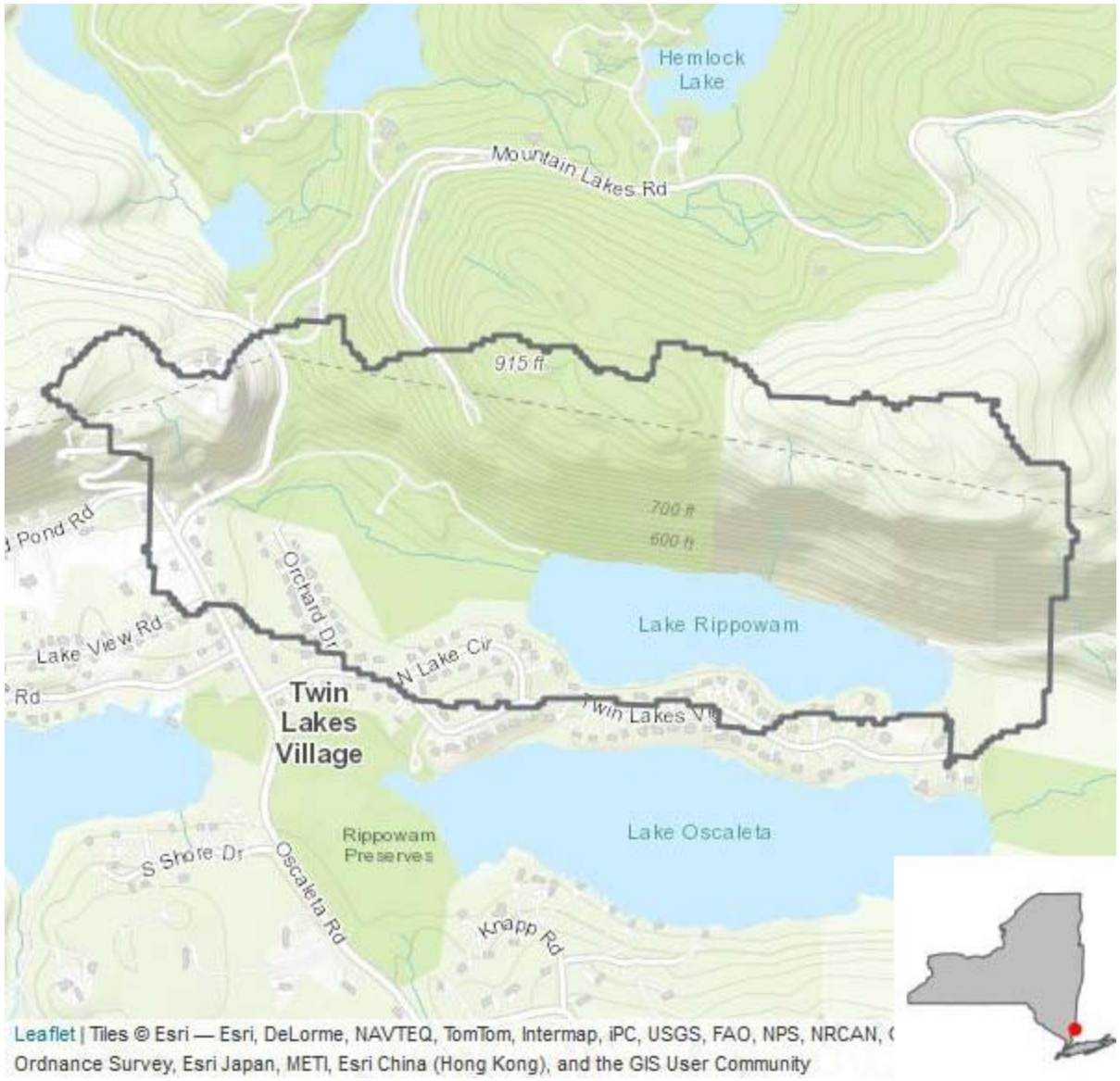
2023

Lake Rippowam

Town(s) of Lewisboro | Westchester County | Lower Hudson River Basin



LAKE CHARACTERISTICS	
Lake Classification	B
Dam Classification	NA
Public Water Supply	No
Lake Size (AC)	29.4
Mean Depth (m)	2.02
Maximum Depth (m)	5.9

WATERSHED CHARACTERISTICS	
Watershed Area (AC)	245
Watershed to Lake Ratio	9
Wetlands %	11
Barren Land %	0
Shrub Scrub %	0
Grassland Herbaceous %	0
Forest %	74
Developed %	14
Agriculture %	0

CSLAP Participation	
Years in CSLAP	2006-2011, 2013-2023

Waterbody Assessment	Trophic State	HABs Frequency	Invasive Species
Download Assessment Here	Eutrophic	Frequent Blooms	Invasives Reported

Summary

How to read this report:

This goal of this report is to answer the common question, “How is Lake Rippowam doing?” As there is more than one way to answer this question, the report has been broken down into six sections, described below, to give a comprehensive understanding of the waterbody’s condition.

For a detailed summary of the data sources and analyses used to generate this report, see the 2023 Lake Reports Data Sources and Analyses.

For information on water ecology, monitoring, and management throughout New York State, see *Diet for a Small Lake: The Expanded Guide to New York State Lake and Watershed Management*.

Evaluated Data

New York State lakes are classified to reflect their best uses (e.g., water supply, recreation, and/or fishing) and data are evaluated against water quality standards to determine if water quality conditions support these best uses. The assessment of the lake is published in the waterbody segment factsheet and the select data used to derive this evaluation are reported in the Evaluated Data tab of this report.

Trophic State

Trophic state refers to the overall biological productivity of a waterbody. Very productive waterbodies can have plants, animals, and/or algae that grow to nuisance levels. Therefore, trophic state is a measure of lake water quality used worldwide. The trophic parameters are reported in this tab and contextualized with trend calculations and statewide distribution plots.

HABs

Harmful algal blooms (HABs) are a concern in freshwater systems worldwide. Several types of HABs also have the ability to produce toxins which can pose health risks. Exposure to any HABs can cause health effects in people and animals. This is true regardless of toxin levels. This tab summarizes the occurrence and frequency of public HAB reports to NYHABS on this waterbody.

Invasive Species

Introduced, non-native organisms can pose a nuisance to human use and/or harm ecosystem health of a waterbody. This tab provides a comprehensive list of invasive species, reported to iMapInvasives, for this waterbody.

Depth Profile

A depth profile is a set of in-situ measurements collected vertically at the deepest point of the waterbody. Depth profiles are a valuable tool used to understand how conditions change with depth. Vertical profile plots are given in this tab for each profile parameter collected in this waterbody.

Other Parameters

Additional parameters are analyzed in order to understand properties of the waterbody that aren't related to the topics above. These may include other nutrients, minerals, and salt that do not have applicable water quality standards. Results from these parameters are reported in this tab and contextualized.

Data

All data available for this waterbody are reported in the Data tab. The first table provides a comprehensive list of all the locations that have been sampled. The second table provides the parameter data collected at these locations. Finally, the third table provides a complete list of public HAB reports for this waterbody.

Evaluated Data

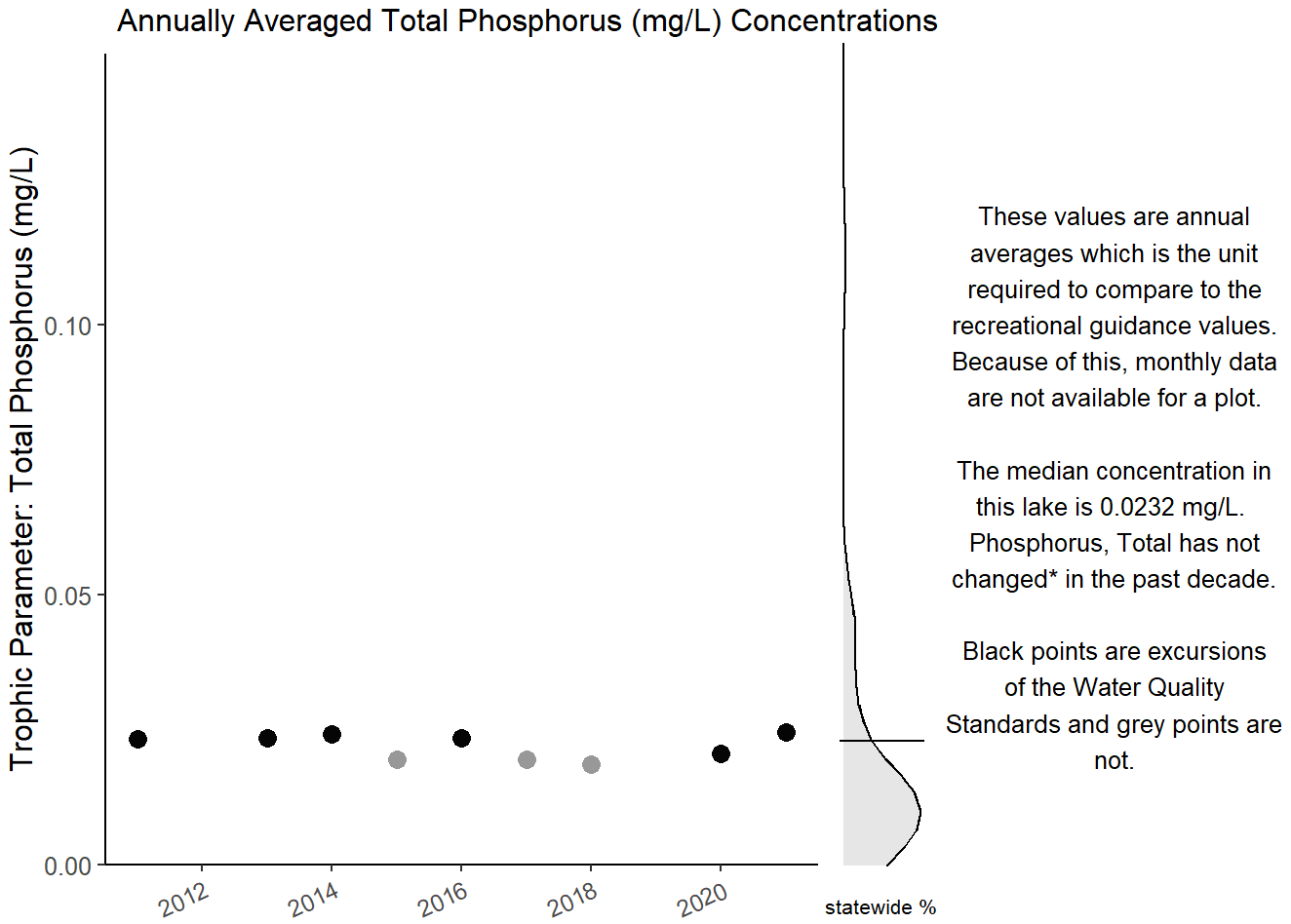
Each lake in New York State is classified to reflect the best uses of the lake. The NYSDEC water quality assessment determines whether these best uses are being supported by the lake's water quality conditions. The lake's assessment is published in the waterbody segment factsheet . Assessments are updated during even years and the most recent published assessment considers data collected 2011-2021. Data collected after 2021 are not reflected in this tab.

