



Quebec, Newfoundland and Labrador, Gulf and Maritimes Regions

Notice to Fish Harvesters

4RST GREENLAND HALIBUT

ANNOUNCEMENT OF THE IMPLEMENTATION OF THE NAFO DIVISION 4RST GREENLAND HALIBUT PRECAUTIONARY APPROACH

Québec, St. John's, Moncton and Halifax – March 9, 2022

Fisheries and Oceans Canada – announced the implementation of a Precautionary Approach (PA) for Greenland Halibut in Northwest Atlantic Fisheries Organization (NAFO) Divisions 4RST starting with the 2022-23 season.

This announcement follows the work carried out since 2018 by a working group composed of representatives from the Department of Fisheries and Oceans (DFO), industry, the provincial governments of Quebec and Newfoundland and Labrador, and Indigenous groups. A complete PA proposal, including 3 Harvest Control Rule (HCR) scenarios, was presented and submitted to the Gulf Groundfish Advisory Committee (GGAC) members on October 21, 2021. Members were invited to submit written comments and recommendations to DFO.

This PA includes the following elements:

- Fishery and conservation related objectives
- Reference Points delineating the Healthy, Cautious and Critical zones
- HCRs, that correspond to Scenario 2 that was presented to GGAC members in October 2021.
- When the stock is in the Healthy and Cautious zones, the HCRs identify the total recommended removals based on the level of stock biomass and the corresponding target exploitation rate. If the stock were to fall into the Critical zone, the HCRs would recommend a prohibition on directed fishing and a requirement to keep bycatch below the removals provided by the HCRs.

The various components of this PA are further described in Appendix 1 of this Notice to Fish Harvesters.

The Greenland Halibut stock status assessment will determine the total removals recommended by the HCR's. Subsequently, the results will be presented to the members of the GGAC for information and consultation, prior to the ministerial decision on the establishment of the 4RST Greenland Halibut total allowable catch (TAC).

As it is currently an intermediate year between full stock assessments, a stock status update took place on February 25, 2022. Since the TAC was determined for one year only in 2021-22, the stock status update will also specify the total recommended removals in

4RST GREENLAND HALIBUT

2022-23 based on the application of the HCRs. The results from this Science update will be presented to GGAC members on March 10, 2022, after which the Minister will make a decision on the TAC for 2022-23.

Starting in 2023-24, the TAC will be established according to the frequency of the groundfish management cycle, i.e. every two years. In the intermediate years, an update of the stock status will be carried out in order to inform the Fisheries Management Directorate of the necessity to adjust the TAC, if necessary, according to agreed parameters.

This PA has an initial implementation period of 5 years. A review mechanism, in collaboration with industry stakeholders, is planned before the end of this implementation period in order to make the necessary adjustments in anticipation of its renewal.

FOR MORE INFORMATION

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Appendix 1

Summary of the Precautionary Approach (PA) for Greenland halibut 4RST including harvest control rules

This Appendix summarizes all of the components of the PA established for the sustainable management of Greenland halibut 4RST. This PA would be in place for an initial period of 5 years, with the TAC set at the frequency of the groundfish management cycle, i.e. every two years. In the intermediate years, a stock status update will be conducted to inform Fisheries Management Directorate if adjustments to the TAC for this stock are required. A review, in collaboration with industry stakeholders, is expected to occur before the end of this 5-year period to inform any necessary adjustments to the PA. This review could be accelerated if new information or analytical capabilities are generated in future scientific assessments for this stock.

The conservation objectives for the Greenland halibut 4RST commercial fishery are as follows:

Timeline	Conservation objectives for the commercial fishery
Short term (0 to 5 years)	Stop the decline in spawning stock biomass (> 40 cm) to avoid reaching the LRP and initiate an increase in spawning stock biomass.
Medium term (5 to 10 years)	Promote an increase in spawning stock biomass (> 40 cm) to 80% of USR (30 192 t).
Long term (10 to 15 years)	Promote the return and maintenance of the spawning biomass of Greenland halibut in the healthy zone.

