ICE

Observed Changes

Annual ice cover on the Great Lakes decreased by 71% from 1973 to 2010, though ice cover varies from year to year. On March 6, 2014, 92.2% of the lakes' surfaces were covered with ice—the second largest amount of ice cover recorded for the Great Lakes.

Projected Changes

Lakes, streams, and wetlands are likely to have less ice cover. Lake ice cover will continue to vary from year to year, although the long-term trend is for less ice cover.

Impacts

Less ice cover on ponds and lakes will extend the growing season for invasive aquatic plants such as hydrilla, and make it easier for them to survive the winter. Lake whitefish are native to parts of New York and the Great Lakes, and less ice cover will reduce protection of their eggs—which they lay in shallow water—from waves and storms.

Sources of more information

Much of the information in this leaflet was derived from Rosenzweig, C., W. Solecki, A. DeGaetano, M. O'Grady, S. Hassol, P. Grabhorn (Eds.). 2011. Responding to Climate Change in New York State: The ClimAID Integrated Assessment for Effective Climate Change Adaptation. Technical Report. New York State Energy Research and Development Authority (NYSERDA), Albany, New York.

CAYUGA NATURE CENTER

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CAYUGA NATURE CENTER

How is climate change affecting New York winters?

Winters in New York State are changing as the Earth warms from increased emissions of carbon dioxide, methane, and other gases that are trapping heat in our atmosphere. Most of these emissions come from burning fossil fuels to generate electricity, power trans- portation and industrial processes, and heat and cool buildings.

This leaflet describes what is happening to winters in New York State, what is projected to happen in the future, and how animals and plants are affected.

American Black Ducks. Photo: US Fish and Wildlife Service

TEMPERATURE

Observed Changes

Over the long term, New York winters have been getting warmer. From 1970-2008, state average winter temperatures increased by over 1.1 °F (0.6 °C) per decade.

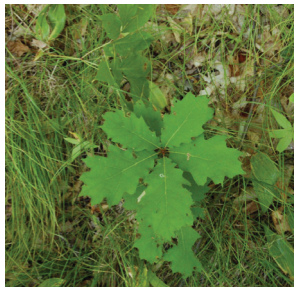
Projected Changes

New York winters are likely to be milder by the end of this century. If current trends continue, climate models predict that by the end of the century average winter temperatures in New York State could be around 9 °F (5 °C) higher than during the period 2013-2017.

Impacts

Hemlock wooly adelgid. Photo: National Park Service

Will warmer winters mean that insects which once lived only to our south will be able to survive through the winter here? It depends. For parts of New York that don't have much snow cover today during the winter, insects like the introduced hemlock wooly adelgid that overwinter above ground may be more likely to survive. In other parts with more snow cover, insects may have a harder time as winter snow cover decreases and they lose insulation from the snow.



Red oak seedling. Photo: Eli Sagor, CC BY-NC 2.0

The composition of forest tree species is expected to change, as climate conditions become more favorable for oaks and less favorable for maples, black cherries, and American beech. Species interactions will have an impact on these changes. For example, deer populations are increasing as deer find food more easily during warmer winters, and deer love to eat oak seedlings!

SNOW

Observed Changes

Snowfall varies a lot from year to year, and between 1970 and 2007 there was no statistically significant statewide trend in snowfall.

Projected Changes

As the century progresses, snowfall is likely to become less frequent, and New York is likely to have a shorter snow season.

In the near term, less ice cover on the Great Lakes means more moist air above the lakes and more lake-effect snow. By the end of the century, however, we can expect 50 to 90% fewer lake-effect snow events, because warmer winter temperatures will often lead to rain instead of snow.

Impacts

Woodland vole. Photo: USACE

Small mammals likes voles and snowshoe hare that depend on snow for insulation and protection will be at risk. Predators such as fox, mink, and bobcats depend on these small mammals for food in the winter, so they will be affected, too.

Photo: Albert Herring

With less snow cover, white-tailed deer are having an easier time finding food and surviving the winter. Their popula- tions will likely increase further.

Photo: Emmanuel Boutet

Snow is a thermal insulator. Less winter snowcover on the ground can expose tree roots to frost damage. Studies have shown that soils with less snowcover retain less nitrogen, a plant nutrient.