The following plots display the NYSDEC data evaluated according to the (NYS Water Quality Standards). These evaluations are used to determine the waterbody assessment according to the (Consolidated Assessment and Listing Methodology).

How to read these plots: Each circle represents a single observation on the waterbody, unless labeled annually averaged. Black points are excursions of the Water Quality Standards and grey points are not. The plots are split into four sections for each parameter; from left to right: the first section shows annual data; the next section shows seasonal data; the next section shows the statewide distribution with the median for this lake displayed as a horizontal bar; the last section of text explains the legend for that plot, a brief description of the parameter, the median measurement, and a decadal trend statement. Asterisks indicate a significance test ($p<0.05$). The title on the y axis, tells which group each parameter belongs to. The x-axis describes the year of observation on the left, and the month on the right. The parameters sampled may vary from year to year depending on the focus of the sampling program.

Primary and Secondary Contact Recreation

The NYSDEC data collected to evaluate the recreation uses are reported here. Parameters sampled by NYSDEC to evaluate these uses are trophic parameters (total phosphorus), and other nutrient parameters (ammonia, nitrite, total dissolved solids) according to SOP 203. Although this is the standard sampling suite used by NYSDEC, it is not a comprehensive list of all water quality standards applicable to primary and secondary contact recreation uses.



Fishing

TThere are no data to complete a 2022 assessment of the Fishing use for Lake Rippowam. Parameters sampled by NYSDEC to evaluate this use are dissolved metals (aluminum, arsenic, copper, nickel, and zinc as well as hardness for specific standards calculations), nutrient parameters (ammonia, nitrite, total dissolved solids, as well as pH and temperature for specific standards calculations), and in situ parameters (dissolved oxygen, pH) according to SOP 203. Although this is the standard sampling suite used by NYSDEC, it is not a comprehensive list of all water quality standards applicable to fishing best use.

Trophic State

Trophic state refers to the overall biological productivity of a waterbody. Nutrient supply, light availability, regional climate, watershed

characteristics, and lake morphology influence a waterbody's trophic state. Based on the amount of overall productivity, waterbodies are classified into three main categories: oligotrophic, mesotrophic, and eutrophic. Chlorophyll A, total phosphorus, and secchi depth are used as indicators to determine trophic state classifications according thresholds defined in SOP 203.

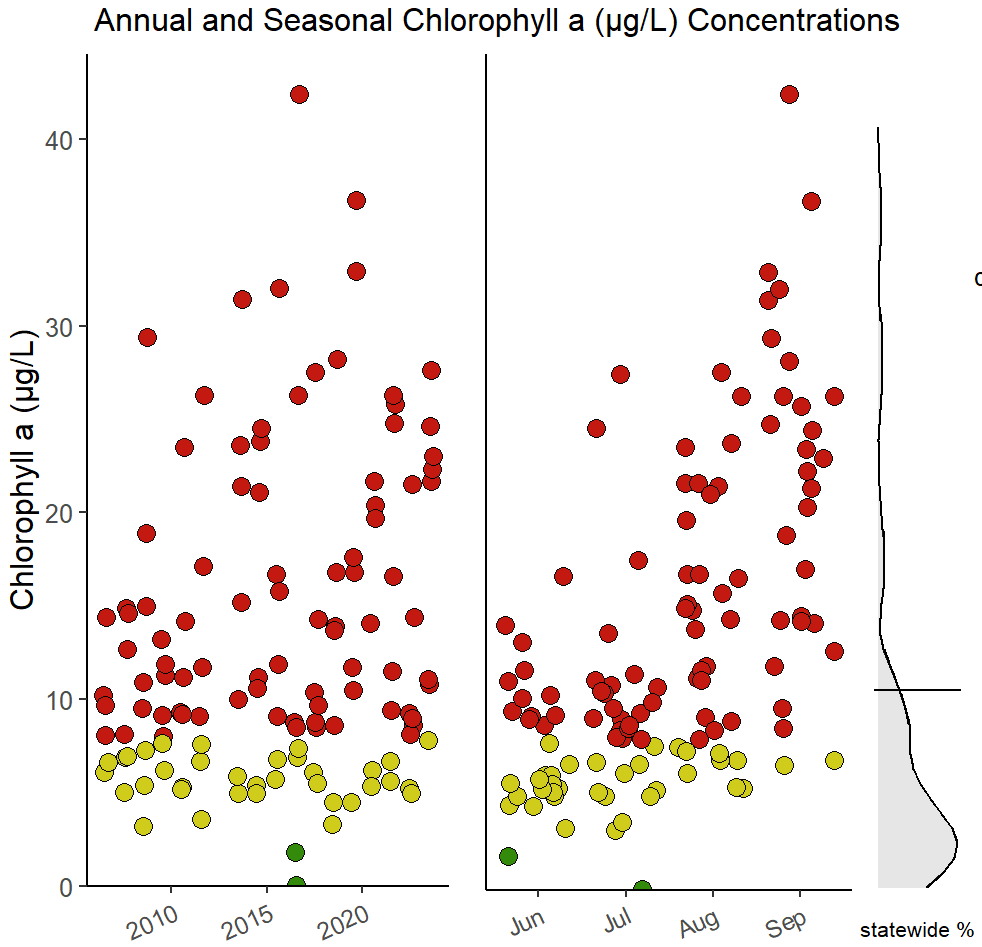
The trophic state of Lake Rippowam is Eutrophic.

> Oligotrophic lakes carry low levels of nutrients and have less productivity. These lakes are often clear, cold, and have high oxygen levels.

> Mesotrophic lakes are an intermediate classification between oligotrophic and eutrophic lakes. They contain a moderate amount of nutrients and support a healthy, diverse population of aquatic plants, animals, and algae.

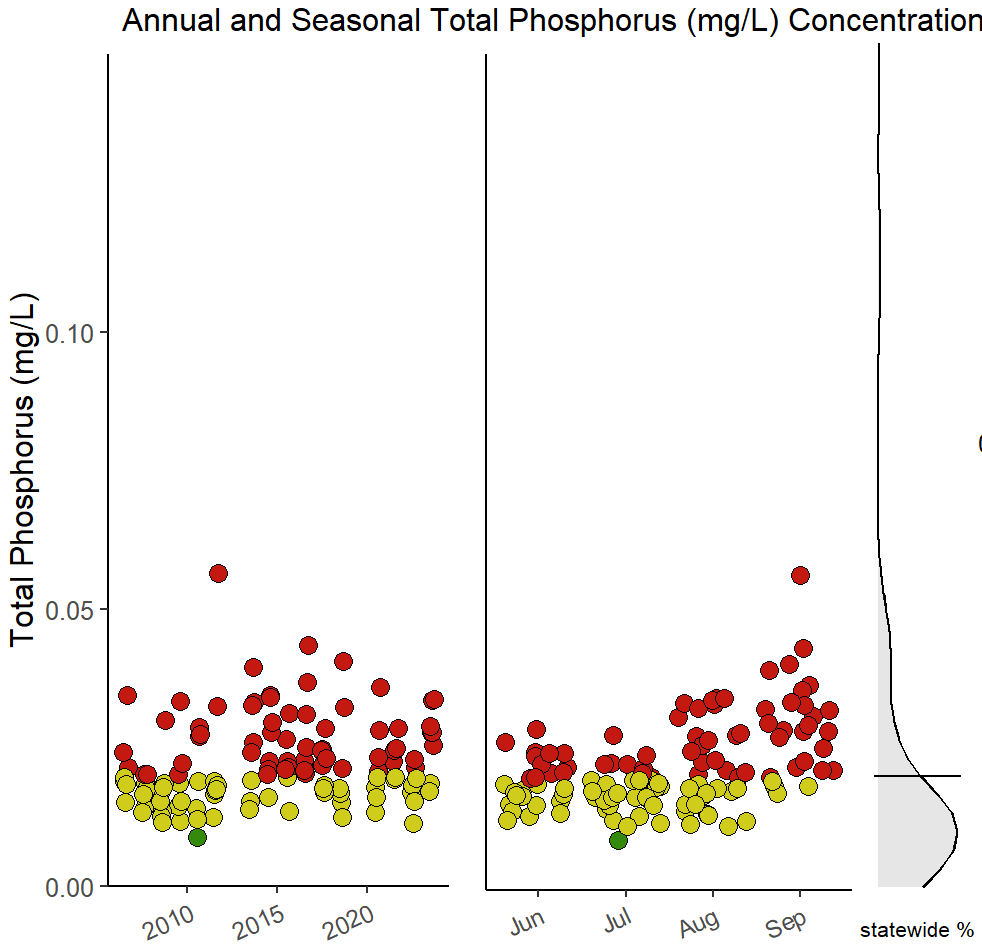
> Eutrophic lakes carry high levels of nutrients and have high productivity. These lakes may support an overgrowth of aquatic plants and/or algae. They are typically murky, warm, and have low oxygen levels.

