

2024 DATA SNAPSHOT: LITTLE TWIN LAKE

WATER CLARITY

While there is no statistically significant trend in Secchi depth, **Little Twin Lake has been generally less clear since 2022.**

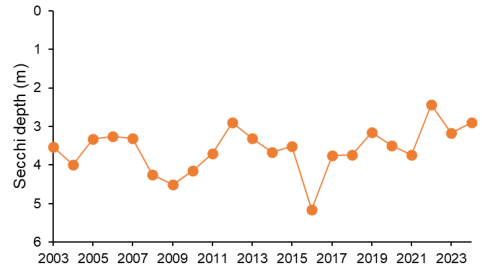


FIGURE 1: SECCHI DEPTH OVER TIME

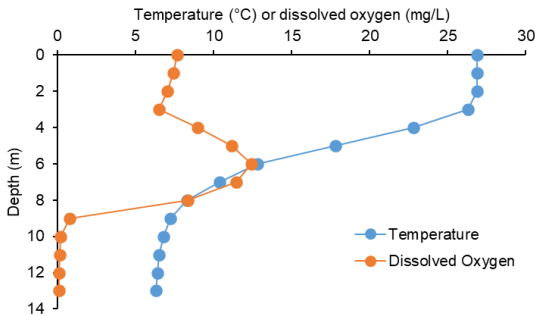


FIGURE 2: JULY 2024 PROFILES

TEMPERATURE & DISSOLVED OXYGEN

Little Twin is typically stratified during the summer, with warm surface waters and cold bottom waters, and lacks oxygen in deep waters. Oxygen concentration in Little Twin is often found at the middle depths, suggesting high algal abundance in that area.

ALGAE

Since 2003, Little Twin has been oligo-mesoeutrophic, or of low to intermediate algal productivity. Average summer **algal abundance** (measured as chlorophyll a concentration) **has significantly decreased since 2003.** Algal abundance has been rising since 2019, although it has remained low relative to previous years.

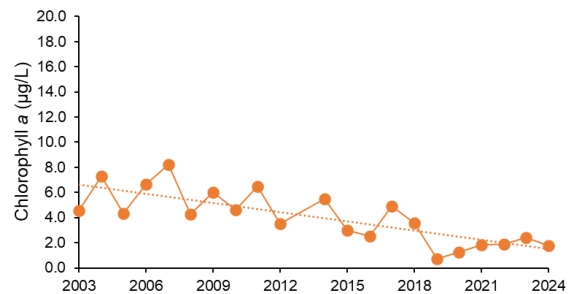


FIGURE 3: SUMMER ALGAE ABUNDANCE OVER TIME

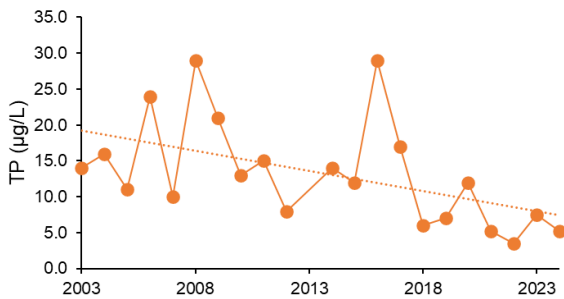


FIGURE 4: SUMMER SURFACE TP OVER TIME

NUTRIENTS

Average summer total phosphorus (TP) concentration in surface waters has significantly decreased since 2003. **Phosphorus concentration was up to 20x greater in the deep water compared to the surface** in 2024 (the only year of deep-water monitoring) depending on sampling month.

CYANOBACTERIA

Screening for potentially toxic cyanobacteria is not conducted routinely but has revealed the presence of potentially toxigenic cyanobacteria. Cyanobacteria consistently dominate the algal community.

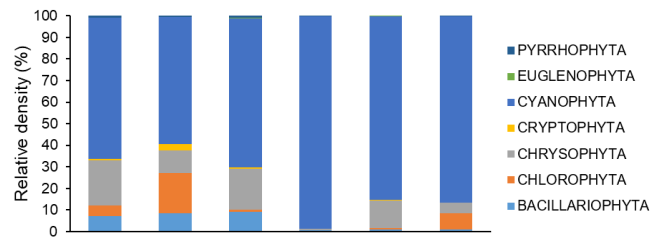


FIGURE 5: ALGAE COMMUNITY COMPOSITION

2024 TAKE HOMES: **LITTLE TWIN LAKE**

1. Average summer algal abundance in Little Twin has generally increased since 2019 although it remains low relative to the early 2000's.
2. Internal phosphorus loading is the release of phosphorus from lake sediments when oxygen is absent. The lack of oxygen at the bottom Little Twin and the elevated concentration of phosphorus in deep water samples suggest that internal phosphorus loading may be occurring, even as phosphorus in surface waters has been declining. This internal source of phosphorus can fuel cyanobacteria populations.
3. Cyanobacteria blooms remain a risk in Little Twin. Infrequent cyanobacteria screens have contained cyanobacteria groups capable of producing cyanotoxins and cyanobacteria are consistently the dominant algal group.

HOW TO EVALUATE THESE DATA

This document provides a snapshot of foundational water quality parameters monitored in Little Twin Lake. Think of these data as a “medical checkup” for the lake. The strength of these data lies in their ability to show trends over time which can be used to (1) evaluate risk factors, (2) target stewardship efforts, and (3) guide management strategies.

Water Clarity: Secchi depth is the depth at which a black and white disk lowered into the water disappears. The deeper the Secchi depth, the clearer the lake. Suspended particles, algae, and dissolved compounds can decrease water clarity.

Temperature & Dissolved Oxygen: Deep temperate lakes have distinct temperature layers during the summer because surface water is warmed by the sun while deep water remains cold. The layers mix in the fall, helping to spread nutrients and oxygen throughout the lake. Oxygen gas dissolved in lake water is generated by surface turbulence and photosynthesis by algae and is removed by the process of decomposition. Low oxygen concentrations can be stressful to lake organisms and can promote nutrient release from lake sediments.

Algae: Algae are photosynthetic, plant-like organisms forming the base of lake food webs. Chlorophyll is a pigment in algal cells that we use to quantify algal abundance. A rapid increase in the amount of chlorophyll to a high level in your lake is an indication of an algal bloom.

Nutrients: Phosphorus and nitrogen are necessary components for the growth of the algae that support lake food webs. Too much nitrogen and phosphorus can fuel algal blooms. These nutrients come from the watershed as well as from lake sediments.

Cyanobacteria: Cyanobacteria (sometimes called blue-green algae) are photosynthetic bacteria often classified as algae. Cyanobacteria are most commonly responsible for harmful algal blooms, or HABs, in lakes. Some cyanobacteria can produce toxins that are harmful to wildlife, pets, and humans.