

Regarding the Senate Order of Reference 2022-10-04 “Examine and report on Canada’s seal populations and their effect on Canada’s fisheries,” by the Fisheries and Oceans Standing Committee, a brief from Harpseals.org, a nonprofit organization based in the United States, on the subject of grey seals:

Grey seals were abundant in the Gulf of St. Lawrence, along the Scotian Shelf, and along the New England coast in the United States when Europeans arrived in Canada. Cod was also abundant. However, after killing all the walrus in the St. Lawrence River and the Gulf of St. Lawrence, European settlers proceeded to severely deplete the population of grey seals in the 1700’s and 1800’s. In the 20<sup>th</sup> century, they nearly exterminated grey seals, when the government put bounties on the heads of the grey seals, until their population plummeted to about 5,600 animals in 1966.

The United States was complicit in this shameful attempt to exterminate a species of seals until the passage of the Marine Mammal Protection Act in 1972, an achievement still unmatched by Canada over 50 years later. Despite the commission of this crime against nature by Canada and the U.S., the grey seals were not exterminated.

Their population began to recover, especially as the campaign to eradicate them abated. By 2016, scientists in the Department of Fisheries and Oceans (DFO) estimated the grey seal population to be between 263,600 and 578,300 and estimated the mean to be 424,300 animals. In some of their range, grey seals are thought to have reached their carrying capacity; in other areas, DFO and other scientists believe they have not yet reached their carrying capacity, and their population continues to rise. Scientists have found that grey seals are recolonizing the lands from which they were exterminated over the past few centuries. Some see this as a conservation success story, but fishermen see this another way.

Fishermen have been concerned about the state of the North Atlantic cod fishery in the Gulf of St. Lawrence for decades. They resent being unable to kill thousands of tons of cod each year in the Gulf. Under the mismanagement of the DFO, they over-fished the cod to the point of nearly extirpating the species in this region. In typical fashion, they refuse to accept any blame for the current dismal state of the cod population in the southern Gulf of St. Lawrence (sGSL), instead pointing fingers at another species, in this case, the grey seals. They have been lobbying for a cull of grey seals for years, claiming that this will restore the cod population and enable them once again to over-fish the cod to extinction.

Fishermen are not only unwilling to accept blame for their destructive behavior, but in pushing for a cull of grey seals, they also show a lack of understanding of ecosystems. By over-fishing the cod, fishermen have created a series of disastrous, cascading effects on the ecosystem. Predation by grey seals on cod, in particular an overwintering aggregation of cod, is just one factor in the failure of the cod population to recover. An increase in the abundance of forage fish that prey upon cod eggs, larvae, and juveniles, as a result of the depletion of the predatory cod, is another factor. The condition of the cod has also declined due to selective fishing and a myriad of other factors. The potential that the cod population has reached a point of no return, a stock level so low that the species cannot recover, is considerable.

In considering whether a cull would be effective, one must understand the grey seal diet. Grey seals are generalist feeders. They consume many species besides Atlantic cod, including sandlance, mackerel, squid, thorny skate, Atlantic herring, winter flounder, American plaice, redfish, turbot, yellow-tailed flounder, windowpane flounder, Greenland halibut, Atlantic salmon, and white hake. Several factors affect the composition of their diet, including prey availability (which can vary seasonally) and prey behavior (including the aggregation of prey and the ability of prey species to avoid predation), the age and sex of the seal, and the nutritional content of the prey.

Prey availability depends not only on natural migration patterns of the prey species and limitations on grey seal movements (e.g., during breeding season); it also depends on fishing practices. Over-fishing can deplete a preferred prey, leading grey seals to choose alternative prey. Redfish have been found to be an important prey species of grey seals in some studies. This is another species that was severely depleted by over-fishing, but thanks to a regional fishing moratorium as well as environmental changes, this species has rebounded. It is likely that this will impact grey seal dietary choices going forward.

In order for grey seals to maintain blubber stores, they need to consume fatty fish. Cod and redfish are both low-fat species, so grey seals need to consume significant quantities of other species to meet their nutritional needs. High fat species consumed by grey seals include butterfish, herring, mackerel and Atlantic salmon. Sandlance are also fatty fish between February and June, when their lipid reserves are highest.

Unfortunately, due to over-fishing and DFO mismanagement, the mackerel population is critically low. DFO continued to commit crimes against nature and ocean ecosystems by allowing this species to be fished while it was in a critical state, with landings in the Gulf region of several thousand tons, until recently. DFO also allowed fishermen to over-fish herring until it reached a critically low level and continues to allow fishing of this species. Fishermen also over-fished Atlantic salmon, though this species has been decimated by other human activities as well. Fishing continues to impact this species due to exceptions made to the fishing moratorium for indigenous and recreational fishermen, as well as unreported, illegal fishing.

