish biomass, while shellfish declined. By the early 2010s, total fish biomass in the Newfoundland Shelf (2J3K) and Grand Bank (3LNO) had nearly doubled from the mid-1990s level. These trends also speak about a changing internal structure of these ecosystems, with groundfish regaining their dominance in the marine community. However, these changes do not mean a return to the same ecosystem structure that existed prior to the 1990s.

Overall, even though total biomass has improved since the mid-1990s, current levels are still well below the total biomasses observed in the 1980s. Furthermore, since 2014, ecosystem units in this bioregion have shown reductions in total biomasses in the order of 30% in comparison to immediately precedent years, suggesting conditions that promoted groundfish build-ups have eroded. This current low ecosystem productivity may be linked to declines in primary production and zooplankton biomass, and the simultaneous reductions in availability of forage species like capelin and shrimp. Although fishing has undoubtedly been an important driver of

changes in the commercial groundfish species in the NL Shelves bioregion, bottom-up processes and species interactions have also been major driving forces in these ecosystems over the past three decades.

2.3. Indigenous Traditional Knowledge

Indigenous traditional knowledge and traditional ecological knowledge from Indigenous groups are considered in science processes and management decisions. Indigenous organizations in Newfoundland and Labrador have participated formally in the following DFO processes related to 2+3KLMNO groundfish:

- Participation in meetings of the 2+3KLMNO Groundfish Advisory Committee to discuss and provide input on management measures for groundfish.
- Participation in 2+3K and 3L Greenland halibut Working Group
- Participation in DFO's Cod Recovery Working Group process
- Participation in science advisory processes for groundfish Stock Assessments
- Participation as members of the Canadian Delegation to NAFO to inform Canadian position on management approach for NAFO-managed stocks.

2.4. Stock assessments

Domestic

For groundfish stocks managed by Canada, the Canadian Science Advisory Secretariat (CSAS) oversees the provision of scientific advice required by DFO. Scientific assessments and advice with respect to groundfish resources are regularly conducted through regional CSAS peer-review meetings to address a number of scientific questions related to the management of Canadian oceans and the conservation of marine and freshwater resources. Individuals with knowledge and technical expertise may be invited to these meetings to contribute to the peer review and development of advice. A

schedule of past and upcoming science advisories is available [online](#). During the science advisory process, the health of marine ecosystems, the conservation of species at risk, and the status and trends of different stocks of fish, invertebrates and marine mammals in Canada are considered.

Following the provision of new science advice on groundfish stocks, advisory committee meetings are held with stakeholders and Indigenous groups to discuss the scientific results and obtain input on appropriate fisheries management measures.

The status of each stock of 2+3KLMNO groundfish can be found in [Table 2](#), based on the most recent CSAS Science Advisory Reports. [Published CSAS reports](#) can be found on our website.

Table 2: Status of DFO-managed 2+3KLMNO groundfish stocks based on most recently available CSAS assessment.

Stock	Assessment type	Status of stock
2+3K American plaice	Research vessel survey indices	<p>An LRP was determined using SSB from the survey, and recruitment estimated from the relative cohort strength model. Recruitment has generally been impaired when survey SSB is below 70,000 t, therefore this was chosen as the LRP. Survey SSB was at 24% of the LRP in 2009. A stock status update in 2020 indicated that the stock remains in the critical zone.</p> <p><u>The CSAS Science Response Report is expected to be available online in 2021</u></p>
2GH Cod		<p>Information on the Labrador cod stock is sparse and there is no consistent survey time series from which to evaluate trends. This area has shown no sign of recovery since a moratorium on directed fishing was imposed in 1993.</p> <p><u>CSAS Science Advisory Report 2011/037</u></p>

Stock	Assessment type	Status of stock
2J3KL Cod	State space model	<p>The 2021 assessment indicated that SSB remains in the critical zone at 52% of the LRP. The estimated fishing mortality remains low. Probability that SSB will reach the LRP by 2022 is <1% under all catch scenarios; probability that the stock will increase in 2022 over 2019 levels is 52-59%. Ecosystem indicators such as plankton and forage species (capelin, shrimp) suggest overall low productivity which may negatively impact cod productivity and stock recovery.</p> <p><u>The report from the 2021 assessment is expected to be available online in 2021</u></p> <p><u>CSAS Science Advisory Report 2019/050</u></p>
Roundnose Grenadier	Research vessel survey indices	<p>Available abundance indicators from RV surveys are limited and sample only a portion of the preferred depth range/distribution of this species. Recent RV survey data indicate that population levels appear to be relatively stable since the early 2000s. Population models indicate that current bycatch levels appear to be sustainable; however reduction in bycatch could enhance recovery of roundnose grenadier.</p> <p><u>CSAS Science Advisory Report 2010/021</u></p> <p>There is no schedule for this assessment.</p>

Stock	Assessment type	Status of stock
3LNO Haddock	Research vessel survey indices	<p>RV survey indices have varied without trend since the mid-1990s. Recruitment of fish less than 20cm in length is low with no fish less than 20cm being caught in the 2016 or 2017 fall RV surveys. No LRP exists for this stock although several were considered. Prospects for this stock are poor.</p> <p><u>CSAS Science Advisory Report 2018/009</u></p>
Lumpfish	Research vessel survey indices	<p>Lumpfish was assessed by COSEWIC as Threatened in 2017. The Pre-COSEWIC assessment (<u>Research Document 2016/068</u>) was carried out in November 2015.</p> <p>A DFO Recovery Potential Assessment (RPA) for Lumpfish took place in March 2019. The Science Advisory Report from this meeting will be available on the <u>CSAS website</u> when published</p> <p>There is no schedule for this assessment.</p>
3LNO Monkfish	Research vessel survey indices	<p>Recruitment of Age 3 Monkfish over 2014-17 was less than 50% of the time-series' average, and the lowest in the 2001-2017 time-series. The relative fishing mortality index for Divs. 3LNOPs peaked during 2002-03, and then remained below the 1996-2016 average since 2007. A proxy limit reference point (LRP) of 2,000 t was accepted for Divs. 3LNOPs Monkfish. The Monkfish biomass index for Divs. 3LNOPs (5,010 t) was estimated to be 2.5 times larger than the accepted LRP.</p> <p><u>CSAS Science Advisory Report 2018/010</u></p> <p>There is no schedule for this assessment.</p>

Stock	Assessment type	Status of stock
2+3K Redfish		Redfish biomass increased considerably from 2003-2010, with biomass during 2010-2015 reaching approximately half of the pre-collapse (1978-1990) levels. Recruitment since 2000 was above the long term average, with a time-series high in 2014. The fishery remains under moratorium. In the absence of an LRP, it is not possible to identify which zone of the PA framework this stock is currently within. <u>CSAS Science Advisory Report 2020/021</u>
2J3KL Witch Flounder	Research vessel survey indices	In 2016 and 2017, indices of abundance and biomass reached the highest levels since 1990, but remained below the levels of the mid-1980s. The abundance index of fish <23 cm indicate improved recruitment since 2013. Following a contraction of the stock to shelf slope areas through the 1990s, the distribution of the stock has expanded in recent years, returning to deep channels occupied in the mid 1980s. The stock is currently in the critical zone, at 68% of the LRP. <u>CSAS Science Advisory Report 2018/053</u>

NAFO managed stocks

With respect to groundfish stocks managed by NAFO, science advice is provided by NAFO's Scientific Council which consists of scientific experts from NAFO Contracting Parties (including Canada). Advice is provided by the Scientific Council upon request by the NAFO Commission for specific fish stocks within the NAFO Regulatory Area; by coastal states who need information on stocks within their EEZs; or, on stocks that are straddling between two jurisdictional areas. The Scientific Council primarily conducts its scientific assessments during its annual meeting in June, with advice presented to the NAFO Commission during its annual meeting in

September. Scientific Council stock assessments and scientific advice are published on the [NAFO website](#). A summary of, and link to the most recent NAFO Scientific Council assessments for 2+3KLMNO groundfish can be found in [Table 3](#).

Table 3: Status of NAFO-managed 2+3KLMNO groundfish stocks based on the most recent assessment.

Stock	Assessment type	Status of stock
3M American plaice	Research vessel survey Trends - XSA Illustration	<p>The stock has increased in recent years due to improved recruitment (at age 3) since 2009, and recovered to the levels of the mid 1990s, when the fishery was closed. Both catches and F remain low, although slightly higher catches are observed since 2013.</p> <p>SCR 20/039 (PDF, 2.61 MB)</p>
3LNO American plaice	ADAPT framework - Virtual Population Analysis	<p>Fishing mortality increased from the late 1990s to 2015 and has subsequently declined. Recruitment has been very low in the last two decades. The stock remains low compared to historic levels and is presently considered to be below Blim.</p> <p>Recommendation is that, in accordance with the rebuilding plan, there should be no directed fishing on American plaice in Div. 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.</p> <p>SCR 21/035 (PDF, 5.47 MB)</p> <p>This stock will be assessed in June 2024.</p>

Stock	Assessment type	Status of stock
3M cod	Virtual Population Analysis type Bayesian model	<p>Strong year-classes of 2009 to 2011 are dominant in the current SSB. Subsequent recruitments are much lower; therefore, substantial declines in stock size are occurring and expected to continue in the very near future under any fishing scenario.</p> <p>Yield of less than or equal to 5 000 tonnes in 2022 results in a very low probability ($\leq 10\%$) of SSB being below Blim in 2023 and a very low probability of exceeding Flim. 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, SC advises catches of no more than 3 000 tonnes in 2022.</p> <p><u>SCR 21/017REV</u> (PDF, 5.61 MB)</p>
3NO cod	ADAPT framework - Virtual Population Analysis	<p>Recommended no directed fishing in 2022 to 2024 to allow for stock rebuilding. Bycatch of cod in fisheries targeting other species should be kept at the lowest possible level. Projections of the stock were not performed but given the poor strength of all year-classes subsequent to 2006, the stock will not reach Blim in the next three years.</p> <p><u>SCR 21/031</u> (PDF, 3.21 MB)</p> <p>This stock will be assessed in June 2024.</p>

Stock	Assessment type	Status of stock
2+3KLMNO Greenland halibut	2 Models – SCAA & SSM	<p>The Statistical Catch-at-Age (SCAA) and state-space modeling (SSM) assessment methodology applied to the Greenland halibut resource in 2017 was updated to include data up to 2019. Estimates of quantities such as recruitment, exploitable biomass, and average F hardly changed from values estimated in 2017. There has been a slight downward trend in exploitable biomass, but this is expected to reverse given that the estimates of incoming recruitment are of above average strength. New data and recent resource trends are consistent with predictions made in 2017 when a revised management procedure for Greenland halibut was adopted.</p> <p>The TAC for 2022 derived from the HCR is 15 864 tonnes.</p> <p><u>SCR 20/030</u> (PDF, 1.31 MB)</p>

Stock	Assessment type	Status of stock
3LN Redfish	Surplus production model	<p>Stock declined with a sudden rise of the catch over the late 1980's first half of the 1990's, and started to gradually recover after catches fell to a residual level in response to stock collapse. The maximum observed sustainable yield (MSY) of 21 000 t is linked to a Fmsy at 0.11/year and a Bmsy at 185 000 t. There is a high probability (>90%) that the stock was at least 38% above Bmsy at the beginning of 2020, after crossing 2019 under a fishing mortality not higher than 46% Fmsy.</p> <p>At present the stock is kept at a safe zone and is moderately exploited. Nevertheless this management unit is also passing through low productivity times and the end of this regime is (still) not foreseen. Under the present circumstances, a medium term risk based management strategy that goes beyond what the stock can offer and sustain now is not a precautionary strategy. Therefore, management should be based on bi-annual assessments and short term equilibrium yield projections.</p> <p>SCR 20/033REV2 (PDF, 930 KB)</p>
3M Redfish	Extended Survivor analysis (XSA)	<p>Catches do not exceed F0.1 level, given the life history of the stock. This corresponds to a TAC of 10 933 t in 2022 and 11 171 t in 2023.</p> <p>SCR 19/016 (PDF, 1.18 MB)</p> <p>This stock will be assessed in June 2023.</p>

Stock	Assessment type	Status of stock
3O Redfish	Research vessel survey trends	<p>There is insufficient information on which to base predictions of annual yield potential for this resource. Stock dynamics and recruitment patterns are also poorly understood. Catches have averaged about 12,000 t since the 1960s and over the long term, catches at this level appear to have been sustainable. Scientific Council is unable to advise on an appropriate TAC for 2020, 2021 and 2022.</p> <p><u>SCR 19/038</u> (PDF, 988 KB)</p>
3LNO Thorny skate	Research vessel survey trends	<p>The stock is currently above Blim. The probability that the current biomass is above Blim is >95%. Total survey biomass in Divisions 3LNOPs has remained stable since 2007 but is still lower than the levels observed at the end of the 1980s. Recruitment in 2017 was above average but declined to below average in 2018 and was average in 2019. Fishing mortality is currently low.</p> <p><u>SCR 20/041REV</u> (PDF, 2.46 MB)</p>

Stock	Assessment type	Status of stock
3NO White hake	Research vessel survey trends	<p>The assessment is considered data limited and is associated with a relatively high uncertainty. Biomass of this stock increased in 1999 and 2000, generated by the large recruitment observed in those years. Subsequently, the biomass index decreased and has since remained variable but lower. No large recruitments have been observed since 2000, however the 2019 index is the highest in two decades. Fishing mortality is low. Given the absence of strong recruitment, catches of white hake in 3NO should not increase.</p> <p><u>SCR 21/022</u> (PDF, 2.24 MB)</p> <p>This stock be assessed in June 2023.</p>

Stock	Assessment type	Status of stock
3NO Witch flounder	Surplus production model	<p>The stock size increased from 1994 to 2013, then declined during 2013-2015 and has since increased slightly. In 2020 the stock is at 44% Bmsy (59 880 tonnes). There is 14% risk of the stock being below Blim and a 4% risk of F being above Flim ($F_{msy}=0.063$). With the exception of the growth of the stock following improved recruitment in the late 1990s, it is unclear if the recruitment index is representative. Nevertheless, the recruitment index in 2019 is the highest in the time series.</p> <p>The probability of F exceeding Flim in 2020 is 16% at a catch of 1 175 tonnes (TAC 2020). The probability of F being above Flim ranged from 2% to 50% for the catch scenarios tested. The population is projected to grow under all scenarios and the probability that the biomass in 2023 is greater than the biomass in 2020 is greater than 60% in all scenarios. The population is projected to remain below Bmsy through to the beginning of 2023 for all levels of F examined with a probability of greater than 88%. The probability of projected biomass being below Blim by 2023 was 7% to 11% in all catch scenarios examined and was 4% by 2023 in the F=0 scenario. The probability of F exceeding Flim in 2020 is 16% at a catch of 1 175 tonnes (TAC 2020). The probability of F being above Flim ranged from 2% to 50% for the catch scenarios tested. The population is projected to grow under all scenarios and the probability that the biomass in 2023 is greater than the biomass in 2020 is greater than 60% in all scenarios. The population is projected to remain below Bmsy through to the beginning</p>

Stock	Assessment type	Status of stock
		<p>of 2023 for all levels of F examined with a probability of greater than 88%. The probability of projected biomass being below Blim by 2023 was 7% to 11% in all catch scenarios examined and was 4% by 2023 in the F=0 scenario.</p> <p>SCR 20/046REV (PDF, 2.24 MB)</p>
<p>3LNO Yellowtail flounder</p>	<p>Surplus production model</p>	<p>Fishing mortality up to 85% Fmsy , corresponding to catches of 22 100 t, 20 800 t, and 19 900 t in 2022 to 2024 respectively, have risk of no more than 30% of exceeding Flim, and are projected to maintain the stock above Bmsy.</p> <p>SCR 21/018 (PDF, 1.82 MB)</p>

2.5. Precautionary approach

Canada has national and international commitments to establish decision-making frameworks for groundfish stocks that are compliant with the Precautionary Approach (PA), in order to ensure sustainable fisheries management. The Precautionary Approach can be defined as being cautious when scientific knowledge is uncertain, and to not postpone or fail to take action to avoid serious harm to fish stocks or their ecosystems by using the absence of adequate scientific information as a reason for such inaction. This approach is widely accepted as an essential part of sustainable fisheries management. Applying the Precautionary Approach to fisheries management decisions entails establishing a harvest strategy that:

- identifies three stocks status zones (healthy, cautious, and critical) according to upper stock reference points and limit reference points;
- sets the removal rate at which fish may be harvested within each stock status zone; and,
- adjusts the removal rate according to fish stock status variations (i.e. spawning stock biomass or another index/metric relevant to population

productivity) based on decision rules.

Groundfish stocks assessments are written in a manner consistent with DFO's Precautionary Approach. For more information visit the [Sustainable Fisheries Framework](#) website.

With respect to those groundfish stocks managed by NAFO, stock assessments are written in a manner consistent with NAFO's Precautionary Approach Framework. Further information can be found on [NAFO](#)'s website.

For some groundfish stocks reference points exist and in other cases work continues on identifying reference points.

2.6. Research

A goal of DFO Science is to provide high quality knowledge, products and scientific advice on Canadian aquatic ecosystems and living resources, with a vision of safe, healthy, productive waters and aquatic ecosystems. In addition to ongoing research vessel survey research to inform stock assessments for both Canadian and NAFO managed stocks, DFO Science carries out scientific research related to fish ecology and nearshore fisheries.

