The Capelin Conundrum

By Barry Darby

Capelin are almost as controversial, in fishery circles, as they are essential in Newfoundland and Labrador's marine food chain. The call in March by WWF-Canada, Oceana and the NunatuKavut Council for a ban on the capelin fishery, and the vigorous responses from the FFAW and the Association of Seafood Processors, highlight the need for a solution that everyone involved would be able to live with.

On the one hand, WWF and Oceana recommend we stop fishing the capelin stocks, whose numbers they see as being dangerously low. NunatuKavut has for several years been advocating an end to the commercial capelin fishery, citing obvious stock declines and ecosystem changes. On the other hand, the union, the processors and DFO say the fishery's impact on the stock is minimal, and urge that the harvest continue. With important pros and cons on both sides of the argument, I want to suggest a way forward that could not only resolve the capelin conundrum but also benefit other stocks and our fishery sector as a whole.

Let's start with the recognition that our province has a local need for these little fish to be harvested. The greatest need for capelin is as bait for other fisheries. As well, capelin is needed as part of our traditional and indigenous cultures, as food for local consumption and fertilizer for our gardens. (The best ones for fertilizer are probably the dead ones on the beach, which are already partly dehydrated.) Some capelin is also used as feed in the province's aquaculture industry. So there are multiple reasons why I would dispute the demand for a total ban on harvesting capelin.

However, we do not have an actual ***need*** for the commercial capelin roe fishery, whose product is for export only. We could end the roe fishery and still harvest the capelin we need here in Newfoundland and Labrador. That could largely resolve the serious problems being pointed out by WWF, Oceana, NunatuKavut and also many harvesters, who see the mass removal of capelin, especially the egg-bearing females harvested for roe, as damaging to the ecosystem and to the many other species that depend on these forage fish.

Here is a way we could continue harvesting capelin to meet our own needs while protecting the stock: change the system of harvest management to one based on effort instead of on quotas. Effort-based management (EBM) controls input rather than output (see barrydarby.com). For example, an effort-based capelin fishery might allow each commercial harvester to begin July 1, and harvest five or six days a week during daylight hours, using a castnet. In addition, from a date in late July and into August, any four harvesters might operate a single beach seine with a maximum length and depth. With these less "efficient" gear types, there would be no need for a quota, and harvesters could catch as much capelin as they could sell.

Such effort-based management rules would result in a number of positive outcomes, first of all for the capelin. These "slow fishing" methods could never catch all of them. Those caught by castnets would have already spawned a considerable quantity of eggs, leading to more offspring. If capelin were scarce, fewer harvesters would target them since they could earn more income elsewhere in the fishery. Since processors would not want large quantities of spent females, fewer capelin would be bought. Moreover, since capelin are already arriving at our beaches quite late in the year as compared to previously, we should do what we can to favour the survival and reproduction of earlier spawners. A delayed seining season would help accomplish this, as the capelin caught then would be late spawners that would otherwise likely produce late spawners in the following year(s).

As for the question of whether the fishery as currently conducted damages the capelin stock significantly, DFO maintains that it does not. As a short-lived species, the capelin stock is subject to wide fluctuations, depending on environmental conditions, and is unlikely to be severely impacted by

the removal of a relatively small percentage of its total biomass. However, as Professor Bill Montevecchi points out in the *Northeast Avalon Times*, not only is the roe fishery targeting the next generation of capelin, it also ends up killing many more fish than the catch numbers indicate. Fish are discarded when purse seiners net more than they are allowed to land, or when the proportion of large females does not meet the criteria set by the processors.

Another crucial unknown is the potential damage that the current level of capelin harvest could be doing to other species that depend on capelin abundance. Before returning to address that question, let me first challenge the assumptions behind the near-unanimous call for more capelin research.

Of course we need to do more research, but the research needed takes time, and we cannot afford to wait before making decisions. Action is required now, not in 2022 or 2023.

More fundamentally, as NunatuKavut President Todd Russell asks, "What are we doing that extra science *for*, and what are we doing it *on*?" WWF, Oceana, FFAW, ASP and DFO all seem to be assuming that the research is needed to answer the question of how much capelin can or should be harvested – in other words, to define a Total Allowable Catch and the corresponding quotas. But that question cannot be answered by more research on the capelin stock – for two reasons.