After the past egregious mistakes made by the DFO, the Canadian government made a commitment in the Canada National Marine Conservation Areas Act to adopt “the precautionary principle in the conservation and management of the marine environment so that, where there are threats of environmental damage, lack of scientific certainty is not used as a reason for postponing preventive measures.” At the same time, the government has considered and continues to contemplate a cull of grey seals.

DFO scientists have engaged in crude modeling studies to guesstimate the number of grey seals that would have to be killed to possibly avoid further decline or regional “commercial extirpation” (defined by DFO scientists as a spawning stock biomass less than 1,000 tons) of cod in the sGSL. Of the estimated 104,000 seals in the area at some point in the year, they claimed that 73,000 seals would have to be killed to sufficiently reduce predation on adult (at least 5 year old) cod. Since, according to these scientists, 36,000 of the grey seals who enter the region during the year come from Sable Island, 63,000 from the Gulf, and 5,000 from the

eastern Shore, this would suggest that, if all Sable Island seals and all eastern Shore seals who enter the Gulf were killed, at least 32,000 seals from the Gulf would also have to be killed.

The Canadian government's stated objective, after it nearly eliminated grey seals, is to keep the seal population above the Precautionary Reference Level with 80% certainty (meaning that there is a 20% chance that if the government follows this scientific quota advice, the seal population could still fall below that reference level). The scientific guidance is that the following number of seals could be killed and still meet this objective:

- 4,500 seals in the Gulf of St. Lawrence, where 95% are the young of the year or
- 2,400 seals in the Gulf of St. Lawrence, where 70% are the young of the year.

For the Scotian Shelf, where the Sable Island (main breeding grounds) and coastal Nova Scotia herds are, in order to meet this objective, there could be a kill quota of

- 30,000 seals, where 95% are young of the year or
- 17,000 seals, where 70% are young of the year.

Thus it would be impossible to kill the number of grey seals that the scientists believe would be necessary to kill for the sake of the cod, and still fulfill Canada's commitment to abide by the precautionary principle in managing the grey seal herds.

Furthermore, many fisheries scientists and marine biologists believe that a cull of grey seals would be irresponsible and ineffective. The following are statements made by scientists whom we interviewed in 2019.

"In fact, there's been a long history in the last several hundred years of culling populations of seals and other marine mammals, and there has never been a documented outcome of success or knowing one way or another of whether it had any effect whatsoever. I think it's simply not possible to know."

"To sanction something like a cull when you know there is no evidence that it will be effective is irresponsible in the face particularly of changing ecosystems, of changing climate and all the other pressures we have put on them."

"I think that we have basically messed the food web up and changed the ecosystem so remarkably that to focus on these small, tiny solutions or proposed solutions of a cull of a single predator is simply to not recognize everything that's going on in the ecosystems in the marine environment."

Sara Iverson, Ph.D. FRSC  
Professor  
Department of Biology  
Dalhousie University  
Scientific Director, Ocean Tracking Network

"I think the predictive capacity in an ecosystem framework is a fool's game right now. We cannot make predictions about what would happen if there was a cull of seals in one

area for example. Heavens, we cannot even make reliable predictions in a single species context.”

The Late Jeffrey Hutchings, Ph.D.  
Professor  
Department of Biology  
Dalhousie University

“One problem with culling natural predators is that we’re often not aware of the complexity of the interactions between that species and a whole variety of prey species, not just the species of interest that we’re trying to protect. This can cause unintended adverse effects.”

Boris Worm, Ph.D.  
Killam Research Professor  
Department of Biology  
Dalhousie University

“I think it’s virtually impossible to predict what the removal of a portion of a seal population would do, and I think it’s unlikely that the outcome would be predictable. The fact is that predator-prey dynamics are complicated, ecosystems are complicated, food webs are complicated, and often times, seals are eating other fish that might be eating the baby fish of the prey that we want to harvest in our own fisheries.”

Peter Ross, Ph.D.  
Vice President Research & Executive Director  
Coastal Ocean Research Institute  
Ocean Wise

To help cod in the sGSL and avoid similar problems with other species in the region, sensible solutions in keeping with the precautionary principle must be pursued, including

- A complete moratorium on fishing of species below their limit reference points and in regions where species have been depleted.
- A complete moratorium on all fishing that results in cod by-catch.
- Redistribution of cod to additional spawning and overwintering areas. (There is also evidence that they are finding new sites on their own in order to avoid predation. Eliminating or reducing fishing of all species in these alternative sites will help cod flourish in these areas.)
- Effectively addressing additional factors that affect the cod condition, such as hypoxia in the Gulf of St. Lawrence and climate change.

For more information and to see interviews of Dr. Hutchings and other scientists, visit <https://www.ScapegoatSeals.org>