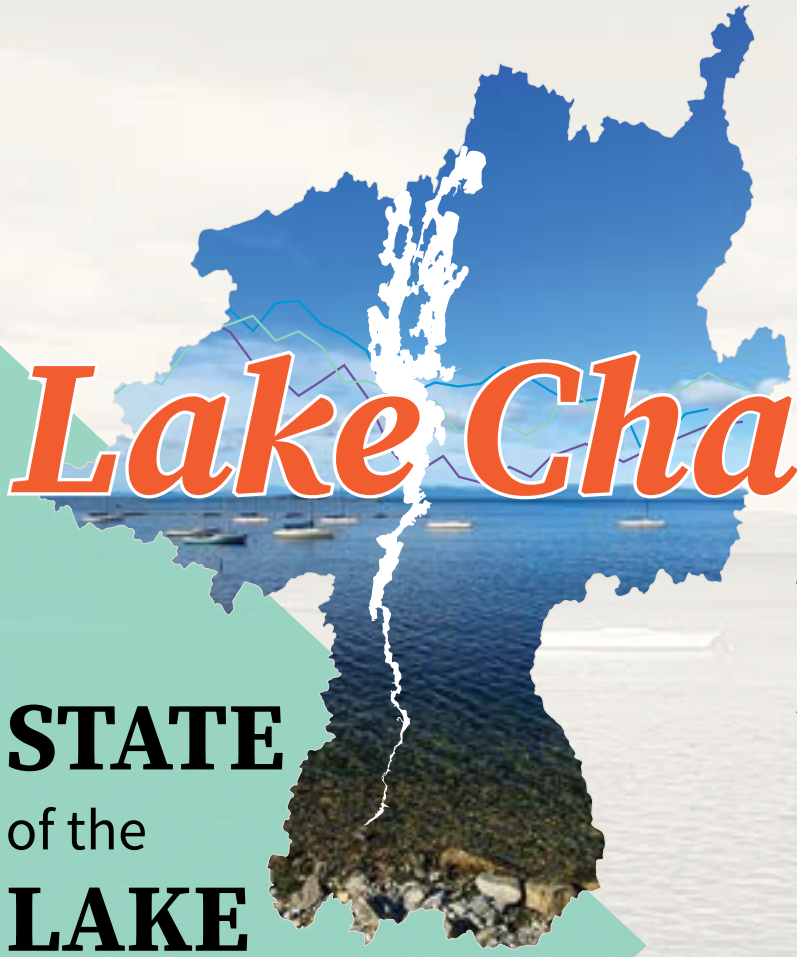


Lake Champlain provides high quality drinking water, beaches that are safe for swimming at most times, and habitat for 90 fish species and other wildlife. However, human activities pose threats to several parts of the Lake and its watershed.

Lake Champlain

STATE of the LAKE and Ecosystem Indicators Summary Report

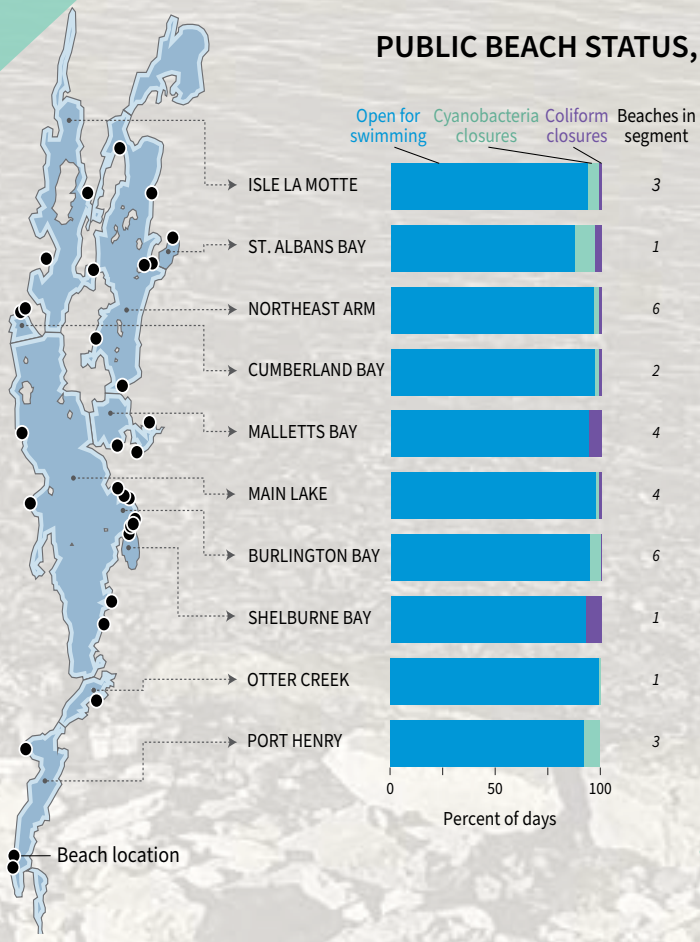
About 24% of the Basin's population (164,000 people) enjoy safe and reliable drinking water from the Lake.

