

NOAA- CHANGES TO ECOSYSTEM: (from page 37)

In New England, recreational opportunities have been relatively stable.

2020 Ecosystem Changes

Warmer Water in the Gulf of Maine and Chesapeake Bay

In 2019, the Gulf Stream was at its most northern position since 1993. A more northerly Gulf Stream means warmer ocean temperature on the Northeast U.S. shelf and increased sea surface height along the East Coast. The Gulf Stream influences the oceanic conditions on the shelf by moving heat from the equator northward. This movement of heat impacts ecological productivity—the amount of plants and animals in the ocean.

Deep source water that enters the Gulf of Maine is typically a mix of both Labrador and warm slope water. We continue to observe little to no Labrador Slope water entering the Gulf of Maine. The source water determines part of the temperature, salinity, stratification, and nutrient content of the Northeast Shelf marine ecosystem.

Warmer ocean temperatures impact many important species in the region. For example, surfclams and ocean quahogs are vulnerable to damage from warming ocean temperatures. Warmer waters also cause the ocean to be more acidic, reducing calcium carbonate, a mineral that clams need to build a shell. Surfclams and ocean quahogs are commercially valuable, and among the most popular seafood eaten in the United States. New observations show that acidification in surfclam summer habitat is approaching, but has not yet reached, levels affecting surfclam growth.

Satellite data show the Chesapeake Bay experienced a warmer winter and a cooler spring in 2020 compared to the 2010–2019 average temperatures.

Above-average winter water temperatures likely helped blue crabs, but hurt striped bass numbers. More blue crabs could live through the warmer winter. The cooler spring may have reduced survival of larval striped bass, and the warmer winter probably meant less food for them.

Chesapeake Bay blue crab is highly sought-after by commercial and recreational fishermen because of its value and taste. As both predator and prey, blue crab are also a keystone species in the Chesapeake Bay food web.

Striped bass are another top predator in the Chesapeake Bay food web, and important to commercial and recreational fishermen.

Fish Distribution Shifts Continue

Many species continue to shift northeast along the shelf and into deeper waters. This impacts what fish are available to catch, how much time and effort it takes to catch those fish, and who is responsible for managing human use of those species.

In particular, fishery management measures based on historic distribution of a species may not have the expected outcomes if that species is changing when and where it occurs.

NOAA scientists will continue to work with the fishery councils to advance ecosystem-based management.



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