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New Report Updates Status of Lake Trout in Adirondacks, Assesses Viability, and Recommends Actions

KEENE VALLEY – The Adirondack Chapter of The Nature Conservancy today released a report on the status of lake trout in the Adirondacks, providing a new baseline for gauging the future of the region’s top freshwater predator. The report also explores lake trout as a climate-change sentinel that could bring to light otherwise invisible changes in the region’s deepest, coldest lakes.

Lake trout have the most demanding temperature and oxygen requirements of any of New York’s freshwater game fish: water must be very cold (less than 55°F) and highly oxygenated (5+ milligrams per liter, or at least 50 percent saturated). When surface waters warm in late spring and summer, lake trout retreat to deeper water. Consequently, they are isolated to the largest and deepest Adirondack lakes—most of them deeper than 30 feet—where they find refuge in bottom waters during summer.

Lake trout (*Salvelinus namaycush*) and brook trout (*Salvelinus fontinalis*) arrived in the Adirondacks closely following the retreat of the glaciers 11,700 years ago. Brook trout generally occupy a warmer range of waters (52–61°F) and, unlike lake trout, can inhabit Adirondack rivers, streams and shallower ponds.

The Conservancy report, *Lake Trout and Climate Change in the Adirondacks: Status and long-term viability*, found that 102 inland North Country lakes (with a mean surface area of 923 acres) have current or recent records of lake trout. Report author Mary Thill surveyed New York Department of Environmental Conservation biologists and databases, historical records, scientific literature, and private lake managers to update the tally.

Lake trout no longer inhabit approximately 74 Adirondack lakes with historical records of the species. Over the past 150 years, causes of habitat loss included introduced species and stormwater runoff, inadequate wastewater-treatment infrastructure, and other sources of fertilizer that feed algae and deplete oxygen in deepwater basins. Historically, overfishing, DDT, acid rain and other factors also eliminated populations in individual lakes. Where water quality has improved, DEC has succeeded in restoring lake trout to approximately a dozen waters.

Anticipated issues

Mean annual air temperature in the eastern Adirondacks warmed by 2.1°F between 1976 and 2005, according to a 2010 report by the Adirondack and Vermont chapters of The Nature Conservancy. The range of anticipated additional warming in northern New York over this century is 6–11°F. Episodes of heavy rain have been more frequent in the past four decades than in the early 1900s.

Since the Adirondacks is near the southern limit of lake trout range, scientists expect these factors to eliminate a significant portion of the region’s coldwater fish habitat over this century.

As summerlike conditions extend into spring and fall, shallower lakes with small coldwater

refuges are vulnerable to habitat reduction and oxygen loss. Prolonged summer conditions are also expected to magnify problems in lakes impaired by introduced species and pollution.

How much deep water will become uninhabitable in the Adirondacks is not yet calculated. The total will depend on the characteristics of individual lakes, the dynamics of change, and steps taken to minimize stormwater inputs, introduced species and other pressures.

On the other hand, a number of larger, deeper, fast-flushing, highly oxygenated lakes in forested watersheds show high potential for long-term resilience. “Despite the unpredictability of many aspects of climate change, these waters are best bets—places most likely to sustain coldwater fish for the long term if other stresses can be limited,” said Michael Carr, executive director of the Adirondack Chapter of The Nature Conservancy.

Recommendations

The report includes actions Adirondack communities and landowners can take to guard the long-term water quality of their lake-trout lakes. Since measurement is the basis of sound management, it also calls for monitoring of temperature, late-summer oxygen, and the timing of spring stratification and fall turnover in key Adirondack lakes.

The Conservancy initiated the report in hopes that private and public lake managers will use the information to plan for intensified stresses on coldwater fish populations.

A next step is to evaluate the potential long-range viability of the 102 known Adirondack lake trout waters, based on physical characteristics, such as depth and volume, as well as cultural and land-use variables, such as shoreline clearing.

“The combination of lake trout and brook trout make the Adirondacks a national fishing destination,” said DEC Commissioner Joe Martens. “DEC is pleased to have contributed both data and expertise to this new report which will serve as a valuable reference for the status of lake trout in the Park and the threats this species faces. I deeply appreciate the Nature Conservancy’s effort and this forward looking study which will help DEC’s fisheries managers now and into the future.”

“Brook trout and lake trout are iconic symbols of the heritage fish communities of the Adirondack region. This timely report brings much deserved attention to the often overlooked lake trout populations,” said Daniel Josephson, a research associate with Cornell University’s Adirondack Fishery Research Program.

Previously, the Adirondack Chapter of The Nature Conservancy has published technical reports on potential climate-change impacts in the Champlain Basin, the economic benefits of improved road-stream crossings, and transportation infrastructure and wildlife.

For a copy of the lake trout report, see www.nature.org/adirondackslaketroutrout or contact Mary Thill (518) 576-2082, mthill@tnc.org.

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CAPTIONS

[FOUR SEASONS ILLUSTRATION] Lake trout life events and potential climate change impacts by season: Climate change is expected to magnify stresses on Adirondack lake trout by depleting oxygen in summer and fall refuge at the bottom of deep lakes, by shrinking these coldwater habitats, and by increasing predation on young trout by introduced warm-tolerant fish such as bass. Illustration by Matt Paul

[PHOTOGRAPH] New York State Department of Environmental Conservation aquatic biologists Rob Fiorentino (left) and Jim Pinheiro inspect a lake trout for signs of age after weighing and measuring during a 2013 DEC survey of lake trout populations in several Adirondack lakes. It is not uncommon for lake trout to live longer than 20 years. Photograph by Mary Thill