How to read these plots: Each circle represents a single observation and is colored to highlight oligotrophic (green), mesotrophic (yellow), and eutrophic (red) conditions. The plots are split into four sections for each parameter; from left to right: the first section shows annual data; the next section shows seasonal data; the next section shows the statewide distribution with the median for this lake displayed as a horizontal bar; the last section of text explains the legend for that plot, a brief description of the parameter, the median measurement, a decadal trend statement, and a statement over the entire data record. Asterisks indicate a significance test ($p<0.05$). If there is enough data available, a gray trend line will be displayed on the annual plot.



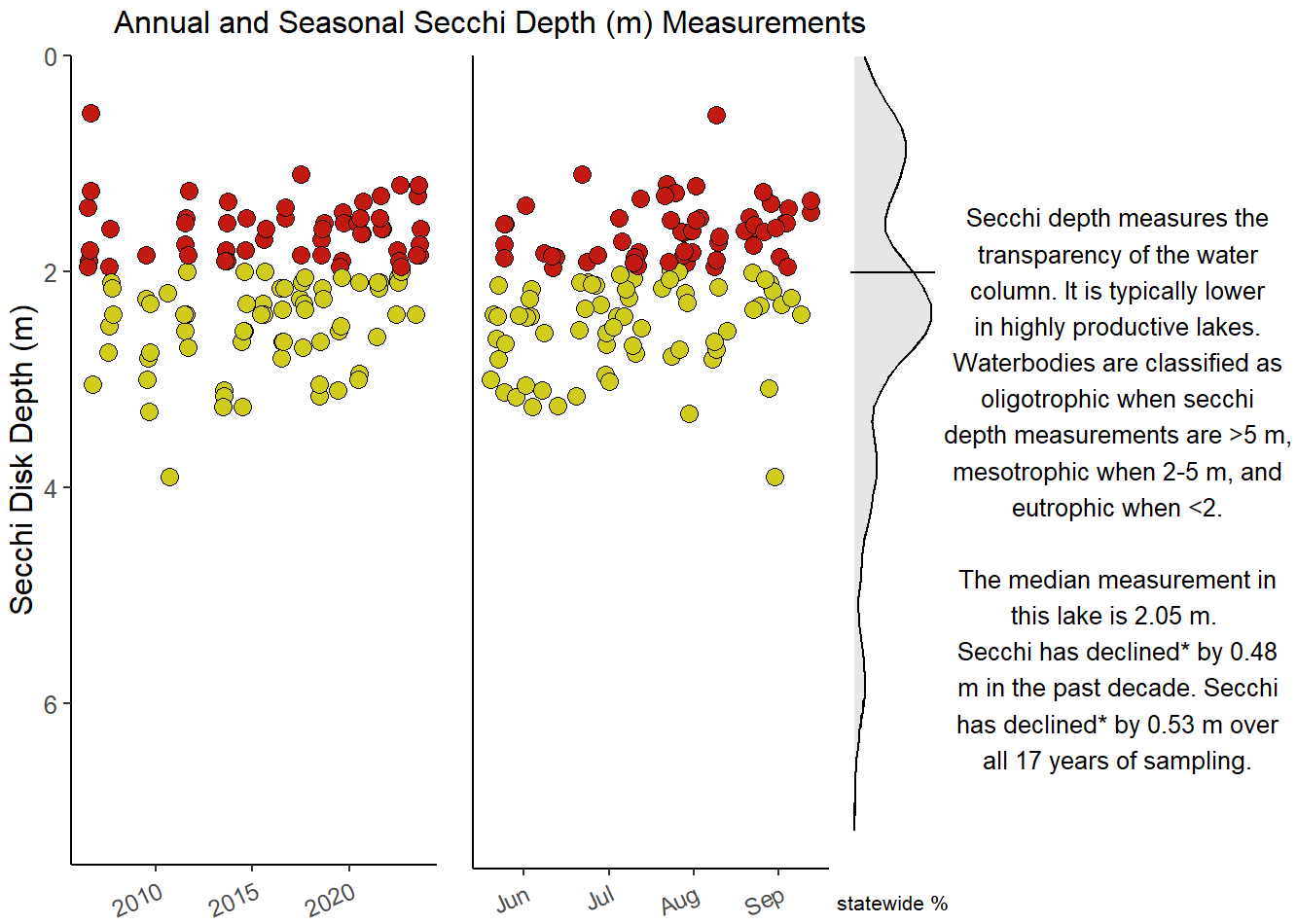
Chlorophyll a is the primary photosynthetic pigment in photosynthetic organisms, like algae. The levels of chlorophyll a measured have a direct relationship to the amount of algae in a waterbody. Waterbodies are classified as oligotrophic when chlorophyll a concentrations are <2 µg/L, mesotrophic when 2-8 µg/L, and eutrophic when >8 µg/L.

The median concentration in this lake is 10.5 µg/L. Chlorophyll A has not changed* in the past decade. Chlorophyll A has increased* by 4.9 ug/L over all 17 years of sampling.



Total phosphorus is a limiting nutrient for algal growth. Waterbodies are classified as, oligotrophic when total phosphorus concentrations are <0.01 mg/L, mesotrophic when 0.01-0.02 mg/L, and eutrophic when >0.02 mg/L.

The median concentration in this lake is 0.0202 mg/L. Phosphorus, Total has not changed* in the past decade. Phosphorus, Total has increased* by 0.0048 mg/L over all 17 years of sampling.



Secchi depth measures the transparency of the water column. It is typically lower in highly productive lakes. Waterbodies are classified as oligotrophic when secchi depth measurements are >5 m, mesotrophic when 2-5 m, and eutrophic when <2.

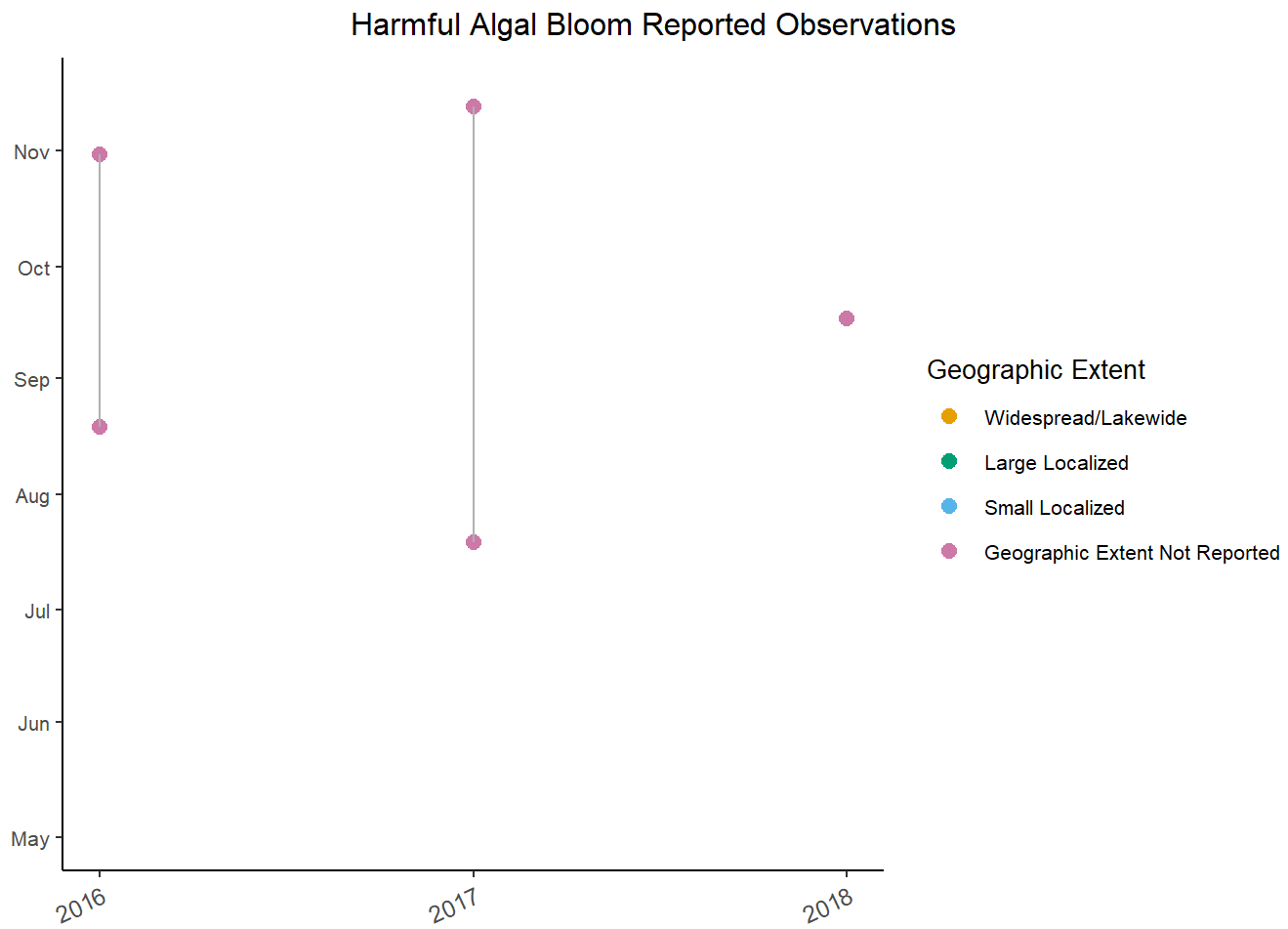
The median measurement in this lake is 2.05 m. Secchi has declined* by 0.48 m in the past decade. Secchi has declined* by 0.53 m over all 17 years of sampling.

