

CLIMATE ADAPTATION SCIENCE CENTERS

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Distribution of Deer & Waterfowl Could Change as Winters Become Less Severe in the Great Lakes Region

Winter conditions have changed substantially in the Great Lakes region over the last 50 years. Winter temperatures have increased, causing lake ice cover to decrease. Since 1973, the five Great Lakes have lost 71% of their winter ice cover. These changes have direct implications for deer and waterfowl, which together represent some of the region's most important game species and form the foundation of a rich hunting tradition.

WHAT: Winter severity is a key regulator of wildlife in the Great Lakes region. Warming temperatures could change winter severity, altering the distribution, size, and health of wildlife populations – some for better and some for worse. To help plan for these changes, researchers projected how winter severity, snowpack, and lake ice could change in the region through the mid- to late-21st century.

FINDINGS: By the end of the century, the Great Lakes region could see substantial warming, a dramatic reduction in winter lake ice cover, more rain, and less snow.

What will this mean for wildlife? For deer, populations could grow as habitat conditions become more favorable. This could lead to increased damage to crops and vegetation, making it more challenging for resource managers to reduce the impacts of deer on agriculture and forests.

For waterfowl, implications could be felt a thousand miles away. Migration to southern states could be delayed, which could impact the South's hunting and tourism economies. Eventually, waterfowl may remain in the Great Lakes during winter, rather than migrating, which could lead to increased pressure on their wetland habitats in the region.

SIGNIFICANCE: Each year, state agencies in the region use information on winter severity to develop strategies for maintaining healthy deer harvests. Prior to this study, long-term projections of winter severity, snowpack, and lake ice were not available at the scale of the Great Lakes region, limiting the ability of wildlife managers to effectively plan ahead. With these new projections, managers have a foundation for estimating future distributions of wildlife, such as deer and waterfowl, and can start planning for expected changes now.

WHO: **PROJECT LEAD:** Northeast Climate Adaptation Science Center, casc.usgs.gov/centers/northeast

PARTNERS: University of Wisconsin-Madison | Michigan Department of Natural Resource | State University of New York at Oswego | Ducks Unlimited Inc, Great Lakes Atlantic Regional Office | University of Wisconsin -Extension | Long Point Waterfowl

STAKEHOLDERS: Wisconsin Department of Natural Resources | Michigan Department of Natural Resources | Ducks Unlimited | Long Point Waterfowl | Upper Midwest and Great Lakes LCC

