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Newfoundland and Labrador Region

Canadian Science Advisory Secretariat
Science Advisory Report 2025/007

NAFO SUBDIVISION 3PS ATLANTIC COD (*GADUS MORHUA*) STOCK ASSESSMENT IN 2024

CONTEXT

The Fisheries Management Branch of Fisheries and Oceans Canada (DFO) has requested updated advice on the status of 3Ps Atlantic Cod to inform decisions for this stock for the 2025–26 management period. 3Ps Atlantic Cod is prescribed under section 6 of the Fisheries Act. A management procedure to inform the annual Total Allowable Catch (TAC) has been adopted as part of a Rebuilding Plan for this stock. This Science Advisory Report is from the October 28–31, 2024, regional peer review on the Assessment of Northwest Atlantic Fisheries Organization (NAFO) Subdivision 3Ps Atlantic Cod. Additional publications from this meeting will be posted on the Fisheries and Oceans Canada Science Advisory Schedule as they become available.

SCIENCE ADVICE

Status

- The 2025 Spawning Stock Biomass (SSB) is projected to be below the Limit Reference Point (LRP) with a greater than 99% probability. The stock remains in the Critical Zone.

Trends

- The stock has been in the Critical Zone since 2000, with SSB remaining at or near time series lows without trend since 2009. SSB in 2025 is projected to be 33.2 kt (95% Confidence Interval [CI] = 26.4 to 41.8), which is 50% (95% CI = 40–63%) of the LRP (66 kt).
- Recruitment is impaired and has remained well below the time series average since 1993.
- Natural mortality (M) increased considerably from the early-2000s to the 2010s reaching a time-series high in 2019, but decreased over the last five years coinciding with improvements in cod condition. The population weighted M estimate for ages 5–8 in 2024 is 0.32.
- Fishing mortality (F) declined from 2000 to the early-2020s, and has been low (0.02–0.04) over the last four years.

Ecosystem and Climate Change Considerations

- The ecosystem in 3Ps is undergoing structural changes associated with changing ocean climate. These oceanographic changes and bottom-up processes are important drivers of observed community shifts.
- Biological and ecosystem metrics indicate food limitation is negatively impacting stock productivity.
- Cod productivity is expected to be negatively impacted as warming continues.

Stock Advice

- Projections are only provided to 2026 as uncertainty in the current abundance of young fish was likely to result in overestimates of stock growth.
- Projections indicate a very high (>95%) probability of stock growth to 2026. The stock remains well below the LRP over this period and is projected to be at 63% (95% CI = 51–78%) of the LRP in 2026 under the adopted management procedure.
- Following the management procedure, the maximum total allowable catch would be 1,251 t for 2025.
- Given the low status and productivity of the stock, removals from all sources should be at the lowest possible level until the stock clears the Critical Zone.

BASIS FOR ASSESSMENT

Assessment Details

Year Assessment Approach was Approved

2019 (Varkey et al. 2022)

Assessment Type

Full Assessment

Most Recent Assessment Date

1. Last Full Assessment: 2023 (DFO 2024a)
2. Last Interim Year Update: N/A; this stock is assessed annually

Stock Assessment Approach

1. Broad category: Stock assessment model
2. Specific category: State-space age-based stock assessment model

This assessment uses a custom state-space age-based stock assessment model (Hybrid, Varkey et al. 2022) to estimate stock trends since 1959. The model incorporates fisheries and survey data to estimate time-varying processes in fishing mortality (F) and natural mortality (M). Cod condition informs trends in M.

A complementary State-Space Assessment Model (SAM; Champagnat et al. 2024) is also examined in this assessment as a consistency check and showed similar trends to the Hybrid assessment model.

Ecosystem and Climate Change Assessment Approach

The assessment considers an Ecosystem Summary for the Newfoundland and Labrador Bioregion and conditions specific to subdivision 3Ps, with updates provided to 2024. This describes Environmental and Physical Oceanographic conditions following Cyr et al. (2024), including the Newfoundland and Labrador Climate Index (Cyr and Galbraith 2020). Analyses of the fish community structure and trends, including diets and food consumption follow Koen-Alonso and Cuff (2018), and NAFO (2021). Available information on marine mammals, including aerial surveys and seal scat samples, are used to summarize current knowledge for these species in 3Ps (Hamilton et al. 2023; DFO 2024b; Vincent and Kiszka 2022). A mortality

index informed by cod condition is used to incorporate bottom-up processes into the assessment model.