With one exception, the 19 public community suppliers drawing from Lake Champlain met or exceeded all water quality standards in 2021–2022.

Fish can be safely eaten when consumption advisories are followed.

Mercury is a common contaminant in fish across the globe. Mercury levels in five key Lake Champlain fish species have decreased since the 1990s.

PUBLIC BEACH STATUS, 2021-2023



The 31 public beaches analyzed in the report were open 95% of the time during the summer.

The small percentage of closures were due to cyanobacteria blooms that can occur on the hottest days and elevated coliform bacteria levels that can occur after rainstorms.

PATRICK LEAHY

The Patrick Leahy Lake Champlain Basin Program publishes the *State of the Lake Report* every three years to provide the most up-to-date information on Lake's water quality, ecosystem health, and community engagement.

PATRICK LEAHY Lake Champlain Basin Program

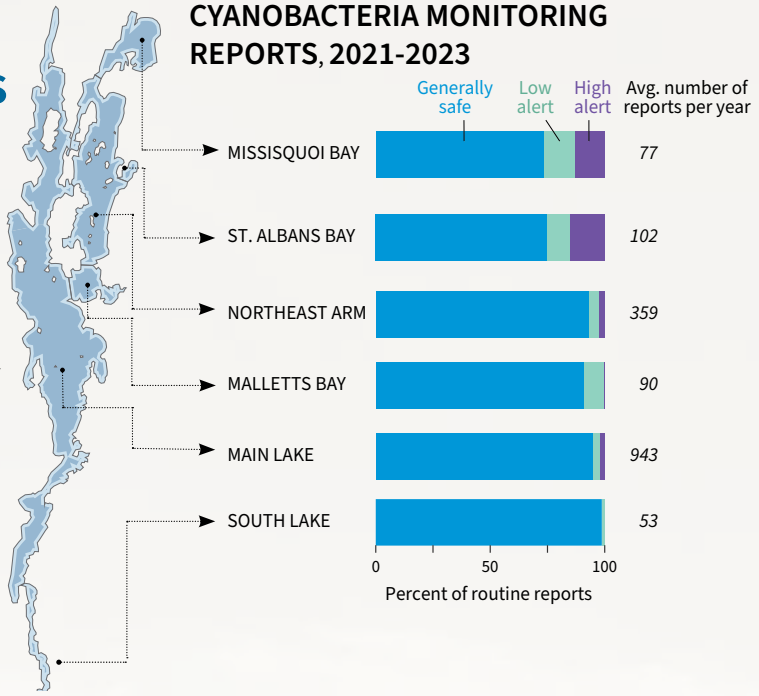
NEIWPCC

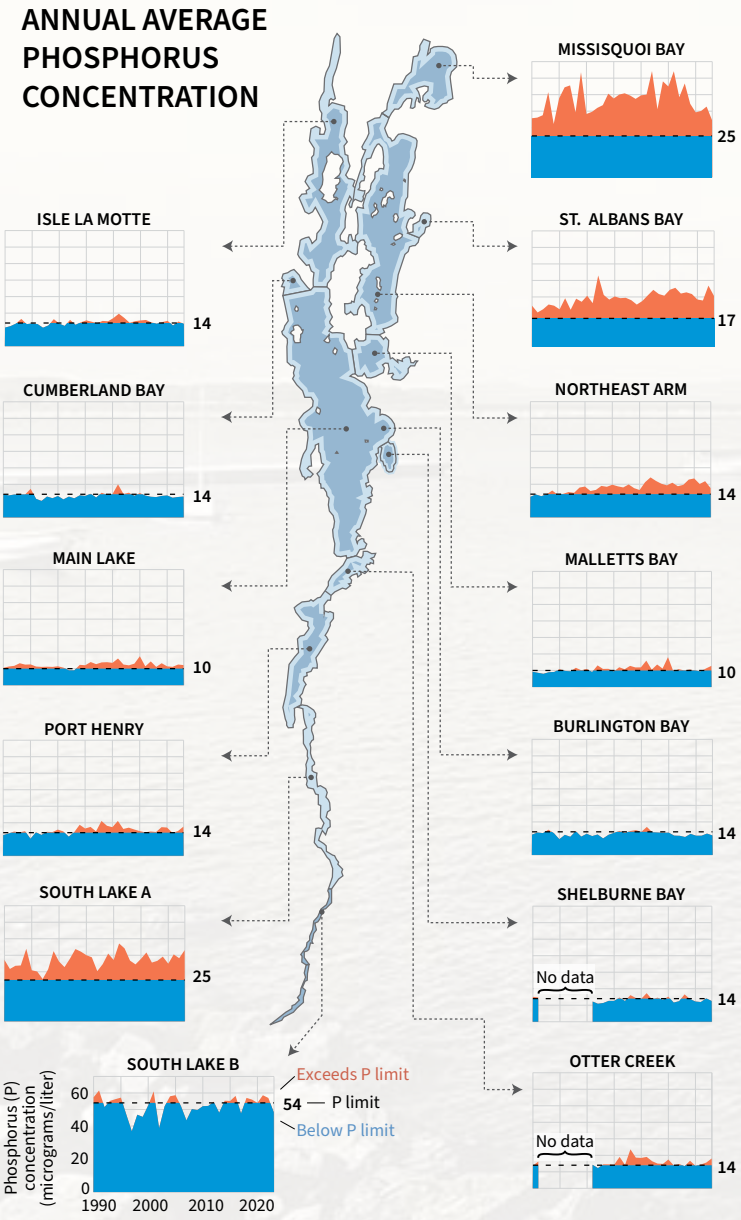
Cyanobacteria and Phosphorus

Cyanobacteria are a natural part of all ecosystems, but they pose a significant challenge to water quality.

In certain conditions—warm, calm waters with excessive nutrients like phosphorus— cyanobacteria can form blooms that can potentially release toxins.

About 94% of 14,500 assessments conducted lake-wide between 2013 and 2024 reported "generally safe" conditions during the recreation season.





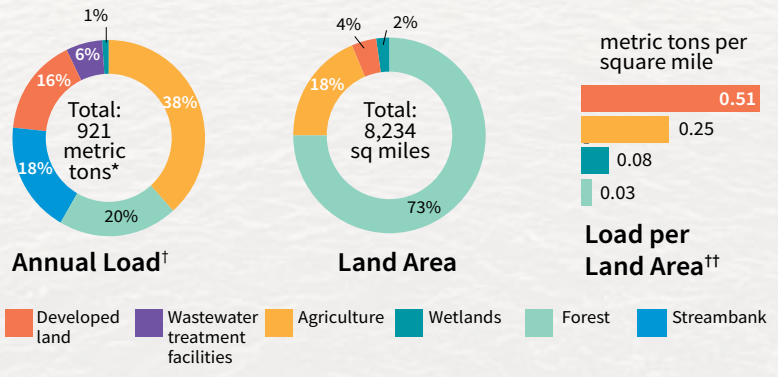
Too much phosphorus is a main cause of cyanobacteria blooms.

Since 1990, no part of the Lake has consistently met its limit for phosphorus levels. Some areas regularly have annual levels below their limits, but Missisquoi Bay, St. Albans Bay, and parts of the South Lake consistently exceed their limits (see figure to left).

