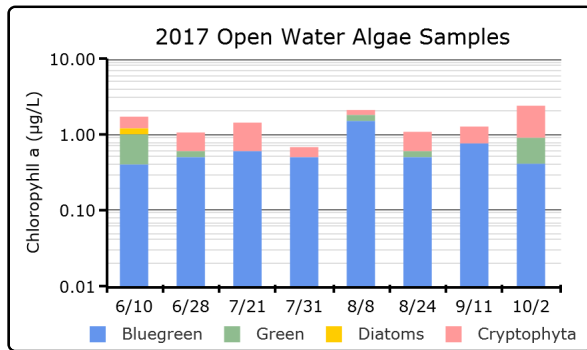


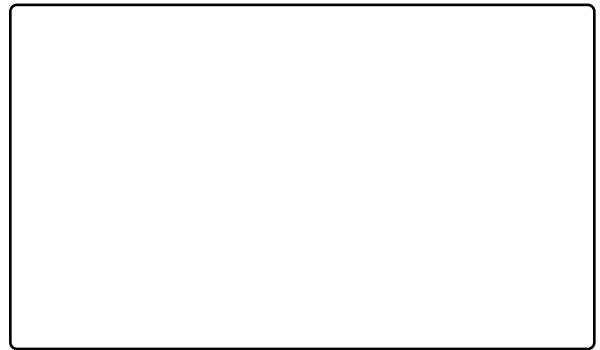


## HAB Status

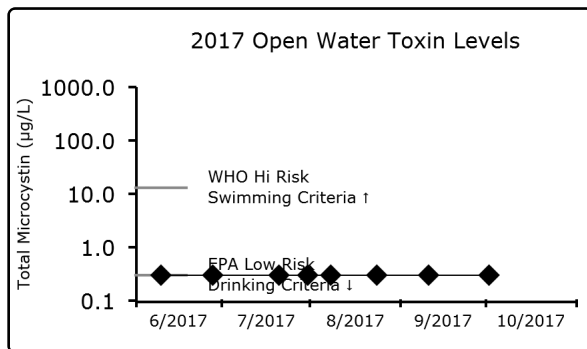
2017 Open Water Algae Samples



2017 Shoreline Algae Samples



2017 Open Water Toxin Levels

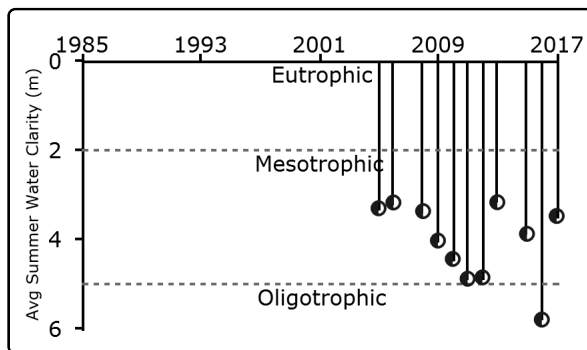


2017 Shoreline Toxin Levels

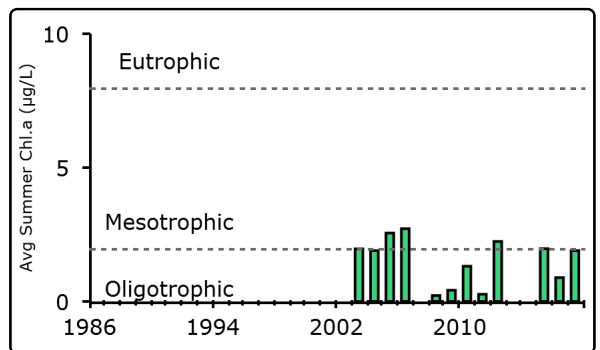


## Schroon Lake Long Term Trend Analysis

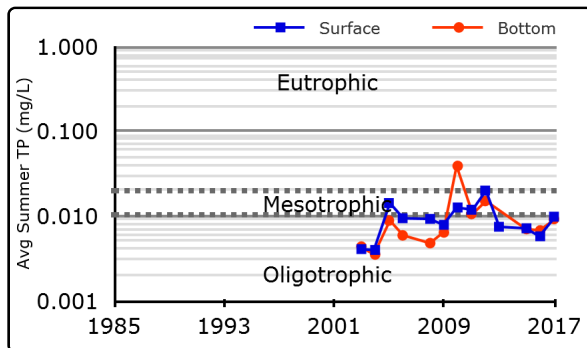
Clarity



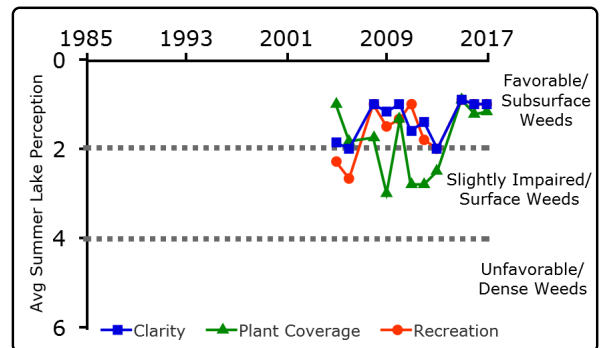
Chlorophyll a



Surface and Deep Phosphorus

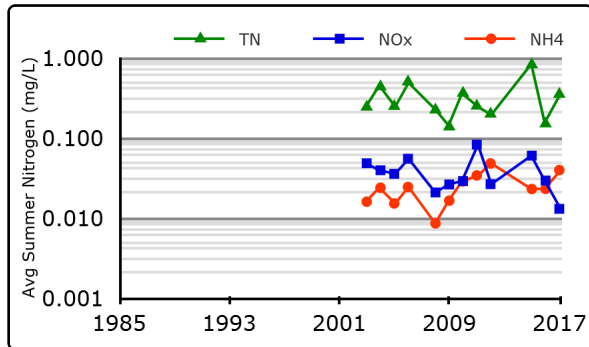


Lake Perception

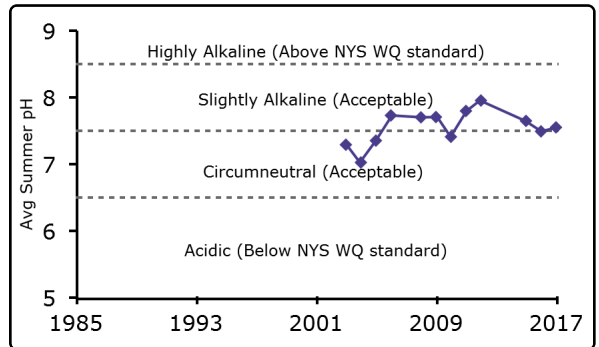


# Schroon Lake Long Term Trend Analysis

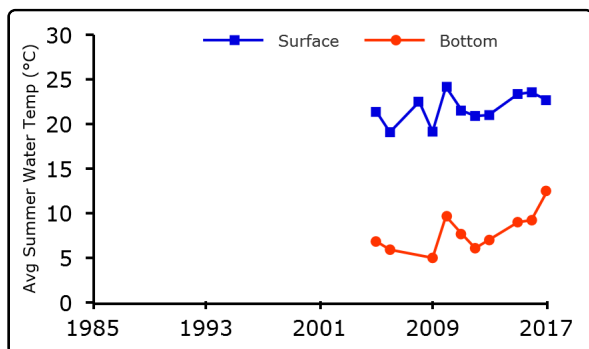
## Nitrogen



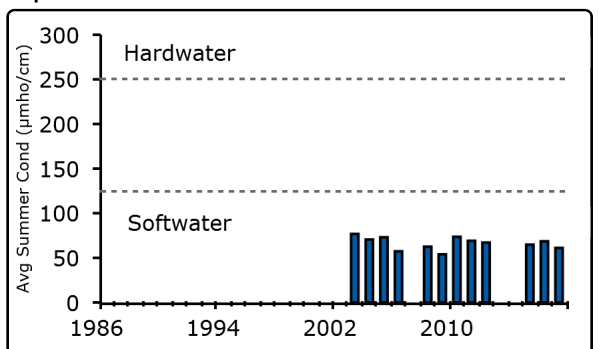
## pH



## Temperature

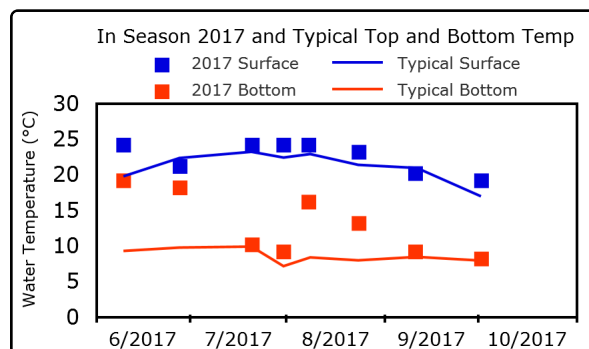


## Specific Conductance

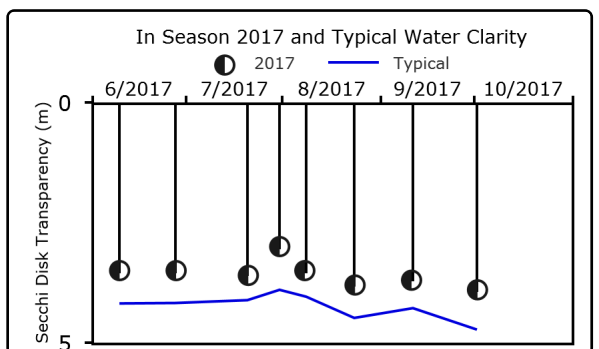


# Schroon Lake In-Season Analysis

## In Season Temperature
























## In Season Water Clarity



# Scorecard

## Lake Use

Potable Water				Bottom pollutants
Swimming				No impacts
