



Citizen Lake Monitoring Report



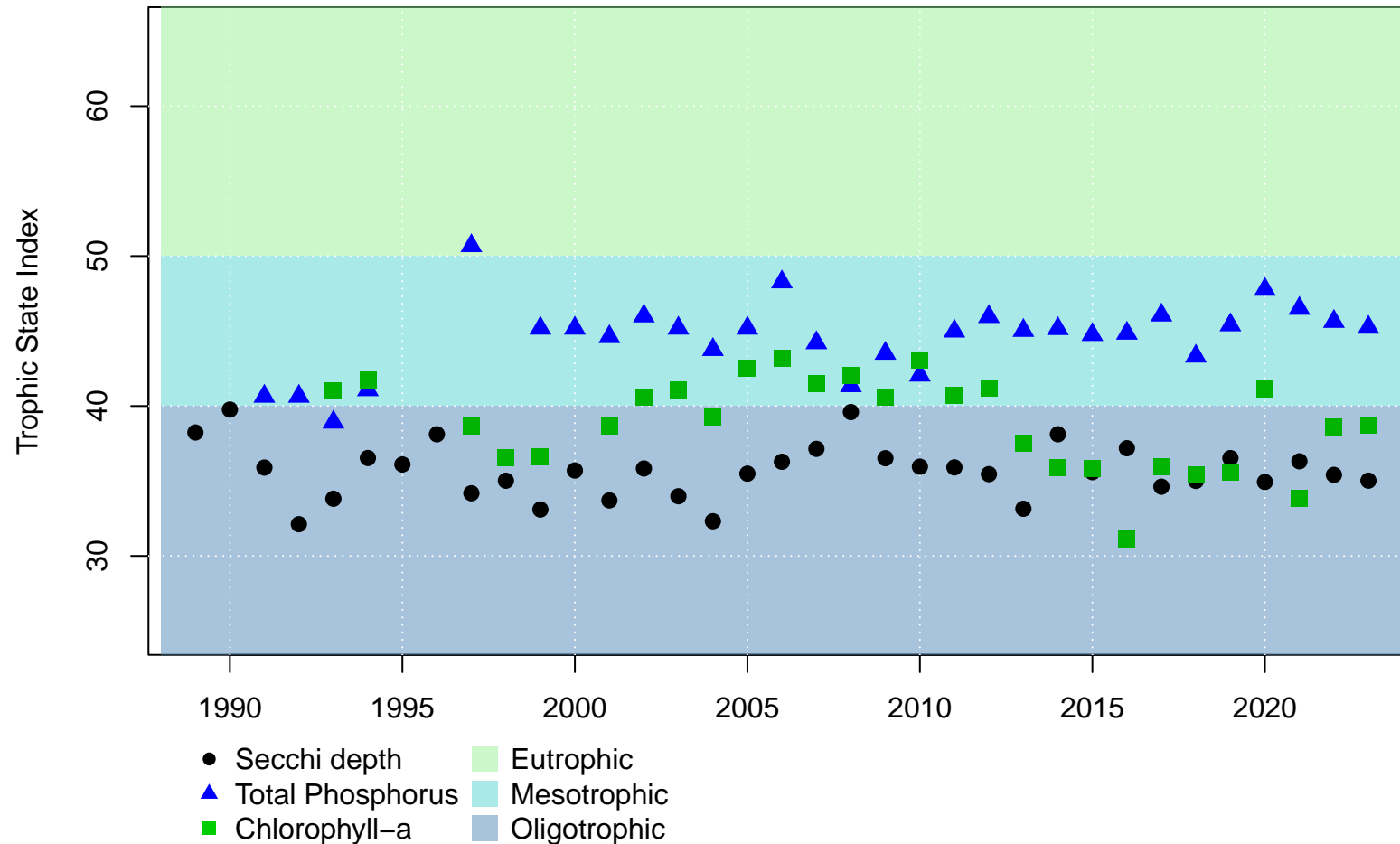
Report year: 2023
Waterbody name: Squash Lake
WBIC: 1019500
Station ID: 443264
County: Oneida County
Lake area: 398 acres
Max. depth: 74 feet
Lake type: Deep Seepage

This report contains information that summarizes data routinely collected by the Citizen Lake Monitoring Network.