Stock, Ecosystem and Fishery Overview Information

This assessment is detailed in Varkey et al. In prep[1]. This stock and fishery are subject to a Rebuilding Plan. Subdivision 3Ps is a distinct Ecosystem Production Unit (NAFO 2015) within the Newfoundland and Labrador Bioregion.

Stock Structure Assumption

Stock structure of Atlantic cod in NAFO Subdivision 3Ps is complex, including inshore components, both migratory and non-migratory offshore components, and mixing with adjacent stocks. These stock components are managed collectively as a single stock with one LRP.

Reference Points

- Limit Reference Point (LRP): 66 kt. The LRP was determined based on visual evaluation of recruitment and SSB scatter to determine the point below which only low recruitment has been observed, and was supported by break-point analyses (DFO 2020)
- Upper Stock Reference (USR): N/A; not defined
- Removal Reference (RR): N/A; not defined

Management Objectives

This stock is subject to a Rebuilding Plan (DFO 2024c), the primary objective of which is to promote stock growth out of the Critical Zone (i.e., grow the stock above the LRP), by ensuring removals from all fishing sources are kept to the lowest possible level until the stock has cleared this zone. In support of this Rebuilding Plan the stock assessment evaluates:

- whether the median SSB estimates from the updated model fall within the 75 per cent probability envelope from the rebuilding projections under prevailing productivity conditions (DFO 2023),
- whether there has been a sustained decline in the stock of three or more years, and
- whether scientific information indicates a major change in the understanding of the stock.

Management Procedure

A fishing mortality-based management procedure (MP) is used to recommend the maximum annual Total Allowable Catch (TAC). The calculation of this MP is detailed in the Rebuilding Plan, with fishing mortality remaining at a fixed level (F = 0.065 for ages 9+, decreasing for younger ages following DFO 2023 while the stock is in the Critical Zone.

Data

- DFO Canadian RV survey (1983–2005, 2007–19, 2021–22, 2024)

[1] Varkey, D., Wheeland, L., Trueman, S., Rideout, R., Kumar, R., Regular, P., Munro, H., Novaczek, E., and Du Pontavice, H. In prep. Assessment of Northwest Atlantic Fisheries Organization (NAFO) Subdivision 3Ps Atlantic Cod in 2024. DFO Can. Sci. Advis. Sec. Res. Doc.

- France Evaluation des Ressources Halieutiques de la région 3PS survey (1978–91)
- Groundfish Enterprise Allocation Council industry survey (1997–2005)
- Sentinel line trawl and gill net surveys (1995–2023)
- Commercial fishery landings and catch at age (1959–2023)
- Atlantic Zone Monitoring Program (2008–24)
- MODIS/Aqua surface chlorophyll (2003-24)
- Mark-recapture reporting rates (2001–22)

Data changes: stock weights were re-estimated for 1983 onward.