Recreation				Elevated nutrients
Aquatic Life				Invasive animals
Aesthetics				Invasive plants
Habitat				Invasive plants
Fish Consumption				Not applicable


PWL


Average  
Year


2017


Primary Issue

 Supported/Good

 Threatened/Fair

 Stressed/Poor

 Impaired

 Not Known

## Summary

**2017 compared to prior years:** The south basin of Schroon Lake continues to be *mesoligotrophic*, or moderately unproductive, based on very low nutrient levels and intermediate water clarity and algae levels. Water transparency was slightly higher than usual, despite algae levels (chlorophyll *a*) that were also slightly higher than usual (and phosphorus readings that were close to normal). Each of the other water quality indicators was similar to normal in 2017. A spike in surface phosphorus readings in late August (probably unrelated to the earlier deepwater TP increase) was verified by other sampling. This did not appear to influence other water quality indicators.

**Compared to nearby lakes:** The south basin of Schroon Lake has similar water clarity, but lower nutrient and algae levels, than other nearby (eastern Adirondack region) lakes. Aquatic plant coverage is lower than in many of these other lakes, although extensive weed growth occurs in some nearshore areas. Chloride levels were between the 25<sup>th</sup> and 50<sup>th</sup> percentile for New York state lakes, indicating a slight potential for aquatic life impacts from road salt (and no impacts have not been reported). Organic contaminants limit consumption of lake trout, yellow perch and smallmouth bass in specific size ranges, as reported in <https://www.health.ny.gov/publications/2779.pdf>.

**Comparison to other sites on the lake:** Conductivity and deepwater phosphorus levels were slightly higher in the northern basin. Water clarity is slightly higher in the southern basin than in the northern basin, consistent with slightly lower algae levels. However, nutrient levels are similar in both basins, and the differences between the two basins may be small. The surface TP increase in late August was seen in both sampling sites, suggesting this may have been driven by weather or other short-term factors.

