

Are cod 'severely depleted' in the Gulf of Maine? Fishermen, scientists view ocean depths differently

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Atlantic cod. Credit: [Hans Hillewaert](#)/Wikimedia Commons, [CC BY-SA](#)

When fishermen and women look at the gray Atlantic waters off New England, they see a marine environment literally swimming with cod, the popular white fish prized around the world for its mild flavor.

Scientists, on the other hand, say Atlantic cod stocks in the Gulf of Maine are severely depleted and possibly vulnerable to extinction.

The question of how fishermen and marine scientists employed by [government agencies](#) can view cod numbers so differently has puzzled Micah Dean, a marine biologist with the state of Massachusetts, for years.

While a doctoral student at Northeastern University, Dean believed he came up with an answer.

In a paper published recently by the *Canadian Journal of Fisheries and Aquatic Sciences*—appropriately titled "Lost in Translation"—Dean says that fishermen and scientists view the ocean depths with such different lenses that they are literally not seeing the same things.

"We did a telephone survey and we asked commercial fishermen, over the last 10 years, do you think the cod population in the Gulf of Maine has gone down a lot, gone down a little, stayed the same, gone up a little or gone up a lot," Dean says.

"The most common response we got from fishermen was that the population had gone up," he says.

Government scientists, on the other hand, say the Gulf of Maine cod stock has declined about 80% from 2005 to 2017 and is less than 5% of its target level, making it "severely depleted," Dean says.

"We're really not close at all," he says. "Everyone's got their own

reality."

"I've tried to translate between these two perspectives and identify an explanation for how this came to be," says Dean, whose survey of approximately 100 fishermen took place in 2018.

Different lenses

It's not obdurance on the part of fishermen, Dean says, adding they have been given a faulty lens.

For starters, commercial and recreational ground fishermen are prohibited from trawling in cod spawning sites, where they could see for themselves that the population of older cod that frequents the areas has plummeted, he says.

"That's where the largest cod are," Dean says. "We used to catch many over 60 to 70 pounds. They don't exist anymore."

But "because we've closed all the spawning grounds to fishing," says Dean, who works for the Massachusetts Division of Marine Fisheries, fishermen and women "can't see the lack of adult cod. It alters their perspective on the population."

"Most of the spawning grounds are gone. We really recognize the necessity of protecting what remains."

Fishermen also don't see the decline in juvenile codfish because the 6.5-inch mesh openings in their nets allow the juveniles to escape, Dean says.

"A scientist using a quarter-inch mesh or 2-inch mesh net sees the dramatic loss of juveniles," he says.

Regulatory changes about harvest limits can also alter perspective, Dean says.

He says when the government started limiting the number of days at sea fishermen could hunt for cod, it also increased trip limits to minimize the number of over-the-limit cod that were discarded.

The regulatory change was important since up to 80% of cod discarded during commercial trawls end up perishing, Dean says. But it also led to the impression the ground fish is more abundant than it actually is and encouraged fishermen to target cod more on days they were allowed to fish.

The regulations caused catch rates to increase even as stock declined, he says.

"So much of the angst in the fishing industry is that fishermen don't believe the answers they are being told," he says.

Collaborating on counts

"To manage a resource like this you have to have some baseline agreements on the status or the condition so we can agree on what sort of measures need to be taken to improve the condition."

Several years ago Dean and other state fishery officials took steps to address the issue by collaborating with commercial fishermen on a series of bottom trawl surveys.

Unlike the surveys conducted by the [federal government](#), the surveys that took place from 2003 to 2007 and then again from 2016 to 2019 took place on commercial fishing vessels.

"We had commercial captains and crew operating the boat," Dean says. The feeling was "fishermen will believe what other fishermen catch."

The state biologists also conducted the trawls for a longer period of time than the federal government, operating 10 months out of the year, as opposed to two one-month snapshots in the spring and fall, Dean says.

"We got a much more intensive view of (the cod) population," he says.

What they found matched previous government surveys.

"We found basically that the federal stock assessment, the scientific perspective, was in general accurate and that the population had declined significantly," says Dean, who used material from his dissertation and [historical data](#) to create an online story map about the plight of Atlantic cod fish for the Massachusetts Division Marine Fisheries.

The collaboration has not changed the hearts and minds of commercial fishermen contacted during Dean's [telephone survey](#).

"The majority of fishermen still think the population has increased" and protested stringent catch limits, Dean says.

"I was hopeful, maybe naively hopeful, that the (collaborative trawling surveys) would really start to unify perspectives so we can get past the bickering over whether there is an issue or not and roll up our sleeves and try to solve the issue."

What fishermen say

John Pappalardo, CEO of the Cape Cod Commercial Fishermen's Alliance, an advocacy group for commercial fishermen and women, says he agrees with Dean that the population of Atlantic cod "has been

declining from their historic highs for a long time."

But while fishermen in their 80s see a dramatic reduction in numbers, commercial fishermen who have been catching cod for the past 25 or so years see a rebound in cod stocks due to fishing restrictions.

When a fisherman says he thinks cod are coming back, Pappalardo says he asks if the fleet based in Chatham can go to an area and fish for several months straight. "That's what you used to do," he says.

But Pappalardo, who fished commercially for 12 years, says fishermen have a point when they say it's not just fishing that has an impact on the cod population.

Seal predation, fresh water intrusion from the St. Lawrence Seaway and increase in water temperature in the Gulf of Maine are all affecting cod stocks, he says.

Some commercial fishermen think cod, a cold water species, is being driven into deeper waters and to points north and east of where survey boats may be going, Pappalardo says.

"Are there a lot of cod? No," he says. But Pappalardo says scientists haven't been able to show that reducing fishing of the species "to a very, very low level" has helped the population rebound.

"It's a very complex problem."

What's so great about cod

Mild tasting cod is popular almost across the world, being a staple in fish and chips and, in a salted version, favorite dishes in the Caribbean, despite not existing much farther south than Rhode Island, Dean says.

"Cod are worth more than other species," he says. "They are easy to catch and close to shore."

The good news is that recreational fishermen are being successfully diverted to fishing sites where another white ground fish, haddock, is plentiful.

And there are signs that cod populations are on the upswing from their historic low in 2014, with the most recent state trawling survey in 2019 showing an increase among juveniles, Dean says.

He hopes the restrictions on fishing cod—so hated by the commercial [fishing industry](#)—will allow this group of fish to live out their lifespan of 20 years and help repopulate the spawning grounds.

That would be a welcome sight to commercial [fishermen's](#) eyes.

In the meantime, Dean says, "There's always going to be disagreements. It's sort of a natural consequence of managing a wild harvested resource."

More information: Micah J. Dean et al, Lost in translation: understanding divergent perspectives on a depleted fish stock, *Canadian Journal of Fisheries and Aquatic Sciences* (2022). [DOI: 10.1139/cjfas-2022-0090](#)

Provided by Northeastern University

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