

Wednesday, May 5, 2021

SUBMISSION OF RECOMMENDATIONS FOR MANAGEMENT MEASURES- SOUTHERN GULF OF ST. LAWRENCE FALL SPAWNING HERRING



Submission of recommendations for management measures- Southern Gulf of St. Lawrence fall spawning herring

Atlantic herring in the southern Gulf of St. Lawrence are an important forage fish species, critical to transferring energy throughout the ecosystem's food web. The southern Gulf population, in area 4T, is divided into two groups characterized by different spawning times, the [spring](#) and fall spawners. These different spawning contingents are managed as separate stocks.

In 2017, the population of fall spawners declined and since then has remained low within the cautious zone, which should trigger harvest rate reductions to prevent further decline and encourage growth back to healthy levels. Due to the Gulf's changing ecosystem, scientists at Fisheries and Oceans Canada (DFO) estimate that the stock will likely enter the critical zone by 2025, the point where conservation management actions must be directed at avoiding serious harm to the stock and when a rebuilding plan is required.

Canada's *Fisheries Act*, amended in 2019, mandates that fish stocks are managed at levels that promote sustainability and that rebuilding plans must be implemented for depleted populations. These rebuilding plans should include clear timelines and targets and be based on science. It is essential that quota decisions are also based on science and prioritize the long-term health of a population, and that the new Fishery Monitoring Policy is implemented to support sustainable fisheries management.

To promote rebuilding of fall spawning herring, Oceana Canada is calling on DFO to account for all sources of fishing removals in a single annual quota and to prioritize developing a rebuilding plan before the stock declines into the critical zone. A working group for this rebuilding plan should be immediately established and the plan must have timelines and targets to bring fall spawning herring populations back to healthy levels.

Oceana Canada respectfully recommends that DFO take the following fisheries management actions for this stock:

- 1. Reduce the Total Allowable Catch (TAC) to 8,000 t;**
- 2. Account for bait landings in the development of the TAC;**
- 3. Implement proposed management measures that will reduce bycatch of spring spawners in the fall spawner fishery; and**
- 4. Develop a rebuilding plan for this spawning component that is compliant with the Precautionary Approach (PA) framework and international best practices.¹**

¹ Archibald and Rangeley (2019). The quality of rebuilding plans in Canada. ([online](#)).

Oceana Canada commends Fisheries and Oceans Canada (DFO) for applying a new stock assessment model that now provides an estimate of natural mortality for 4T fall spawning herring.² Including time-varying natural mortality in the model and a subsequent readjustment of the Upper Stock Reference point illustrate an increased capacity for science-informed decision-making for this stock. We also recognize that last year, with the update of the assessment model and stock status, the Total Allowable Catch (TAC) was reduced significantly to 12,000 metric tonnes in line with scientific advice and we supported that decision. As presented in the most recent assessment, a further reduction of the TAC to 8000 metric tonnes does provide a slightly higher probability of growing the stock in the short term. Given the poor long-term projections, the stocks high natural mortality, declines in weight at age, and reduced recruitment, we recommend a reduction in the TAC to 8000 metric tonnes this year as a measure of precaution, to improve the probability of keeping the stock above the LRP.

While there has been one year of data reporting requirements for bait landings, it is not yet comprehensive enough to correctly estimate the mortality associated with these removals, and thus bait landings are still accounted for in the natural mortality model estimate along with other sources of truly natural mortality.² Given that high natural mortality has been a driver in the decline of spawning stock biomass for fall herring, it is important that uncertainties associated with this estimate are accounted for when possible and that potential sources and relative contributions are identified, including bait landings. While estimates of fishing mortality have been at or below the provisional harvest decision rule³ over the past decade,² without bait landings included in this estimate it is most certainly an underestimate of total fishing mortality. As such, there is potential that harvesting has exceeded the provisional harvest control levels since the stock declined into the cautious zone (2017 onwards), despite commercial landings being below the commercial TAC. Therefore, Oceana Canada recommends that bait landings be counted against an annual TAC that accounts for all directed removals. This approach is used in the NAFO area 4R herring fishery, where the amount estimated to be taken by bait is included in the TAC and removed prior to the allocation of the TAC to commercial harvesters.⁴

We also support the proposal by the department to introduce management measures aimed at reducing bycatch of the spring spawning component in the fall fishery. We feel it is paramount to reduce additional incidental fishing mortality on that critically depleted stock component, especially given that both a commercial and bait fishery are persecuting fisheries on it this season. Management measures aimed at reducing bycatch would be consistent with departmental policy of keeping all sources of fishing removals on critically depleted stocks as low as possible.⁵ While details of these potential measures were not reviewed at the advisory

² DFO, 2020. Assessment of the southern Gulf of St. Lawrence (NAFO Division 4T-4Vn) spring and fall spawner components of Atlantic Herring (*Clupea harengus*) with advice for the 2020 and 2021 fisheries. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2020/029.