Various studies are currently being conducted to improve our understanding of the important ecological processes relevant to groundfish. Growth, condition, and maturity are being investigated for a variety of stocks, and research into predation on groundfish, and by groundfish, is being advanced through ongoing modelling efforts. A few examples of these research efforts are described below.

Between 2012 and 2015, DFO released more than 10,000 Greenland halibut with external tags. The majority of these fish were tagged along the edge of the continental shelf in NAFO Divisions 3KL. This program has a two-tiered reward system in order to attempt to estimate reporting rates, with rewards at either a \$20 value or \$100 value, depending on the tag colour. As Greenland halibut are relatively long lived (maximum age of 30 years;

maturity at approximately 14 years of age), it is expected that these experiments will yield information on movements and migration for years to come. This information will be evaluated in future stock assessments.

DFO-Science have maintained a tagging program for Atlantic cod in the Newfoundland and Labrador region since the 1950s (annually since 1978), which now includes records of over 400,000 tagged fish. The program tags a sample of fish across the province in an effort to better understand exploitation rates and movement of cod. A subset of fish are tagged with high reward (\$100) tags to estimate reporting rate of the tags by harvesters. In recent years, information from the tagging program has been used in the stock assessment model for 2J3KL cod. In addition, since 2005, DFO has deployed an annual sample of acoustic transmitters in cod to better understand timing and movement of fish. An array of acoustic receivers along the eastern and northeastern Newfoundland is maintained by DFO to support the acoustic telemetry program.

The Sentinel Survey of Atlantic cod has been conducted in NAFO Divisions 2J3KL since 1995, and currently there are twenty-two complete years of catch and effort data and biological information. Sentinel Survey data are collected by trained fish harvesters at various inshore sites along the eastern and northern coasts of Newfoundland, and the southern coast of Labrador. The main goals of the Sentinel Survey Program include: to develop indices of relative abundance (i.e., catch rates) for resource assessments; to incorporate knowledge of inshore fish harvesters in the resource assessment process; to evaluate inter-annual variability in resource distribution over inshore areas; and to collect information on key biological parameters used in assessments (i.e. fish length, sex, maturity stage, and otoliths to determine fish age), as well as biological samples used for genetic, physiological, and toxicological analyses, along with stomach contents for food and feeding studies.

3. Economic, social and cultural importance of the fishery

3.1. Socio-economic profile

In NAFO Divisions 2+3KLMNO, there are directed commercial fisheries for groundfish species including: Greenland halibut, Atlantic halibut, lumpfish, monkfish, redfish, skate, white hake, winter flounder, witch flounder, and yellowtail flounder (refer to [Section 1.5, Table 1](#)). Although 2J3KL cod is under moratorium, a stewardship fishery and cod quality project is in place.

Over the 2016 to 2020 period, groundfish landings have trended upwards, albeit with some variability by species. For instance, redfish and Greenland halibut landings declined in the more recent years of the data series, whereas the landings of other groundfish has increased. Refer to [Table 4](#).

Table 4: Landings of 2+3KLMNO groundfish landed in Newfoundland and Labrador Region by all fleet sectors (2016-2020).

2+3KLMNO Groundfish Catch^{1,2} excluding discards (tonnes)					
Species	2016	2017	2018	2019	2020(p)
Atlantic cod	10,056	12,847	9,507	10,534	10,213
Atlantic halibut	209	150	175	213	158
Redfish	3,047	4,243	4,399	3,280	1,533
Greenland halibut	6,121	5,356	6,068	6,049	5,574
Winter flounder	23	55	20	27	6
Other Groundfish³	8,222	7,491	7,967	12,315	14,330
Total per Year	27,678	30,141	28,137	32,419	31,813

Source: DFO-NL Catch and Effort Database. Data preliminary and subject to revision.

Notes:

¹ Due to guidelines on privacy protection, Fisheries and Oceans Canada is unable to release landings and catch information if a data set has fewer than five fishers, vessels or buyers. Data has been combined where it did not meet this requirement.

² Groundfish catch by calendar year

³ Other Groundfish includes American plaice, chimaera, Arctic cod, rock cod, cusk, dogfish, black dogfish, haddock, monkfish, pollock, rough-head grenadier, sculpin, silver hake, skate, white hake, witch flounder, yellowtail flounder, and unspecified groundfish, northern wolffish, spotted wolffish, and striped/Atlantic wolffish.

Vessel overview

In 2020, there were approximately 1,427 active enterprises with groundfish landings in the 2+3KLMNO, operating from 1,619 vessels. The majority (87 per cent) of these vessels were <40' in length and accounted for approximately 28 per cent of the total groundfish landings. Twelve per cent of the vessels were in the 40'-89'11" category and accounted for about 13 per cent of the total groundfish landings. The number of active vessels with groundfish landings has declined over the 2016-2020 period with a decline of 29 per cent since 2008. Refer to [Figure 3](#).

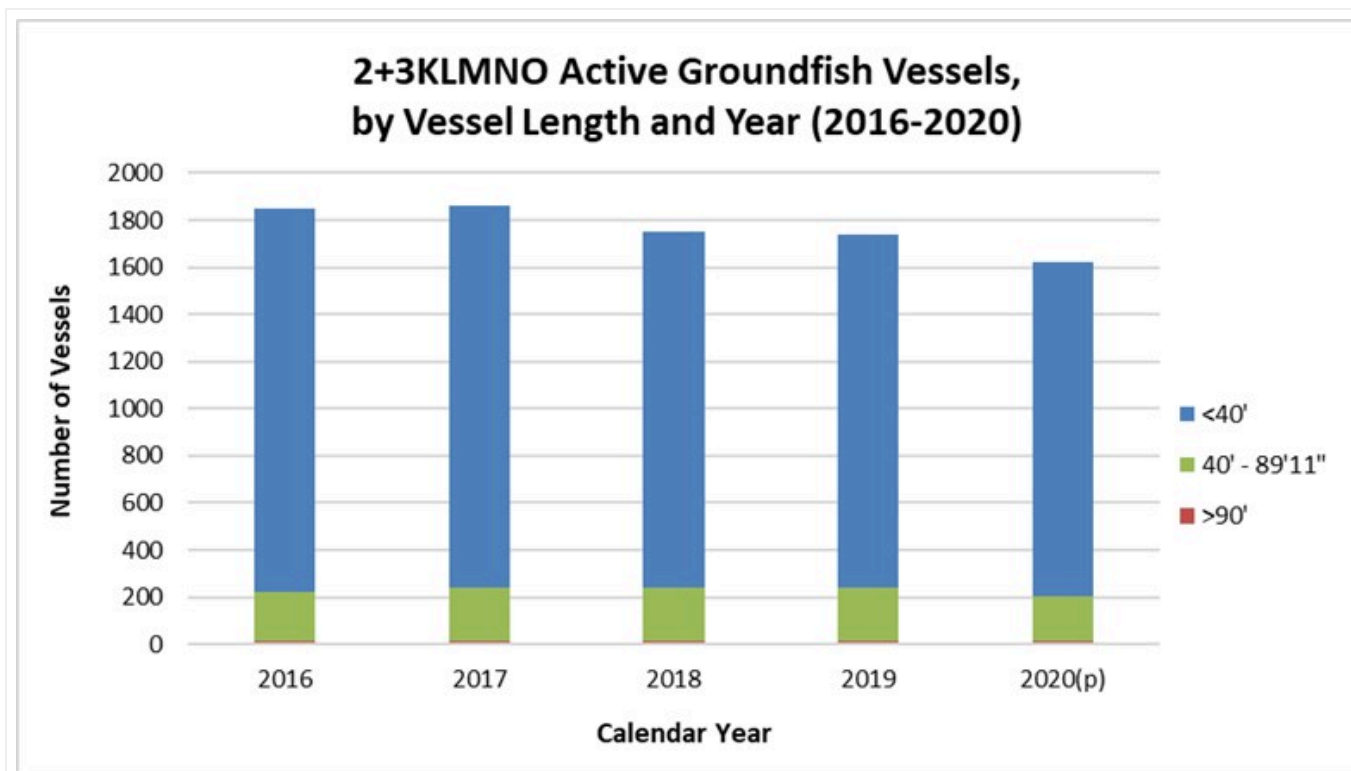


Figure 3: Number of active vessels in 2+3KLMNO groundfish fishery by vessel length (2016-2020).

► Description

Landings

In 2020, there was approximately 31,816 tonnes (t) of groundfish landed from 2+3KLMNO (excluding discarded catch). This was the second-highest landings in the 2016-2020 period. Peak landings in the series were 32,419 (t) in 2019. The average annual groundfish landings over this period were approximately 30,000 (t). In 2020, groundfish accounted for approximately 26 per cent of the total landings, crustaceans 43 per cent, pelagics 19 per cent and molluscs 11 per cent. Although crustaceans account for the greatest proportion of catch, this has been decreasing in recent years. Refer to [Figure 4](#).

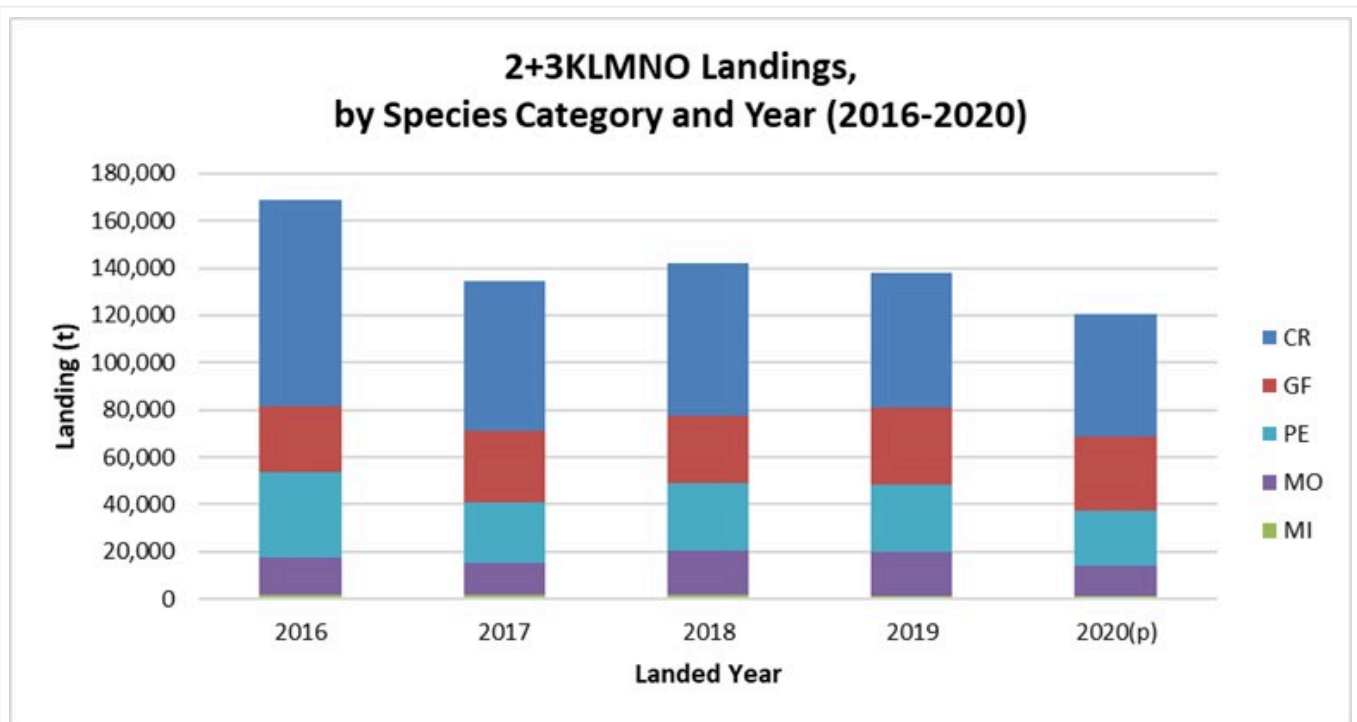


Figure 4: Landings (t) by species category (2016-2020).

[Note: CR is crustaceans, GF is groundfish, MO is molluscs, PE is pelagic, and MI is miscellaneous. Landings of marine mammals (seals) is not included].

► Description

Of the total groundfish landings, cod accounts for the largest amount by volume (see [Figure 5](#)). In 2020, cod comprised 32 per cent of 2+3KLMNO groundfish landings, Greenland halibut 18 per cent and redfish 5 per cent. Other groundfish species were combined to meet privacy guidelines.

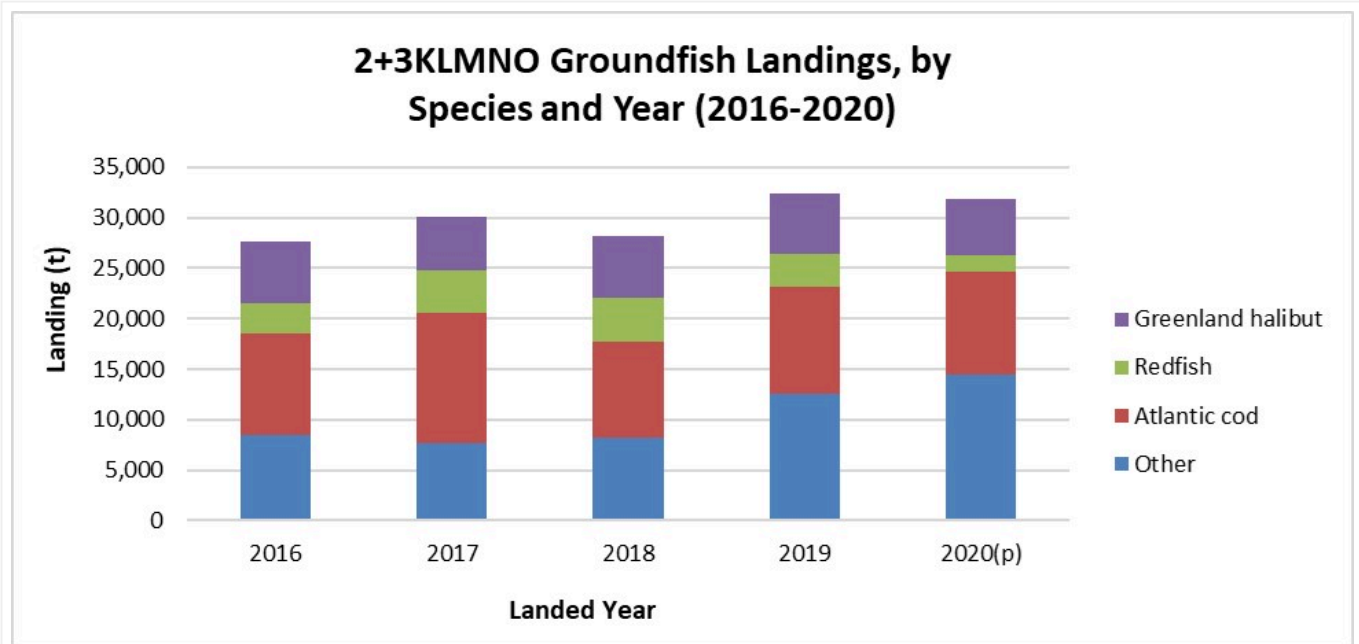


Figure 5: Landings (t) by Species (2016-2020).

► Description

Landed value

The average landed value of groundfish in 2+3KLMNO over the 2016-2020 period was approximately \$70 million annually. Overall, crustaceans had the greatest landed value, with an annual average of approximately \$434 million. Refer to [Figure 6](#).

