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OCEANA CANADA'S RECOMMENDATIONS FOR 2J3KL CAPELIN MANAGEMENT DECISIONS





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Dear Erin,

Please accept Oceana Canada's recommendations for upcoming harvest level and management decisions for the 2J3KL capelin stock in 2022/23. I would like to extend thanks for allowing me to attend the Capelin Advisory Committee meeting as an observer on March 29, 2022 and for the opportunity to participate in this process. We urgently recommend the following actions as the fishing season approaches for 2J3KL capelin, a population which has persisted at low abundance for many years and which lacks reference points and estimates of biomass:

- 1. Immediately close the 2J3KL capelin fishery.
- 2. Invest in capelin research programs and develop a rebuilding plan for the stock.
- 3. Develop and implement a fisheries management plan that accounts for capelin's role in the ecosystem and with adequate monitoring, prior to resuming the capelin fishery.

A fisheries management plan should adhere to the Precautionary Approach and contain both:

- a. A minimum stock biomass below which commercial harvesting is prohibited, and;
- b. A maximum harvest cap to reduce the probability of overfishing in years when environmental conditions are poor.

We provide more detail on these recommendations below.

 Immediately close the 2J3KL capelin fishery: We acknowledge the operational limitations that precluded a stock assessment for capelin in 2022. Although a full stock assessment did not take place in 2022, the stock status update¹ provided by Fisheries and Oceans Canada (DFO) Science shows that capelin in NAFO areas 2J3KL continue to be affected by poor recruitment. DFO still does not have the ability to estimate spawning stock biomass for 2J3KL capelin, however the 2021 stock assessment² estimated capelin to be only six per cent of its pre-collapse abundance. The 2021 assessment also showed that the Bellevue Beach larval index was the lowest in the time series, and further, the 2022 capelin stock update showed that standardized larval abundance remained near historical lows from 2018-2021, and has been below average for the past eight years.

Research conducted by Oceana Canada in 2022 sought to assign a provisional health status following to stocks with an uncertain status, following the Precautionary Approach guidelines (anticipated report release of April 20, 2022).³ Preliminary evidence from this assessment shows that not only are capelin overfished, and would be considered in the critically depleted zone, but that overfishing is occurring now at the current harvest levels. Despite low overall catches compared to historical levels, a heavily depleted stock such as 2J3KL capelin cannot sustain high enough recruitment that would allow for continued fishing at status quo rates, an effect known as depensation, where declines in the breeding contingent of a population result in reduced production and survival of offspring.⁴

The quota reduction in 2021⁵ of 25 per cent (from 19,377 metric tonnes to 14,842 metric tonnes) was a step in the right direction for 2J3KL capelin but stronger action is needed. The 2021 quota remained the third largest forage fish allotment in Canada, on a population that is only a tiny fraction of its former abundance. This stock also lacks the formal reference points required to determine its health status under DFO's Precautionary Approach Framework.⁶ While managed under a single-species approach, capelin have failed to recover in the 30 years since the stock collapsed. In contrast, capelin stocks in the Barents Sea have rebounded numerous times in the past 30 years⁷, where stock declines were met with temporary fishery closures to allow the population to grow above its limit reference point.

2J3KL capelin requires an immediate and decisive shift in management to stop overfishing and facilitate recovery. The Precautionary Approach Framework commits to "not using the absence of adequate scientific information as a reason to postpone or fail to take action to avoid serious harm to the resource." We acknowledge the important role that environmental conditions play influencing the abundance of capelin. However, high levels of fishing mortality on a forage fish stock can exacerbate the already wide fluctuations in abundance and recruitment that species like capelin experience, and can also contribute to overall population decline.⁸ There is no substantiated way to reduce the natural mortality of the capelin stock and future recruitment is impeded by the capelin fishery targeting roe (eggs), by which larval contributions to the next generation are lost. The 15,000mt quota for capelin in 2021 could represent half a billion female capelin caught just before spawning, and the loss of trillions of eggs.¹ Continuing to put pressure on capelin in the absence of reference points would not comply with the Precautionary Approach which states that conservation actions should take precedence when the stock is depleted.

At the 2J3KL Capelin Advisory Committee meeting held March 29, 2022, we noted a troubling lack of alarm over the capelin stock's failure to recover over the past three decades. We continue to hear committee members purport that the fishery has a negligible impact on the capelin population compared to removals of capelin by predation, and we are concerned about lack of urgency to reduce fishing pressure to facilitate stock recovery. While the amount of capelin consumed by predators is indeed much higher than the amount removed by fishing, natural mortality is exactly that- natural. Without an absolute estimate of biomass, there is no way to determine true impact of fishing mortality relative to natural mortality. Further, the species that do rely on capelin for food, such as cod and turbot, have seen lower stomach content weight and less capelin in their diets than previously observed.² Cod, in particular, have appeared skinnier and in poor condition in recent years, which has been attributed to low capelin availability in their diets.