ASSESSMENT

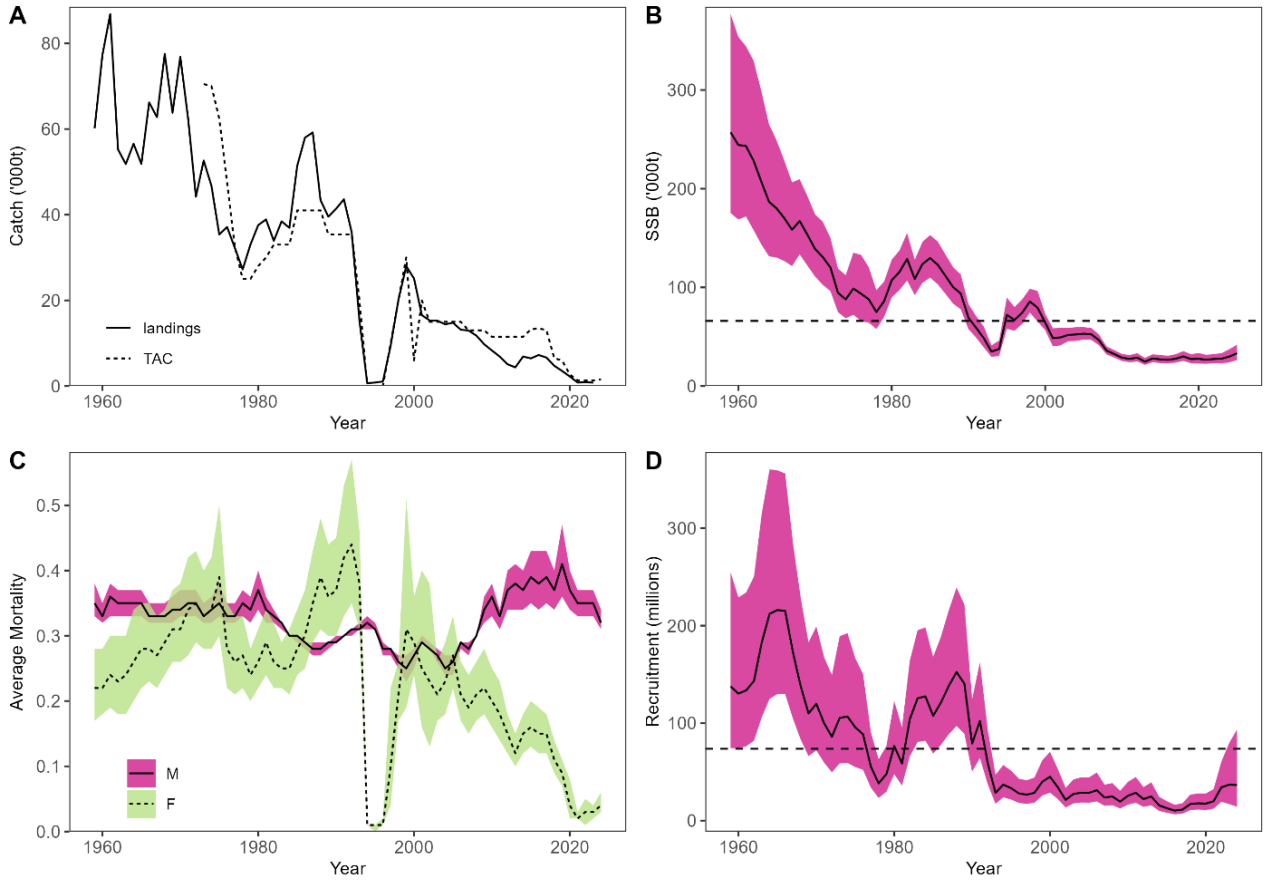

Figure 1. A) Reported annual landings (solid) and Total Allowable Catch (TAC) (dashed). B) Estimates of SSB (solid black line = median estimate; shaded area = 95% confidence interval) relative to the LRP (dashed line; LRP = 66 kt SSB). C) Average Natural (M; solid line) and Fishing (F; dashed line) mortality, ages 5–8; estimates with shaded 95% confidence intervals. D) Estimated recruitment (median estimate of age-2 abundance, with 95% confidence interval), with the time-series mean (dashed horizontal line = 74 million).