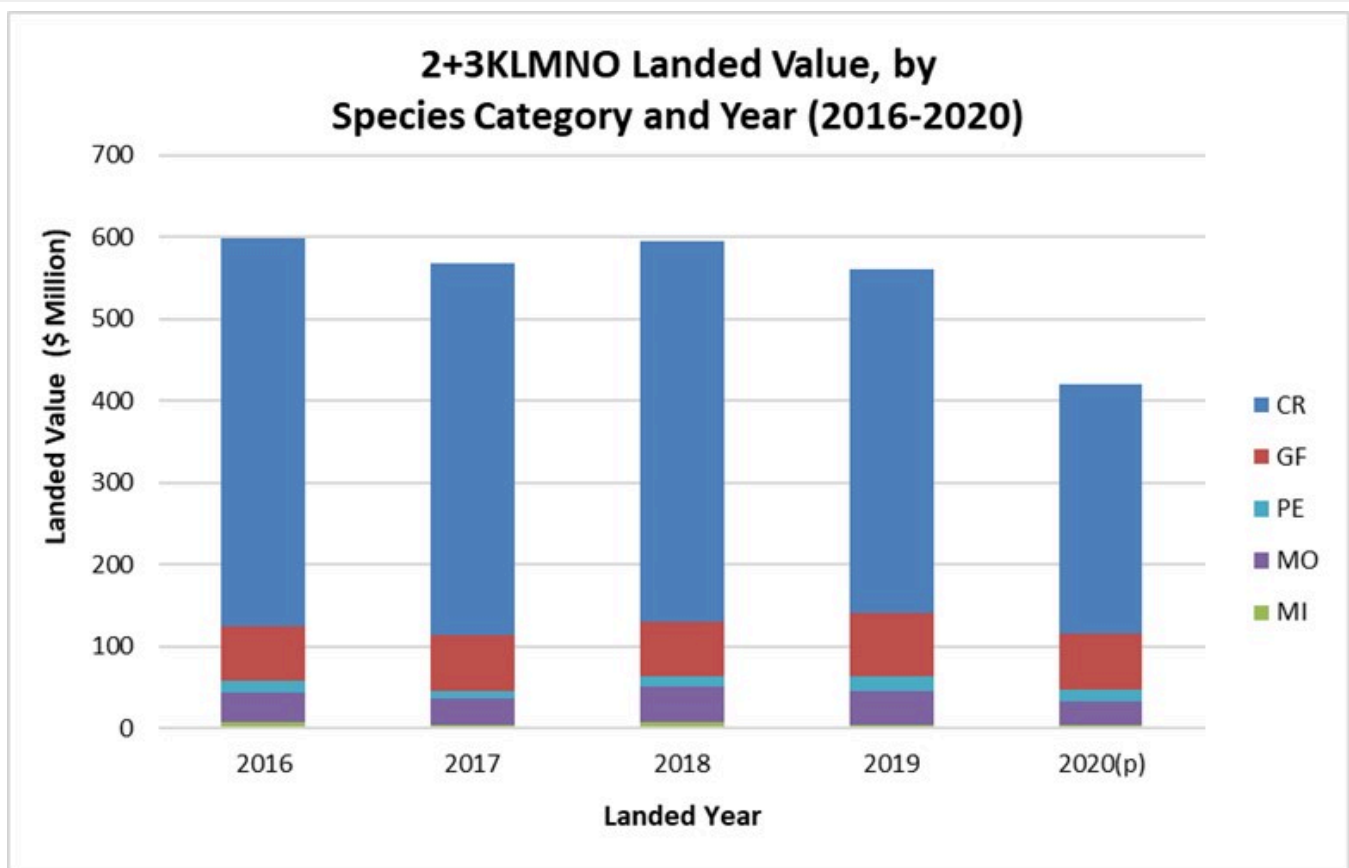


Figure 6: Landed value by Species Category (2016-2020). Note: CR is crustaceans, GF is groundfish, MO is molluscs, PE is pelagic, and MI is miscellaneous.

► Description

The annual landed value of 2+3KLMNO groundfish has been relatively consistent over the most recent five year period. Landed value increased in 2019, however, it returned to average levels in 2020. Greenland halibut had the highest landed value for all years. In 2020, Greenland halibut landed value was approximately \$28 million, cod was \$15 million, and redfish was \$4 million. Refer to [Figure 7](#).

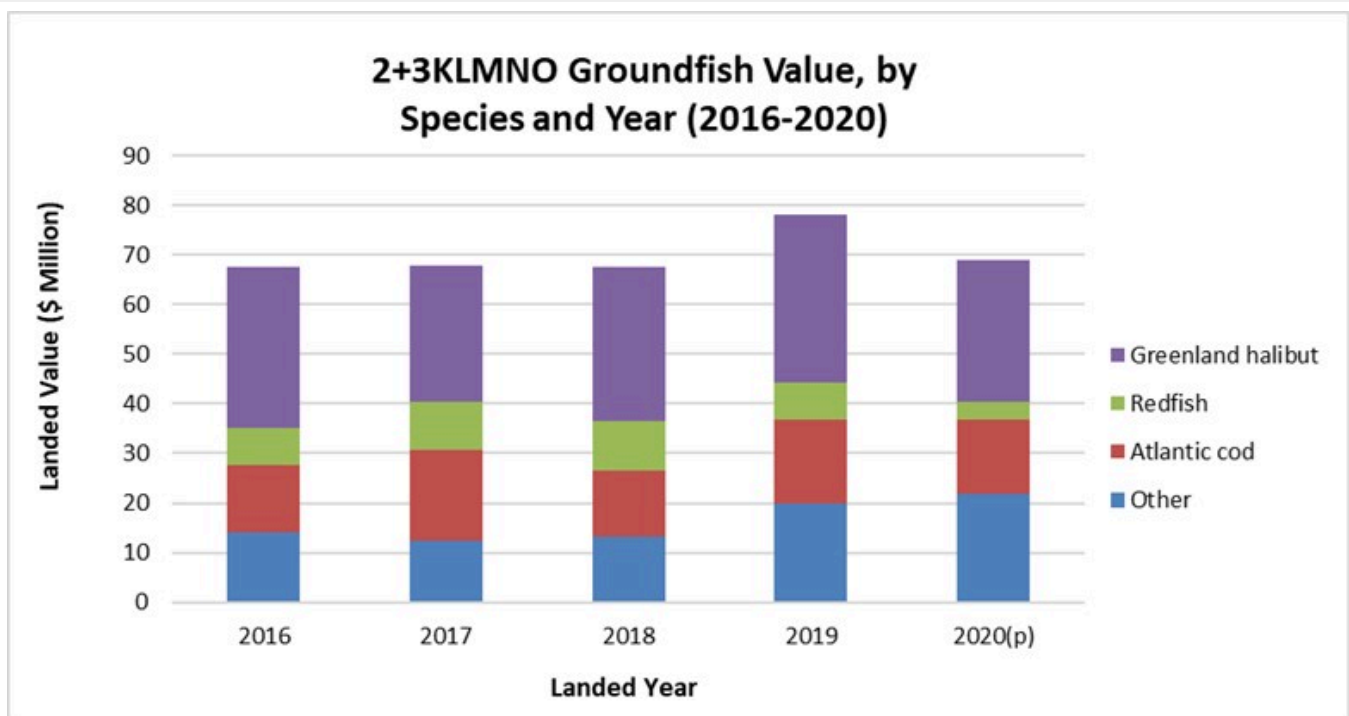


Figure 7: Landed value (\$ Millions) by Species (2016-2020).

► Description

3.2. Dependency on Groundfish

In 2020, there were 1,127 active enterprises operating <40' vessels with groundfish landings. On average, the landed value of groundfish was approximately \$11,000 and accounted for 22 per cent of total enterprise fishing revenue (all species). Snow Crab landings comprised about 58 per cent of the average enterprises total fishing revenue, followed by cod (21 per cent), capelin (8 per cent), Greenland halibut (1 per cent) and other species (12 per cent).

There were 333 active enterprises operating vessels between 40'-89'11" with groundfish landings. On average, the landed value of groundfish was approximately \$51,000 and accounted for 12 per cent of total enterprise fishing revenue (all species). Snow Crab landings comprised about 78 per cent of the average enterprises total fishing revenue, followed by Greenland halibut (9 per cent), shrimp (5 per cent), capelin (3 per cent), cod (3 per cent) and other species (2 per cent).

Dependency information for enterprises operating >90' vessels was excluded due to privacy guidelines.

4. Management issues

4.1 Bycatch

In general, fishing methods and gears select imperfectly. In many fisheries it is not possible to direct for one species without incidentally capturing others, and/or to avoid the capture of juveniles or other undesired individuals of the target species. As there is mandatory landing of groundfish in Newfoundland and Labrador (except where authorized), the incidental catch, or *bycatch*, is retained by the fishery and recorded through the dockside monitoring program. Recognizing bycatch is often unavoidable and with growing concerns about long-term sustainability of fisheries and ocean health, Canada signed on to the United Nations *Code of Conduct for Responsible Fisheries* in 1995, which called on signatories to adopt measures to minimize bycatch, and 'to the extent practicable, the development and use of selective, environmentally safe and cost effective fishing gear and techniques'.

Fishing gears and harvesting practices have evolved to improve the selectivity of fishing, and efforts have been made to maximize the potential for survival of catch that is returned to the water. Nevertheless, some amount of incidental fishing mortality remains. For this reason, bycatch in Canadian waters needs to be systematically addressed in all fisheries management plans. At the same time, increasing demand from markets for evidence that seafood comes from sustainable fisheries is bringing more attention to the management of bycatch in major fisheries.

Under the Sustainable Fisheries Framework, DFO has created the [Policy for Managing Bycatch](#). This policy is national and applies to commercial, recreational, and Indigenous fisheries managed or licensed by DFO under the *Fisheries Act*. This policy has two objectives. First, to ensure that Canadian fisheries are managed in a manner that supports the sustainable harvesting

of aquatic species and that minimizes the risk of fisheries causing serious or irreversible harm to bycatch species. Second, to account for total catch, including retained and non-retained bycatch. This policy will be implemented over time through Integrated Management Plans.

This policy does not apply to any catch that harvesters are licensed to direct for and that is retained. This includes any species that harvesters are licensed to direct for on a given trip regardless of whether or not they did so. This policy also does not apply to any catch that licence holders are authorized to direct for in catch-and-release fisheries. Also not covered by this policy is bycatch of corals, sponges, marine plants and other benthic organisms. These are considered to be better protected under habitat-related policies, which, in Canada, is the Policy for Managing the Impact of Fishing on Sensitive Benthic Areas. The management of the retained, targeted catch is guided by A Fishery Decision-Making Framework Incorporating the Precautionary Approach.

For each fishery, Conservation Harvesting Plans set out measures to reduce incidental catch of non-target species, including those listed under the *Species at Risk Act*. In many of the 2+3KLMNO groundfish fisheries, there is an incidental catch daily limit or trip limit, which if exceeded, may result in the fishery to close for a period of time. In addition, there are ongoing efforts to improve selectivity of fishing gear, to reduce the environmental impact of gear, and to maximize post-release rates of survival for released individuals.

Bycatch is monitored by DFO through dockside monitoring programs (by independent third-party), daily hails, logbooks, and at-sea observers (refer to Section 7). Coverage of at-sea observers is generally 5-10%, and there are challenges with logbook compliance; consequently a degree of uncertainty remains around the amount of discards.

4.2 Marine mammal interactions

Preventive, Mitigation and Response measures have been put in place to reduce marine mammal incidents. As of 2018, it is mandatory for all harvesters to report marine mammal incidents. Mandatory reporting of lost gear, sequential numbering of buoys and measures reducing the amount rope on the water surface, were also implemented in 2018. Gear marking for fixed gear was implemented in 2020. In February 2020, new gear modification measures to reduce harm to whales from entanglement were announced. The new gear modifications will result in a reduced likelihood of entanglements occurring, and mitigate duration and severity of entanglements that do occur. Gear modifications being considered are weak rope, sleeves and ropeless gear.

In addition, the Newfoundland and Labrador region has a contract with a marine mammal response group to respond to strandings, entanglements and entrapments.

4.3 Species at Risk

Several marine species are considered to be at risk within Canadian waters as a result of human activity. To prevent extinction and promote recovery of species considered to be extirpated, endangered, threatened or of special concern, the *Species at Risk Act* (SARA) and associated measures was adopted in 2002. This legislation includes prohibitions that protect endangered, threatened and extirpated species, their residences, and their critical habitats. There are requirements to develop and implement a recovery strategy, action plan, or management plans for any species listed under SARA. Fishing and other activities that may impact species protected under SARA can proceed through the use of permits or agreements under Section 73 and 74 or through exemptions under Section 83(4). The SARA public registry is available [online](#).

The following SARA-listed species occur in Newfoundland and Labrador waters:

- Northern Wolffish (*Anarhichas denticulatus*) – Threatened

- Spotted Wolffish (*Anarhichas minor*) – Threatened
- Atlantic Wolffish (*Anarhichas lupus*) – Special Concern
- White Shark (*Carcharodon carcharias*) – Endangered
- Leatherback Sea Turtle (*Dermochelys coriacea*) – Endangered
- Loggerhead Sea Turtle (*Caretta caretta*) – Endangered
- Beluga whale (*Delphinapterus leucas*) - Endangered
- Blue whale (*Balaenoptera musculus*) - Endangered
- Fin whale (*Balaenoptera physalus*) – Special Concern
- North Atlantic Right Whale (*Eubalaena glacialis*) – Endangered.
- Sowerby's Beaked Whale (*Mesoplodon bidens*) – Special Concern
- Northern Bottlenose Whale (*Hyperoodon ampullatus*) – Endangered

In accordance with the recovery strategies for the northern wolffish (*Anarhichas denticulatus*), spotted wolffish (*Anarhichas minor*), leatherback sea turtle (*Dermochelys coriacea*), the licence holder is permitted to carry out commercial fishing activities authorized under the Fisheries Act that may incidentally kill, harm, harass, capture or take the northern wolffish and/or spotted wolffish as per subsection 83(4) of the Species at Risk Act, and the license holder is permitted to carry out commercial fishing activities authorized under the Fisheries Act that are known to incidentally capture leatherback sea turtles.

Having met the conditions of sections 73(2) to (6.1) of SARA for white shark, licence holders are permitted to carry out commercial fishing activities authorized under the Fisheries Act that may incidentally kill, harm, harass, or capture this species

Licence holders are required to return northern wolffish, spotted wolffish, leatherback sea turtle or white shark to the place from which it was taken, and where it is alive, in a manner that causes the least harm.

Licence holders are required to report in their logbook any interaction with northern wolffish, spotted wolffish, leatherback sea turtles or white shark.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in an independent advisory body to the Minister of Environment and Climate Change that meet twice annually to assess the status of species at risk of

extinction. There are several marine species which occur in Newfoundland and Labrador 2+3KLMNO waters that have been assessed as endangered, threatened or of special concern by COSEWIC, but which are not yet listed under SARA (refer to COSEWIC [website](#)). Should additional species be listed under SARA, there will be a need to address potential impacts to these new species. Industry will be consulted as required to develop any necessary strategies to mitigate these impacts.

4.4 Marine conservation initiatives

As of August 2021, the Government of Canada has formally protected 13.81% of Canada's marine and coastal areas. The Government of Canada has further committed domestically to protecting 25% by 2025, and working towards 30% by 2030.

To meet marine conservation targets, Canada is establishing Marine Protected Areas (MPAs) and "other effective area-based conservation measures" (OECMs), in consultation with industry, non-governmental organizations, and other interested parties. An overview of these tools, including a description of the role of fisheries management measures that qualify as Other Measures is available on the [DFO website](#).

A number of the marine conservation measures established to date around the Newfoundland and Labrador Region ([Figure 8](#)) were designed to benefit cod and other groundfish. The Gilbert Bay Marine Protected Area, in which all commercial fishing is prohibited, was established specifically to protect the unique sub-population of Northern Cod found in that area. The Funk Island Deep Closure and Hawke Channel Closure marine refuges specifically prohibit bottom trawl, gillnet, and longline fishing in order to protect habitat important to Atlantic cod. Marine refuges established through the Division 30 Coral Closure, Northeast Newfoundland Slope Closure, Hopedale Saddle Closure and the Hatton Basin Conservation Area prohibit all bottom-contact fishing activities to protect cold water corals and sponges. Commercial fishing is prohibited also in the Laurentian Channel, and Eastport Marine

Protected Areas. More information on these conservation measures can be found on the [DFO website](#). Other protected areas may be established in the future.

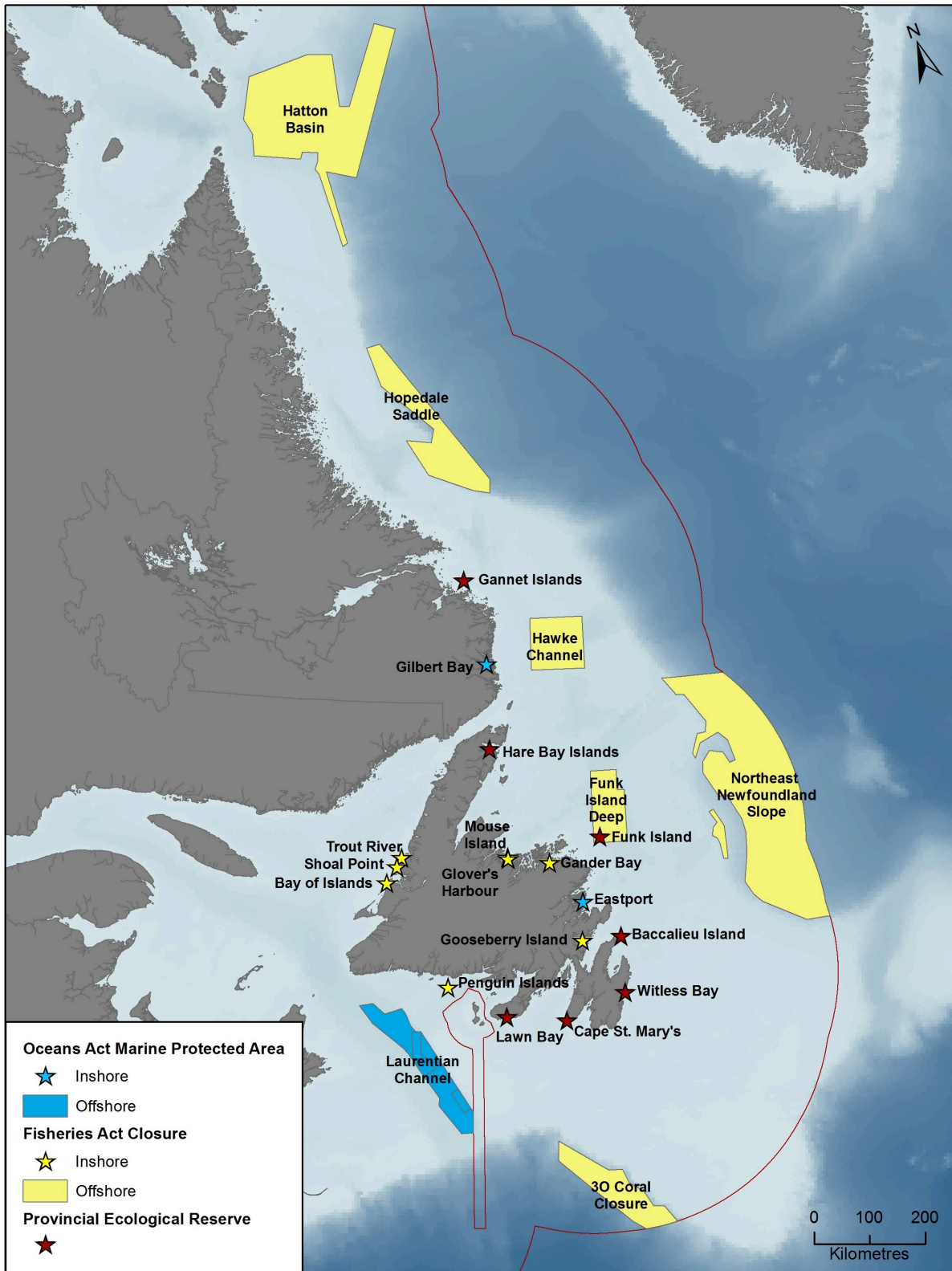


Figure 8: Map of Marine Conservation Areas in the Newfoundland & Labrador Region.