We strongly but respectfully recommend that the commercial fishery for 2J3KL capelin be closed. The fishery should not be reopened until such a time that progress is made in science and management to allow the stock to rebuild, and until a rigorous fisheries management plan can be developed and implemented (expanded upon below in point #3).

- 2. Invest in capelin research programs and develop a rebuilding plan for the stock: We recognize that DFO has undertaken the task of establishing a Limit Reference Point and applaud DFO on the positive steps it has taken with acoustic data interpretation in pursuit of estimating spawning biomass for 2J3KL capelin. Increased monitoring of spawning beaches and expanding the spatial extent of atsea acoustic surveys would be of great benefit in facilitating estimates of biomass, recruitment and reference points for this stock. We strongly recommend further investments into capelin science and full implementation of Precautionary Approach reference points to develop a rebuilding plan for 2J3KL capelin under the Fish Stock Provisions of the amended Fisheries Act.⁹
- 3. Develop and implement a fisheries management plan that accounts for capelin's role in the ecosystem and with adequate monitoring, prior to resuming the capelin fishery: The amended *Fisheries Act* (6.1(1)) states that measures implemented to promote the sustainability of fish stocks shall "[take] into account the biology of the fish and the environmental conditions affecting the stock". Therefore, we recommend that a future fishery management plan for 2J3KL capelin explicitly account for their role facilitating energy transfer through the marine ecosystem, and for their unique fluctuations in abundance and recruitment based on environmental conditions. This includes both a minimum stock biomass and a maximum harvest cap.

i) Estimate only: based off a calculation of the average weight of two to three year old capelin (which dominate the fishery) weighing between 15-48 g (approximate minimum and maximum average weight at age of Capelin in the DFO surveys from 1989-2018; Figure 6, Mowbray, F.K., Bourne, C., Murphy, H., Adamack, A., Lewis, K., Varkey, D., and P. Regular. 2019. Assessment of Capelin (Mallotus villosus) in SA2 + Div 3KL in 2017. DFO Can. Sci. Advis. Sec. Res. Doc. 2019/068. iv + 34 p.). At 15 g/fish: 15,000 mt = 15,000,000 kg/ 0.015 kg = 1 billion fish. If half of these are assumed to be female, and maximum potential fecundity of capelin post-1990s collapse in Newfoundland is 7,616-42,880, the fishery could prevent spawning of 3.8 -21.4 trillion eggs each year. At 48 g/fish: 15,000 mt = 15,000,000 kg/ 0.048 kg = 0.31 billion fish. If half of these are assumed to be female, and maximum potential fecundity is the same as above, the fishery could prevent spawning of 1.2- 6.7 trillion eggs each year. Penton and Davoren. 2013. Capelin (Mallotus villosus) fecundity in post-1990s coastal Newfoundland. Mar Biol 160, 1625–1632. https://doi.org/10.1007/s00227-013- 2215-7

A management plan for capelin should include a minimum stock biomass, below which no harvest is permitted. This minimum biomass threshold should be set at a level that preserves recruitment capacity during years with poor environmental conditions and ensures the ecological needs of predators that depend on capelin are provided. This management approach is taken for the Barents Sea capelin stock⁷, where fishing is only allowed if the biomass of capelin, after predators' needs are accounted for, is greater than 200,000 metric tonnes. Similarly, the Precautionary Approach Framework already dictates a maximum acceptable removal reference for stocks as "at or below F_{MSY} or some other described metric of fishing pressure". Forage fish management would see a harvest cap being set below the maximum sustainable removal reference. The difference between the target harvest rate and a maximum sustainable removal reference would serve as the 'buffer' to reduce the probability of fishing mortality exceeding that maximum rate in a year where stock biomass and recruitment is impaired by external conditions.

Capelin play a critically important role in the marine ecosystem of Newfoundland and Labrador, supporting many species from puffins and humpback whales, to the iconic northern cod. We understand that the decision to stop fishing 2J3KL capelin is not an easy one and will impact the coastal Newfoundland communities involved in the fishing industry. However, closing the 2J3KL capelin fishery until the population recovers and modern fisheries management tools are in place will provide the best chance for this severely depleted stock to rebuild. This decision is an unfortunate but necessary one to support healthy oceans in Atlantic Canada and provide opportunities for coastal communities to steward a prosperous future fishery. Ending the overfishing of capelin will support a return to abundance for this ocean ecosystem.

We appreciate your consideration of our input and thank you for the opportunity to contribute. We will continue to engage with this stock and look forward to discussing our recommendations and addressing any questions you may have.

Sincerely,

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