HABs

Harmful Algal Bloom (HABs) are a concern in freshwater systems worldwide. They generally consist of visible patches of cyanobacteria, or blue-green algae, and may produce toxins. Under conditions with adequate nutrient availability, warm temperatures, and calm winds, cyanobacteria may multiply rapidly and form blooms that are visible on a waterbody's surface. Regardless of toxin presence, HABs may pose health risks to people and animals through pathways of ingestion, skin contact, or inhalation. NYSDEC documents the occurrence of HABs through a public reporting platform called the New York Harmful Algal Bloom System or NYHABS. Reports of HABs are confirmed through visual confirmation by NYSDEC staff and published on this platform. The NYHABS reporting platform opens to the public each year in May and typically closes in November. Though this is the HAB monitoring season, blooms may occur other times of the year. To learn more about HABs visit NYSDEC's HABs page. To report a HAB during the HAB monitoring season visit the NYHABS Notifications Page.

How to read this plot: The plot is a summary of HAB reported observations. Each circle represents a confirmed HAB report and the colors coincide with the observer estimated geographic extent of the bloom. The season on the y-axis proceeds in an upward direction, typically from

June (bottom) through October (top).



Invasive Species

Invasive species refers to introduced, non-native organisms that negatively impact an ecosystem. Rooted aquatic plants, algae, animals, bacteria, viruses, and insects can all be invasive species. The introduction of these organisms can adversely affect the environment or human health. Predators, parasites, and diseases that exist in these organisms' native habitat control the fast-paced reproduction and spreading that tend to occur in their introduced habitat. Invasive species are one of the greatest threats to New York State's biodiversity. They can be introduced and spread from international trade, connected waterways, aquarium releases, boaters or anglers who do not clean, drain, and dry their equipment correctly, dumped bait, and a variety of other ways. To learn more about invasive species visit NYSDEC's Aquatic Invasive Species page.

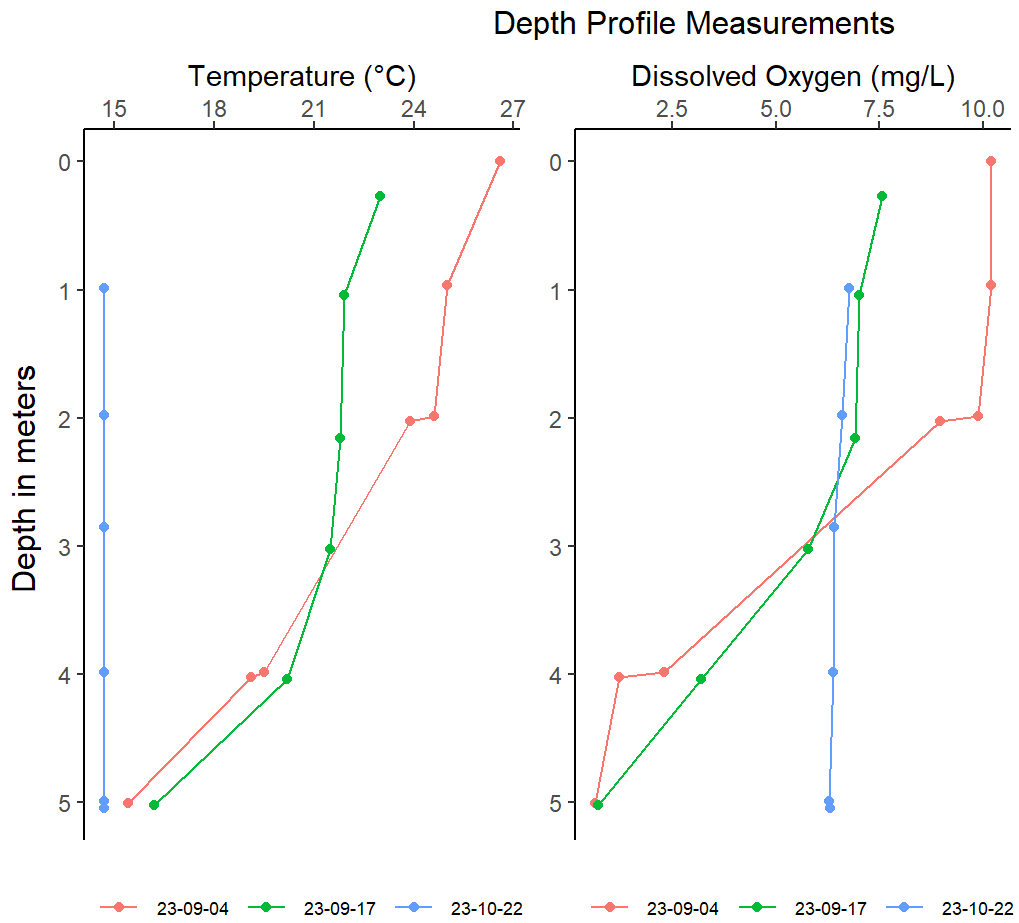
Invasive species have been reported in Lake Rippowam. This is the specific list of observations in this waterbody. Some species may have been eradicated since last reported. To report invasive species observations, please visit iMapInvasives.

Common Name	Scientific Name	Type
Eurasian Water-milfoil	*Myriophyllum spicatum*	Plant

Depth Profile

Depth profiles are measurements collected using an in-situ probe across the vertical profile of a waterbody and typically at the deepest location. The initial recording is taken at the surface and is then lowered by a meter for each subsequent observation. A measurement is taken at each interval until the probe is one meter off the bottom. Temperature, dissolved oxygen, pH, ORP, specific conductivity, turbidity, chlorophyll A, and phycocyanin measurements are collected through this process. The data collected are a valuable tool used to understand how conditions change with depth.

How to read these plots: Each colored line represents readings collected on a specific date. Each circle on the line represents a single observation collected from the profile of the water column that day. The plots start at the surface (0 meters) and work their way down the water column, with an observation at roughly every 1 meter. The title on the x axis represents each parameter collected from the depth profile.



Temperature drives the solubility of gases and solutes and is the primary driver of the density gradient in the water column. Solubility decreases with increasing temperature.

Dissolved Oxygen is the amount of oxygen that is present in water and is a direct indicator of its ability to support aquatic life. Levels may fluctuate but typically, the bottom of the water column has less oxygen than the surface.

Depth in meters

pH was not collected

ORP was not collected

pH is a quantitative measure of the acidity or basicity of liquids, based on hydrogen ion activity in the solution. Many organisms have narrow tolerances, and a shift in pH can have major effects on health and population numbers.

Oxidation-reduction potential (ORP) is typically measured to determine a substance's ability to oxidize or reduce another substance. It is a measure of the activity of electrons during a chemical reaction.

Depth in meters

Specific Conductivity was not collected

Turbidity was not collected

Specific conductivity measures dissolved ions that allow electrical currents to pass through a solution. Chloride, phosphate, nitrite, and other ions can enter a waterbody through weathering and/or anthropogenic sources.

Turbidity is another measure of water clarity, indicating how much suspended material is in the water. The more suspended material in a waterbody, the more turbid, or less clear, it becomes.

Depth in meters

Chlorophyll A was not collected

Phycocyanin was not collected

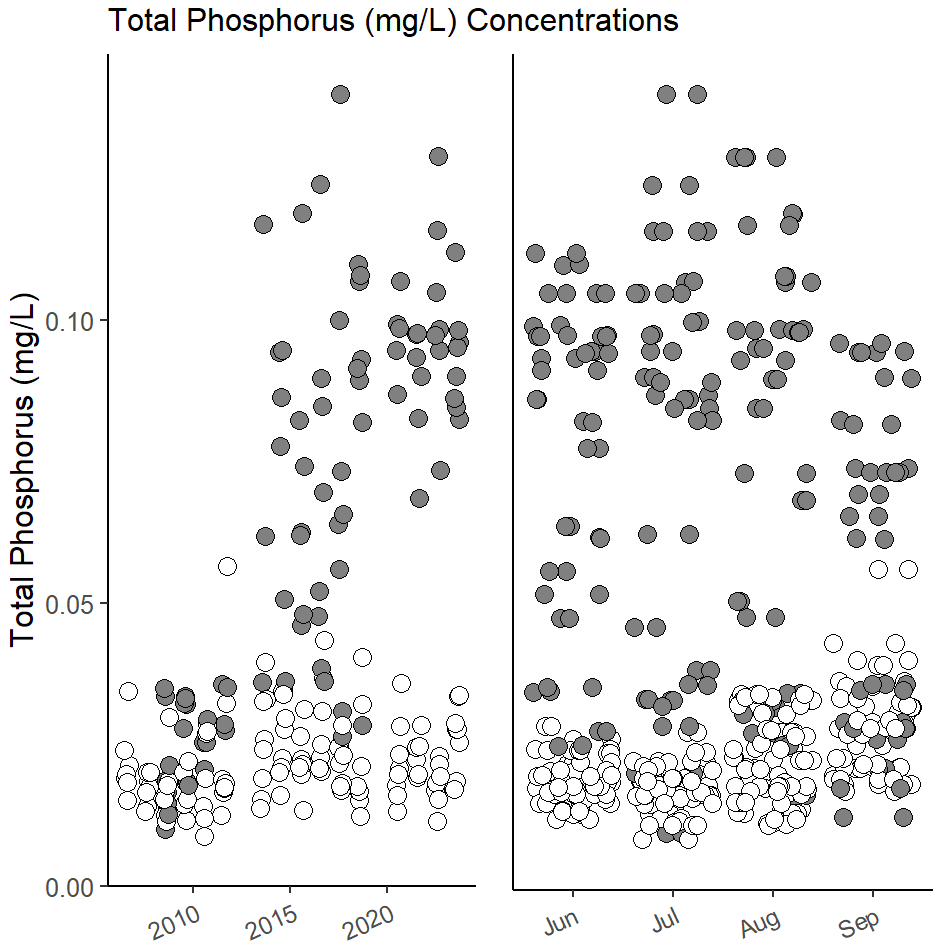
Chlorophyll a is the primary photosynthetic pigment in photosynthetic organisms like algae. The levels of chlorophyll a measured have a direct relationship to the amount of algae in a waterbody.