4.5 Habitat considerations

DFO seeks to conserve and protect fish habitat that supports Canada's fisheries resource through application of the fisheries protection provisions of the Fisheries Act. A key provision of the Fisheries Act is subsection 35 which prohibits the carrying on of a work, undertaking or activity that results in serious harm to fish that are part of or support a commercial, recreational or Indigenous fishery without an authorization from the Minister.

The Fisheries Protection Program provides advice to proponents to enable them to proactively avoid and mitigate the effects of projects on fish and fish habitat, undertakes the review of proposed works, undertakings and activities that may affect fish and fish habitat, and ensures compliance with the Fisheries Act and the Species at Risk Act by issuing authorizations and Letters of Advice, with conditions for offsetting, monitoring, and reporting. Information related to how and when DFO reviews projects near the water is available on The Projects Near the Water [webpage](#).

4.6 Aquatic Invasive Species (AIS)

Best practices to prevent the introduction and spread of AIS include:

- annual routine vessel maintenance (i.e. cleaning the hull and using anti-fouling paint to prevent bio-fouling)
- cleaning and airing dry gear and ropes to prevent movement between areas by gear
- avoiding transportation of large amounts of water from one location to another
- recognizing and reporting any AIS to DFO for early detection

More information and maps of aquatic invasive species in Newfoundland and Labrador can be found on the [Identify an Aquatic Invasive Species](#) section of the DFO website.

4.7 Catch monitoring

Catch monitoring is important to the overall management of fisheries, including quota monitoring and scientific assessment processes. Logbooks, dockside monitoring program, daily hails, vessel monitoring systems (VMS), and at-sea observers are required in many 2+3KLMNO groundfish fisheries. Please refer to [Section 7](#) for further information on these specific management programs and tools.

4.8 Market access

There is a market demand for ensuring fisheries are compliant with the Precautionary Approach, as seafood retailers have become increasingly committed to selling only seafood that has been certified as sustainable. Some groundfish fisheries in 2+3KLMNO have been certified as sustainable by the Marine Stewardship Council (MSC), and industry has established several Fisheries Improvement Projects to move other fisheries in 2+3KLMNO towards meeting or exceeding the MSC standard. These initiatives have resulted in an increased focus on the development of PA-compliant frameworks, including the establishment of reference points and harvest control rules, which in turn is resulting in an increased demand for management and scientific capacity and capabilities.

Other market access challenges include the need for comparability measures to meet export requirements. The United States (US) is implementing the import provisions of the *[Marine Mammal Protection Act](#)* following court direction. The import rule requires countries exporting fish and fish products to the US to demonstrate that they have regulatory measures in place that are comparable in effectiveness to those of the US for reducing marine mammal incidental mortality and serious injury in commercial fisheries. Countries who fail to obtain such comparability measures to the US for their export fisheries by January 1, 2023, will be prohibited from entering the US market. Canada is currently working towards demonstrating appropriate measures are in place in all Canadian fisheries.

5. Objectives

DFO strives to manage groundfish stocks based on the principles of stock conservation and sustainable harvest, as well as ecosystem health and sustainability. The following objectives are used to guide the development of management measures that are designed to maximize the benefit of this resource for all stakeholders.

5.1 Stock conservation and sustainable harvest

Sustainable fisheries mean harvesting and farming fish stocks in a way that meets Canada's present needs without compromising the ability to meet future needs. Conservation and the long-term sustainability of groundfish stocks are important objectives for DFO. DFO will work with all stakeholders to ensure these objectives are achieved and that groundfish stocks support an economically viable and self-reliant fishery.

A successful model for sustainable fisheries management relies on five components, including: planning; making science-based decisions; managing environmental impacts; enforcing the rules; and monitoring results. More details on each of these components can be found on our website.

5.2 Ecosystem health and sustainability

The consideration of ecosystem health and sustainability is an essential component of groundfish fisheries management. The role of groundfish species in the food web, as well as the impact of fisheries on non-target species and habitat are examples of important considerations for the long-term health of the ecosystem. Ongoing ecosystem-based research and science advice helps to inform the sustainable management of groundfish stocks (refer to Section 2.2 for further information).

5.3 Stewardship

The shared stewardship management objective recognizes that industry participants and all stakeholders are an important component of fisheries management policy development and the decision-making process. It also recognizes that achievement of the conservation objective requires that governments, resource users and other stakeholders share responsibility for the implementation of fisheries management decisions and for their outcomes. The mandate of the 2+3KLMNO Groundfish Advisory Committee recognizes this objective and meets twice annually to provide recommendations to the Department in support of the development of management measures that address conservation and sustainable use of groundfish resources (refer to [Appendix 4](#) for further details about the committee).

5.4 Stock-specific objectives

In some instances, stock-specific objectives have been identified as part of rebuilding plans for the following stocks:

- 3LNO Yellowtail Flounder ([Appendix 2](#))
- 3NO Cod ([Appendix 3](#))
- 3LNO American plaice ([Appendix 4](#))
- 2+3KLMNO Greenland halibut ([Appendix 5](#))
- 2J3KL Atlantic cod ([Appendix 6](#))
- 3LN Redfish ([Appendix 7](#))

6. Access and allocation

The Minister can, for reasons of conservation or for any other valid reasons, modify access, allocations and sharing arrangements as outlined in this IFMP in accordance with the powers granted pursuant to the [Fisheries Act](#).

6.1 Quotas and allocations

Decisions on domestic stocks are taken in consultation with the Groundfish Advisory Committee and based on latest available science advice provided through the CSAS process (refer to [Section 2.4](#)). Information on the Total Allowable Catch (TAC) for stocks managed by Canada are available online on the Fisheries Management decisions section of the DFO [website](#).

Several straddling stocks within NAFO Subarea 2 and Division 3KLMNO are managed by the Northwest Atlantic Fisheries Organization (NAFO) (refer to [Section 1.6](#)). Decisions on NAFO-managed stocks are based on latest available science provided by Scientific Council (refer to [Section 2.4](#)), and decided upon by the Commission at the annual NAFO meeting in September. The annual TACs for stocks managed by NAFO are available [online](#).

When a total allowable catch (TAC) for Northern (2J3KL) cod is established, the first 115,000 t of directed Canadian access will be allocated to the inshore sector and Indigenous groups in Newfoundland and Labrador. At a TAC level less than or equal to 115,000 t, directed fishing activity will be limited to inshore harvesters and Indigenous groups in Newfoundland and Labrador. All other fleets, where no quota is allocated, will be limited to bycatch only.

TACs for 2018, 2019, 2020, 2021 and 2022 (where it has already been determined) for domestic groundfish stocks and NAFO managed stocks are found in [Section 7.1, Table 7](#).

6.2 Sharing arrangements

For stocks where NAFO establishes the TAC, a Quota Table that lists allocations for each Contracting Party is published annually on the [NAFO website](#). Canada's proportional share of the TAC for the respective NAFO-managed 2+3KLMNO groundfish stocks are shown in [Table 5](#).

Table 5: Canadian shares of NAFO-managed 2+3KLMNO groundfish stocks.

Species	Canadian share
3LNO American plaice	98.5%
3M American plaice	7.5%
3M Atlantic cod	0.8%
3NO Atlantic cod	47.68%
2+3K Greenland halibut^a	100.0%
3LMNO Greenland halibut	15.0%
3LN Redfish	42.6%
3M Redfish^b	2.5%
3O Redfish^c	30.0%
3LNO Skate	16.6%
3NO White hake	29.4%
3NO Witch	60.0%
3LNO Yellowtail	97.5%

Notes:

^a Canada is allocated the entire (100%) NAFO TAC for 2+3K Greenland halibut. France is then allocated 3% of the TAC under the *1994 Procès-Verbal Applying the March 27, 1972 Agreement Between Canada and France on their Mutual Fishing Relations (PV)* in respect of the French islands of St. Pierre and Miquelon.

^b For 3M redfish, the allocation for this stock is based on a quota of 20,000 t. However, the fishery is closed when the annual TAC is reached.

^c Canada is allocated 30.0% of the NAFO TAC for 3O redfish. France is then allocated 15% share of the total Canadian allocation amount under the *1994 Procès-Verbal Applying the March 27, 1972 Agreement Between Canada and France on their Mutual Fishing Relations (PV)* in respect of the French islands of St. Pierre and Miquelon.

The shares of the Canadian allocation per fleet are shown in [Table 6](#), for all domestic and NAFO stocks that are currently subject to a directed fishery, and where a TAC has been set.

Table 6: Canadian fleet sharing arrangement for commercial 2+3KLMNO groundfish stocks that are managed with a quota.

Species	Canadian Fleet Shares
3M Atlantic cod	100% allocation to Vessels Over 100' (competitive)
2+3K Greenland halibut	Fixed Gear <65': 51.118% Mobile Gear <65': 1.805% Fixed Gear 65-100': 6.477% Mobile Gear 65-100': 0.171% Offshore EA holders (>100'): 32.121% Scandinavian Long Liners (>100'): 4.928% Nunatsiavut Government Communal: 3.380%
3LMNO Greenland halibut	Fixed Gear <65': 59.421% Mobile Gear <65': 1.546% Fixed Gear 65-100': 2.609% Mobile Gear 65-100': 0.193% Vessels >100': 32.851% Nunatsiavut Government Communal: 3.380%
3LN Redfish	Fixed Gear <65': 3.010% Vessels over 100':96.990%
3M Redfish	Vessels over 100':100.000%
3O Redfish	Mobile Gear <100': 21.29% Vessels over 100':78.71%
3LNO Skate	Fixed Gear <35': 11.689% Fixed Gear 35-64': 32.489% Fixed Gear >65': 10.000% Mobile Gear (all fleet sectors): 45.822%

Species	Canadian Fleet Shares
3NO White hake	All vessels (directed competitive): 34.014% All vessels (bycatch): 65.986%
3NO Witch flounder	Mobile Gear 65-100' (competitive): 3.330% Vessels over 100':96.670%
3LNO Yellowtail	Vessels over 100':100.000%

6.3 Communal commercial fisheries

Indigenous fishing policy in Canada is guided by a vision of supporting healthy and prosperous Indigenous communities through: building and supporting strong, stable relationships; working in a way that upholds the honour of the Crown; and facilitating Indigenous participation in fisheries and aquaculture and associated economic opportunities.

As per the Principles respecting the Government of Canada's relationship with Indigenous peoples, the Government of Canada is committed to achieving reconciliation with Indigenous peoples through a renewed, nation-to-nation, government-to-government, and Inuit-Crown relationship based on recognition of rights, respect, co-operation, and partnership as the foundation for transformative change.

Fisheries and Oceans Canada supports the participation of adjacent Indigenous organizations in commercial fisheries. The Aboriginal Fisheries Strategy Program (AFS) is designed to encourage Indigenous involvement in commercial fisheries and related economic opportunities. The Allocation Transfer Program (ATP) component of the AFS was the primary instrument used to voluntarily retire licences from commercial harvesters and subsequently reissue them to Indigenous groups on a communal basis. This program was retired in 2018. The Northern Integrated Commercial Fisheries Initiative (NICFI) provides funding and supports development of Indigenous-owned communal commercial fishing enterprises and aquaculture operations. Indigenous groups also self-fund the acquisition of communal commercial fishing licences.

A subsequent program, Aboriginal Aquatic Resource and Oceans Management (AAROM) Program, was designed for Indigenous groups to collaboratively develop capacity and expertise to facilitate their participation in aquatic resource and oceans management.

All communal commercial fishing licences issued to Indigenous groups are done so under the authority of the Aboriginal Communal Fishing Licences Regulations and not the Fisheries Act.

As of December 2020, there were a total of thirty-seven (37) 2+3KLMNO groundfish communal commercial licences authorized in the Newfoundland and Labrador Region.

7. Management measures

7.1. Groundfish Total Allowable Catch (TAC)

Most commercial stocks are managed under a Total Allowable Catch or bycatch limit, however several stocks are currently under moratorium. The TACs or Canadian allocation (in the case of NAFO-managed stocks), are listed in Table 7, for 2018, 2019, 2020, 2021 and 2022 (where it has already been determined).

Table 7: Canadian total allowable catch (tonnes) for each 2+3KLMNO groundfish stock (2018-2022).

Species/Fishery	2018 TAC (t)	2019 TAC (t)	2020 TAC (t)	2021 TAC (t)	2022 TAC (t)
2+3K American plaice	Under moratorium	Under moratorium	Under moratorium	Under moratorium	Under moratorium
3LNO American plaice (NAFO)	Under moratorium	Under moratorium	Under moratorium	Under moratorium	Under moratorium
3M American plaice (NAFO)	Under moratorium	Under moratorium	Under moratorium	Under moratorium	Under moratorium

Species/Fishery	2018 TAC (t)	2019 TAC (t)	2020 TAC (t)	2021 TAC (t)	2022 TAC (t)
2GH Atlantic cod	Under moratorium	Under moratorium	Under moratorium	Under moratorium	Under moratorium
2J3KL Atlantic cod	Moratorium; inshore stewardship fishery	Moratorium; inshore stewardship fishery	Moratorium; inshore stewardship fishery	Moratorium; inshore stewardship fishery	TBD
3M Atlantic cod (NAFO)	89,160	140	68	12	32
3NO Atlantic cod (NAFO)	Under moratorium	Under moratorium	Under moratorium	Under moratorium	Under moratorium
2+3K Greenland halibut (NAFO)^a	4,273	4,151	4,384	4,111	4,109
3LMNO Greenland halibut (NAFO)	1,833.9	1,836	1,881	1,884	1,763
2+3 Grenadier	Under moratorium	Under moratorium	Under moratorium	Under moratorium	Under moratorium
3LNO Haddock	Under moratorium	Under moratorium	Under moratorium	Under moratorium	Under moratorium
2GHJ Lumpfish	No TAC is set for this fishery				
3KL Lumpfish	No TAC is set for this fishery				
3LNO Monkfish	No TAC is set for this fishery				
2+3K Redfish	Under moratorium	Under moratorium	Under moratorium	Under moratorium	Under moratorium
3LN Redfish (NAFO)	6,049	7,710	7,710	7,710	7,710
3M Redfish (NAFO)	500	500	500	500	500

Species/Fishery	2018 TAC (t)	2019 TAC (t)	2020 TAC (t)	2021 TAC (t)	2022 TAC (t)
3O Redfish (NAFO)^b	6,000	6,000	6,000	6,000	6,000
3LNO Thorny skate (NAFO)	1,167	1,167	1,167	1,167	1,167
3NO White hake (NAFO)	294	294	294	294	294
3KL Winter flounder	No TAC is set for this fishery				
2J3KL Witch flounder	Under moratorium	Under moratorium	Under moratorium	Under moratorium	
3NO Witch flounder (NAFO)	669.6	705	705	705	705
3LNO Yellowtail flounder (NAFO)	16,575	16,575	16,575	16,575	19,500

Notes:

^a Canada is allocated the entire (100%) NAFO TAC for 2+3K Greenland halibut. France is then allocated 3% of the TAC under the *1994 Procès-Verbal Applying the March 27, 1972 Agreement Between Canada and France on their Mutual Fishing Relations (PV)* in respect of the French islands of St. Pierre and Miquelon.

^b Canada is allocated 30.0% of the NAFO TAC for 3O redfish. France is then allocated 15% share of the total Canadian allocation amount under the *1994 Procès-Verbal Applying the March 27, 1972 Agreement Between Canada and France on their Mutual Fishing Relations (PV)* in respect of the French islands of St. Pierre and Miquelon.

7.2. Fishing seasons

There are a number of factors DFO takes into consideration when establishing the season for the groundfish fishery, including:

- fish harvester safety (refer to [Appendix 9 – Safety at Sea](#))
- conservation
- markets
- presence of small fish / by-catch
- provide for an orderly harvest

Season dates are regularly discussed in detail as part of the industry consultation process. Season dates are generally established on a fleet-by-fleet basis, and input from stakeholders is a key consideration.