³ DFO 2019, Sustainable survey for fisheries (<https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/survey-sondage/index-en.html>). There is no removal reference for the cautious and critical zones of this stock, and instead the provisional harvest decision rule of the PA framework is used; the removal rate reference for the healthy zone is established ($F_{0.1} = 0.35$). The most recent Stock assessment indicates that removals since 2017 have been below or at the provisional harvest decision rule for the cautious zone.

⁴ DFO, 2020. NAFO Division 4R - Herring Fishing Areas 13 and 14 (Western Newfoundland and Southern Labrador) 2020-2021 (<http://www.dfo-mpo.gc.ca/fisheries-peches/decisions/fm-2020-gp/atl-13-eng.html>)

⁵ DFO, 2009. A fishery decision-making framework incorporating the precautionary approach. (<https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precaution-eng.htm>)

meeting, we would also be happy to provide further comment on proposed measures should they be introduced to the committee prior to the conservation and harvest decision this year.

The overarching policy goal of DFO's PA Framework, *A Fisheries Decision Making Framework Incorporating the Precautionary Approach*, is to prevent stocks from declining into the critical zone.⁵ The guidance on rebuilding plan development within the framework is that plans should be initiated when stocks are in the cautious zone and declining, well in advance of reaching the limit reference point.⁶ Fall 4T herring is in the cautious zone and, with high probability, has been there since 2017.² Under current conditions and all tested catch levels, the spawning stock biomass is expected to continue declining toward and into the critical zone by 2025.² If DFO has not begun one already, it is imperative that the development of a rebuilding plan begins now:

1. The cautious status and projected decline of fall 4T herring over the short and long-term make it a candidate for rebuilding as per the PA Framework's intent. Rebuilding plans created for fisheries declining in the cautious zone are important to guide efforts to ensure the stock does not further decline into the critical zone.¹
2. The causes for decline in this spawning component include low recruitment and high natural mortality correlated with changing environmental conditions and predator abundance within the Gulf.² These cumulative impacts indicate that the stock requires a holistic management approach. Status quo conservation and harvesting plans do not have a built-in means for addressing ecosystem concerns; however, a rebuilding plan that meets departmental and international best practices could.¹ A rebuilding plan would provide a much more suitable framework to sustainably manage this stock.
3. The working group developing the 4T spring spawning herring rebuilding plan is already established, with the process almost complete. Therefore, the collective knowledge to address many of the challenges with the development process is already in place. If tasked with developing a rebuilding plan for the fall spawning component, members of this working group involved in the fall fishery would already be familiar with this stock's science, history and ecosystem, and would have experience integrating this into a plan to rebuild the stock.
4. The outlook for the fall spawning component, while declining and uncertain, is not as dire as that of the spring spawning component, that may be on its way to extirpation. Therefore, to provide the best chance of maintaining herring in its vital place as a forage fish in the Gulf ecosystem, and to maintain any portion of the Gulf herring fishery in the future, action needs to be taken now to rebuild the stock and prevent its decline into the critical zone. Management of forage fish requires additional considerations above those normally considered in single-species management. The principles contained in DFO's

⁶ DFO, 2013 Guidance for the Development of Rebuilding Plans under the Precautionary Approach Framework: Growing stocks out of the Critical Zone (<https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precautionary-precaution-eng.htm>)

policy on new forage fisheries,⁷ though technically not required for existing fisheries, provide important principles to consider in developing a rebuilding plan for herring.

Oceana Canada recognizes that uncertainty in future environmental conditions and ecosystem changes in the Gulf make biomass projections and management of this stock uncertain. However, it is because of this uncertainty that we recommend counting bait catches in this fishery against a TAC and to immediately begin developing a rebuilding plan that takes future ecosystem uncertainty into account. Together with ensuring the lowest possible fishing removals as recommended by departmental science,² these two management-led changes could help prevent the stock from reaching the critically low levels the spring spawning component currently exhibits. By acting now, the department can help ensure that the 4T fall spawning herring fishery can be a resource that supports Gulf of St. Lawrence coastal communities for generations to come.

Reba McIver
Fisheries Analyst
(rmciver@oceana.ca)

Dr. Robert Rangeley
Science Director
(rrangeley@oceana.ca)

Oceana Canada
1701 Hollis Street, Suite 800,
Halifax, Nova Scotia
B3J 3M8

⁷ DFO, 2009. Policy on New Fisheries for Forage Species (<https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/forage-back-fiche-eng.htm>)