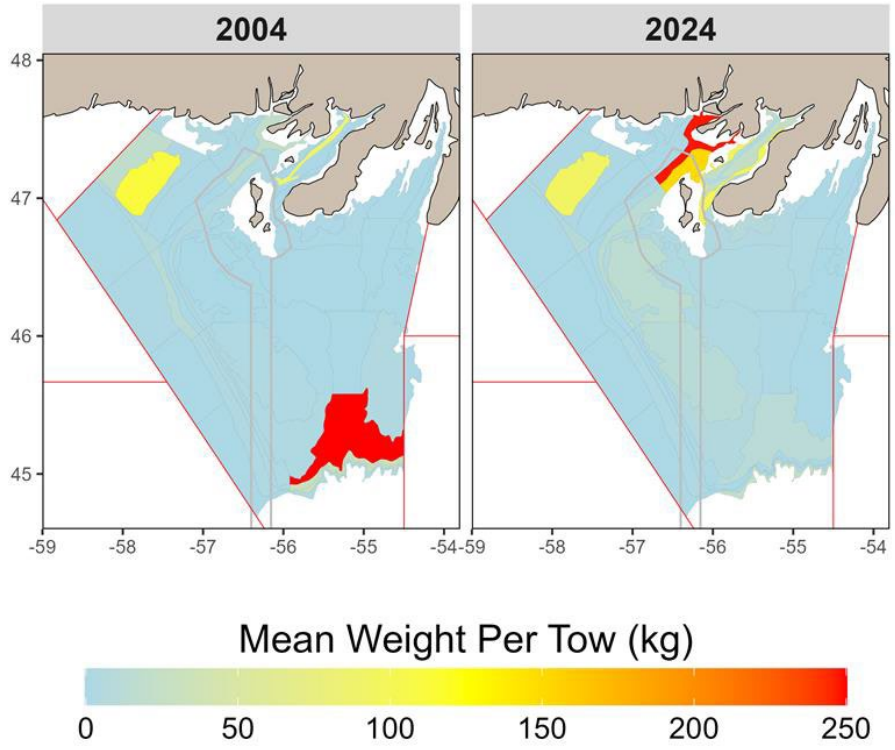

Figure 2. Mean weight per tow (kg) by strata from the spring RV survey illustrates characteristic offshore distribution (e.g., 2004) relative to the current (e.g., 2024) more shoreward distribution of the stock.

Stock Status and Trends

Table 1. Estimates of 3Ps cod population size and mortality rates over the last five years from the Hybrid assessment model.

Year	SSB median 95%CI (000 t)	SSB/B_{lim} (median)	Recruits median 95%CI (millions)	Average M (ages 5–8)	Average F (ages 5–8)
2020	27.6 (22.7, 33.5)	42%	17.4 (10.9, 27.9)	0.37	0.04
2021	26.7 (22.6, 31.6)	40%	20.0 (12.3, 32.4)	0.35	0.02
2022	27.4 (23.2, 32.4)	42%	34.3 (19.4, 60.6)	0.35	0.03
2023	27.7 (23.1, 33.3)	42%	36.8 (17.0, 79.8)	0.35	0.03
2024	29.9 (24.0, 37.3)	45%	36.6 (14.3, 93.3)	0.32	0.04

Biomass

The SSB was below the LRP (66 kt) from 1991 to 1994, with a low in 1993 around 35 kt (Figure 1). The stock increased through the mid to late 1990s while a moratorium on directed fishing was in place (1993–97), but by 1999 started declining again following a re-opening of the fishery. From 2001–06 SSB was relatively stable at values that averaged near 50 kt. Further decreases followed and SSB has been near 30 kt since 2008. With an assumed catch of 1,550 t for the 2024 calendar year (i.e., the 2024/25 TAC), SSB in the beginning of 2025 is estimated to be 33.2 kt (Table 3), which is 50% of the LRP. The age structure of the population is truncated, with few older fish observed.

Recruitment

Recruitment (age-2) estimates have been below the long-term average (74 million) since the mid-1990s and over the last decade reached historic lows (10–12 million over 2015–17). Recent estimates of recruitment have increased slightly, but are associated with a high degree of uncertainty (Table 1; Figure 1D). This is attributed to potential overestimation of young fish in the 2023 catch at age as a consequence of limited sampling in the commercial fishery, and from recent gaps in the Research Vessel (RV) survey. Given low SSB, truncated age structure of the population, small size at age, and early age at maturity, short term prospects for improved recruitment are limited.

Removal Rate

The population weighted F estimate (ages 5–8) was <0.02 during the moratorium (August 1993–May 1997) when removals were from bycatch and recreational fisheries, and then rapidly increased to 0.3 in 1999 and 2000 after the reopening of the fishery. F5-8 has been declining since that time, coinciding with a series of reductions in TAC (Table 2) and participation in the fishery, and has ranged from 0.02 to 0.04 over the last three years (note: the population weighted F estimates here are not directly comparable to the maximum F level specified in the MP). Catches since the implementation of the management procedure have been within the range specified by the MP.

Natural Mortality

Natural mortality (M, ages 5–8) increased considerably from the early-2000s to the 2010s and averaged 0.37 over 2010–20 (time-series high at 0.41 in 2019). M decreased over the last five years, coinciding with improvements in cod condition. M is currently at time-series average levels, estimated at 0.32 in 2024.

Spatial Distribution

The RV survey has shown a steady decline in biomass in the offshore, with offshore indices in 2022 and 2024 at the lowest levels observed since 1998. This has resulted in a high proportion of survey biomass inshore (Figure 2). Declines in offshore components may adversely impact the overall resilience of the stock.