Fishery openings and closings are communicated through DFO's Notice to Fish Harvesters system. Fishery opening and closing dates/times may be adjusted due to weather conditions. To the extent practicable, these decisions are taken in consultation with industry. Openings will occur at 0600 hours whenever possible in the interest of safety at sea.

7.3. Licensing

The Newfoundland and Labrador [Fisheries Licensing Policy](#) provides details on the various licensing policies that govern the commercial fishing industry in Newfoundland and Labrador Region. The policy was developed to provide fish harvesters, Indigenous Organizations, and the Canadian public with a clear and consistent statement regarding the DFO policy respecting commercial fishing enterprises, the registration of vessels, and the issuance of recreational and commercial fishing licences in the Newfoundland and Labrador Region. The policy is updated on an ongoing basis. It is further supplemented by various complementary policies:

- The *Commercial fisheries licensing policy for Eastern Canada – 1996*, which is found [online](#).
- The Policy on Issuing Licences to Companies, which is found [online](#)

On December 9, 2020, the Government of Canada published amendments to the Atlantic Fishery Regulations, 1985 and the Maritime Provinces Fishery Regulations in Canada Gazette, Part II, some of which came into force on April 1, 2021. These amendments replaced the *Preserving the Independence of the Inshore Fleet in Canada's Atlantic Fishery* policy (PIIFCAF). The PIIFCAF was discontinued as of March 31, 2021.

The amended regulations prohibit licence holders from transferring the use and control of the rights and privileges conferred under the licence to any third party; restrict the issuance of inshore licences to licence holders who have not transferred use or control of the rights and privileges conferred under the licence; and, prohibit anyone other than the licence holder from using and controlling the rights and privileges associated with a licence.

The NL Regional Licensing policy sets out requirements and eligibility criteria established by the Minister of Fisheries, Oceans and the Canadian Coast Guard with respect to the licensing of commercial fishing and Communal Commercial fishing in the Newfoundland and Labrador Region. Communal Commercial Licences issued to Indigenous Organizations are managed under the authority of the *Aboriginal Communal Fishing Licences Regulations*. The Minister retains complete discretion to make an exception to these provisions.

This policy is built on the following principles, as outlined in the Commercial Fisheries Licensing Policy for Eastern Canada – 1996 (CFLP):

- Be consistent with DFO's core mandate,
- Achieve a balance between capacity and the resource,
- Encourage environmentally sustainable harvesting,
- Foster greater economic viability of the fishery sector,
- Facilitate industry self-reliance,
- Develop a greater degree of partnership with a professional group of harvesters,
- Streamline administration of licensing.

Fisheries and Oceans Canada (DFO) Resource Management and Indigenous Fisheries should be consulted for all purposes of interpreting and applying licensing policies. Participants in the Newfoundland and Labrador Region commercial fisheries who are not satisfied with licensing decisions made by DFO have the opportunity to request a licensing appeal.

Reasons for requesting a licensing decision appeal must relate to:

- an incorrect application of licensing policies;
- extenuating circumstances; or,
- a change in policy.

Licences for harvesting groundfish are issued through the National Online Licensing System (NOLS). The licence outlines the specific licence conditions under which the harvester is permitted to fish, including fishing area, season dates, fishing restrictions, gear type specifications, and harvest limits. The NOLS system is also used for paying licence fees, renewing vessel registration, submitting licence requests such as vessel transfers, and printing licences and licence conditions.

7.4. Dockside monitoring program

The Dockside Monitoring Program (DMP) provides independent third party verification of fish landings. The program supports fisheries management by providing accurate and timely harvest data, including the weight and species landed. All groundfish landings in 2+3KLMNO are subject to DMP, with the exception of lumpfish. However, all groundfish taken as bycatch in the lumpfish fishery is subject to DMP.

It is the responsibility of licence holders to ensure their catch is monitored by a DFO certified dockside monitoring company. Specific procedures for the monitoring of catch weights at dockside have been developed through consultation with industry and Dockside Monitoring Program (DMP) companies. DFO's accepted method of verification of landings at dockside is a direct weight-out using certified weight scales. The cost for this monitoring is the responsibility of the fishing industry.

7.5. Logbooks

Completing a logbook is mandatory under Section 61 of the Fisheries Act. Fish harvesters are required to record information about fishing catch and effort, and submit this data as specified in the conditions of licence. Fish harvesters are responsible for obtaining their own *logbook*. Information that should be in the logbook includes:

- location
- date
- time
- sets
- gear type
- weight of fish caught
- bycatch
- interactions with Species at Risk
- interactions with marine mammals

Include information on anything else which may be useful to fish harvesters or DFO. Note that marine mammal mitigation measures are now mandatory and fish harvesters must report all interactions. Logbooks can be purchased from one of the Department's prequalified logbook suppliers. Failure to submit a logbook may result in enforcement action.

7.6. At-sea observer program

The At-Sea Observer Program provides independent third party verification of fish harvesting activities. Observers are assigned to fishing vessels operating in the offshore, inshore and near-shore areas. The program provides accurate and timely information on fish harvests. It also provides scientific catch and sampling data. The fishing industry and the department use this information for fisheries management and scientific research purposes.

Commercial groundfish harvesters who are required to use at-sea observers as a condition of licence, make agreements with service providers qualified by the Canadian General Standards Board and designated by Fisheries and

7.7. Vessel monitoring system

The National Vessel Monitoring System (VMS) is a satellite-based, positional tracking system used to monitor the location of vessels and their movement. The data is received in near real-time and contributes to improved compliance with fisheries regulations (refer to Section 9.2), safety at sea, science, and marine security. Licence conditions specify requirements for carrying a DFO approved VMS unit on fishing vessels. The VMS monitoring requirement applies to all vessels fishing groundfish in Canadian waters of 2+3KLMNO, except vessels that are in the less than 10.668m (35ft) in Length Overall category. All groundfish vessels fishing in the NAFO Regulatory Area outside Canada's 200 mile limit are required to have a VMS device onboard that transmits positional information on an hourly basis, in addition to its course and speed.

7.8. Hails

Fish harvesters fishing groundfish in 2+3KLMNO who are at sea in excess of 24 hours duration, and/or are landing in ports outside the Newfoundland and Labrador Region, have hail-in and hail-out requirements as specified in licence conditions. Harvesters are required to report the round weight of all species caught on a daily basis as described in Schedule 16. The hail report shall be sent to DFO by phone, fax or e-mail as outlined in the groundfish general licence conditions, regardless of whether or not there has been fishing activity.

7.9. Area closures

Areas restricted to fishing are specified in licence conditions. There are a number of areas in 2+3KLMNO where fishing is prohibited or restricted. Please refer to Section 4.4 for specific information on marine conservation closures.

7.10. Small fish and incidental catch protocols

There are protocols in place in order to ensure that the incidence of capturing undersized fish and bycatch are minimized. Protocols for small fish are based on a percentage limit for the capture of fish smaller than the given minimum legal size, specified in licence conditions and Conservation Harvesting Plans. The incidental catch protocols are based on established daily limits in weight of the bycatch or as a percentage of the total catch. Exceeding the limit may result in the closure of a fishery. Refer to [Section 4.1](#) for further information on efforts to reduce bycatch.

7.11. Gear restrictions

There are several measures in place that specify the required configuration of gear (for example mesh size or hook size) and the amount of gear permitted (number of nets, hooks). These measures are identified in the corresponding CHP for each directed fishery, and/or the licence conditions. A few examples of general gear restrictions follow:

- All fishing gear must be returned to port with the vessel at the end of the fishing trip.
- For all fixed gear fisheries, each gillnet must have a valid tag, issued under the authority of the Minister, securely attached to the head-rope or footrope of the net. Gillnets shall not exceed 50 fathoms in length.
- Occurrences of lost gillnets must be recorded in the fishing logbook and reported to nearest DFO office. Every reasonable effort should be made to retrieve any lost nets.

7.12. Quota reconciliation

In fisheries where it is applied, quota reconciliation is a process of automatically deducting inadvertent quota overruns on a one-for-one basis from one year to the next. The accounting will result in a quantity of fish equal to the quantity of the overrun being taken off the allocation (i.e., not allocated) of the respective licence holder and/or fleet before the next fishing season starts.

Quota reconciliation is not a penalty or sanction for over-fishing. Rather, it is simply an accounting of overruns to support conservation of the resource and ensure that removals respect established quotas over time.

8. Shared stewardship arrangements

DFO officials work closely with the harvesting and processing sectors in all aspects of fisheries management, science, and conservation and protection.

8.1 Oceans management initiatives promoting shared stewardship

DFO is leading initiatives in integrated oceans management, including MPA network planning within the Newfoundland and Labrador Shelves and Estuary, and Gulf of St. Lawrence Bioregions. This provides a collaborative governance model founded on principles of shared responsibility. As a result, stewardship is promoted by providing a forum for consultation with stakeholders who want to be engaged in marine resource or activity management decisions that affect them.

Aligning integrated oceans management with fisheries management plans will support evidence-based resource use and fisheries management decisions. These decisions will be made with input from multiple interests, including commercial fisheries and other stakeholder groups.

9. Compliance plan

9.1 Conservation and Protection program description

The deployment of Conservation and Protection (C&P) resources in the fishery is conducted in accordance with management plan objectives, as well as in response to emerging issues. The mix of enforcement options available and over-riding conservation objectives determine the level and type of enforcement activity.

Work plans at the regional, area and detachment levels are designed to establish priorities based on management objectives and conservation concerns. The monitoring and evaluation elements of enforcement work plans facilitate in-season adjustments should conservation concerns and/or significant occurrences of non-compliance emerge.

9.2 Compliance performance

The Conservation and Protection program promotes and maintains compliance with legislation, regulations and management measures implemented to achieve the conservation and sustainable use of Canada's aquatic resources, and the protection of species at risk, fish habitat and oceans.

The program is delivered through a balanced regulatory management and enforcement approach. Specifically:

- promotion of compliance through education and shared stewardship
- monitoring, control and surveillance activities
- management of major cases and special investigations in relation to complex compliance issues
- and use of intelligence data supplied through the National Fisheries Intelligence Service

Pillar 1: Education and shared stewardship

Fishery officers who work within C&P actively participate in consultation processes with the fishing industry and Indigenous groups to address compliance issues. Informal meetings with stakeholders also occur on an ad-hoc basis to resolve in-season matters, in addition to regular interaction with fish harvesters. The consultative process may include C&P membership on area integrated management planning committees, which are comprised of fish harvesters, representatives from the provincial and federal governments, and other community groups with an interest in fishery conservation issues.

Fishery officers also visit local schools and educational institutions to present and discuss fisheries conservation issues and use this information as part of the C&P planning process.

Pillar 2: Monitoring, control and surveillance

Compliance monitoring

C&P promotes compliance with management measures governing the fishery through:

- routine patrols
- dockside inspections
- at-sea inspections
- aerial surveillance
- Vessel Monitoring System (VMS) review
- at-sea observer deployments
- National Fisheries Intelligence Service (NFIS)

Patrols by vehicle, vessel and fixed-wing aircraft are conducted in accordance with operational plans which are developed based on available intelligence.

Each C&P detachment ensures that monitoring and inspections of fish landing activity are carried out on a routine basis. Where a vessel is selected for comprehensive inspection, C&P ensures that catch composition, weight verification and size variation sampling is conducted. C&P also ensures that surveillance flights are conducted on a routine basis.

VMS is a requirement for certain fleets, and provides real-time data on the location of vessels. C&P uses this resource to help determine where the enterprise is fishing, the port of destination and the estimated time of arrival to port. VMS data will also be relied upon for future analysis and comparisons of fishing activity.

At-sea observers are randomly deployed to observe, record and report aspects of the fishing activity. The resulting data is used to compare catch composition of vessels on observed trips vs. non-observed trips. C&P also

reviews quota monitoring reports to ensure individual quotas are not exceeded.

C&P supplies best-known available local information to the National Fisheries Intelligence service for processing and uses this intelligence to combat all types of illegal fishing activity.

Compliance performance

C&P conducts post-season analysis sessions to review issues encountered during the previous season and to make recommendations on improving management measures. The initial sessions are conducted at the area level, followed by a regional session with other DFO sectors.

Pillar 3: Major case

C&P recognizes the need to focus attention on high-risk illegal activities that pose significant threat to the achievement of conservation objectives, which usually cannot be addressed through education or routine monitoring. Some individuals, usually motivated by financial gain, persist through various complex and well-coordinated means in hiding illegal activities which put Canada's aquatic resources at risk.

C&P will focus on high-risk illegal activities that pose significant conservation threats. Detailed analysis of licence holders and possibly companies will be completed using:

- fishery profiling
- targeting of high-risk violators
- conducting forensic investigations
- accessing the resources of the National Fisheries Intelligence Service

Targeting of high risk violators and / or processing facilities will be also be a primary focus should intelligence gathered warrant such action. Any resulting operations will be conducted in conjunction with NFIS staff, additional field staff and area resources as required.

9.3 Compliance priorities

Compliance considerations in groundfish fisheries include:

- fishing gear requirements
- quota overruns
- high grading
- unmonitored landings
- fishing during closure
- monitoring of activity in the newly established Marine Refuge areas.

Verifying accurate reporting of all groundfish fishing activities will be a primary focus of C&P efforts for the duration of this IFMP.

C&P will focus enforcement effort on the detection of unmonitored landings.

9.4 Compliance strategy

C&P has developed an operational plan that outlines monitoring and compliance activities that will be carried out by C&P personnel adjacent to the 2+3KLMNO management areas. The plan provides guidance for C&P, promotes effective monitoring of the fishery, and enables C&P personnel to effectively maintain compliance with management measures governing this fishery. The objective of the plan is to collect information for ensuring compliance and conducting investigations.

The objective is to collect information for ensuring compliance and conducting investigations. Sources of information used by C&P include:

- NFIS
- vessel positioning data
- officer inspection data
- fishing logs
- dockside monitoring program records
- at-sea observer records
- purchase transactions

10. Performance review

A review of the short-term and long-term objectives is an integral part of assessing the performance of groundfish fisheries. During the regional assessment process on the status of the stock, DFO Science may consider the applicable objectives in providing its advice. For fisheries management, the advisory meeting with industry is a formal setting to review both short and long-term objectives. In addition to these formal reviews, DFO officials and industry representatives have an on-going dialogue on the fishery on a year-round basis. These informal discussions provide opportunities to review objectives and identify issues for discussion at the advisory meetings.

DFO Newfoundland and Labrador region completes an annual internal post-season review with participation from Resource Management, Conservation and Protection, and Science staff. Regional headquarters and area-based staff participate in this process to identify local, area and regional fishery performance issues.

The Performance Review outlines the activities and controls that are used in achieving fisheries management objectives. [Table 8](#) identifies the specific strategies that are used to achieve fisheries management objectives.

Table 8: Measurable Objectives/Activities and Fisheries Management Strategies

Objectives	Fisheries management strategies
Conservation and sustainable harvest	
To conserve the groundfish resource to provide commercial sustainability to fish harvesters	<ul style="list-style-type: none">• Fishing season• Total Allowable Catch• Quota monitoring• Gear limits/restrictions

Objectives	Fisheries management strategies
Conservation and sustainable harvest	
To mitigate the impacts on other species, habitat and the ecosystem where groundfish fishing occurs, protecting biodiversity and ecosystem structure and function	<ul style="list-style-type: none"> • Mandatory reporting of lost gear • Bycatch limits • Gear limits/restrictions • <u>Species at Risk Act</u> • Area closures
To promote the development of sustainable fishing practices	<ul style="list-style-type: none"> • Small fish protocols
To employ effective monitoring and surveillance tools and mechanisms that ensure compliance with conservation measures and provide scientists with appropriate information and basic data required to manage the groundfish fishery	<ul style="list-style-type: none"> • Accurate completion of logbooks • Reliable dockside monitoring program • Adequate level of at-sea observer coverage, both spatial and temporal • Adherence to electronic vessel monitoring system (VMS) requirements
Benefits to stakeholders	
To promote the continued development of a commercially viable and self-sustaining fishery	<ul style="list-style-type: none"> • Access and allocation formulas are identified in the IFMP • Opportunities for additional access are addressed through the Allocation Transfer Program
To provide fish harvesters with increased opportunity to develop long-term business stability	<ul style="list-style-type: none"> • Multi-year decisions • Evergreen management plans

Objectives	Fisheries management strategies
Conservation and sustainable harvest	
To promote a co-management approach, providing stakeholders with an effective sharing of responsibility, accountability and decision making, within the constraints of the <u>Fisheries Act</u>	<ul style="list-style-type: none"> • Establish an effective consultative process for stakeholders to participate in the decision-making process • Organize and participate in annual advisory meetings

Fisheries and Oceans Canada (DFO) measures the performance of the fisheries that it manages through the Sustainability Survey for Fisheries (SFF). The survey is published every year and currently includes 170 fish stocks, with more added each year. The fish stocks were selected because of their economic or cultural importance; they represent the majority of total catch of fisheries managed by DFO.

The Sustainability Survey for Fisheries reports on the status of each fish stock and DFO's progress to implement its Sustainable Fisheries Framework policies, a set of national policies to guide the sustainable management of Canada's fisheries.

11. Glossary of terms

Abundance: number of individuals in a stock or a population.

Age Composition: proportion of individuals of different ages in a stock or in the catches.

Area/Subarea: an area defined by the Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries by NAFO, and as described in the Atlantic Fishery Regulations, 1985.