First, as anyone familiar with stock assessments knows, those assessments come with a built-in 20-25% margin of error. Secondly, there is no scientific consensus as to what percentage of a given stock should be harvested. Without knowing those two critical pieces of information, it is simply impossible to set an accurate TAC.

For striking evidence of this impossibility, look at the history of cod stocks. Nearly 30 years after the moratorium, and 65 years after DFO took charge of our fisheries, their stock assessment for 2J3KL cod still has an error rate of around 25%, calculated on the basis of their own data. As for the correct percentage of the 2J3KL stock to harvest, in recent years DFO has set a TAC of just 2-3%, when historically we have safely harvested 15-30% annually, Iceland harvests 26%, and the Barents Sea harvest is at 40%. The math is clear: for a stock of 400 kts, the "correct" harvest amounts could turn out to be as low as 6 kts (2% of 300 kts) or as high as 200 kts (40% of 500 kts.) How much use is that for planning sustainability?

In order to arrive at a TAC in such an impossible situation, DFO uses a system that fishery managers have labeled a "Precautionary Approach Framework" (not to be confused with the very different "Precautionary Principle" as understood by conservationists.) The "PA Framework" is implemented by taking stock data from some earlier time period, setting certain percentages as dividing lines between "healthy", "cautious" and "critical" categories, and then applying computer models and formulas to the latest stock assessment figures to come up with a TAC.

Again, how much use is that for planning sustainability? We have seen the unfortunate results with cod and other stocks. Yet it is that same framework that WWF is now proposing for managing capelin.

The idea that the capelin problem can be solved by more research and a "Precautionary Approach Framework" is thus pure poppycock. Capelin research must not continue the futile pursuit of a Total Allowable Catch; it has to be focused on solving the real and ongoing questions around capelin in the marine environment, the food chain, and our Atlantic fishery.

A major one of those questions, as noted earlier, is about the potential damage that the continuing capelin fishery could be doing to other species that depend on them for food. In order to best utilize and preserve the existing capelin stock, we should consider a more innovative approach: harvest more of the capelin's greatest predator – cod. Cod consume many, many more capelin than

we harvest, and they are able to intercept the spawners on their way to beaches and other spawning grounds long before we humans deploy our seines. With many cod already starving, harvesting some of them would help relieve environmental pressures on the stocks of both species.

Here we come back to effort-based management. A cod harvest based on effort would focus on taking the younger adults, those in the 45-70 cm range, by using mainly baited gear such as handlines, longlines, pots and traps. Removing 15-20% of the cod stock in this way would allow more capelin to reach their spawning grounds and improve the prospects for producing more capelin biomass in the coming years.

Besides enabling us to wisely harvest many more cod than we currently do, the increased selective harvest under this effort-based system would also benefit the cod stocks. With fewer cod competing for the available food, the remaining ones would be healthier, produce more eggs and more viable ones, and grow a core biomass of BOFFFs (big, old, fat, fecund, females) so that the cod stock itself would be able to rebuild over time when conditions were right. Harvesters, processors, and coastal communities would also benefit. Increasing the cod harvest, even to just 15% of the biomass, would supply five more plants the size of Arnold's Cove.

According to DFO's data, 30-50% or more of our cod biomass could be currently dying of starvation. When we consider that, the decision is staring us in the face. Let's catch more of those cod before they die – and leave more capelin in the water to spawn their next generations and keep replenishing the food chain.

The solution to the capelin conundrum is neither an outright ban nor a continuation of the status quo. Instead of being forced to choose sides in a false "either/or" framing of the issue, we have the opportunity to make a third choice – to apply effort-based management to capelin and cod, and to the marine ecosystem that they – and we – are part of.

NunatuKavut's Todd Russell calls for "the political will to make a management decision that is in the best interests of the capelin, of other fish species, of the ecosystem generally, and at the end of the day, the best decision for fishers and harvesters."

That works for me.

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