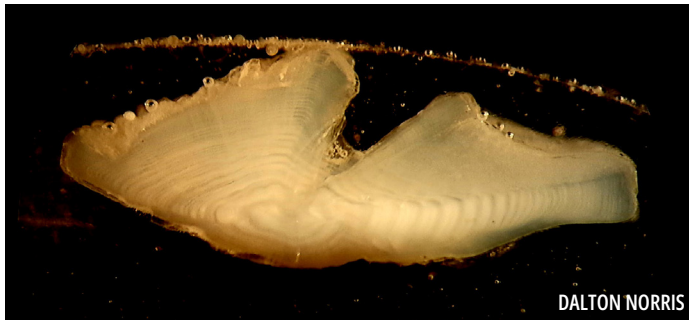


# Lake Trout Growth Sensitivity to Winter and Spring Climate and Possible Interactions with Declining Prey Abundance in Lake Superior



## CORE QUESTION:

How are warming winter temperatures affecting the growth of lake trout in Lake Superior?

Lake Superior is among the most rapidly warming bodies of water on the planet, yet little is understood regarding how native lake trout have responded to this stressor. This research project will use a new approach to measure the growth of lake trout to investigate how warming temperatures and changing winter conditions are affecting the fishery. Scientists will use year-to-year variation in the growth of fish ear stones, or sagittal otoliths, from lake trout to measure the growth of a fish in a given year and compare it with climatic variation in that same year to determine, over decades, how climate variables regulate growth.

## EAR STONES AND CLIMATE CHANGE

Winter temperatures in the Upper Great Lakes have been rising rapidly, leading to reduced ice cover and faster warming of surface waters. Lake Superior, in particular, has experienced significant warming, impacting the ecology and fisheries dependent on it. The project seeks to understand the effects of climate change on the growth of lake trout in Lake Superior, particularly focusing on how warming temperatures and changing winter conditions are affecting the fishery.

Researchers will look at the relationship between growth of lake trout and climate variability by using a biochronology approach, specifically analyzing growth

in sagittal otoliths collected from individual lake trout. The study will focus on two types of lake trout, Lean and Siscowet, that exhibit distinct morphological and behavioral differences. The researchers will investigate how climate signals, including temperature and prey abundance, affect their growth in different locations, years, and age groups using data from 1980 to 2022.

The findings from this research will contribute to understanding the complex interactions between climate change and lake trout growth in Lake Superior. It will also inform fisheries management strategies, particularly regarding potential adjustments to fishing regulations based on changes in lake trout productivity. Overall, the study aims to provide valuable insights into the future of the Lake Superior fishery in the face of climate change.

## CONTACT

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