Phycocyanin is a measurement of pigments uniquely found in cyanobacteria. The concentration of phycocyanin in a waterbody is used as an indicator for relative cyanobacteria biomass.

Other Parameters

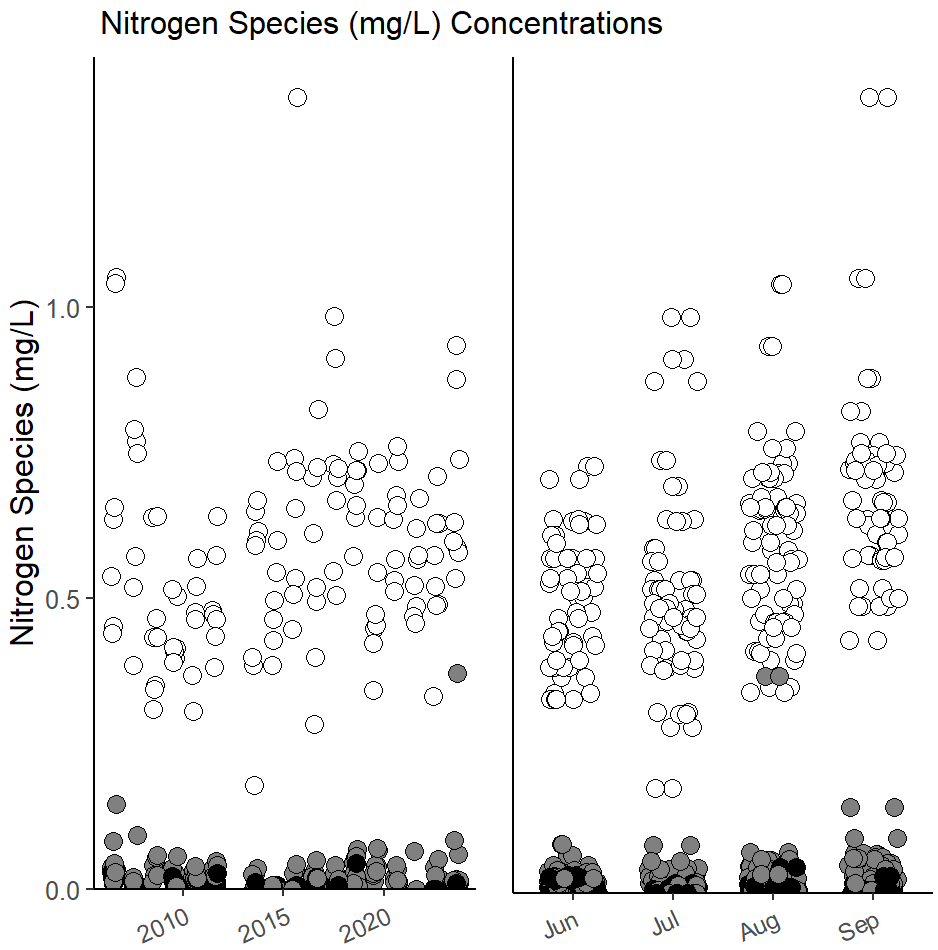
Additional parameters are analyzed to understand properties of the waterbody.

How to read these plots: Each circle represents a single observation on the waterbody. The plots are split into four sections for each parameter; from left to right: the first section shows annual data; the next section shows seasonal data; the next section shows the statewide distribution with the median for this lake displayed as a horizontal bar, if applicable; the last section of text explains the legend for that plot, a brief description of the parameter, the median measurement, and a decadal trend statement. Asterisks indicate a significance test ($p<0.05$). If there is enough data available, a gray trend line will be displayed on the annual plot. The colors of points within each plot are specific to each parameter; refer to the descriptions on the right-hand side of each plot for more information.



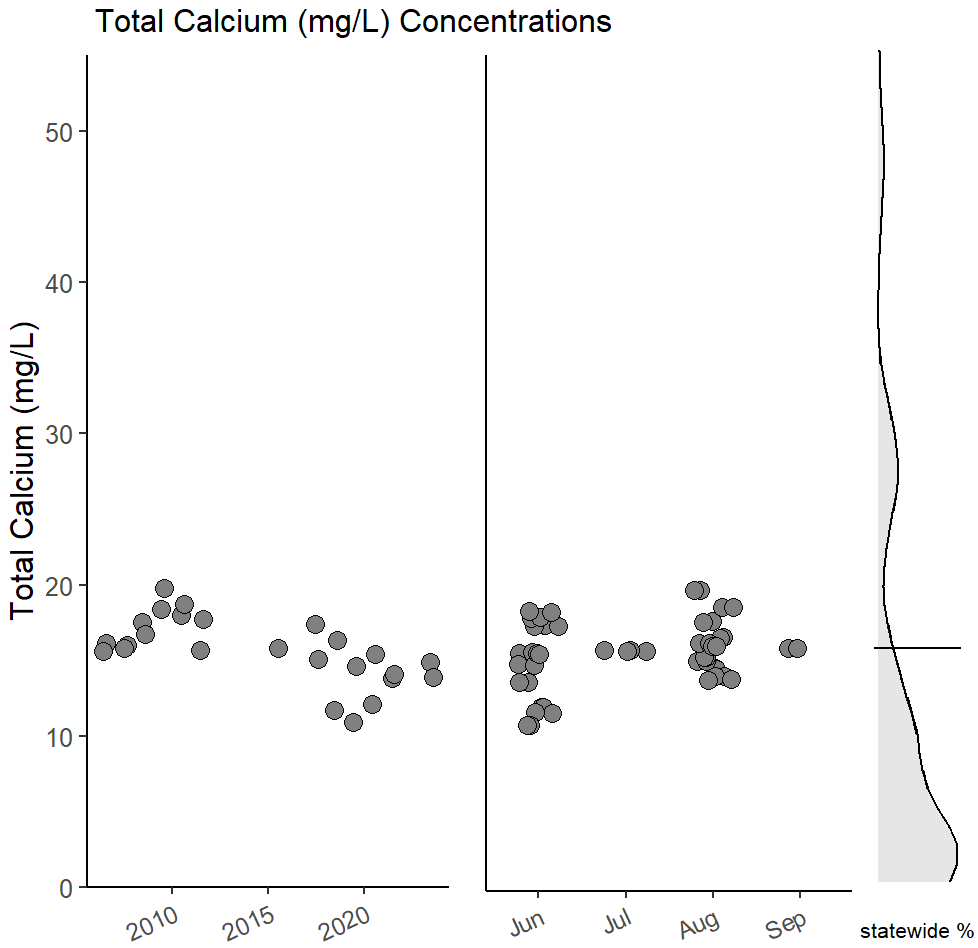
Total phosphorus is a limiting nutrient for algal growth and can vary across the vertical water column. Each circle corresponds to Surface Water (white) and Deep Water (gray) total phosphorus measurements.

The median surface water concentration of TP is 0.0201 mg/L. The median deep water concentration of TP is 0.082 mg/L.



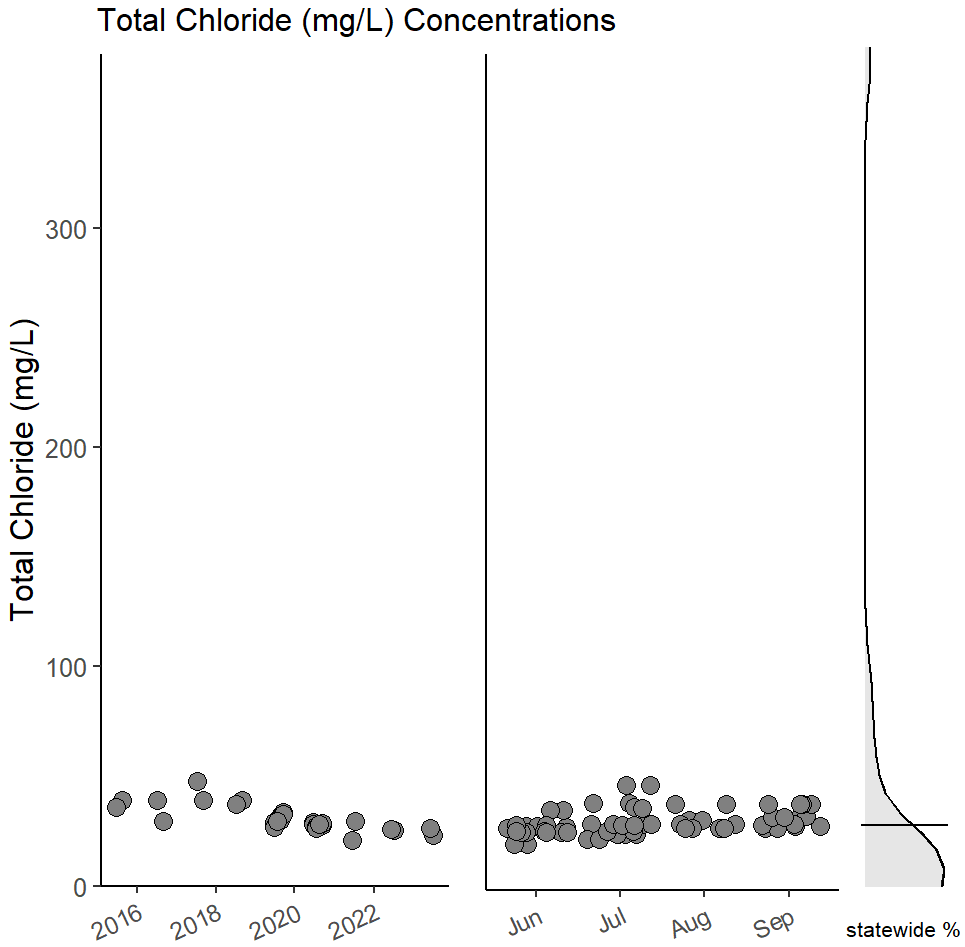
Each circle corresponds to the parameters of Total Nitrogen (white), Ammonia (As N) (gray), and Nitrate-Nitrite (black). Nitrogen occurs in waters as ammonia, nitrate, nitrite, or organic nitrogen. It is a critical nutrient that limits lake productivity but is not as limiting as phosphorus.

