

# CONSERVATION WATCH

by Al Ristori



## SOME STOCKS NEVER RECOVER FROM OVERFISHING

While strict conservation regulations have resulted in impressive recoveries for such species as striped bass and summer flounder, it's very difficult to compare present "recovered" stocks with historical abundance.

In the case of those two species, managers are only looking back a quarter-century or so to make such determinations, but it may well be that true "natural" abundance would be much higher. That's the conclusion reached by Frontiers in Ecology Census of Marine Life researchers who have made estimates of cod abundance on the Scotian Shelf in the 1850s by using old sailing schooner catch records and observations, coupled with modern modeling tools.

## REDEFINING RECOVERY

Their 150-year perspective challenges conventional wisdom as to what constitutes a rebuilt cod stock in a productive marine environment. This suggests that the use of 1980s levels to set a fully rebuilt stock may "grossly under-represent the productive potential of commercially important species."

The researchers used 1850s New England schooner records of daily catch locations and fleet activity on fishing grounds. Using handlines at the time, schooner captains had no reason to falsify records, as is the case today when regulations restrict landings, and by-catch may go unreported in order to avoid closures based on such waste.

As inefficient as dory fishing with

handlines and baited bottom trawls was in the 1850s, it was still sufficient to put a dent in regional cod stocks as catch per unit of fishing effort declined by over 50-percent between 1852 and 1859. Beverly, Massachusetts vessels made 90-percent of their cod trips to the Scotian Shelf between 1852 and 1857, but that declined to 60-percent by 1859 "as captains searched farther afield for more economically profitable concentrations of cod."

"In the logs themselves, effort was measured in a good day's catch. On May 23, 1859, Gilbert Weston, captain of the *Dorado* on the Scotian Shelf's Banquereau Bank, noted in his log that they 'had 1000 hooks out (on trawls) and (caught) 130 (cod) fish.' However, men who had fished in 1852 remembered good days when seven or eight handliners fishing two hooks apiece over the schooner's rail could bring in more than 100 fish. George Gould's crew of eight on *Betsy & Eliza* had four such good days in 1852, landing more than 1,000 cod on one long day in June."

## THE FORMULA

The researchers used a mathematical formula to estimate cod biomass on the Scotian Shelf in 1852 at 1.26 million metric tons, compared with less than 50,000 metric tons today — of which only 6-percent is of adult size. They even consider that to be a conservative estimate, since the hook sizes used in 1850s fisheries probably resulted in few juveniles being boated.

Despite stringent regulations in place the last few years, the report notes, "the best estimate of adult cod biomass on the Scotian Shelf today comprises a mere 38-percent of the catch brought home by 43 Beverly schooners in 1855. In other words, 16 small schooners from this mid-19th century could contain all of the adult cod on the Scotian Shelf today."

## A DISTURBED BALANCE?

This brings up a number of interesting questions. It could be that cod and other important bottom fish have lost their dominance to other species in the ecosystem. NOAA Fisheries trawling surveys demonstrated the change from dominance of cod, pollock, haddock and flounder to skates and spiny dogfish after foreign fleets decimated the target species — and later as the built-up American trawler fleet beat down stocks partially restored after imposition of the 200-mile fisheries limit. Scientists studying a similar change in the North Sea decades ago speculated that the total biomass of that sea didn't change, but its composition did with small species such as sand eels literally crowding out depleted predators just as stunted sunfish can literally take over a pond. On the other hand, the loss of cod biomass over decades may be at least partially due to changes in the ecosystem. Those sailing schooners in the 1850s simply removed a portion of the stocks without any other negative effects and no appreciable by-catch. The introduction of power vessels and trawl nets resulted not only in more exploitation, but also "dirty" fishing, which killed vast numbers of juveniles in addition to the adults sought while additionally affecting the bottom which provided the attraction for the quarry. It's quite obvious on land when animal and bird populations decrease due to habitat loss, but the same rules apply in the ocean. As a result, previously productive areas may never again be capable of maintaining such quantities of desirable species even under the most restrictive conservation regimes.

Looking back on what existed in the oceans 150 years ago is instructive, but will probably have little effect on most managers who roll their eyes when I even bring up information from the 1970s — much less any decade earlier than that!

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