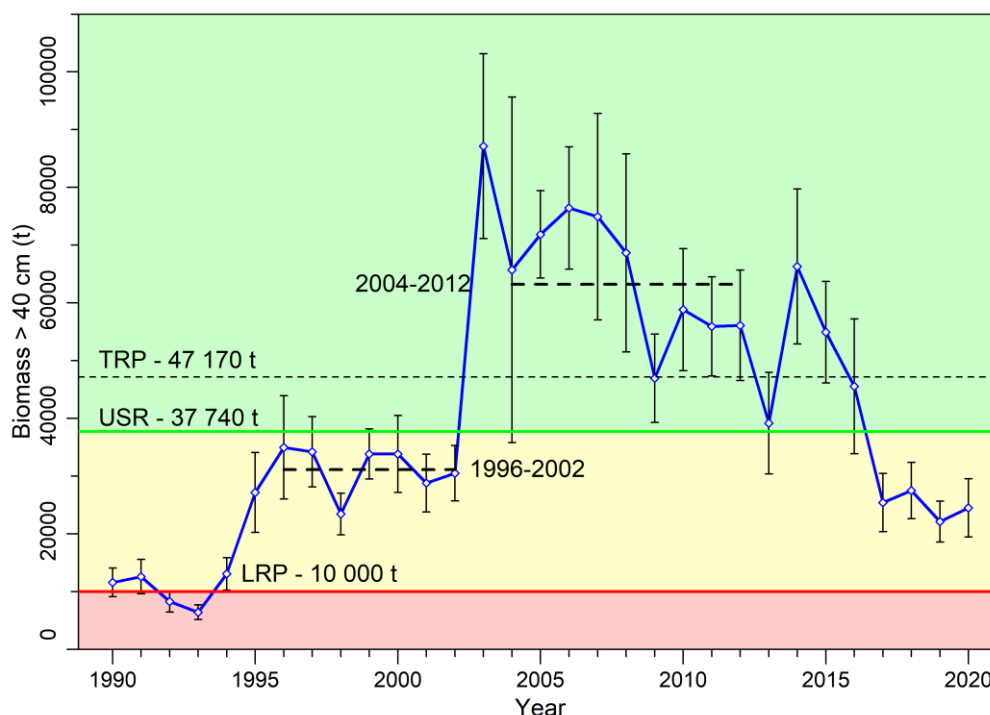
The management objectives developed by the working group for the Greenland halibut stock of the SLG and possible strategies to achieve them :

Objective	Possible or ongoing management strategy
1- Limit inter-annual variation in TAC while considering removals	- Fixed TAC over 2 years according to the groundfish management cycle.
2- Reduce mortality in northern shrimp, redfish and Greenland halibut fisheries (better monitoring)	- Better documenting the different sources of fishing mortality (more specifically unaccounted mortalities); - Optimizing fishing trip planning, promoting good behaviour (awareness, discipline, good fishing practice, compliant immersion times, unaccounted mortality, etc.); - At-Sea Observer Program (coverage rates met); - Monitoring and application of bycatch and small fish protocols; - Review of fishing season to avoid improper practices; - More frequent removal of nets for better quality.
3- Consider socio-economic considerations when establishing the TAC	- Decision criteria that incorporate socio-economic considerations and the establishment of a threshold for continuation of activities taking into account that some fishermen are more dependent on the Greenland halibut fishery than others.

Indicator and reference points

Description of the stock status indicator and reference points included in the PA for 4RST Greenland halibut:

- Stock status indicator for monitoring stock status is the biomass of fish > 40 cm estimated from the Northern Gulf of St. Lawrence (nGSL) survey.
- The target reference point (TRP) is set at 47,170 t, which is the value corresponding to the biomass at maximum sustainable yield (Bmsy).
- The upper stock reference point (USR) is set at 37,740 t, which is the value corresponding to 80% of Bmsy.
- The limit reference point (LRP) is set at 10,000 t.
- These reference points delineate the Healthy, Cautious, and Critical zones of the PA for 4RST Greenland halibut as illustrated in Figure below.