Nitrogen, Total has increased* by 0.094 mg/L in the past decade.
Ammonia has increased* by 0.012 mg/L in the past decade.
Nitrate-Nitrite has not changed* in the past decade.
The median concentrations were 0.567 , 0.007 , 0.0199 respectively.



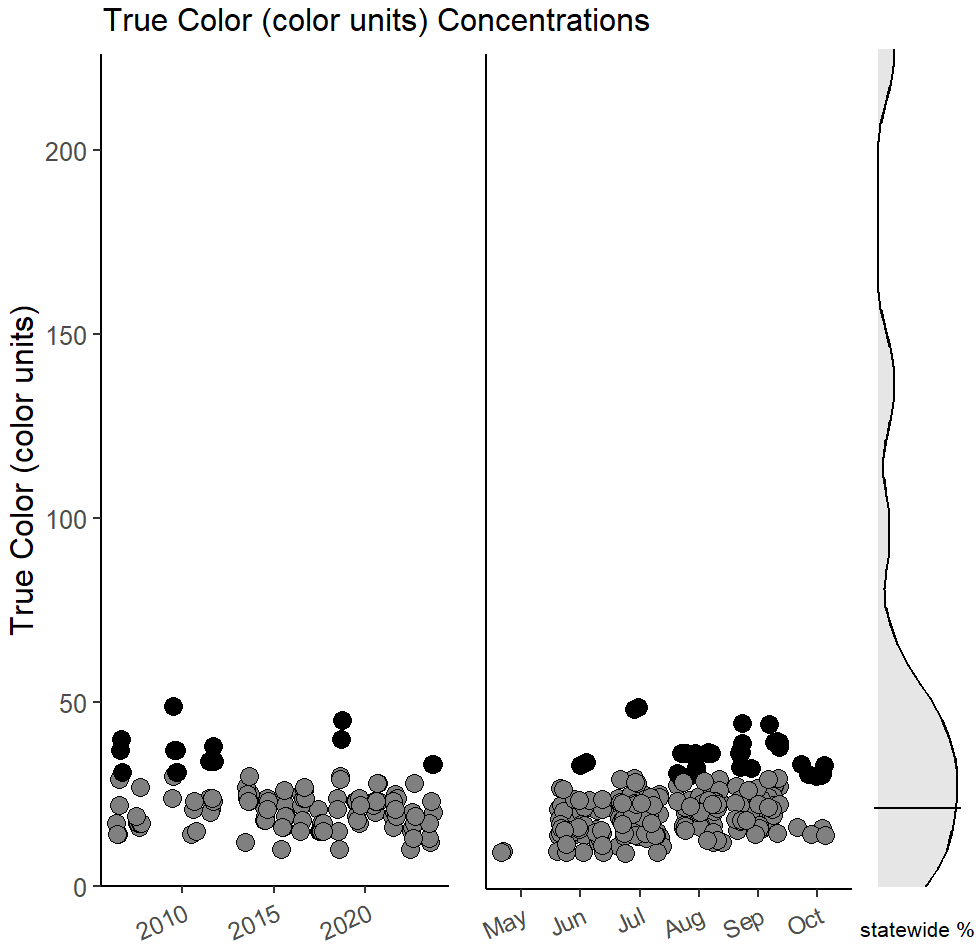
Each circle corresponds to Surface Water calcium measurements. The primary source of calcium in waterbodies is through weathering of bedrock. It is a critical element for many organisms' health and survival. Zebra mussels, for example, require a minimum concentration of 10 mg/L to establish a population in a lake.

The median concentration in this lake is 15.8 mg/L. Calcium, Total has not changed* in the past decade.



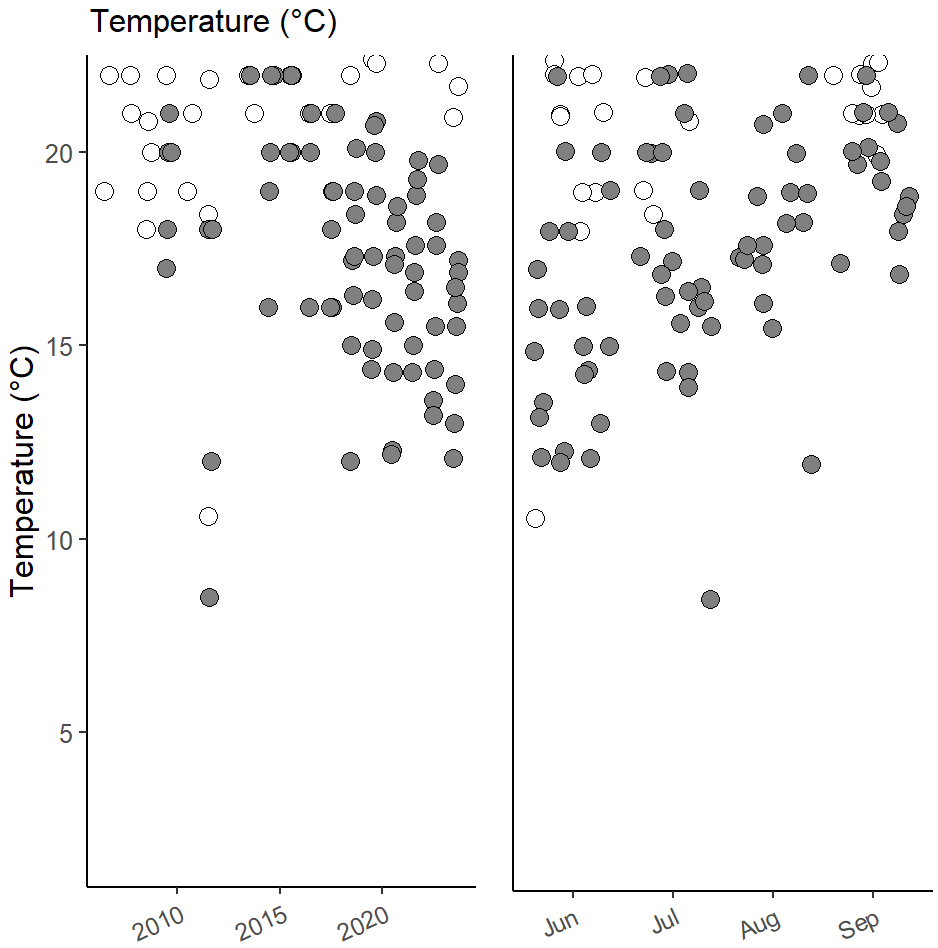
Each circle corresponds to Surface Water chloride measurements. Chloride is present in very low concentrations in most natural waterbodies. There are several natural sources of chloride, including rocks and halite deposits as well as anthropogenic sources including road salt, agriculture, and/or wastewater.

The median concentration in this lake is 29.1 mg/L. Chloride has declined* by 18 mg/L in the past decade.



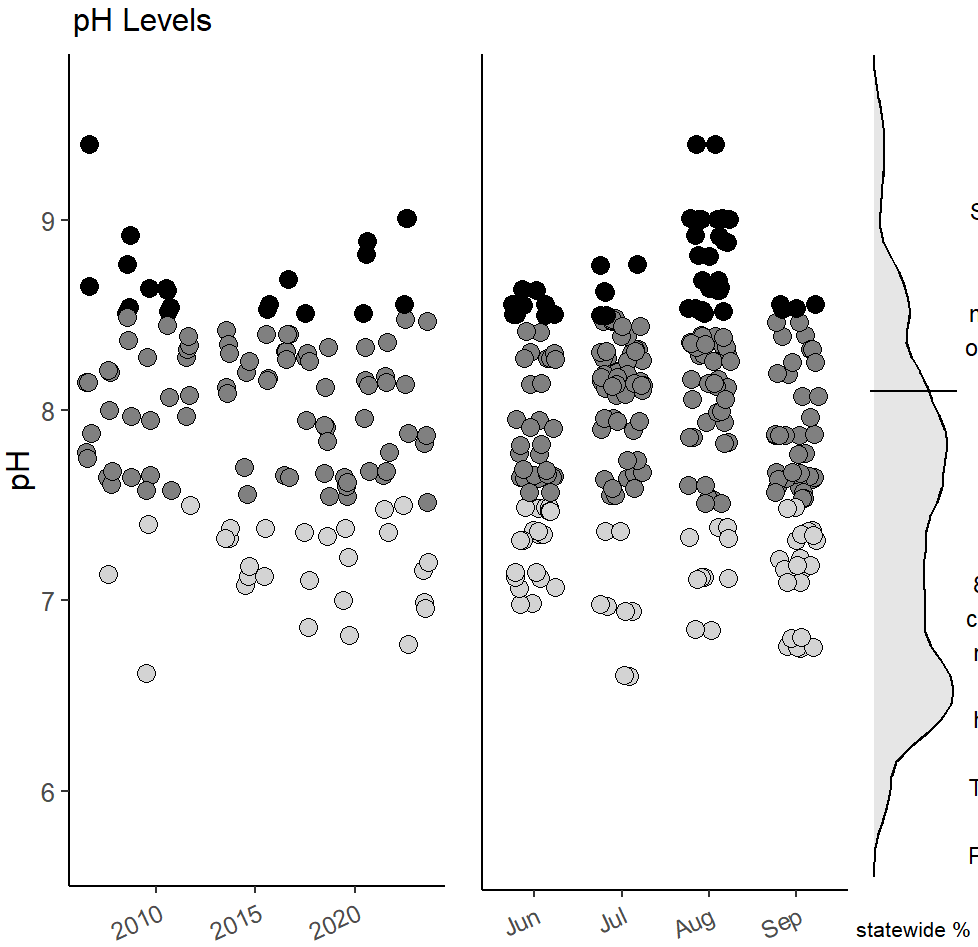
Each circle is colored to correspond to Uncolored (white), Weak Color (gray), and High Color (black). True color is the color of water after removal of suspended material. Color is used to provide information on the amount of dissolved organic matter in a waterbody.

