

Cod resurgence in Canadian waters

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Haddock and redfish collected during a Department of Fisheries and Oceans survey of the Scotian Shelf. Queen's University researchers William Leggett and Jon Fisher, in collaboration with Kenneth Frank and Brian Petrie from the Bedford Institute of Oceanography have found that Cod and other groundfish populations off the east coast of Canada are showing signs of recovery more than 20 years after the fisheries collapsed in the early 1990s. Credit: Jeff McRuer (Bedford Institute of Oceanography, Department of Fisheries and Oceans)

Cod and other groundfish populations off the east coast of Canada are showing signs of recovery more than 20 years after the fisheries collapsed in the early 1990s, according to research published today in *Nature*.

"This early-stage recovery represents a long ecological transition for an ecosystem that was pushed out of balance and that is gradually moving

back into balance," says William Leggett, a professor in the Department of Biology, former principal at Queen's, and an expert in the dynamics of large [marine ecosystems](#).

This study is the first to show evidence of a recovery at the multi-species level and delve into the underlying ecological mechanisms facilitating the recovery.

The researchers hypothesize that the 20-year delay in recovery was caused by a reversal of fish predator and prey roles. When large-bodied fish like cod were dominant, they fed on smaller forage [fish species](#). However, the [overfishing](#) of cod and other groundfish populations meant that these smaller forage fish had the opportunity to prey on large-bodied fish species in their earliest life-stages, preventing these populations from recovering their numbers.

This absence of large-bodied fish predators resulted in the forage [fish population](#) ballooning by 900 per cent and ultimately outstripping its food sources. The subsequent decline in forage fish numbers has been vital for the recovery of the cod and haddock populations.

While this recovery is positive and bodes well for other collapsed fisheries, Dr. Leggett and research colleague Jonathan Fisher are quick to note that the process is not straightforward. Cod populations are now at around 34 per cent of the level that was typical when [commercial fishing](#) was flourishing in the 1970s and 1980s. Haddock, on the other hand, now exceeds its historical levels and is playing a more dominant role.

"It's difficult to say if this switch may have any long-term implications," explains Dr. Fisher, a [postdoctoral fellow](#) in the Department of Biology. "This system may return to its historical character, but there's also the possibility that it won't and that another species will dominate. Only time

will tell."

Provided by Queen's University

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