**Trends:** Deepwater temperatures in the south basin have increased slightly over the last three decades, but this may be associated with slight differences in sample or lake depth than actual changes. Recreational perception has improved slightly over the last several decades, but this was not in response to improvements in water quality perception or aquatic plant coverage. So this apparent improvement may just reflect normal variability.

**Algal blooms and HABs:** Schroon Lake has exhibited highly ephemeral shoreline blooms in the past, but blooms dissipated before samples could be collected to verify bloom conditions. Open water blooms have not been reported, and the lake does not appear to be susceptible to these blooms. The open water algae communities in both basins are low and comprised of a mix of algae species. Toxin levels are consistently low. No blooms were reported in the lake in 2017.

**Aquatic invasive species:** Eurasian watermilfoil, curly leafed pondweed and rudd have been found in Schroon Lake, indicating a high vulnerability to AIS introductions. Calcium levels are too low to support zebra mussels.

**Indicated Actions:** Individual stewardship activities such as pumping your septic system, growing a buffer of native plants next to the water bodies, and reducing erosion from shoreline properties and runoff into the lake will help to improve lake health by reducing nutrient and sediment loading to the lake. Visiting boats should be inspected to reduce the risk of new invasive species, and continued monitoring for invasive species is warranted. Continued algae bloom education and monitoring is recommended. Shoreline blooms should be avoided, even though blooms have not routinely been reported on the lake.

## How to Read the Report

This guide provides a description of the CSLAP report by section and a glossary. The sampling site is indicated in the header for lakes with more than one routine sampling site.

### **Physical Characteristics influence lake quality:**

- Surface area is the lake's surface in acres and hectares.
- Max depth is the water depth measured at the deepest part of the lake in feet and meters.
- Mean depth is either known from lake bathymetry or is 0.46 of the maximum depth.
- Retention time is the time it takes for water to pass through a lake in years. This indicates the influence of the watershed on lake conditions.
- Lake classification describes the "best uses" for this lake. Class AA, AAspec, and A lakes may be used as sources of potable water. Class B lakes are suitable for contact recreational activities, like swimming. Class C lakes are suitable for non-contact recreational activities, including fishing, although they may still support swimming. The addition of a T or TS to any of these classes indicates the ability of a lake to support trout populations and/or trout spawning.
- Dam classification defines the hazard class of a dam. Class A, B, C, and D dams are defined as low, intermediate, high, or negligible/no hazard dams in that order. "0" indicates that no class has been assigned to a particular dam, or that no dam exists.

### **Watershed characteristics influence lake water quality:**

- Watershed area in acres and hectares
- Land use data come from the most recent (2011) US Geological Survey National Land Use Cover dataset

**CSLAP Participation** lists the sampling years and the current year volunteers.

### **Key lake status indicators summarize lake conditions:**

- Trophic state of a lake refers to its nutrient loading and productivity, measured by phosphorus, algae, and clarity. An oligotrophic lake has low nutrient and algae levels (low productivity) and high clarity while a eutrophic lake has high nutrient and algae levels (high productivity) and low clarity. Mesotrophic lakes fall in the middle.
- Harmful algal bloom susceptibility summarizes the available historical HAB data and indicates the potential for future HAB events.
- Invasive vulnerability indicates whether aquatic invasive species are found in this lake or in nearby lakes, indicating the potential for further introductions.
- Priority waterbody list (PWL) assessment is based on the assessment of use categories and summarized as fully supported, threatened, stressed,

impaired, or precluded. Aesthetics and habitat are evaluated as good, fair, or poor. The cited PWL assessment reflects the “worst” assessment for the lake. The full PWL assessment can be found at <http://www.dec.ny.gov/chemical/36730.html#WIPWL>.