Growth

Continued declines in cod size-at-age are evident for older fish. Cod ages 6+ show limited growth, and these ages are on average 37% smaller by weight recently (stock weight 2021–24) than in the mid-1980s (1983–87). This reduced growth is expected to negatively impact stock productivity.

Current Outlook

The 2025 SSB is estimated to be below the LRP with a greater than 99% probability. The stock remains in the Critical Zone.

History of Landings & TAC

Table 2. TAC and landings by management year (thousand metric tonnes). TAC is shared between Canada (84.4%) and France (St. Pierre et Miquelon; 15.6%). Landings are provisional over the last five years.

Management Year	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19	2019–20	2020–21	2021–22	2022–23	2023–24	2024–25
TAC	11.50	13.22	13.49	13.04	6.50	5.98	5.98	2.69	1.35	1.35	1.30	1.55
Canada	4.60	5.80	5.90	5.20	4.90	4.50	3.30	1.75	0.80	0.90	0.80	N/A
France	1.40	1.60	0.90	1.10	0.20	0.20	0.20	0.03	0.02	0.01	0.01	N/A
Totals	6.00	7.30	6.80	6.30	5.10	4.70	3.50	1.78	0.83	0.91	0.81	N/A

The 2011 cohort is no longer dominant in the landings. Recent catches are largely concentrated in the Placentia Bay area (Unit area 3Psc).

Ecosystem and Climate Change Considerations

The ecosystem in 3Ps continues to undergo changes associated with warming ocean climate. Ocean temperature has increased since 1990, and remained warm in 2024 following record high bottom temperatures in 2021 and 2022. With rising temperatures, changes in fish community composition have been observed, including increases in more temperate species. Atlantic cod was historically the most abundant species among predatory fishes in the 3Ps RV survey. However, its dominance has been markedly reduced over the last decade as Silver hake (*Merluccius bilinearis*) increased in the warm shelf edge waters and became the most abundant species of this functional group. This shift in dominance seems to be driven by temperature preferences rather than direct competition, as spatial and diet overlap between Cod and Silver Hake are currently limited in this area. As this ecosystem warms, overlap between these species is expected to increase as seen on the Scotian Shelf (DFO 2024d).

Food limitation is apparent in diet analyses of key fish predators, including Atlantic cod. In conjunction with overall declines in weight-at-age, limited growth, and periods of poor cod condition, it is evident that food limitation negatively impacts stock productivity. Important changes have also been noted in nutrient levels, phytoplankton and zooplankton across the Northwest Atlantic, including in 3Ps, which can impact energy transfer within the ecosystem. To account for these bottom-up effects, a condition-based index of mortality is incorporated in the assessment model, directly linking poor fish condition to increased periods of natural mortality.

Cod productivity is expected to be negatively impacted as warming continues in 3Ps.

Projections

Stock levels to 2025 are determined based on projections under current fishing selectivity (average 2022–24), with an assumed catch of 1,550 t (i.e., the TAC) in 2024. Projections are only provided to 2026, primarily due to current uncertainty in abundance of young fish resulting from limited fishery sampling in 2023. Projections consider three catch scenarios:

1. Catch as calculated with the adopted MP;
2. Catch = TAC 2024/25 = 1,550 t, and;
3. with no fishing removals (Table 3).

All projections show a very high (>95%) probability of stock growth though remaining below the LRP through at least the start of 2026.

Table 3. Short term (2025–26) projections of SSB and catch under the adopted MP, catch = TAC 2024/25 = 1,550 t, and catch at F = 0, including the probability of stock growth relative to current levels P(SSBy > SSB2025) and the probability of projected SSB being above the LRP. "SSB Low" and "SSB High" indicate the lower and upper limits of the 95 percentile projection envelope.

Scenario	Year	SSB/B_{LIM}	SSB ('000 t)	SSB Low ('000 t)	SSB High ('000 t)	Catch (t)	P(SSB_y> SSB_{2025})	P(SSB_y> LRP)
MP	2025	0.50	33.2	26.4	41.8	1,251	NA	<0.1%
MP	2026	0.63	41.3	33.5	51.8	1,536	98%	<0.1%
TAC = 1,550 t	2025	0.50	33.2	26.4	41.8	1,550	NA	<0.1%
TAC = 1,550 t	2026	0.62	41.0	33.1	51.5	1,550	97%	<0.1%
F=0	2025	0.50	33.2	26.4	41.8	0	NA	<0.1%
F=0	2026	0.64	42.3	34.1	53.2	0	99%	<0.1%

OTHER MANAGEMENT QUESTIONS

The stock assessment also evaluated metrics associated with the Rebuilding plan (see Management Objectives above).

