



After being fished sustainably for centuries, the population of Atlantic cod off Canada's east coast was all but wiped out by trawlers. Photo by Design Pics Inc/Alamy Stock Photo

Want to Save a Failing Fishery? Take the Long View

Half a millennium of fishing records shows Canada could have saved the Atlantic cod.

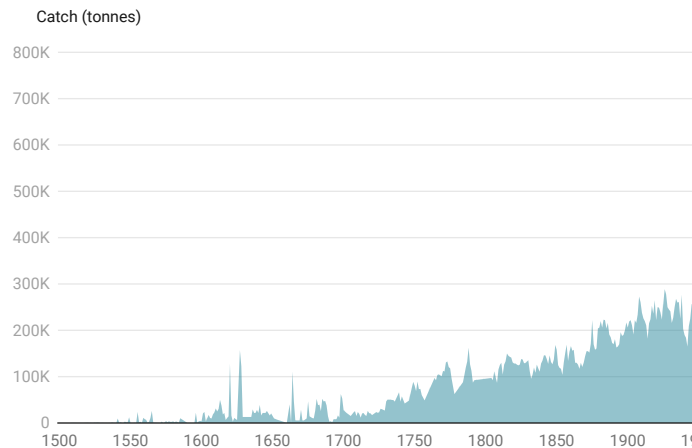
by Brian Owens

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Almost 30 years ago, the cod fishery that had sustained commercial fishers in Newfoundland and Labrador for centuries came to an abrupt end, with a government-imposed moratorium aimed at saving the collapsing cod population. The moratorium put 30,000 people out of work and blighted the province's economy for decades. Now, new research shows that the collapse was not inevitable, and that—if it weren't for short-term thinking decades earlier—the cod fishery could have been viable to this day. The research offers lessons that may help save other floundering fisheries worldwide.

A new model based on catch records dating back to 1508 shows that the cod population remained relatively stable from the 16th century until the 1960s, when the advent of large-scale industrial trawling caused catches to skyrocket. From catches of 100,000 to 200,000 tonnes a year for most of the 18th and 19th centuries, the catch climbed until it peaked at 810,000 tonnes in 1968. From there, the population declined precipitously. This eventually resulted in the decline of the stock and closure of the fishery. The model estimates, says Rebecca Schijns, a fisheries scientist with the Sea Around Us project at the University of British Columbia, that the current biomass of North Atlantic cod is just two percent of what it once was.

Atlantic cod catch from 1508 to 2019



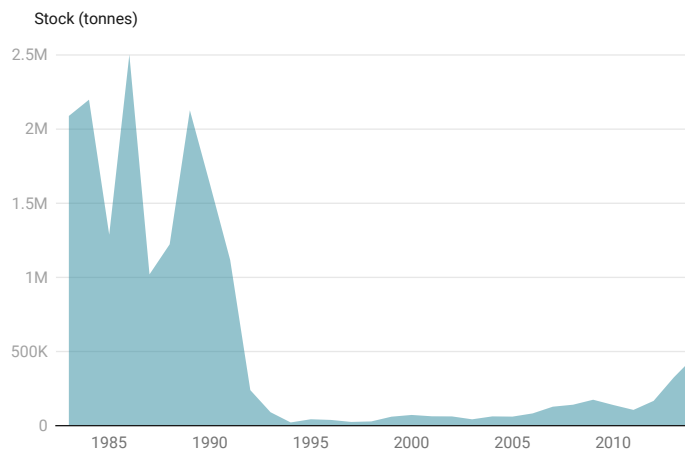
Source: [Schijns et al.](#) • Created with [Datawrapper](#)

Canadian fishery managers took steps to save the failing fishery. In 1977, the Canadian government declared a fishery exclusion zone, forcing foreign fleets out and giving the fish a brief respite. “There was this moment where the stock population stabilized and could have grown back in a few years had there been strict management and regulations,” says Schijns.

If Canada had proceeded cautiously, careful management at that point could have led to a fishery with sustained annual yields of around 200,000 tonnes, according to the model. Instead, Canada replaced the ousted foreign trawlers with its own heavily subsidized fleet, which caused the population to collapse to critical levels. In 1992, Canada closed the commercial cod fishery.

Meant to be more than finger-wagging, the paper offers a lesson in how to avoid repeating the same mistakes. Schijns says that this kind of long-term catch analysis is important to avoid the problem of shifting baselines—a phenomenon in which we assume that the current state of a resource is normal. Analyzing the catch data over 500 years gives context and a big-picture perspective on how to manage a fishery sustainably. “To estimate the full amount of extraction, we need to set the baseline from the beginning,” she says. “Starting in 1508 is a lot different than starting in the 20th century.”

Atlantic cod stock from 1983 to 2019



Source: [Schijns et al.](#) • Created with [Datawrapper](#)

Sherrylynn Rowe, a fisheries ecologist at Memorial University in Newfoundland and Labrador who was not involved in the work, says this new model of the sustainability of cod populations, with its phenomenally long time series, is a helpful addition to the study of the fishery. “Cod is the poster child for fisheries collapse, so anything we do to reflect on that collapse is a useful exercise,” she says.

But it does have one drawback, she says. By focusing only on catch records, rather than trying to account for other sources of cod mortality such as illegal fishing, discarded by-catch, and the full impact of Newfoundland and Labrador’s small recreational fishery, it may not be as reliable as other data sets that also consider these factors.

Both Schijns and Rowe agree, however, that the model is right: it shows that despite the ongoing moratorium on industrial fishing, fishers are catching too much cod in subsistence and recreational fisheries, scientific sentinel surveys, and a small-scale commercial stewardship fishery. The amount caught today—around 10,000 tonnes a year—is far less than in the past, but still too high to allow the population to rebuild.

“If we want to see cod recover, we need to leave some in the water to spawn another day,” says Rowe.

Brian Owens is a freelance science writer and editor based in St. Stephen, New Brunswick. His work has appeared in *Nature*, *New Scientist*, the *Canadian Medical Association Journal*, *The Lancet*, and others.