Local pilot and photographer Charlie MacInnis shared this recent photo of the expanding ice cover on Little Traverse Bay.
(Photo courtesy Charlie MacInnis)

Great Lakes ice cover expanding; impacts lake levels and fish health

By Emily Meier HL 2-2-22
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Colder temperatures have arrived in the area making it feel like a true northern Michigan winter.

Recent updates from the NOAA-Great Lakes Environmental Research Laboratory (GLERL) report that as of January 30, 2022 there is above average ice cover on Lake Michigan.

Currently, the ice coverage for all the Great Lakes is at 39%.

For over 30 years, NOAA-GLERL has been studying, monitoring, and predicting ice coverage on the Great Lakes. NOAA-GLERL explores the relationships between ice cover, lake thermal structure, and regional climate. GLERL conducts research on ice cover forecasting on two different time scales: short-term (1-3 days) and seasonal.

Forecasts are updated regularly on their site but some lakes have already exceeded or met the last updated ice cover forecast made on January 13, 2022.

And the deepest freeze has yet to come. Typically, February is the month that sees the majority of the freeze and ice coverage on the lakes.

So this coming month should reveal a lot about what is to be expected in regard to lake levels, fish health, and algae blooms in the warmer months.

There are pros and cons to both high ice coverage and low ice coverage. Either way, each winter leaves its mark well into the summer months.

"Ice on Lake Michigan keeps lake water from evaporating, which usually leads to higher water levels overall and colder water temperatures longer into the season," Caroline Keson,

Monitoring Programs Coordinator for Tip of the Mitt Watershed Council, said. "Higher water levels can lead to shoreline erosion--an extreme example would be in 2020 when houses along the Lake Michigan coast were falling into Lake Michigan. One fix to protect properties and houses from erosion is shoreline armoring (like rock rip-rap and seawalls), but this tactic can ruin habitat for aquatic fish and wildlife and promote nuisance algal growth. Higher water levels can also saturate septic fields, which doesn't leave them any room to filter out waste before entering shorelines. We saw these two issues become major challenges for homeowners on the Great Lakes and many inland lakes in the past few years."

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And with a lack of ice comes another set of issues.

"A lack of ice on the Great Lakes can cause more evaporation and lead to warmer water temperatures throughout the summer season," Keson explained. "This is enjoyable for swimming, but it can mean problems later on in the autumn. Warmer water temperatures and low water levels can increase the production of a certain type of botulism that can kill migratory birds. Watershed Council volunteers monitor for dead birds on beaches in Emmet County every autumn and have done so since 2011."

Ice coverage also affects local fish populations.

"Once ice covers an inland lake, the amount of dissolved oxygen slowly decreases throughout the winter," Keson explained. "Plants lack light to make more dissolved oxygen and there is no mixing of lake water with the wind to add oxygen to the water. Dissolved oxygen is important in keeping fish healthy. A prolonged season of ice and snow on inland lakes reduces oxygen to the point where fish can no longer survive. When the ice retreats, the wind can mix with water again and create more oxygen. When lakes mix from top to bottom (called turnover) nutrients are distributed throughout. The Watershed Council monitors nearly 60 lakes and streams every three years soon after the ice has retreated in the spring."

The Tip of the Mitt Watershed relies on staff and volunteers to help monitor inland lakes throughout the summer months.

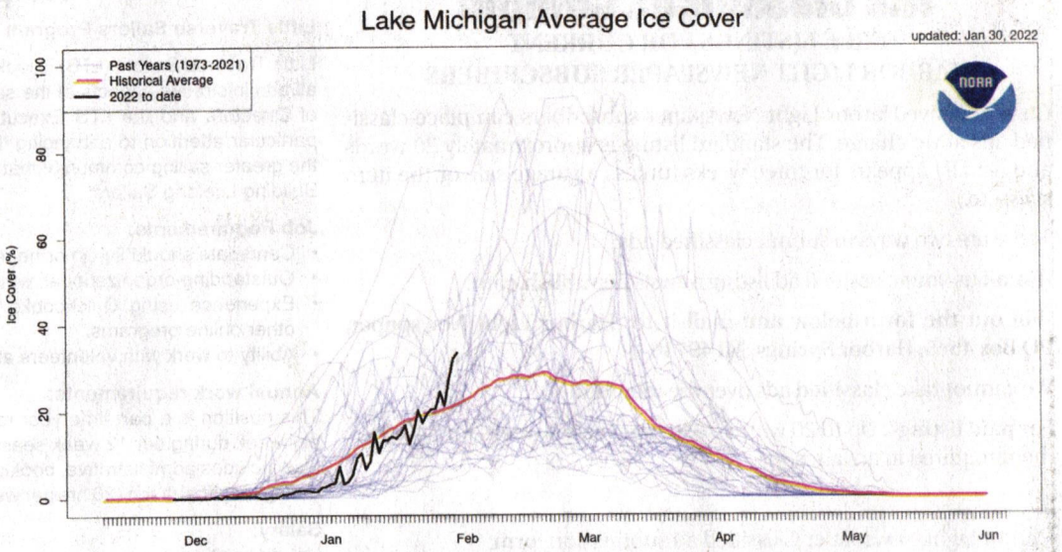
"We have volunteers who monitor inland lakes weekly throughout the summer," Keson said. "We don't monitor the ice-in/ice-out dates, however we have plans to add these parameters to our volunteer program. Many lake associations have kept track of these dates for years. "Decreased ice cover on inland lakes may also allow a certain toxin-producing algae, commonly known as Harmful Algal Blooms (HABs), to bloom sooner and more often. The causes of HABs are still being researched, but more is known each year. The Watershed Council is working with a few lake associations and other resource agencies to address HABs in northern Michigan through education and more water quality monitoring."

Our area is known as a "seasonal area". And most of the time this is used to describe local tourism and population changes throughout the year.

But the seasons are serious business to both local and seasonal visitors as each month's weather can have lasting effects on those yet to come.

For more information about Tip of the Mitt Watershed visit: www.watershedcouncil.org

For more information and updates on ice coverage across the Great Lakes visit: www.glerl.noaa.gov



(Courtesy National Oceanic and Atmospheric Administration)

Above, a graph illustrating current ice coverage on the Great Lakes compared to averages. Below, ice shards piled up along the Wequetonsing shoreline. (Harbor Light photo/Mark Flemming)