The latest data shows encouraging trends. Phosphorus levels in Missisquoi Bay show a downward trend since 2018, and the 2023 annual level was at its lowest since 1994.

Most phosphorus in the Lake comes from agricultural lands, but developed lands contribute the most phosphorus per acre. Wastewater treatment facilities contribute a relatively minor amount, at just 6% of the annual load.

ANNUAL PHOSPHORUS LOADING TO LAKE CHAMPLAIN



* Estimated 2001-2010
† Total amount delivered to the Lake in a period of time, typically reported as metrics tons per year.
†† Does not include load from streambanks and wastewater treatment facilities.

Pathogens and Contaminants

Combined sewer overflow events are sources of bacteria contamination and are a challenge to eliminate.

Combined Sewer Overflows (CSOs) occur when rainstorms overwhelm systems that combine sanitary sewage and stormwater. They are not generally a significant source of phosphorus. CSOs are costly to prevent, but nearly half of CSO discharge points in the Lake Champlain watershed have been eliminated since 1990.

Some toxic substances and contaminants are present in Lake Champlain and its tributaries, but their effects and prevalence are not well understood.

Elevated chloride levels that result from the use of de-icing salts in the winter, can harm fish and wildlife. Lake Champlain chloride levels have risen 20 – 54% since 1992 in some regions.

Per- and polyfluoroalkyl substances (PFAS) are a group of manufactured chemicals that contaminate air, water, and soil. Preliminary monitoring shows that PFAS are present in some areas in the watershed, but at low levels below recommended thresholds for aquatic life and public safety.

Fisheries and Habitat

Due to a comeback of wild-born lake trout, fisheries managers ended stocking in 2025.

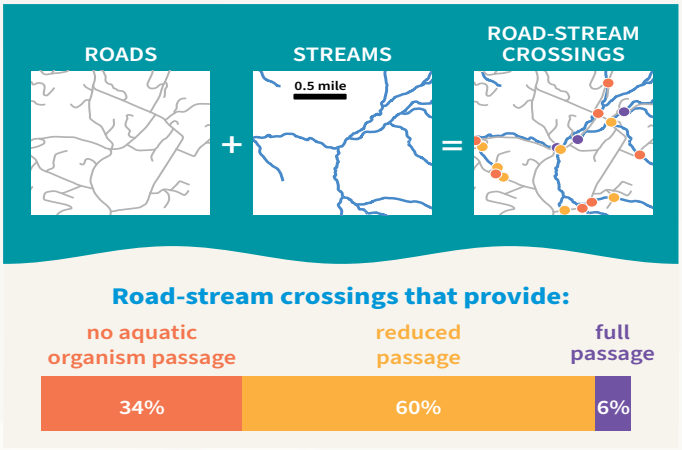
Invasive sea lamprey are parasitic fish that feed on sport fish in the Lake. Impacts on lake trout and landlocked Atlantic salmon during 2021-2023 were the lowest on record, and below the management targets for Atlantic salmon.

About 40% of the Basin's land area has some long-term protection.

Conserved floodplains, wetlands, and streambanks help protect water quality, habitat, and human infrastructure.

Aquatic Organism Passage

Disconnected stream habitat limits species' ability to migrate, reproduce, and thrive.



Only 6% of over 8,000 culverts assessed provide full passage to fish and other aquatic life. The Lake Champlain watershed is home to hundreds of dams that no longer serve a useful purpose but block migratory passage for native species.

Dam removals and other restoration efforts have provided salmon with upstream access to most of their historic range in most major tributaries.

Removal of the Indian Rapids Dam on the Saranac River reconnected a large section of the river to fish passage and recreation opportunities. Photo: Trout Unlimited