There have not been recent sustained declines, and stock size is projected to increase in the short-term.

The current assessment indicates that SSB from 2023–24 was below the 75% probability envelopes from the rebuilding projections under prevailing conditions of M and recruitment previously completed for this stock, with projections for 2025 and 2026 falling within the envelope (Figure 3). Differences in 2023 and 2024 are attributed to a combination of downward revisions in stock size and slower stock growth than projected in the rebuilding simulations. This indicates a slower than expected rate of stock growth.

Our understanding of the stock has not changed since the adoption of the Rebuilding Plan.

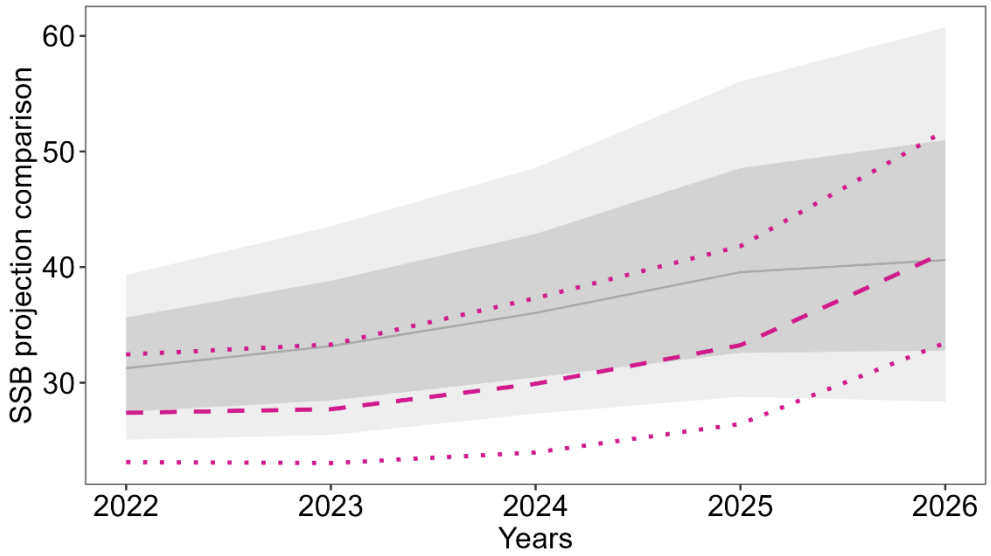

Figure 3. Current SSB projection under the adopted MP (dashed line = median with dotted 95% CI) compared to previous projections from testing the Rebuilding Framework under prevailing conditions (grey line = median, dark grey = 75% CI, light grey = 95% CI).

SOURCES OF UNCERTAINTY

A lack of length and age sampling in the line trawl fishery in 2023 has increased uncertainty in current estimates of abundance for ages <5. This uncertainty is not accounted for in forward looking projections, which potentially overestimate short term potential for stock growth. If gaps in commercial and recreational fishery sampling persist, this will also impact future assessments.

Over the last three assessments both the Hybrid and SAM models show consistent retrospective patterns. Additional data have led to downward revision of SSB with each subsequent assessment, and this is partially attributed to incomplete RV surveys in 2020 and 2023. This has not impacted interpretation of stock status, however, current results indicate SSB did not increase over 2010–23.

Newly characterized genetic diversity indicates two distinct genetic groups overlapping within 3Ps and extending into the Northeast Newfoundland shelf, which is not captured by the current management units. This may have implications for our understanding of the dynamics of this stock, however further work is required to evaluate the implications of these results.

The impact of ongoing warming in 3Ps and associated changes in community composition on the productivity of this stock are not well understood. Further work is needed to quantify the impact of these changes on habitat availability, competition, and cod biological processes.

The timing of the assessment is contributing to increased uncertainty as not all data sources are available to inform the terminal year at the time of the assessment.