### **Current year sampling results**

- Results for each of the sampling sessions in the year are in tabular form. The seasonal change graphically shows the current year results. Red shading indicates eutrophic readings.
- HAB notification periods on the DEC website, updated weekly <http://www.dec.ny.gov/chemical/83310.html>
- Shoreline HAB sample dates and results. Samples are collected from the area that appears to have the worst bloom. Red shading indicates a confirmed HAB.
- HAB sample algae analysis. Algae types typically change during the season. These charts show the amount of the different types of algae found in each mid-lake or shoreline sample. Samples with high levels of BGA are HABs. The second set of charts show the level of toxins found in open water and shoreline samples compared to the World Health Organization (WHO) guidelines.
- If there are more than ten shoreline bloom samples collected in a year, bloom sample information is instead summarized by month (May-Oct.) as minimum, average, and maximum values for blue-green algae and microcystin.

**Long Term Trend Analysis** puts the current year findings in context. Summer averages (mid-June thru mid-September) for each of the CSLAP years show trends in key water quality indicators. The graphs include relevant criteria (trophic categories, water quality standards, etc.) and boundaries separating these criteria.

**In-Season Analysis** shows water temperature and water clarity during the sampling season. These indicate seasonal changes and show the sample year results compared to the typical historical readings for those dates.

**The Lake Use Scorecard** presents the results of the existing Priority Waterbody List assessment for this lake in a graphical form and compares it to information from the current year and average values from CSLAP data and other lake information. Primary issues that could impact specific use categories are identified, although more issues could also affect each designated use.

**The Lake Summary** reviews and encapsulates the data in the lake report, and provides suggested actions for lake management.



## Glossary of water quality and HAB indicators

**Clarity (m):** The depth to which a Secchi disk lowered into the water is visible, measured in meters. Water clarity is one of the trophic indicators for each lake.

**TP (mg/L):** Total phosphorus, measured in milligrams per liter at the lake surface (1.5 meters below the surface). TP includes all dissolved and particulate forms of phosphorus.

**Deep TP:** Total phosphorus measured in milligrams per liter at depth (1-2 meters above the lake bottom at the deepest part of the lake)

**TN:** Total nitrogen, measured in milligrams per liter at the lake surface. TN includes all forms of nitrogen, including **NO<sub>x</sub>** (nitrite and nitrate) and **NH<sub>4</sub>** (ammonia).

**N:P Ratio:** The ratio of total nitrogen to total phosphorus, unitless (mass ratio). This ratio helps determine if a lake is phosphorous or nitrogen limited.

**Chl.a (µg/L):** Chlorophyll a, measured in micrograms per liter. Indicates the amount of algae in the water column.

**pH:** A range from 0 to 14, with 0 being the most acidic and 14 being the most basic or alkaline. A healthy lake generally ranges between 6.5 and 8.5.

**Cond (µmho/cm):** Specific conductance is a measure of the conductivity of water. A higher value indicates the presence of more dissolved ions. High ion concentrations indicate hardwater, and low show softwater.

**Upper Temp (°C):** Surface temperature, measured in degrees Celsius

**Deep Temp (°C):** Bottom temperature, measured in degrees Celsius

**BG Chl.a (µg/L):** Chlorophyll a from blue-green algae, measured in micrograms per liter

**HABs: Harmful Algal Blooms.** Algal blooms that have the appearance of cyanobacteria (BGA)

**BGA:** Blue-green algae, also known as cyanobacteria

**Microcystin (µg/L):** The most common HAB liver toxin; total microcystin above 20 micrograms per liter indicates a “high toxin” bloom. However, ALL BGA blooms should be avoided, even if toxin levels are low.

**Anatoxin-a (µg/L):** A toxin that may be produced in a HAB which targets the central nervous system. Neither EPA nor NYS has developed a risk threshold for anatoxin-a, although readings above 4 micrograms per liter are believed to represent an elevated risk.