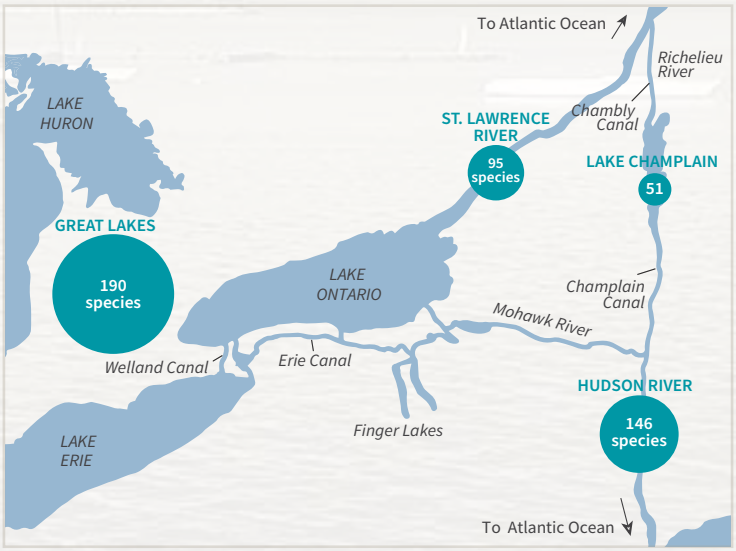
In the early 1900s, the entire surface of the Lake froze over nearly every year.

It now freezes about once every five years. Modeling suggests that by 2050, it may completely freeze just once per decade. The full impacts of this trend on fish and wildlife are difficult to quantify.

Aquatic Invasive Species

No new aquatic invasive species have been documented in Lake Champlain since 2018.

Lake Champlain currently has 51 known non-native species. Fourteen of these are classified as "invasive" because they harm the environment. However, golden clam was detected for the first time in late 2024 in the South Lake.



The Lake is connected to other water bodies that are home to many more invasive species that could spread to our region.

Round goby, quagga mussels, and hydrilla pose the greatest threats to Lake Champlain. Photos: Brian Weidel USGS, Ellen Marsden, University of Florida

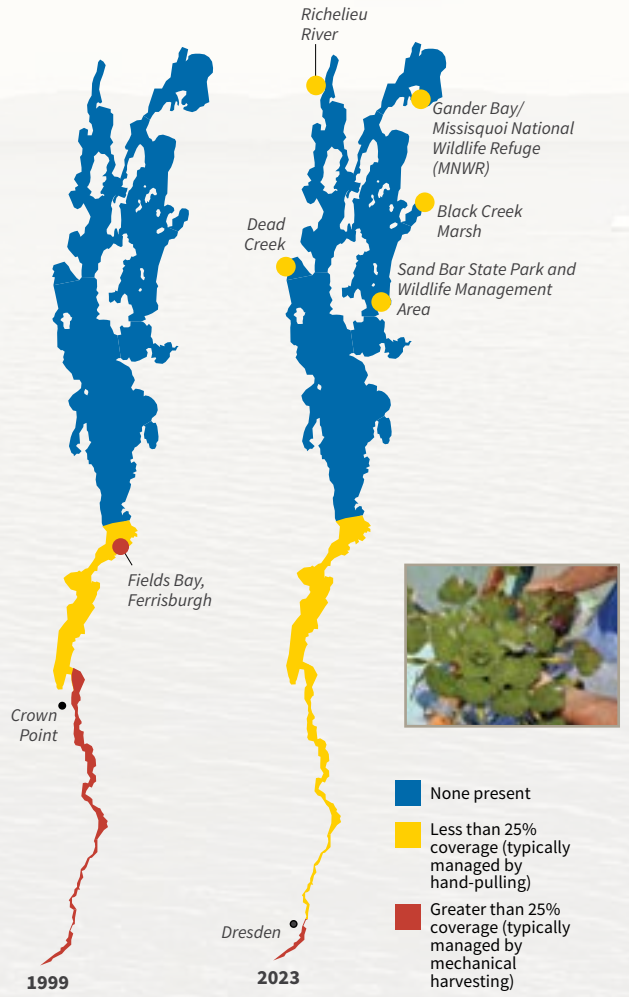
Learn More

Visit sol.lcbp.org to learn more, request a free copy of the report, and find out how you can get involved in protecting and restoring Lake Champlain.

read the full State of the Lake Report

Efforts to reduce invasive water chestnut in the South Lake are successful, but small populations have appeared in other areas.

INVASIVE WATER CHESTNUT COVERAGE



Boaters should Clean, Drain, Dry their watercraft and equipment to help prevent the spread of aquatic invasive species. Photo: LCBP