

Higher water temps trigger ocean changes

Both fishermen and scientists have observed changes that signal important shifts in ocean conditions affecting the fisheries in our region. These changing conditions likely will have a more profound effect in the years to come.

Long-term records for the North Atlantic show periods of high and low temperature that can persist for decades. From a low point in the 1960s, we have seen an increase in temperature to a recent high, and climate models predict further increases (see Figure 1).

Increasing water temperatures are affecting the distribution of marine fish species in the Northeast. Analyses of 36 stocks by the National Marine Fisheries Service's Northeast Fisheries Science Center (NEFSC) indicate that about one-third of them already are showing a significant northward shift.

Temperature changes in coming decades may make some areas uninhabitable for species such as cod that are at the southern extent of their range in our region, or reduce survival of the young in areas that may become marginally suitable because of increasing temperatures.

On the flip side, warmer waters also can mean that southern species will become increasingly important in Northeast fisheries. Atlantic croaker, an important recreational and commercial species in the Mid-Atlantic region, has both increased in abundance and expanded its distribution to the north in recent years.

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Phytoplankton

These temperature changes also have implications for the basic productivity of the marine ecosystem. As temperatures increase, layers develop in the water column with warm water on top and colder water on the bottom.

This layering, called stratification, is fully developed each year in late spring. Stratification reduces the mixing of nutrient-rich bottom water with the shallower, sunlit waters where microscopic plants called phytoplankton thrive. It also can reduce the amount of food that ultimately reaches bottom waters to sustain bottom-dwelling fish and shellfish.

Before stratification is fully established, a spring "bloom" of phytoplankton usually occurs that starts the yearly production cycle. A second bloom often occurs in autumn as stratification begins to break down.

Recent work at the NEFSC has shown that a relatively strong fall bloom is related to strong haddock recruitment. In 2007, the fall bloom

Once again, this issue of Commercial Fisheries News features four Guest Columns, organized under the "Voices" heading, which contain information that we think is important for our readers.

First up, is a contribution submitted the Northeast Fisheries Science Center. In this piece, starting on this page, the science center folks explain what they know so far about changing ocean conditions and how they are affecting stock distribution and fisheries.

We also have a concise summary of the results of a socioeconomic survey of New England lobstermen conducted

by Laura Taylor Singer and Dan Holland of the Gulf of Maine Research Institute in 2006. Although a lot has changed since then, the survey results offer insights into the strengths and vulnerabilities of the industry that can be used by state fishery managers to make more informed decisions. **Page 8B.**

Niaz Dorry, executive director of the Northwest Atlantic Marine Alliance (NAMA), shares her thoughts on the connection between family farmers and community-based fishermen and concludes that

failed to develop (see CFN June 2008 page 26A), possibly signaling a difficult year for haddock recruitment.

Food for fish

Changes in physical conditions also have changed other parts of the food web. For example, long-term ecosystem monitoring by the NEFSC has shown changes in the abundance of different types of tiny crustaceans called copepods.

These species graze on

everyone should consider taking up the "Eat Local" cause, making sure the slogan is expanded to include "Eat Local Seafood." **Page 12B.**

Finally, we hear the latest on the National Marine Fisheries Service's (NMFS) efforts to take a more accurate count of how much fish is caught by recreational fishermen and why it's important. Former state fisheries directors Preston Pate and Gordon Colvin, who are both now working on recreational fishing issues for NMFS, authored this column. **Page 14B.**

We appreciate the efforts of these contributors and, as always, we look forward to hearing from our readers. —Editor