Biomass: total weight of all individuals in a stock or a population.

Bioregion: a biogeographic division of Canada's marine waters out to the edge of the Exclusive Economic Zone, and including the Great Lakes, based on attributes such as bathymetry, influence of freshwater inflows, distribution of multi-year ice, and species distribution. Canada's marine protected areas network is being advanced in five priority marine bioregions: the Gulf of St. Lawrence, the Scotian Shelf, the Newfoundland-Labrador Shelves, the Western Arctic, and the Northern Shelf.

Bycatch: the unintentional catch of one species when the target is another species.

Catch per Unit Effort (CPUE): the amount caught for a given fishing effort, e.g. tonnes of fish per hundred longline hooks.

Conservation Harvesting Plan (CHP): An annual plan submitted by each fleet and approved by the department that includes management measures to ensure fleet's do not exceed their quotas, minimize bycatch, encourage economic prosperity and enhance scientific information.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC): committee of experts who assess and designate which wild species are in some danger of disappearing from Canada.

Communal Commercial Licence: licence issued to Aboriginal organizations pursuant to the *Aboriginal Communal Fishing Licences Regulations* for participation in the general commercial fishery.

Discards: portion of a catch thrown back into the water after it is caught in fishing gear.

Dockside Monitoring Program (DMP): A monitoring program conducted by a company that has been designated by DFO to verify the species composition and landed weight of all fish landed from a commercial fishing vessel.

Ecosystem-Based Management: taking into account species interactions and the interdependencies between species and their habitats when making resource management decisions.

Fishing Effort: quantity of effort using a given fishing gear over a given period of time.

Fishing Mortality: death caused by fishing, often symbolized by the mathematical symbol F .

Fixed Gear: a type of fishing gear that is set in a stationary position. This includes traps, weirs, gillnets, longlines, handlines, bar/beach seines and modified bar seines (known as tuck seines).

Food, Social and Ceremonial (FSC): a fishery conducted by Aboriginal groups for food, social and ceremonial purposes.

Gillnet: fishing gear: netting with weights on the bottom and floats at the top used to catch fish. Gillnets can be set at different depths and are anchored to the seabed.

Groundfish: species of fish living near the bottom such as cod, haddock, halibut and flatfish.

Handlining: fishing using a line with usually one baited hook and moving it up and down in a series of short movements; also called "jigging".

Landings: quantity of a species caught and landed.

Longlining: using long lines with a series of baited hooks to catch fish.

Maximum Sustainable Yield: largest average catch that can continuously be taken from a stock.

Mesh Size: size of the mesh of a net. Different fisheries have different minimum mesh size regulations.

Mobile Gear: any type of fishing gear that is drawn through the water by a vessel to entrap fish, including purse seines.

Natural Mortality: mortality due to natural causes, represented by the mathematical symbol M .

Observer Coverage: carrying a certified at-sea observer onboard a fishing vessel for a specific period of time to verify the amount of fish caught, the area in which it was caught and the method by which it was caught.

Population: group of individuals of the same species, forming a breeding unit, and sharing a habitat.

Precautionary Approach: set of agreed cost-effective measures and actions, including future courses of action, which ensures prudent foresight, reduces or avoids risk to the resource, the environment, and the people, to the extent possible, taking explicitly into account existing uncertainties and the potential consequences of being wrong.

Quota: portion of the Total Allowable Catch that a fleet, vessel class, association, country, etc. is permitted to take from a stock in a given period of time.

Recruitment: the number of individuals growing large enough to become part of the exploitable stock e.g. that can be caught in a fishery.

Research Survey: survey at sea, on a research vessel, allowing scientists to obtain information on the abundance and distribution of various species and/or collect oceanographic data (e.g., bottom trawl survey, plankton survey, hydroacoustic survey, etc.).

Species at Risk Act (SARA): a federal law enabling the Government to take action to prevent wildlife species from becoming extinct and secure the necessary actions for their recovery. It provides the legal protection of wildlife species and the conservation of their biological diversity.

Spawner: sexually mature individual.

Spawning Stock: sexually mature individuals in a stock.

Stock: a population of individuals of one species found in a particular area, and used as a unit for fisheries management, e.g. NAFO area 4R Herring.

Stock Assessment: scientific evaluation of the status of a fish stock within a particular area in a given time period.

Total Allowable Catch (TAC): the amount of catch that may be taken from a stock.

Traditional Ecological Knowledge: a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment.

Tonne: metric tonne, 1000kg or 2204.6 lbs.

Trawl: fishing gear; a cone-shaped net towed in the water by a boat called a "trawler". Bottom trawls are towed along the ocean floor to catch species such as groundfish, while mid-water trawls are towed through the water column.

Validation: the verification by an observer of the weight of fish landed.

Vessel Size: length overall.

Year-class: individuals of a same stock born in a particular year, also called "cohort".

Appendix 1: Conservation harvesting plans

Conservation Harvesting Plans (CHP) that cover 2+3KLMNO groundfish outline management measures such as season dates, authorized gear, gear restrictions, minimum size, incidental catch limitations, and area closures (refer to [Section 7.0](#) for further information), and are considered relatively stable. The following CHPs are available from DFO upon request (refer to [Appendix 11 – Departmental contacts](#)) and include detailed and specific measures for groundfish covered by this IFMP. Specifically:

- 2J3KL Stewardship cod
- 3KL Winter flounder (blackback)
- 2+3K Greenland halibut (turbot), less than 65
- 3LMNO Greenland halibut (turbot), less than 65
- Atlantic-wide licence holders for vessels, mobile gear 65-100'
- Atlantic-wide licence holders for vessels, fixed gear 65-100'
- Newfoundland and Labrador Mobile gear less than 65'
- 2J3KLP4R Newfoundland lumpfish

- 3NO Skate, Monk and Hake, fixed gear
- 3Pn and 4R Western, fixed and mobile gear less than 90'

CHPs can be found on the DFO [Fishery Management Decisions](#) website under groundfish.

An overview of stock-specific measures for 2+3KLMNO groundfish are outlined below in [Table 9](#). Please note that the table does not include any stocks currently under moratorium, and that measures are subject to change.

Table 9: General fishery characteristics for various 2+3KLMNO groundfish fishery as outlined in Conservation Harvesting Plans.

Species	NAFO division	Fleet/Gear type	Season	Key management measures
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Species	NAFO division	Fleet/Gear type	Season	Key management measures
Atlantic cod	2J3KL	Stewardship cod: only vessels less than 89 feet permitted. Authorized gear: <ul style="list-style-type: none"> • Gillnet • Longline • Handline • Cod pot 	Season dates can vary. In 2021, season dates as per the CHP: 2J: August 1 to October 30 3KL: July 25 to October 30	<ul style="list-style-type: none"> • Weekly catch limitations. • 3KL Fall-only and 2J Period 2 fishery option to promote the distribution of catch throughout the season. • Restrictions on number of gillnets permitted onboard the vessel or in the water, and on number of hooks for longlining. • Minimum size (length of fish) specified. • CHP available <u>online</u>.

Species	NAFO division	Fleet/Gear type	Season	Key management measures
Atlantic cod	3M	Vessels greater than 100 feet. Authorized gear: <ul style="list-style-type: none"> • Otter trawl • Longline 	Jan 1-Dec 31 (subject to identified closure provisions).	<ul style="list-style-type: none"> • Minimum mesh size on otter trawl is specified. • Minimum gape size on hook on longline is specified. • Minimum fish size specified.
Greenland halibut	2+3K; 3LMNO	Vessels greater than 100 feet, Authorized gear: <ul style="list-style-type: none"> • Otter trawl • Longline 	Jan 1-Dec 31	<ul style="list-style-type: none"> • Minimum mesh size on otter trawl is specified. • Minimum gape size of hook on longline is specified. • Minimum fish size specified.
Greenland halibut	2+3K; 3LMNO	Vessels 65 to 100 feet, mobile gear. Authorized gear: <ul style="list-style-type: none"> • Otter trawl 	Jan 1-Dec 31	<ul style="list-style-type: none"> • Minimum mesh size on otter trawl is specified. • Minimum fish size specified. • CHP available <u>online</u>

Species	NAFO division	Fleet/Gear type	Season	Key management measures
Greenland halibut	2+3K; 3LMNO	Vessels 65 to 100 feet, fixed gear. Authorized gear: <ul style="list-style-type: none"> • Gillnet • Longline 	Jan 1-Dec 31	<ul style="list-style-type: none"> • Minimum mesh size for gillnet is specified. • Gape size of hook on longline is specified. • Maximum number of gillnets is specified. • Depth restrictions in place. • CHP available <u>online</u>
Greenland halibut	2+3K; 3LMNO	Vessels less than 65 feet, fixed gear. Authorized gear: <ul style="list-style-type: none"> • Otter Trawl 	Season dates can vary and are determined annually. CHP recommends opening date of March 1.	<ul style="list-style-type: none"> • Quota allocated according to random draw of eligible fishers. • Minimum mesh size on otter trawl is specified. • Depth restrictions in place • CHP available <u>online</u>

Species	NAFO division	Fleet/Gear type	Season	Key management measures
Greenland halibut	2+3K; 3LMNO	<p>Vessels less than 65 feet, fixed gear.</p> <p>Authorized gear:</p> <ul style="list-style-type: none"> • Gillnets • Longlines 	<p>Season dates can vary and are determined annually, following consultation with industry.</p> <p>Opening date typically occurs in June.</p>	<ul style="list-style-type: none"> • Maximum catch limit is specified. Multiple trips to harvest the permit will be allowed, however all gear must be removed from the water when returning to port. • The portion of the quota that is not harvested under the initial permit will be subject to a draw. • Number of gillnets permitted is specified. • Minimum mesh size is specified by NAFO Division. • Water depth restrictions in place when using longlines. • Longlining and gillnetting are not both

Species	NAFO division	Fleet/Gear type	Season	Key management measures
				permitted on the same fishing trip. <ul style="list-style-type: none">• CHP available <u>online</u>

Species	NAFO division	Fleet/Gear type	Season	Key management measures
Lumpfish	2GHJ and 3KL	<p>Vessels less than 65 feet, fixed gear.</p> <p>Authorized gear:</p> <ul style="list-style-type: none"> • Gillnets 	<p>Season dates vary annually and are determined following consultations with industry.</p> <p>Opening dates vary by fishing area, and typically occur in May and June.</p>	<ul style="list-style-type: none"> • Minimum mesh size is specified for gillnets. • Maximum number of gillnets is specified. • Depth restrictions for fishing lumpfish are in place, and fishing is only permitted in specified coastal areas (refer to licence conditions). • Harvesters are restricted to the Lumpfish area of their homeport. Harvesters who elect to fish an alternate area, must contact DFO prior to the season opening and submit a completed Schedule 14. • Lumpfish landings are not subject to

Species	NAFO division	Fleet/Gear type	Season	Key management measures
				<p>dockside monitoring, but 100% of groundfish bycatch landed in the lumpfish directed fishery are subject to DMP.</p> <ul style="list-style-type: none"> • CHP available online
Monkfish	3LNO	<p>Vessels less than 65 feet, fixed gear.</p> <p>Authorized gear:</p> <ul style="list-style-type: none"> • Gillnets • Longline 	<p>Season dates vary. Opening date is set in consultation with industry.</p>	<ul style="list-style-type: none"> • Trip limits and harvest cap specified. • Minimum mesh size is specified for gillnets. • Maximum number of gillnets is specified. • Gillnets and longline may not both be fished during the same fishing trip, unless an at-sea observer is onboard. • CHP available online

Species	NAFO division	Fleet/Gear type	Season	Key management measures
Redfish	3LN	Vessels greater than 100 feet, mobile gear. Authorized gear: <ul style="list-style-type: none"> • Otter trawl 	Jan 1-Dec 31	<ul style="list-style-type: none"> • Minimum mesh size on otter trawl specified. • Minimum fish size specified.
Redfish	3M	Vessels greater than 100 feet, mobile. Authorized gear: <ul style="list-style-type: none"> • Otter trawl 	Jan 1-Dec 31	<ul style="list-style-type: none"> • Minimum mesh size on otter trawl: 130 mm. • Minimum fish size specified.
Redfish	3O	Vessels greater than 100 feet, mobile gear; Authorized gear: <ul style="list-style-type: none"> • Otter trawl 	Jan 1-Dec 31	<ul style="list-style-type: none"> • Minimum mesh size on otter trawl specified. • Minimum fish size specified. • CHP available <u>online</u>

Species	NAFO division	Fleet/Gear type	Season	Key management measures
Skate	3LNO	Vessels greater than 100 feet, mobile or longline gear Authorized gear: <ul style="list-style-type: none"> • Otter trawl • Longline 	Jan 1-Dec 31	<ul style="list-style-type: none"> • Minimum mesh size on otter trawl specified. • Minimum gape size of hook on longline specified.
Skate	3LNO	Vessels 65 to 100 feet, mobile gear Authorized gear: <ul style="list-style-type: none"> • Otter trawl 	Jan 1-Dec 31	<ul style="list-style-type: none"> • Minimum mesh size on otter trawl specified.
Skate	3LNO	Vessels 65 to 100 feet, fixed gear.	Jan 1-Dec 31	<ul style="list-style-type: none"> • Minimum mesh size for gillnet is specified. • Required gape size of hook on longline is specified.

Species	NAFO division	Fleet/Gear type	Season	Key management measures
Skate	3LNO	Vessels less than 65 feet, fixed gear Authorized gear: <ul style="list-style-type: none"> • Gillnet • Longline 	Season dates vary. Opening date is set in consultation with industry.	<ul style="list-style-type: none"> • Trip limits specified. • Minimum mesh size for gillnet is specified. • Maximum number of gillnets is specified. • Gillnets and hook and line (longline) gear may not be fished during the same fishing trip, unless an at-sea observer is onboard. • CHP available online
White hake	3NO	Vessels 65 to 100 feet, fixed gear. Authorized gear: <ul style="list-style-type: none"> • Gillnet • Longline 	Jan 1-Dec 31	<ul style="list-style-type: none"> • Minimum mesh size for gillnet is specified. • Required gape size of hook on longline is specified. • CHP available online

Species	NAFO division	Fleet/Gear type	Season	Key management measures
White hake	3NO	<p>Vessels less than 65 feet, fixed gear.</p> <p>Authorized gear:</p> <ul style="list-style-type: none"> • Gillnet • Longline 	Season dates vary. Opening date is set in consultation with industry.	<ul style="list-style-type: none"> • Maximum number of gillnets is specified. • Minimum mesh size for gillnet is specified. • Water depth restrictions specified. • Gillnets and hook and line (longline) gear may not be fished during the same fishing trip, unless an at-sea observer is onboard. • CHP available <u>online</u>

Species	NAFO division	Fleet/Gear type	Season	Key management measures
Winter (blackback) flounder	3KL	Vessels less than 65 feet, fixed gear. Authorized gear: <ul style="list-style-type: none"> • Gillnet 	Season dates vary annually. Note that fishery is only open when 2J3KL Stewardship cod is open.	<ul style="list-style-type: none"> • Maximum number of gillnets is specified. • Minimum mesh size for gillnet is specified. • Areas where fishing is permitted is specified in licence conditions. • CHP available <u>online</u>
Witch flounder	3NO	Vessels greater than 100 feet, mobile gear. Authorized gear: <ul style="list-style-type: none"> • Otter trawl 	Jan 1-Dec 31	<ul style="list-style-type: none"> • Minimum mesh size on otter trawl is specified. • Minimum fish size specified.

Species	NAFO division	Fleet/Gear type	Season	Key management measures
Yellowtail flounder	3LNO	Vessels greater than 100 feet, mobile or longline gear; Authorized gear: <ul style="list-style-type: none"> • Otter trawl • Longline 	Jan 1-Dec 31	<ul style="list-style-type: none"> • Minimum mesh size on otter trawl is specified. • Minimum gape size of hook on longline is specified. • Bycatch limits specified. • Minimum fish size specified. • Spawning closure: 3LNO closed to directed fishing for yellowtail flounder for six-week period, commencing in June.

Appendix 2: 3LNO Yellowtail flounder: Conservation plan and harvest control rules

NAFO sets the Total Allowable Catch (TAC) and national fishing quotas for the 3LNO yellowtail flounder fishery. Canada holds 97.5% of the TAC set by NAFO. Fishing activity is regulated by NAFO within the NAFO Regulatory Area (NRA), and by Canada within its 200-mile zone. The following Harvest Control Rules reflect scientific council advice for this stock and have in part formed the basis of Canadian positions and subsequent NAFO decisions related to establishment of the TAC. They are compliant with the NAFO

Precautionary Approach Framework which guides the setting of TACs within that decision-making forum. Further review of these Harvest Control Rules will continue within the NAFO context and may lead to consideration of a proposal to NAFO for adoption.

Objective:

To maintain the Relative Biomass at or above 1 and to keep Relative Fishing Mortality at less than 1.

Reference Points:

Rather than using specific estimates in a given year, ratio values derived from the production model are considered to be more stable over time.