Research Recommendations

A framework meeting should be held in advance of the scheduled review of the Rebuilding Plan in 2028 in order to address a series of recommendations related to the assessment model and its inputs. This should consider the inclusion of spatial consideration where feasible given recent indications of changes in stock distribution and known differences in biological parameters (e.g., cod size, Cadigan et al. 2022) across the management area.

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SOURCES OF INFORMATION

Cadigan, N., Robertson, M.D., Nirmalkanna, K., and Zheng, N. 2022. The complex relationship between weight and length of Atlantic cod off the south coast of Newfoundland. Can. J. Fish. Aqua. Sci. 79(11):1798–1819.

Champagnat, J., Vigneau, J., Varkey, D.A., Regular, P., Ings, D.W., Babyn, J., and Morgan, J. 2024. Development of a State Space Assessment Model for Cod *(Gadus morhua)* in NAFO Subdivision 3Ps. DFO Can. Sci. Advis. Sec. Res. Doc. 2024/015. iv + 98 p.

Cyr, F., Coyne, J., Galbraith, P.S., Layton, C., and Hebert, D. 2024. Environmental and Physical Oceanographic Conditions on the Eastern Canadian shelves (NAFO Sub-areas 2, 3, and 4) during 2023. NAFO SCR Doc. 24/010.

Cyr, F., and Galbraith, P.S. 2020. A climate index for the Newfoundland and Labrador shelf. Earth Sys. Sci. Data Disc. 13(5):1–23.

DFO. 2020. Stock Assessment of NAFO Subdivision 3Ps Cod. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2020/018.

DFO. 2023. Review of Rebuilding Plan Simulations for Northwest Atlantic Fisheries Organization (NAFO) Subdivision 3Ps Atlantic Cod. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2023/007.

DFO. 2024a. NAFO Subdivision 3Ps Atlantic cod (*Gadus morhua*) Stock Assessment in 2023. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2024/016.

DFO. 2024b. Stock Assessment of Atlantic Harbour Seals *(Phoca vitulina vitulina)* in Canada for 2019–2021. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2024/023.

DFO. 2024c. Integrated Fisheries Management Plan: Rebuilding Plan for Atlantic Cod (*Gadus morhua*) NAFO Sub-division 3Ps Newfoundland and Labrador Region.

DFO. 2024d. Maritimes Research Vessel Survey Trends on the Scotian Shelf and Bay of Fundy for 2023. DFO Can. Sci. Advis. Sec. Sci. Resp. 2024/010.

Hamilton C.D., Goulet, P.J., Stenson, G.B., and Lang, S.L.C. 2023. Counts and spatial distribution of harbour seals (*Phoca vitulina*) and grey seals (*Halichoerus grypus*) from an aerial survey of the coast of the Newfoundland Shelf and Sandwich Bay, Labrador during the summer of 2021. Can. Tech. Rep. Fish. Aquat. Sci. 3566 : v + 39 p.

Koen-Alonso, M. and Cuff, A. 2018. Status and trends of the fish community in the Newfoundland Shelf (NAFO Div. 2J3K), Grand Bank (NAFO Div. 3LNO) and Southern Newfoundland Shelf (NAFO Div. 3Ps) Ecosystem Production Units. NAFO SCR Doc. 18/070.

NAFO. 2015. Report of the 8th Meeting of the NAFO Scientific Council (SC) Working Group on Ecosystem Science and Assessment (WGESA). 17-26 November 2015, Dartmouth, Canada. NAFO SCS Doc. 15/19.

NAFO. 2021. Report of the 14th Meeting of the NAFO Scientific Council Working Group on Ecosystem Science and Assessment (WG-ESA). NAFO SCS Doc. 21/21.181 pp.

Varkey, D.A., Babyn, J., Regular, P.R., Ings, D.W., Kumar, R., Rogers, B., Champagnat, J. and Morgan, M.J. 2022. A state-space model for stock assessment of cod (*Gadus morhua*) stock in NAFO Subdivision 3Ps. DFO Can. Sci. Advis. Sec. Res. Doc. 2022/022 v + 78 p.

Vincent, C. and Kiszka, J. (coord). 2022. COPEMAM - Mieux comprendre les conflits entre pêches et mammifères marins dans l'archipel de Saint Pierre et Miquelon. Rapport final, juin 2022.

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