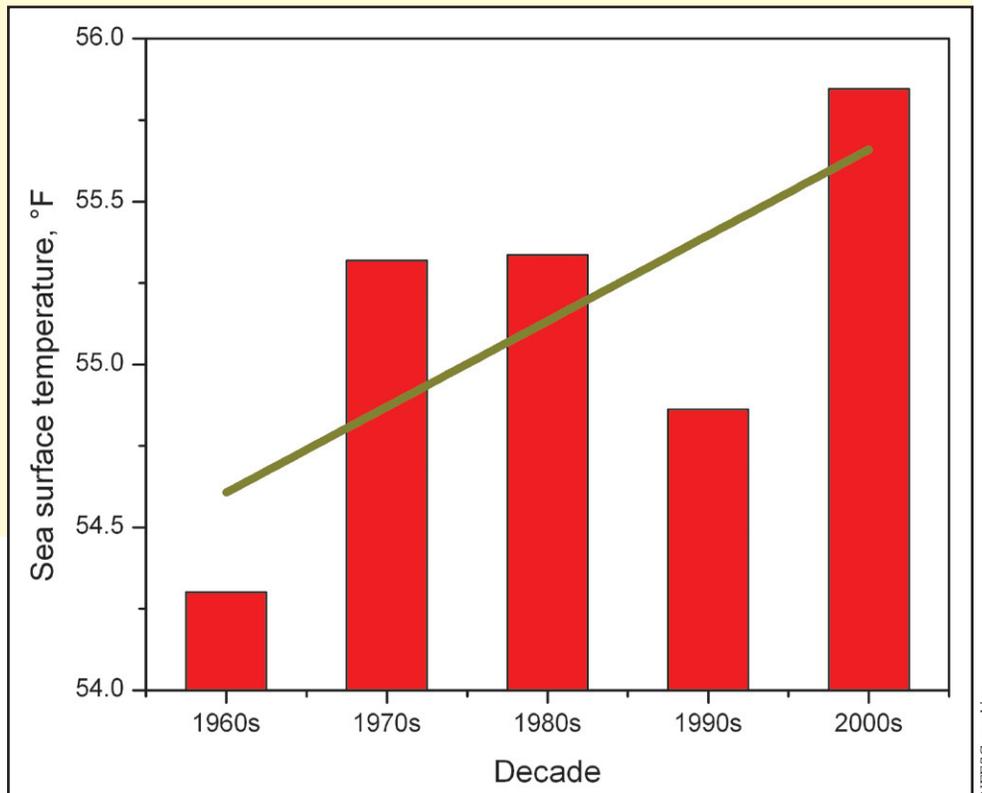


Figure 1. Records for the North Atlantic show an increase in temperature to a recent high from a low point in the 1960s. Increasing water temperatures are affecting the distribution of marine fish species in the Northeast.

phytoplankton and, in turn, are essential food for larval fish and other species, including some marine mammals such as right whales.

In the 1990s, there was a shift from larger copepod species to smaller ones in

our region (see Figure 2). In the North Sea, similar changes have been related to less favorable conditions for larval cod survival.

Studies in both eastern Canada and the US also suggest that intensified stratification has fundamentally changed the ecosystem from one dominated by bottom-dwelling groundfish to one with large numbers of fish that occupy the water column, like herring and mackerel.

These changes are thought to be related to changes in temperature and stratification, affecting the flow of food and energy in the system as a whole.

Growth rates

We have noticed important changes in the growth rates of Northeast groundfish stocks. Of 20 stocks examined by the NEFSC in a recent analysis for the Groundfish Assessment Review Meeting (GARM), more than half have decreased in their average size or weight.

When fish stocks are at high abundance, the average size at age may decline because individuals compete for the same food. For example, the average weight of a two-year-old haddock on Georges Bank from the very