- a. Limit reference point for SSB (*B_{lim}*): 30% of *B_{msy}*
- b. Limit reference point for fishing mortality (*F_{lim}*): Relative F (F/F_{msy}) of 1 (about 0.21 in recent assessments)
- c. *B_{msy}*: Relative Biomass (B/B_{msy}) of 1 (about 1.5 in recent assessments)

Harvest Control Rules:

- a. When Relative Biomass is below *B_{lim}*:
 - i. No directed fishing
 - ii. By-catch should be restricted to unavoidable by-catch in fisheries directing for other species
- b. When Relative Biomass is between *B_{lim}* and *B_{msy}*
 - i. Fishing mortality of $< 2/3 F_{msy}$
- c. When Relative Biomass is above *B_{msy}*:
 - i. Fishing mortality should have a low¹ risk of exceeding *F_{msy}*

Ecosystem Considerations:

The yellowtail flounder fishery experiences a bycatch of American plaice. Hence, in establishing the TAC for yellowtail flounder, the impacts on the 3LNO American plaice of any increase in yellowtail flounder TAC should be considered, especially at TAC levels when the Relative Biomass of yellowtail flounder is above *B_{msy}*.

Appendix 3: 3NO Cod – NAFO Conservation plan and rebuilding strategy

Objectives:

- a. Long-term Objective: The long-term objective of this Conservation Plan and Rebuilding Strategy is to achieve and to maintain the 3NO Cod Spawning Stock Biomass (SSB) in the 'safe zone', as defined by the NAFO Precautionary Approach framework, and at or near B_{msy} .
- b. Interim Milestone: As an interim milestone, increase the 3NO Cod Spawning Stock Biomass (SSB) to a level above the Limit Reference Point (B_{lim}). It may reasonably be expected that B_{lim} will not be reached until after 2015.

Reference Points:

- a. Limit reference point for spawning stock biomass (B_{lim}) – 60 000 tonnes¹
- b. An intermediate stock reference point or security margin B_{sr2} – [120 000 tonnes]
- c. Limit reference point for fishing mortality ($F_{lim} = F_{msy}$) – 0.30
- d. Interim B_{target} – 185 000 tonnes and interim F_{target} of $F_{0.1}$ – 0.193

Re-opening to Directed Fishing:

- a. A re-opening of a directed fishery should only occur when the estimated SSB, in the year projected for opening the fishery, has a very low⁴ probability of actually being below B_{lim} .
- b. An annual TAC should be established at a level which is projected to result in:
 - i. continued growth in SSB
 - ii. low probability of SSB declining below B_{lim} throughout the subsequent 3-year period, and
 - iii. fishing mortality < $F_{0.1}$

Harvest Control Rules:

Noting the desire for relative TAC stability, the projections referred to in items (a) through (d) below should consider the effect of maintaining the proposed annual TAC over 3 years. Further, in its application of the Harvest Control Rules, Commission may, based on Scientific Council analysis, consider scenarios which either mitigate decline in SSB or limit increases in TACs as a means to balance stability and growth objectives.

a. When SSB is below *B_{lim}*:

- i. no directed fishing, and
- ii. bycatch should be restricted to unavoidable bycatch in fisheries directing for other species.

Before SSB increases above *B_{lim}*, additional or alternative harvest control rules should be developed, following the Precautionary Approach, to ensure the long-term objective is met, such as:

b. When SSB is between *B_{lim}* and *B_{isr}*:

- i. TACs should be set at a level(s) to allow for continued growth in SSB consistent with established rebuilding objective(s)
- ii. TACs should result in a low probability of SSB declining below *B_{lim}* throughout the subsequent 3-year period, and
- iii. Biomass projections should apply a low risk tolerance

c. When SSB is above *B_{isr}*:

- i. TACs should be set at a level(s) to allow for growth in SSB consistent with the long term objective, and
- ii. Biomass projections should apply a risk neutral approach (i.e. mean probabilities)

d. When SSB is above *B_{target}*:

- i. TACs should be set at a level of F that has a low probability of exceeding *F_{msy}*, and
- ii. Biomass projections should apply a risk neutral approach (i.e. mean probabilities)

Ecosystem Considerations:

Considering the importance of capelin as a food source, consistent with the ecosystem approach, the moratorium on 3NO capelin will continue until at least 31 December 2018.

Bycatch Provisions:

The bycatch provisions in the CEM for 3NO cod should be reviewed periodically, to coincide with scheduled assessments of the stock by Scientific Council, and adjusted to reflect the overall trend in spawning stock biomass.

Appendix 4: 3LNO American plaice – NAFO Conservation plan and rebuilding strategy

Objective(s):

- a. Long-term Objective: The long-term objective of this Conservation Plan and Rebuilding Strategy is to achieve and to maintain the 3LNO American plaice Spawning Stock Biomass (SSB) in the 'safe zone', as defined by the NAFO Precautionary Approach framework, and at or near *B_{msy}*.
- b. Interim Milestone: As an interim milestone, increase the 3LNO American plaice Spawning Stock Biomass (SSB) to a level above the Limit Reference Point (*B_{lim}*). It may reasonably be expected that *B_{lim}* will not be reached until after 2014.

Reference points:

- a. Limit reference point for spawning stock biomass (*B_{lim}*) – 50 000 tonnes
- b. An intermediate stock reference point or security margin *B_{isr6}* – [100 000 tonnes]
- c. Limit reference point for fishing mortality (*F_{lim}* = *F_{msy}*) – 0.31
- d. *B_{msy}* – [242 000 tonnes]

Re-opening to directed fishing:

- a. A re-opening of a directed fishery should only occur when the estimated SSB, in the year projected for opening the fishery, has a very low⁷

probability of actually being below *Blim*.

- b. An annual TAC should be established at a level which is projected to result in:
 - i. continued growth in SSB,
 - ii. low probability of SSB declining below *Blim* throughout the subsequent 3-year period, and,
 - iii. fishing mortality $< F_{0.1}$.

Harvest control rules:

Noting the desire for relative TAC stability, the projections referred to in items (a) through (d) below should consider the effect of maintaining the proposed annual TAC over 3 years. Further, in its application of the Harvest Control Rules, Commission may, based on Scientific Council analysis, consider scenarios which either mitigate decline in SSB or limit increases in TACs as a means to balance stability and growth objectives.

- a. When SSB is below *Blim*:
 - i. no directed fishing, and
 - ii. bycatch should be restricted to unavoidable bycatch in fisheries directing for other species
- b. When SSB is between *Blim* and *B_{isr}*:
 - i. TACs should be set at a level(s) to allow for continued growth in SSB consistent with established rebuilding objective(s)
 - ii. TACs should result in a low probability of SSB declining below *Blim* throughout the subsequent 3-year period, and
 - iii. Biomass projections should apply a low risk tolerance
- c. When SSB is above *B_{isr}*:
 - i. TACs should be set at a level(s) to allow for growth in SSB consistent with the long term objective, and
 - ii. Biomass projections should apply a risk neutral approach (i.e. mean probabilities)
- d. When SSB is above *B_{msy}*:

- i. TACs should be set at a level of F that has a low probability of exceeding F_{msy} , and
- ii. Biomass projections should apply a risk neutral approach (i.e. mean probabilities)

Appendix 5: 2+3KLMNO Greenland halibut – NAFO rebuilding program

Rebuilding Program

1. The current Management Strategy (MS) for Greenland halibut stock in Subarea 2 + Divisions 3KLMNO adopted by NAFO in 2017 shall be in force from 2018 to 2023 inclusive.
2. The total allowable catch (TAC) shall be adjusted annually according to the harvest control rule (HCR) specified in Annex I.F.
3. The Exceptional Circumstances Protocol (Annex I.G) shall be invoked in response to an event or observation by Scientific Council which is outside of the range of possibilities considered within the MSE.

Control Measures

4. The following measures apply to vessels 24 meters or greater in overall length engaged in the Greenland halibut fishery in Subarea 2 and Divisions 3KLMNO:
 - a. Each Contracting Party shall allocate its quota for Greenland halibut among its authorized vessels.
 - b. An authorized vessel shall land its Greenland halibut catch only in a designated port. To this end, each Contracting Party shall designate one or more ports in its territory where authorized vessels may land Greenland halibut.
 - c. Each Contracting Party shall post to the NAFO MCS Website, in PDF format, the name of every port it has so designated. Any subsequent changes to the list shall be posted in replacement of the previous one no less than fifteen days before the change comes into effect.

- d. At least 48 hours before its estimated time of arrival in port, an authorized vessel or its representative on its behalf, shall advise the quantity of Greenland halibut retained onboard, and information on the division or divisions where the catches were taken.
 - e. Each Contracting Party shall inspect each landing of Greenland halibut in its ports and prepare an inspection report in the format prescribed in Annex IV.C, which it posts to the NAFO MCS Website, in PDF format, within 14 working days from the date on which the inspection was completed. The PSC3 report shall identify and provide details of any infringement to the CEM detected during the port inspection. It shall include all relevant information available in reference to infringements detected at sea during the current trip of the inspected fishing vessel.
5. The following procedures apply with respect to authorized vessels with more than 50 tonnes live weight total catch on board taken outside the Regulatory Area entering the Regulatory Area to fish for Greenland halibut:
- a. the master shall notify the Executive Secretary by e-mail or fax, at the latest 72 hours prior to the vessel's entry into the Regulatory Area, of the amount of catch on board, the position by latitude and longitude where the master intends to commence fishing, the estimated time of arrival at the position, and contact information for the fishing vessel (e.g., radio, satellite phone or email).
 - b. An inspection vessel that intends to inspect a fishing vessel before it begins fishing for Greenland halibut shall notify that fishing vessel and the Executive Secretary of the coordinates of a designated inspection point that is no more than 60 nautical miles from the position where the master estimates that the vessel will commence fishing and shall inform other inspection vessels that may be operating in the Regulatory Area accordingly.
 - c. A fishing vessel notified in accordance with paragraph (b) shall proceed to the designated inspection point.

d. Until inspected in accordance with this Article, a fishing vessel may not begin fishing unless:

- i. it receives no notification within 72 hours of the notification it has transmitted in accordance with subparagraph 5(a); or
- ii. within 3 hours of its arrival at the designated inspection point, the inspection vessel has not begun the intended inspection.

6. The Contracting Parties shall prohibit landings of Greenland halibut from non-Contracting Party vessels that have engaged in fishing activities in the Regulatory Area.

Duties of the Executive Secretary

7. The Executive Secretary:

- a. places on the agenda of the Commission in the context of reviewing the implementation of this rebuilding plan, the issue of deciding on additional measures to ensure the effective attainment of its objective;
- b. ensures that the list of designated ports posted by the Contracting Parties for the purpose of this Article as well as any subsequent changes is automatically made available to all Contracting Parties;
- c. ensures that any port inspection report posted to the NAFO MCS Website in accordance with subparagraph 4(e) is transmitted to any Contracting Party that requests it; and
- d. transmits the information received in accordance with subparagraph 5(a) to all inspection vessels in the Regulatory Area.

8. If the Executive Secretary does not receive a notification from an inspection vessel within 24 hours of the notification transmitted in accordance with subparagraph 5(b) of this Article, the Executive Secretary immediately advises the fishing vessel that it may begin fishing and notifies inspection vessels and the flag State FMC accordingly.

Restoration of the "Others" quota

9. When the TAC exceeds 30 000 tonnes the next 1300 tonnes beyond 30 000 tonnes will be allocated to the “Others” quota. In deciding the relevant contributions of Contracting Parties to the 1300 tonnes “Others” quota, the Commission will take into account the benefit that some Contracting Parties received from the assignment of the “Others” quota that occurred when the Greenland Halibut Rebuilding Plan was adopted.

Appendix 6: Rebuilding plan for Atlantic Cod – NAFO divisions 2J3KL

On December 21, 2020, the Rebuilding plan for Atlantic cod (Northern cod) NAFO Divisions 2J3KL was implemented. The purpose of this plan is to identify the main objectives and requirements for rebuilding Atlantic cod in NAFO Divisions 2J3KL, as well as the management measures that will be used to achieve these objectives.

The rebuilding plan objectives, harvest decision rule and calculation are outlined below. The full rebuilding plan for 2J3KL Atlantic cod can be found [online](#).

Objective(s):

- a. The short-term objective is to facilitate an increase of the 2J3KL Cod spawning stock biomass (SSB) beyond 75% of *Blim*, while also providing reasonable fishing opportunities. As evident from the history of this stock, a timeline for this objective cannot be defined, as high levels of natural mortality can delay rebuilding. Tactical management action is therefore required to ensure low levels of fishing mortality is maintained while the stock is below 75% of *Blim*.
- b. The long-term objective is to have 2J3KL cod SSB exceed *Blim* with a high probability. The timeline for meeting this objective cannot be determined as the rate of recovery critically depend on future rates of recruitment and natural mortality. Long-term forecasts of these rates

are highly uncertain, which makes it difficult to conduct meaningful evaluations of strategic management measures.

Harvest decision rule:

- a. The harvest decision rule (HDR) is based on a phased approach in the short-term until the spawning stock biomass (SSB) is above the interim target of 75% of Biomass Limit Reference Point (*Blim*).
- b. Until then, a low level of fishing mortality (F) is maintained and is linked to stock magnitude and direction with a cap on removals.
- c. The HDR is informed by the annual scientific stock assessment. Annual changes in total landings are computed by a rule that uses the size of the stock relative to *Blim*, relative to a base landings level (chosen to be the level of landings in 2017).
- d. The HDR is based on two quadratic formulas that computes the relative change in landings based on stock status relative to *Blim*
 - A modest increase in removals within range of 50-75% *Blim*
 - At 75% *Blim*, a 50% increase in landings from current level
 - Majority of increase occurs as you approach 75% *Blim*
 - Within range of 25-50% *Blim*
 - At 25% *Blim*, a 67% decrease in landings from current level
 - Rate of decline increases as stock size decreases

Harvest decision rule calculation:

$$C = C_{2017} \left(1 + \gamma \left(\frac{B}{B_{lim}} - x_{mid} \right)^2 \right); \begin{cases} \frac{B}{B_{lim}} < x_{mid}, & \gamma = \frac{y_l - 1}{(x_l - x_{mid})^2} \\ \frac{B}{B_{lim}} > x_{mid}, & \gamma = \frac{y_h - 1}{(x_h - x_{mid})^2} \end{cases}$$

Parameters of rule	Value	Description
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Parameters of rule	Value	Description
xmid	0.52	"Starting point" of rule when conceptualized, i.e. 52% of Blim
xl	0.25	Lower bound of B/Blim
xh	0.75	Upper bound of B/Blim
yl	0.33	HDR result is 33% of C ₂₀₁₇ at b/blim=xl (0.25)
yh	1.5	HDR result is 150% of C ₂₀₁₇ at b/blim=xh (0.75)
C ₂₀₁₇	13000	Catch value of stewardship fishery in year 2017 (tonnes)

With the above values, the equation evaluates to:

$$C = 13000 \left(1 + \gamma \left(\frac{B}{B_{lim}} - 0.52 \right)^2 \right); \begin{cases} \frac{B}{B_{lim}} < 0.52, & \gamma = -9.19 \\ \frac{B}{B_{lim}} > 0.52, & \gamma = 9.45 \end{cases}$$

Appendix 7: 3LN Redfish – NAFO Conservation plan and harvest control rule

Objectives:

The long-term objective of the Redfish 3LN Conservation Plan is to maintain the biomass in the 'safe zone', as defined by the NAFO Precautionary Approach framework.

Reference points:

- Limit reference point for biomass (*Blim*): 30% of *Bmsy*
- Limit reference point for fishing mortality (*Flim*): *Fmsy*

Performance statistics (levels of risks that apply to section 4):

- Very low (< 10%) probability of biomass declining below *Blim*.

- b. Low ($< 30\%$) probability of fishing mortality $> F_{msy}$
- c. Less than 50% probability of declining below 80% B_{msy} on or before 2021

Supplementary guidance to the 3LN Redfish harvest control rule:

- a. When biomass is below B_{lim} :
 - i. No directed fishing
 - ii. Bycatch should be restricted to unavoidable bycatch in fisheries directing for other species
- b. When biomass is between B_{lim} and 80% of B_{msy} :
 - i. TAC's should be set at a level(s) to allow for growth to above 80% of B_{msy} or to avoid or mitigate further decline in biomass consistent with explicit rebuilding objectives. Tolerance for short-term preventable decline is reduced as biomass approaches B_{lim} .
- c. When biomass is above 80% of B_{msy} :
 - i. TAC's should be set at a level(s) to maintain biomass above 80% of B_{msy} or to avoid or mitigate decline below 80% of B_{msy}
- d. If fishing mortality is above F_{msy} :
 - i. Fishing mortality should be reduced to a level below F_{msy} .

Management strategy/harvest control rule:

A stepwise biannual catch increase in TAC, reaching 18,100 tonnes by 2019-2020. (18,100t is the equilibrium yield in the 2014 assessment under the assumption of an MSY of 21,000 tonnes).

2015: 10,400 t

2016: 10,400 t

2017: 14,200 t

2018: 14,200 t

2019: 18,100 t

2020: 18,100 t

2021: 18,100 t

2022: 18,100 t

Review/Monitoring:

- a. Scientific Council will monitor the performance of the HCR by examining the trends in the survey indices and by conducting a full assessment every 2-3 years and for the first time in 2016.
- b. Conduct a full review/ evaluation of the management strategy at the end of the 7 year implementation period.