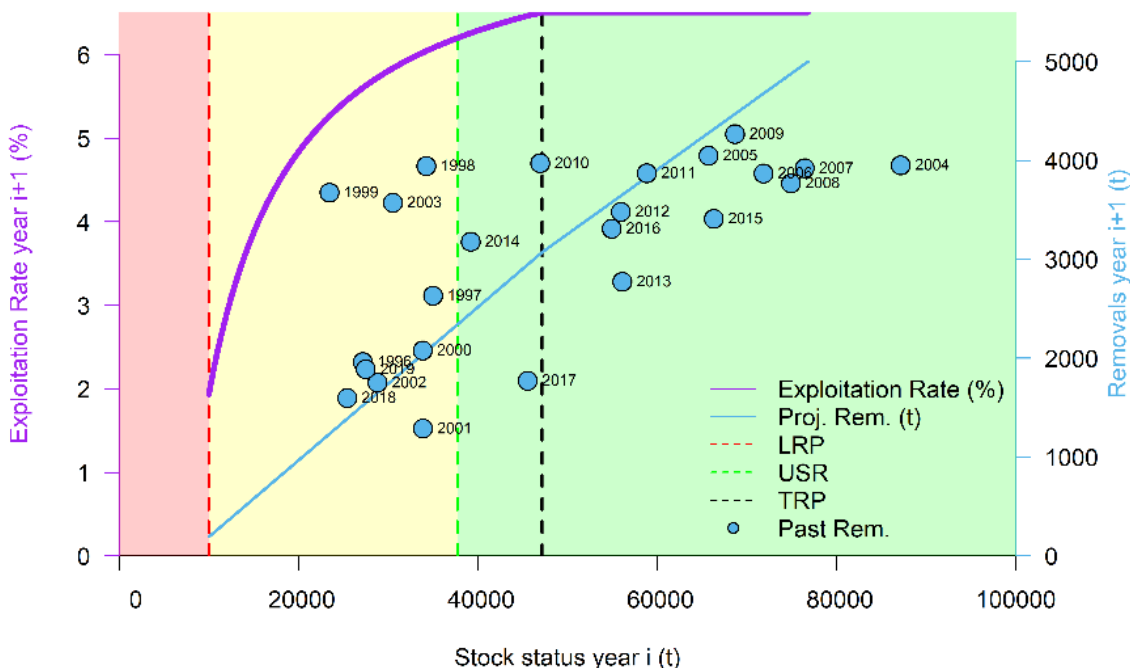
Harvest Control Rules (HCRs)

The PA's HCRs determine the exploitation rate based on the stock status indicator. When the stock is in the Healthy and Cautious zones, the HCRs identify the exploitation rate based on the level of stock biomass. This exploitation rate is then converted to a projected removal, which is the recommended catch limit, and would include all sources of removals. When the stock is in the Critical zone, the HCRs prescribe no directed fishing and a requirement to keep bycatch below the removals provided by the HCRs. The recommended catch limit or total removals will be the basis for informing Fisheries Management Directorate concerning the establishment of the 4RST Greenland Halibut

Fisheries and Oceans Canada - Quebec, Newfoundland and Labrador, Gulf and Maritimes Regions
4RST GREENLAND HALIBUT

TAC.

- The exploitation rate when the stock status indicator is \geq TRP is set at 6.51%, while the exploitation rate at the midpoint of the Cautious zone, is set at 5.31%.
- These exploitation rates are then converted to removals and a straight line is drawn to connect these coordinates and join the LRP.
- The removals on the straight line are then converted to identify exploitation rates for the entire Healthy and Cautious zones, according to the equations described below.
- This results in a curvilinear decrease in exploitation rates in the Cautious Zone as the stock status indicator moves closer to the LRP (next figure).



- The exploitation rate corresponding to the LRP is 1.94%.
- The following equations are used to calculate the projected exploitation rates (E , between 0 and 1) and total removals (R , in tonnes) for the Cautious and Healthy Zones, based on the stock status indicator (I). As an example, a projection of total removals by biomass is provided at the end of this Appendix.

HCR	Equations cautious and healthy (\leq TRP) zones	Equations healthy zone \geq TRP
Corresponding to Scenario 2	$m = 7.740305e^{-2}; b = -580.3473$ $E = \frac{m * I + b}{I}$ $R = m * I + b$	$E = 0.0651$ $R = E * I$

- When the stock is in the Critical Zone, no directed fishing will be permitted under the PA.

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4RST GREENLAND HALIBUT

Projection of total removals by biomass

Biomass (+ 40 cm)	Exploitation rate	Total removals
(t)	(%)	(t)
10000	1,94	194
12500	3,10	387
15000	3,87	581
17500	4,42	774
20000	4,84	968
21000	4,98	1045
22000	5,10	1123
23000	5,22	1200
24000	5,32	1277
25000	5,42	1355
26000	5,51	1432
27000	5,59	1510
28000	5,67	1587
29000	5,74	1664
30000	5,81	1742
32500	5,95	1935
35000	6,08	2129
37500	6,19	2322
40000	6,29	2516
42500	6,37	2709
45000	6,45	2903
47500	6,51	3092
50000	6,51	3255
52500	6,51	3418
55000	6,51	3581
57500	6,51	3743
60000	6,51	3906
62500	6,51	4069
65000	6,51	4232
67500	6,51	4394
70000	6,51	4557
72500	6,51	4720
75000	6,51	4883