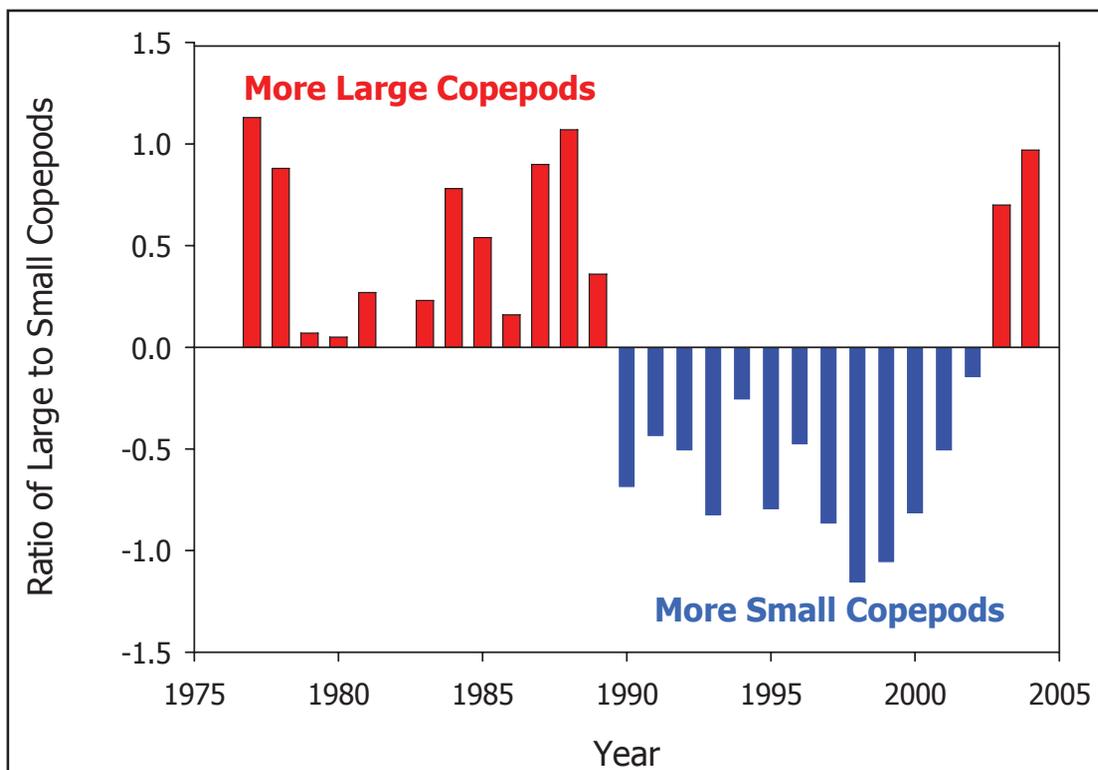


Figure 2. Long-term ecosystem monitoring by the NEFSC has shown there was a shift from larger copepod species to smaller ones in the 1990s, in the Northeast region.

NEFSC graphics

Ocean changes

Continued from page 1B

large 2003 year class was eight-tenths of a pound in NEFSC fall surveys. Ten years earlier, a fish of the same age weighed more than twice as much – 1.8 pounds.

The average size of Georges Bank cod for older ages, on the other hand, has declined over the past 20 years even as the population has declined. This declining trend, also observed for cod and other stocks in Canadian waters, appears to be related to changes in the basic productivity of the system – possibly related to the quality of available food.

Changes in growth have important consequences for the biological targets and fishing limits called reference points that are used in fishery management. The most recent report to the New England Fishery Management Council (see CFN July 2008) suggested proposed revisions to biomass targets that were, in total, about 21% less than estimates derived in 2002.

Holistic perspective

Changes in fish stock distribution and abundance are not caused only by fishing or only by environmental conditions – they interact.

The NEFSC remains committed to the basic ecological research needed to understand this interaction in a way that is useful to fishermen and to fishery managers. As environmental conditions change with long-term climate trends, this focus has taken on increasing importance.

Our goal is to complement existing stock assessment advice and provide a holistic ecosystem perspective – one that looks at the entire system – to help guide management decisions in the future.

Northeast Fisheries Science Center

This article is the result of the combined efforts of a number of professionals at the National Marine Fisheries Service's Northeast Fisheries Science Center in Woods Hole, MA. Contributors include: Elizabeth Brooks, Mike Fogarty, Teri Frady, Kevin Friedland, Jon Hare, Janet Nye, Loretta O'Brien, Paul Rago, and Ken Sherman.

An easy-to-read report on the ecology of the Northeast Continental Shelf and the government's evolving ecosystem approach to fisheries management can be downloaded online at <www.nefsc.noaa.gov/ecosystems/Ecosystems.pdf>.

Shop Talk

Continued from page 3B

building, which features overhead beams shaped to look like the frame of a wooden fishing vessel, for the inaugural mass. The service was followed by a procession to the waterfront for the blessing led by fishermen and their families, carrying the statue of **St. Peter**.

Nathan Michaud of Bangor, ME, a professional who specialized in rural development in coastal communities and was a co-creator of "**Lobster Tales**," died unexpectedly on July 29. He was 36.