Appendix 8: 2+3KLMNO groundfish advisory committee

Mandate

The 2+3KLMNO Groundfish Advisory Committee (GAC) serves as a forum for the discussion of issues related to the management of the groundfish fishery in NAFO Sub-area 2 and Divisions 3KLMNO. The Committee's purpose is to provide advice and recommendations to the Department in support of the development of management measures that address conservation and the sustainable use of groundfish resources. The committee will work to foster local and industry stewardship and partnerships. Science review and advice to support management measures is sought through the annual Science Regional Advisory Process (RAP) and is supplemented by advice from NAFO Scientific Council (where applicable).

Guiding principles

The following principles will be used to guide decisions on the structure and operations of the 2+3KLMNO GAC:

Transparent:

The advisory process is transparent with open lines of communication and the provision of timely, accurate, accessible, clear and objective information. This information will be available to all participants in the process on an equal basis. DFO organizers will provide access to agendas and necessary information in advance of meetings.

Accountable:

Participants who represent a constituency are expected to bring forward the general views, knowledge and experience of those they represent, and report back about deliberations of the consultation activity and reasons for decisions taken. All participants share accountability for the success of the process.

Inclusive representation:

Participation in the advisory process should be balanced and reflect the broad range of interest of the membership. Observer status will be available at 2+3KLMNO GAC meetings, at the discretion of the chair(s), if requested by non-member stakeholders. Observers may be provided an opportunity to participate in discussions following input from members.

Effective:

All participants should be satisfied that the process can achieve the goals of the mandate. This does not mean that participants will always agree with the final advice, outcome or recommendation.

Efficient:

The size of the advisory committee will reflect a balance between the diversity of fleet sector interests and participant numbers that will facilitate productive discussion.

Membership:

The Groundfish Advisory Committee will be comprised of representatives from DFO, the harvesting and processing sectors, Province of Newfoundland and Labrador, Indigenous Organizations, and environmental non-governmental organizations.

The GAC can be expanded, to accommodate an organization or group that has an interest in management of groundfish resources. Requests for nomination to the GAC will be reviewed at the annual meeting. Changes to

the membership will be at the discretion of the Chair. Further, the Chair reserves the right to limit membership to maintain the committee's efficiency.

Ad hoc working groups may be established by the GAC to review specific issues and report their findings to GAC as a whole.

All members are expected to review minutes and be aware of the discussion and outcome of the previous meeting in preparation for subsequent meetings. Further discussion of issues dealt with at previous meetings will generally be limited to correction or clarification of issues discussed.

Administration

- Meetings will be chaired by DFO.
- The GAC will meet at least once a year. The meeting schedule is at the call of the chair, with the schedule to be adjusted as the need requires. Any designated representative or alternate can request additional meetings.
- Meetings may occur either in person or by teleconference.
- The agenda will generally include only those issues for which the meeting was convened.
- DFO will be responsible for the preparation of the meeting agenda and minutes, in consultation with the GAC members.
- Expenses by designated representatives and alternates to attend GAC meetings are the responsibility of the organization, department, or company that they represent.

Operating principles:

- The Minister of Fisheries and Oceans Canada is responsible for the management of fisheries in the Newfoundland and Labrador Region; DFO will maintain legislative authority towards the conservation of the groundfish resource and its habitat.
- GAC will strive to reach consensus. When consensus is not possible, the views of all members will be reflected in the record of the meeting, and

GAC's views will be conveyed in a manner that communicates the points of view expressed by all of its members.

- Participants agree to share all relevant information where possible, and to accept the concerns and goals of others as legitimate.
- Participants agree to act in "good faith" in all respects of the process, including respecting confidentiality in relaying information to others.
- Participants will maintain a professional manner and refrain from discussions of a personal nature.
- Participants will be asked to provide any proposals to DFO in advance of the meeting for distribution to GAC members.
- The chair shall be responsible for notifying all participants of any meeting.
- Summary minutes of each meeting will be distributed by the Department of Fisheries and Oceans after they are reviewed and accepted by the chair.

Appendix 9: Safety at sea

Vessel owners and masters have a duty to ensure the safety of their crew and vessel. Adherence to safety regulations and good practices by owners, masters and crew of fishing vessels will help save lives, protect the vessel from damage and protect the environment. All fishing vessels must be in a seaworthy condition and maintained as required by Transport Canada and other applicable agencies. Vessels subject to inspection should have a certificate of inspection valid for the area of intended operation.

In the federal government, responsibility for regulating shipping, navigation, and vessel safety lies with Transport Canada, while emergency response is the responsibility of the Canadian Coast Guard (CCG). DFO has responsibility for the management of fisheries resources, and in Newfoundland and Labrador, the provincial Workplace Health, Safety and Compensation Commission (WHSCC) has jurisdiction over health and safety issues in the workplace.

Before leaving on a voyage the owner, master or operator must ensure that the fishing vessel is capable of safely making the passage. Critical factors for a safe voyage include:

- seaworthiness of the vessel
- vessel stability
- having the required safety equipment in good working order
- crew training
- knowledge of current and forecasted weather conditions

Useful publications include Transport Canada's Small Fishing Vessel Safety Manual which can be obtained from Transport Canada (TC) or printed from their website.

Fishing vessel safety includes three priority areas:

- vessel stability
- emergency drills
- cold water immersion

Fishing vessel stability

Vessel stability is paramount for safety. Care must be given to the stowage and securing of all cargo, skiffs, equipment, fuel containers and supplies, and also to correct ballasting. Fish harvesters must be familiar with their vessel's centre of gravity, the effect of free surface liquids on stability, loose water or fish on deck, loading and unloading operations and the vessel's freeboard. Fish harvesters should know the limitations of their vessels. If unsure, the vessel operator should contact a qualified naval architect, marine surveyor or the local Transport Canada Marine Safety office.

Fishing vessel owners are required to develop detailed instructions addressing the limits of stability for each of their vessels. The instructions must be based on a formal assessment of the vessel by a qualified naval architect and include detailed safe operation documentation. Instructions should be kept on board the vessel at all times.

Fishing vessel owners should also keep on-board detailed documentation on engine room procedures, maintenance schedules to ensure watertight integrity, and instructions for regular practice of emergency drills.

Emergency drill requirements

The vessel master must establish procedures and assign responsibilities to each crew member for emergencies such as crew member overboard, fire, flooding, abandoning ship and calling for help.

Since July 30, 2003 all crew members with more than six months at sea are required to have taken minimum Marine Emergency Duties (MED) training or be registered for such training.

MED provides a basic understanding of:

- hazards associated with the marine environment
- prevention of shipboard incidents (including fires)
- raising and reacting to alarms
- fire and abandonment situations
- skills necessary for survival and rescue

Cold water immersion

Drowning is the number one cause of death in the fishing industry. Cold water is defined as water below 25 degrees Celsius, but the greatest effects occur below 15 degrees Celsius. Newfoundland and Labrador waters are usually below 15 degrees.

The effects of cold water on the body occur in four stages:

- cold shock
- swimming failure
- hypothermia
- post-rescue collapse

Vessel masters should know what to do to prevent themselves or their crew from falling into the water and what to do if that occurs.

Other issues

Weather

Vessel owners and masters are reminded of the importance of paying close attention to current weather trends and forecasts during the voyage.

Marine weather information and forecasts can be obtained from [Environment Canada's website](#).

Emergency radio procedures

Vessel owners and masters should ensure that all crew are able to activate the Search and Rescue (SAR) system by contacting the Canadian Coast Guard (CCG) early rather than later. It is strongly recommended that all fish harvesters carry a registered 406 MHz Emergency Position Indicating Radio Beacon (EPIRB). These beacons should be registered with Coast Guard's National Search and Rescue secretariat. When activated, an EPIRB transmits a distress call that is picked up or relayed by satellites and transmitted via land earth stations to the Joint Rescue Co-ordination Centre (JRCC), which will task and co-ordinate rescue resources.

All crew members should know how to make a distress call and should obtain their restricted operator certificate from Innovation, Science and Economic Development Canada (formerly Industry Canada). Whenever possible, masters should contact the nearest Canadian Coast Guard (CCG) Marine Communications and Traffic Services (MCTS) station prior to a distress situation developing. Correct radio procedures are important for communications in an emergency. Incorrect or misunderstood communications may hinder a rescue response.

Since August 1, 2003 all commercial vessels greater than 20 metres in length are required to carry a Class D VHF Digital Selective Calling (DSC) radio. A registered DSC VHF radio has the capability to alert other DSC equipped vessels in the immediate area and advise Coast Guard MCTS that the vessel is in distress. Masters should be aware that they should register their DSC

radios with ISED Canada to obtain a Marine Mobile Services Identity (MMSI) number; otherwise the automatic distress calling feature of the radio may not work.

A DSC radio that is connected to a GPS unit will also automatically include the vessel's current position in the distress message. More detailed information on MCTS and DSC can be obtained by contacting a local MCTS center or from the [Canadian Coast Guard](#).

Collision regulations

Fish harvesters should have a thorough knowledge of the [Collision Regulations](#) and the responsibilities between vessels where risk of collision exists. Navigation lights must be kept in good working order and must be displayed from sunset to sunrise and during all times of restricted visibility. To help reduce the potential for collision or close quarters situations that may also result in the loss of fishing gear, fish harvesters are encouraged to monitor the appropriate local Vessel Traffic Services (VTS) VHF channel, when travelling or fishing near shipping lanes or other areas frequented by large commercial vessels.

Vessels required to participate in VTS include:

- every ship 20 metres or more in length
- every ship engaged in towing or pushing any vessel or object, other than fishing gear
- where the combined length of the ship and any vessel or object towed or pushed by the ship is 45 metres or more in length, or
- where the length of the vessel or object being towed or pushed by the ship is 20 metres or more in length

Exceptions include:

- a ship towing or pushing inside a log booming ground
- a pleasure yacht less than 30 metres in length, and
- a fishing vessel that is less than 24 metres in length and not more than 150 tonnes gross

Sail plan

An important trip consideration is the use of a sail plan which includes the particulars of the vessel, crew and voyage. The sail plan should be left with a responsible person on shore or filed with the local MCTS centre. After leaving port the fish harvester should contact the holder of the sail plan daily or as per another schedule. The sail plan should ensure notification to JRCC when communication is not maintained which might indicate your vessel is in distress. Be sure to cancel the sail plan upon completion of the voyage.

Appendix 10: DFO Conservation and Protection enforcement data

Table 10. Number of fishery officer hours dedicated to, and number of domestic¹ Canadian waters by DFO Conservation and Protection,

Species	2016			2017			2018	
	Fishery Officer Patrol Hours	Total Hours	# Vessel Checks	Fishery Officer Patrol Hours	Total Hours	# Vessel Checks	Fishery Officer Patrol Hours	Total Hours
Cod ²	3,615.5	5,465.5	248	3,405.5	5,247.5	663	4310	6710
Greenland halibut	801.5	1,183.5	61	989.75	1,899	95	639.25	1020
Redfish	415.5	732	65	567	929.5	72	3038	4820
Atlantic halibut	141	216.2	37	183	235	29	123	1220
Flounder ³	171	282.5	13	48	75	11	432	7720
Skate	19	19	3	47.5	95	4	239	4220
Hake ⁴	28.5	47.5	1	4	8	1	19.5	1920

Species	2016			2017			2018	
	Fishery Officer Patrol Hours	Total Hours	# Vessel Checks	Fishery Officer Patrol Hours	Total Hours	# Vessel Checks	Fishery Officer Patrol Hours	Total Hours
Lumpfish	2	3.5	1	0.5	0.5	0	3.5	3.5
Other Groundfish ⁵	36	78	0	70.5	133.5	1	85.5	100

Notes:

1. Information on Canada's High Seas Monitoring, Control and Surveillance Activities, including those in the NAFO Regulatory Area, is available [online](#).
2. Cod includes Atlantic cod and rock cod.
3. Flounder includes American plaice, winter flounder, witch flounder, and yellowtail flounder.
4. Hake includes white hake and silver hake.
5. 'Other Groundfish' includes data for monkfish and haddock.

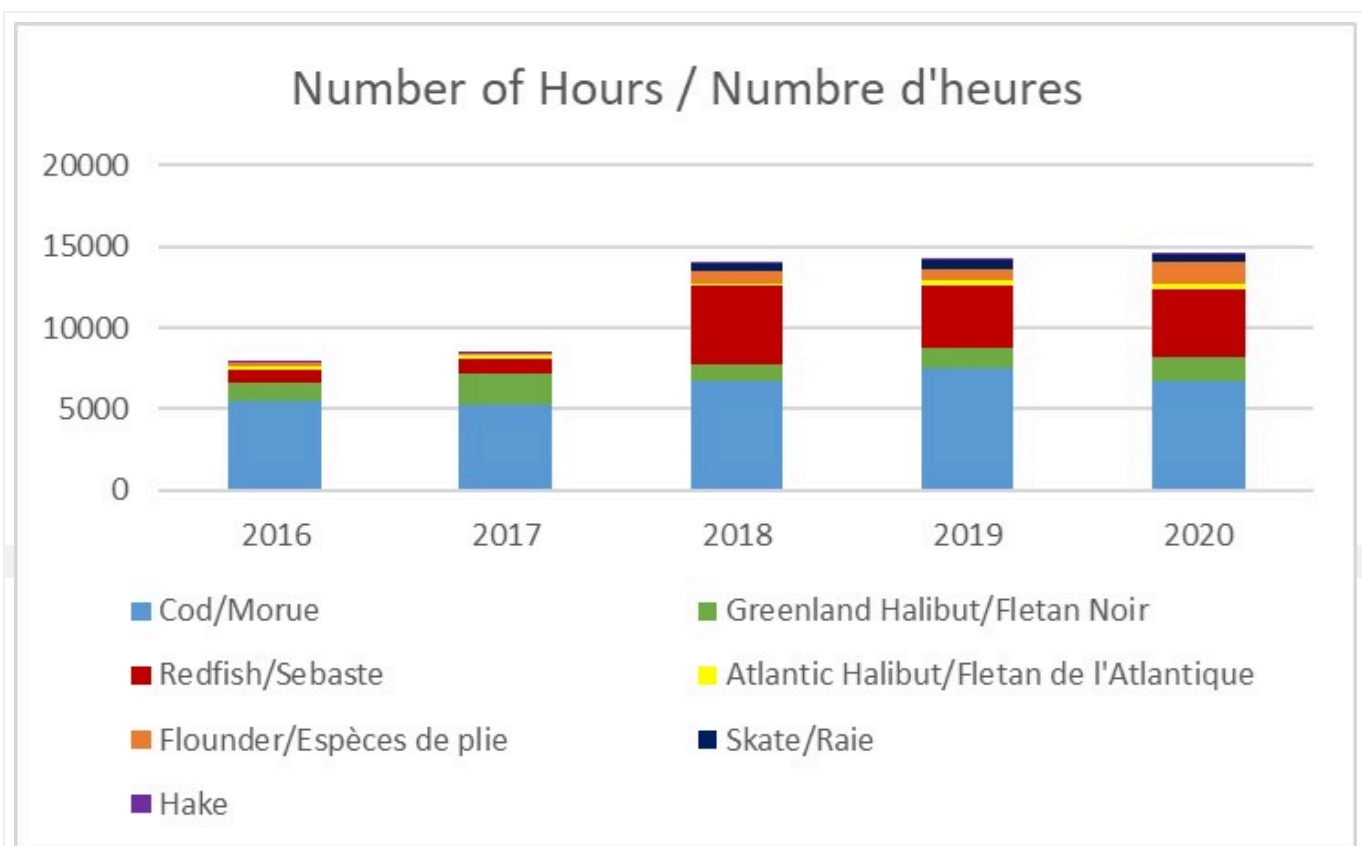


Figure 9: Total DFO monitoring and surveillance hours per species in Canadian 2+3KLMNO waters for 2016-2020 period (Conservation and Protection, DFO-NL Region).

► Description

Table 11. Total violations per species in domestic¹ Canadian waters of 2+3KLMNO for 2016-2020 period (DFO-NL Conservation & Protection, NL Region).

Species	2016	2017	2018	2019	2020	Average per year
Cod ²	138	90	86	125	104	108.6
Greenland halibut	52	19	23	24	17	27
Atlantic halibut	7	2	16	10	0	7
Flounder ³	7	5	2	6	3	4.6
Redfish	0	2	6	2	2	2.4
Skate	0	0	0	0	0	0
Monkfish	0	0	0	0	0	0
Lumpfish	0	1	2	2	0	1
Other Groundfish ⁴	2	0	5	0	3	12
Total	206	119	140	169	129	

Notes:

1. Information on Canada's High Seas Monitoring, Control and Surveillance Activities, including those in the NAFO Regulatory Area, is available [online](#).
2. Cod includes Atlantic cod and rock cod.
3. Flounder includes American plaice, winter flounder, witch flounder, and yellowtail flounder.
4. 'Other Groundfish' includes data for white hake, silver hake and haddock.

Appendix 11: Departmental contacts

For additional information please contact:

Contact	Telephone
DFO Newfoundland and Labrador Region Headquarters 80 East White Hills Road, P.O. Box 5667, St. John's, NL, A1C 5X1	
Regional Manager, Groundfish and International Fisheries	709-772-4472
Resource Manager, 2+3KLMNO Groundfish	709-772-0695
Senior Resource Manager, 2+3KLMNO Groundfish	709-772-5020
DFO Newfoundland and Labrador Area Offices	
Resource Management Area Office Grand Falls-Windsor, NL	709-292-5167 709-772-5845
Resource Management Area Office Happy Valley-Goose Bay, NL	709-896-6153

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