The median concentration in this lake is 22 color units. True Color has not changed* in the past decade.



Each circle is colored to correspond to Surface Waters (white) and Deep Waters (gray). Water temperature is related to many other parameters of waterbodies. It affects the growth of plants and animals, the amount of oxygen in the water, and the length of the recreation season.

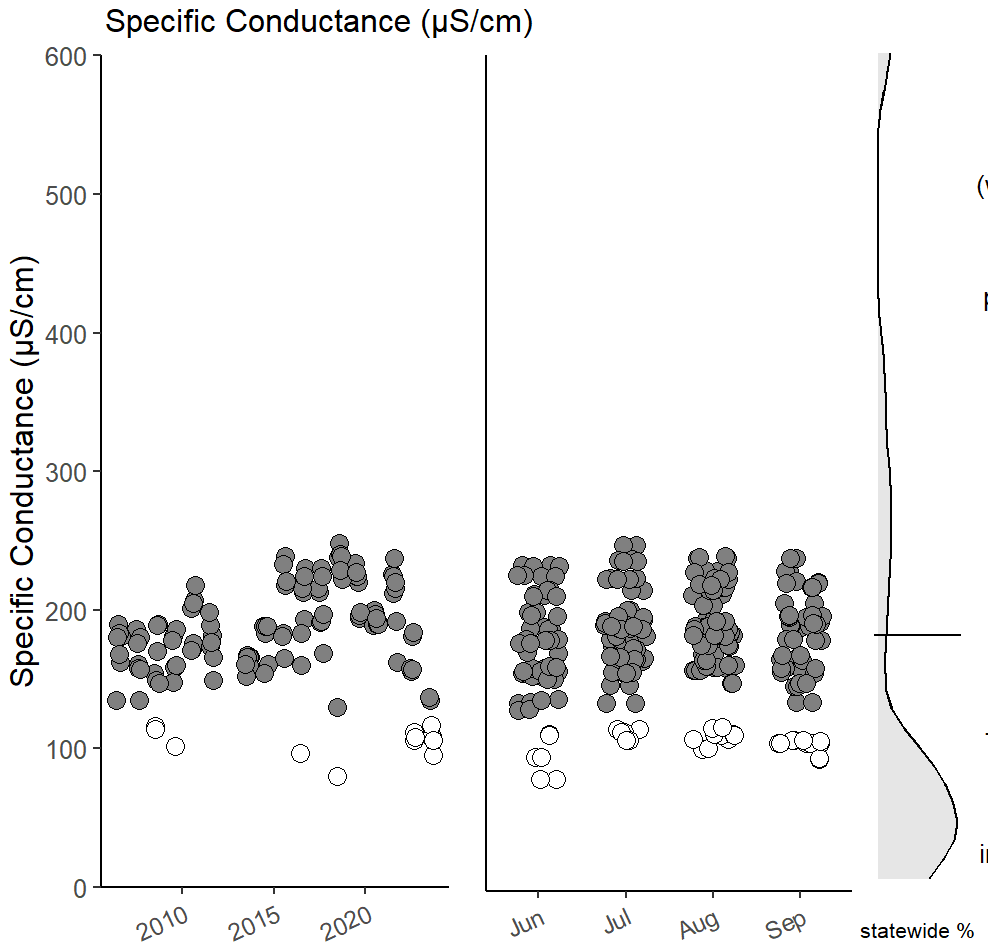
The median surface water temperature is 25 °C. Temperature, Surface has not changed* in the past decade. The median deep water temperature is 18.2 °C. Temperature, Deep has declined* by 8 deg C in the past decade.



Each circle is colored to correspond to Acidic (white), Circumneutral (light gray), Slightly Alkaline (dark gray), and Highly Alkaline (black) conditions. pH is a quantitative measure of the acidity or basicity of liquids, based on hydrogen ion activity in the solution. The pH scale ranges from 0-14, with values 0-6.5 indicating Acidic conditions, 6.5-7.5 being Circumneutral, and 7.5-8.5 indicating Slightly Alkaline, and 8.5-14 indicating Highly Alkaline conditions. Many organisms have narrow tolerances, and a shift in pH can have major effects on health and population numbers.

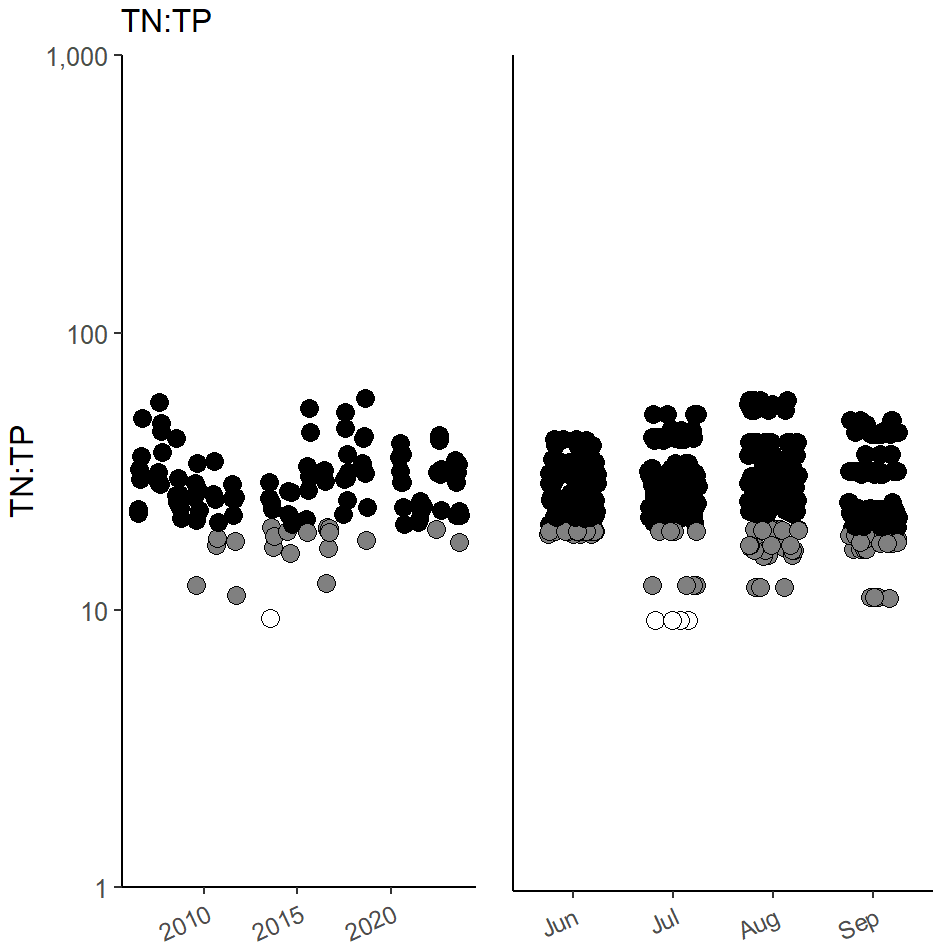
The median measurement in this lake is 8.07.

PH, Surface has not changed* in the past decade.