In 2001, Lobster Tales used coded claw bands to allow buyers to go online, enter the code, see a photo of the Vinalhaven-area lobsterman who caught the lobster, and learn about his community. The idea was to find

out where lobsters ultimately wound up and to help consumers connect to the industry.

Michaud is survived by his wife, Christie, and two young daughters. Contributions in his honor may be made payable to Charlotte and McRea Michaud and mailed to University Credit Union, 977 Union St., Bangor, ME 04401.

Hancock Gourmet Lobster Co. has hit the big time. The Cundy's Harbor, ME-based company recently announced that its "Downeast Lobster Rolls" had won a coveted spot on "**The O-List**" in the July edition of *O, The Oprah Magazine*. Endorsements from media mogul **Oprah Winfrey** tend to catapult vendors into the national spotlight. /cfn/



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Continued from page 7B

said he had been very busy, explaining, "We're running cheap Maine lobster into supermarkets."

The few Western Connecticut fishermen in the area earned \$5.50/lb for catches of 1/2 lb/pot on 3- or 5-night sets. A dealer called quality quite nice and said although his July market had been very strong, August had slowed a hair. He said, "It's a struggle out there. It's hard to collect money. There's nothing easy about this business right now."

New York

A mid-Long Island dealer paid \$5.50/lb for catches of 300 lbs on 2-night sets. Quality was 75% shippable, and a dealer said they were all small as the lobster were in a female run. He said he had no trouble marketing his product.

A Bronx fisherman said he pulled two strings, got nothing, and decided to fish for blackfish, but with the water at 74°, even those weren't biting.

New Jersey

In the Sandy Hook area, dealers paid \$5/lb for catches of from 1/2 to 3/4 lb/pot on 7 nights, 99% of which was shippable. One called demand quiet. He said Shop Rite was selling chix and quarters for \$5.99/lb and threes to sixes for the same price. He complained that customers didn't know how to cook new shells and as he was explaining, the phone rang: someone calling to ask how to cook shadders. He called demand quiet.

Farther down the coast fishermen earned \$6/lb for hard shell and \$4.50/lb for new shells on catches of 1 lb to 1-1/2 lbs/pot on 5 to 7 nights, 75% of which was shippable. A dealer said demand on weekends was good, but during the week, it was below average. He said the tomalley scare caused a lessening of demand and a lot of questions.

Sandra Dinsmore

Harpswell races

Continued from previous page

A pair of Boothbay Harbor boats took home first place points in MSHS class competition, including Bruce Engert's Thunderbolt, which ran alone in Gas Class C, and Bill Hallinan's Apparition II, which beat out Harpswell lobsterman Jere Green's Jennifer Anne in Diesel Class J.

Harpswell is Andy Johnson's homeport, and his Holland 40 Whistlin' Dixie turned a hat trick there by besting Keith Jordan's new Calvin Beal 44, Bailey & Bella, in Diesel Class N and then outrunning Tom Clemons' Motivation in both the diesel free-for-all and fastest lobster boat contests. The 43-mph speed posted by Whistlin' Dixie in the final race was the highest radar reading of the day.

Long Island boat builder Steve Johnson enjoys racing so much that he brought two boats across upper Casco Bay to race in Harpswell. Johnson's Wild One has ruled Diesel Class I for the past few seasons, and this year's Harpswell race was no

exception. The Wild One took the MSHS points ahead of Chip Johnson's Three Stars with a clocked speed of 42 mph.

It was Johnson's gasoline division entry, 2 Wild, which provided the most entertainment, however, as race watchers speculated whether or not the 28' Jingle Johnson's unique power system would hold together for the length of the race course. But hold together it did – twice in fact.

2 Wild's twin V-8 engines, rigged via belt drives to a single drive shaft, churned out a not-too-impressive 31 mph in the gas free-for-all to finish in first place ahead of Bruce Engert's Thunderbolt. 2 Wild previously won the Gas E race uncontested.

For a complete list of boats that competed at Harpswell, refer to the results box on page 17B, presented courtesy of Accutech Marine Propeller Inc.

Steve Curtis

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