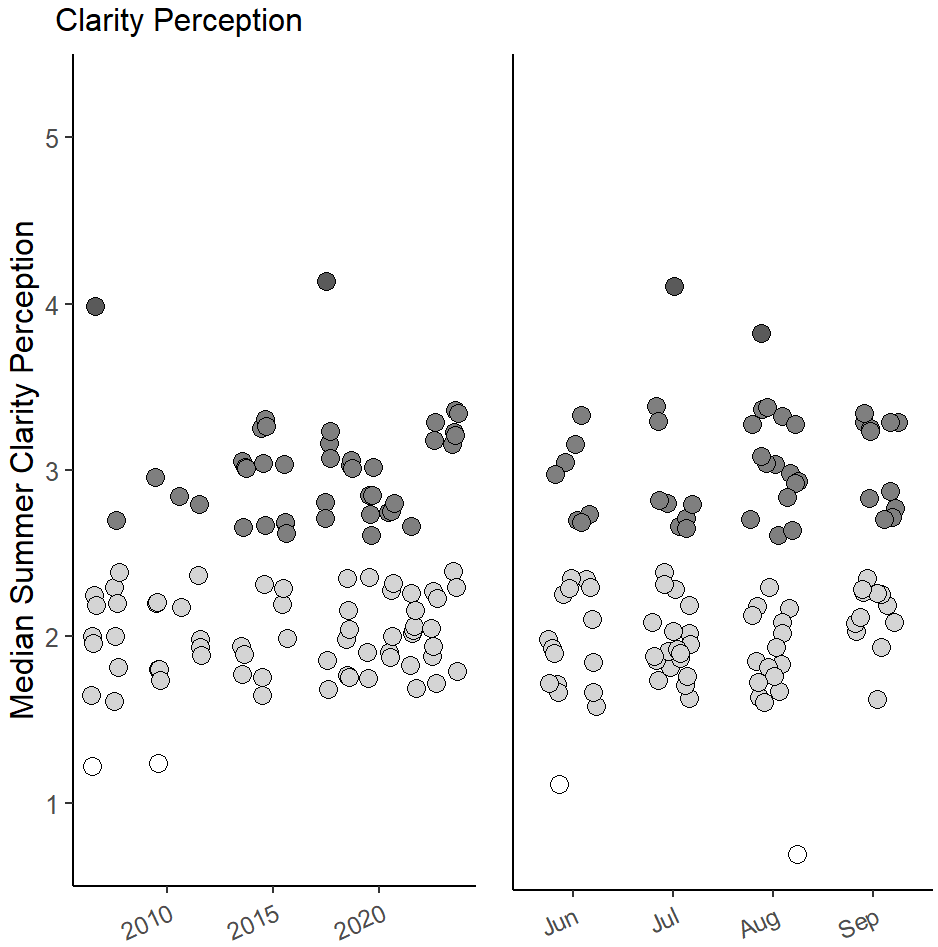
Each circle is colored to correspond to Softwater (white), Moderately Hardwater (gray), and Hardwater (black). Conductance is the presence of dissolved ions in water that allow the ability for electrical currents to pass. Chloride, phosphate, nitrite, and other ions can enter a waterbody from weathering as well as anthropogenic sources including road salt, agriculture, and/or wastewater.

The median measurement in this lake is 181 µS/cm. Specific Conductance has increased* by 56 uS/cm in the past decade.

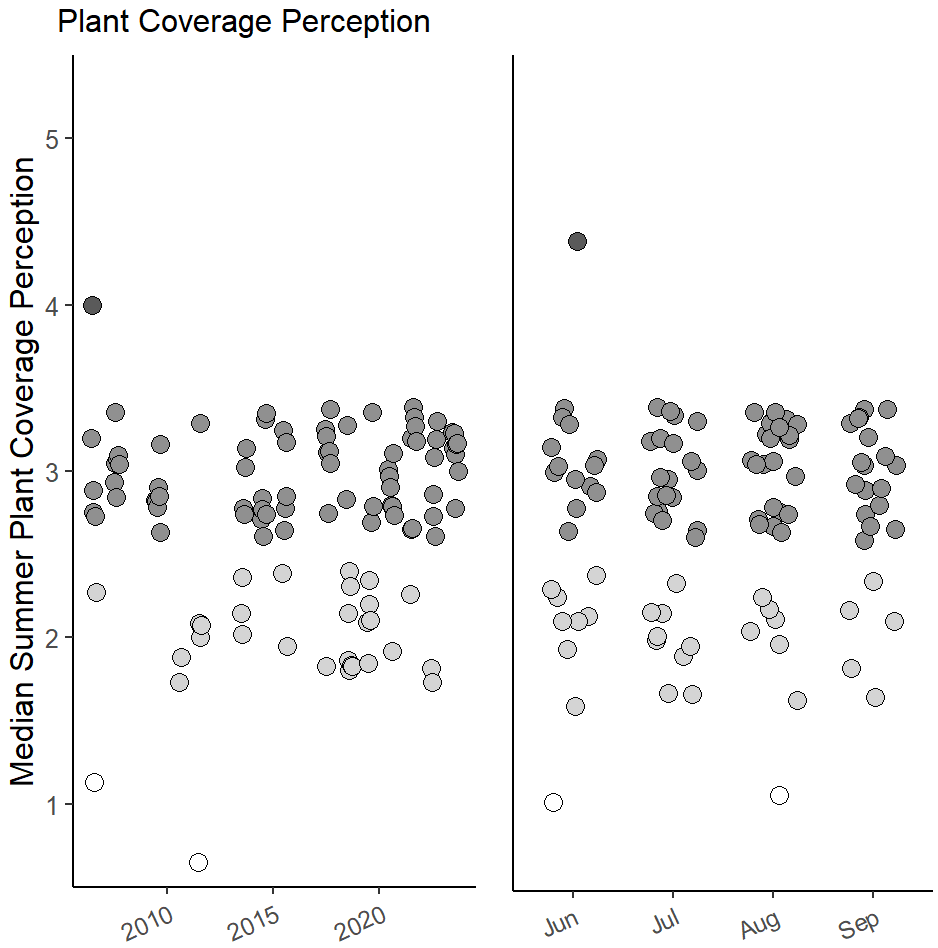


Each circle is colored to correspond to Nitrogen Limited (white), N or P Limited (gray), and Phosphorus Limited (black) conditions. Nitrogen and Phosphorus are the two primary nutrients in aquatic systems. Nutrient limitation and which phytoplankton species are dominant in a waterbody can be influenced by the Nitrogen to Phosphorus ratio.

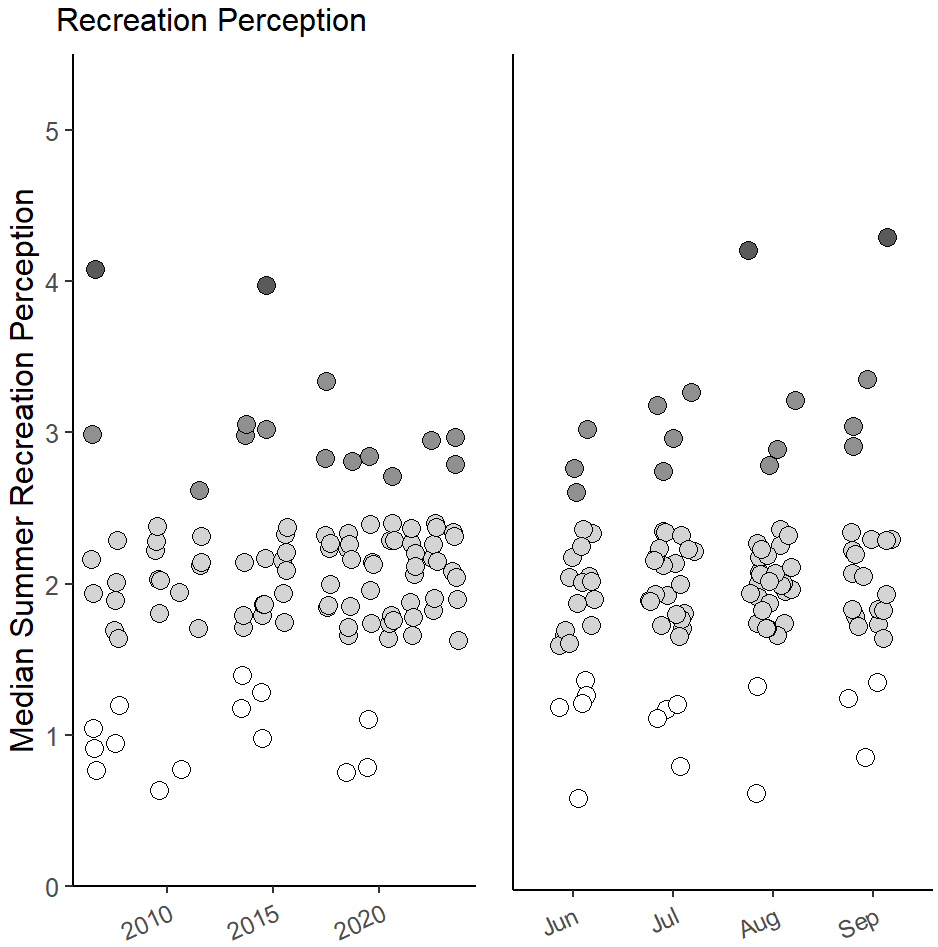
In this lake, the median ratio of TN:TP is 27.1.



Each circle is colored to correspond to the conditions, relating to clarity, of crystal clear (white), minimal algae (light gray), moderate algae (gray), high algae (dark gray), and severely high algae (black). Lake perception is an alternative measure of water quality and its aesthetic collected from an individual on the waterbody through a series of questions about anthropogenic uses. Water clarity is the transparency of the water column. Suspended particles and/or algae can cloud visibility and affect the amount of light that can penetrate the water column.



Each circle is colored to correspond to the conditions, relating to plant coverage, of no plants visible (white), minimal plants visible underwater (light gray), moderate plant growth at surface (gray), dense plant growth at surface (dark gray), and dense plant growth across entire surface (black). Lake perception is an alternative measure of water quality and its aesthetic collected from an individual on the waterbody through a series of questions about anthropogenic uses. Excessive plant growth can be associated with nutrient pollution, which affects aesthetic enjoyment and constrains recreational activities.



Each circle is colored to correspond to the conditions, relating to recreation, of beautiful, could not be nicer (white), very minor aesthetic problems - excellent for overall use (light gray), swimming and aesthetic enjoyment slightly impaired (gray), desire to swim and aesthetic enjoyment substantially reduced (dark gray), and swimming and aesthetic enjoyment impossible (black). Lake perception is an alternative measure of water quality and its aesthetic collected from an individual on the waterbody through a series of questions about anthropogenic uses. Recreation is the most common use designation of waterbodies and can be directly affected by aesthetic quality.

Data

Sample Locations

Results reported in the data tables were collected from the following locations:

Results

HAB Reports