- p. 2–3: Plots summarizing the trophic status and clarity of this lake over time.
- p. 4–6: Trends over time in water clarity, total phosphorus, and chlorophyll–a
- p. 7+: Tables of observations made during the selected report year, and temperature and dissolved oxygen profiles.



Trophic State



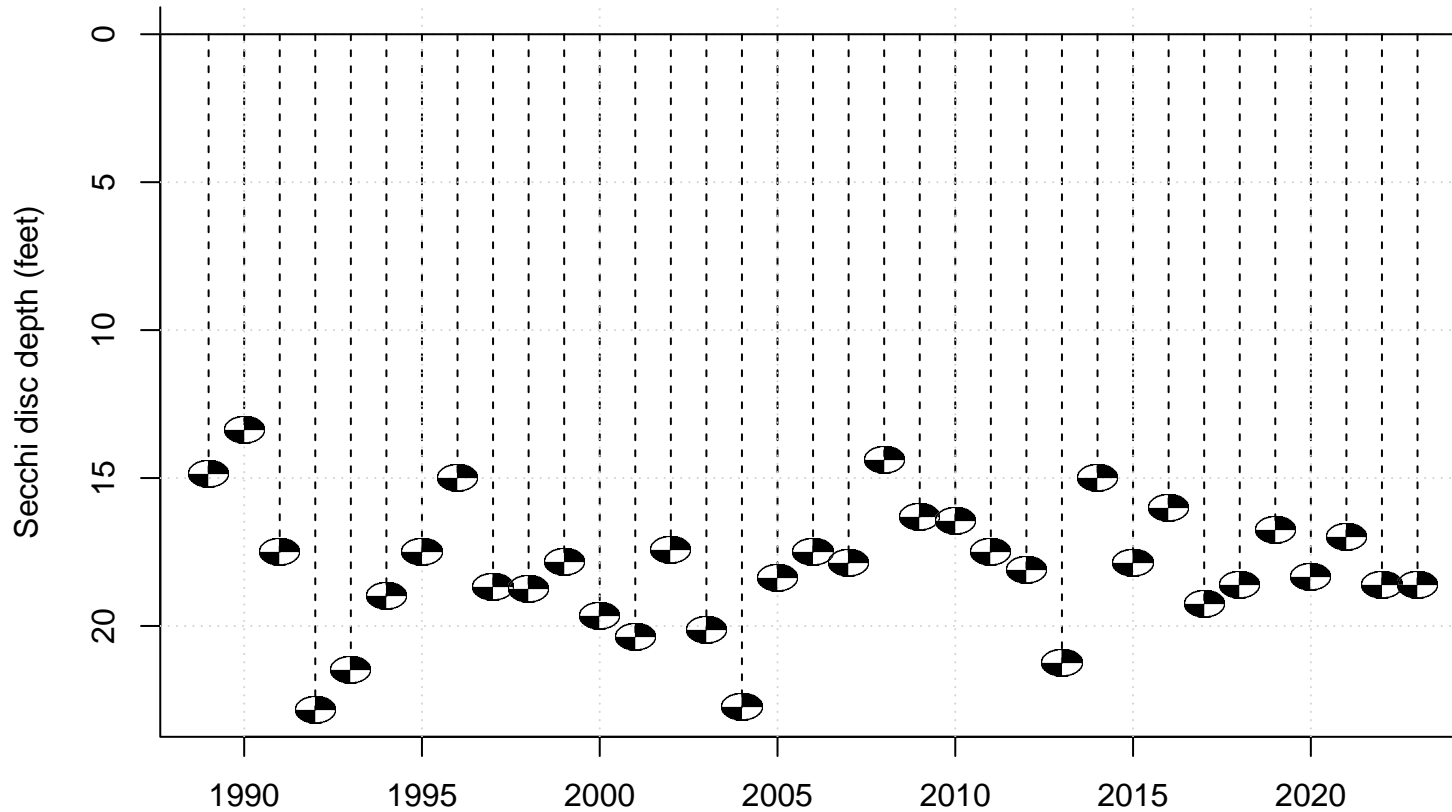
Trophic state indices (TSI) indicate the amount of nutrients in the lake. The TSI equations use late summer (July 15 - September 15) averages of Secchi depth, total phosphorus, and chlorophyll- α .

Eutrophic: excess nutrients, lower clarity, and greater risk of harmful algal blooms and hypoxia (low oxygen)

Mesotrophic: moderate levels of nutrients, moderate clarity

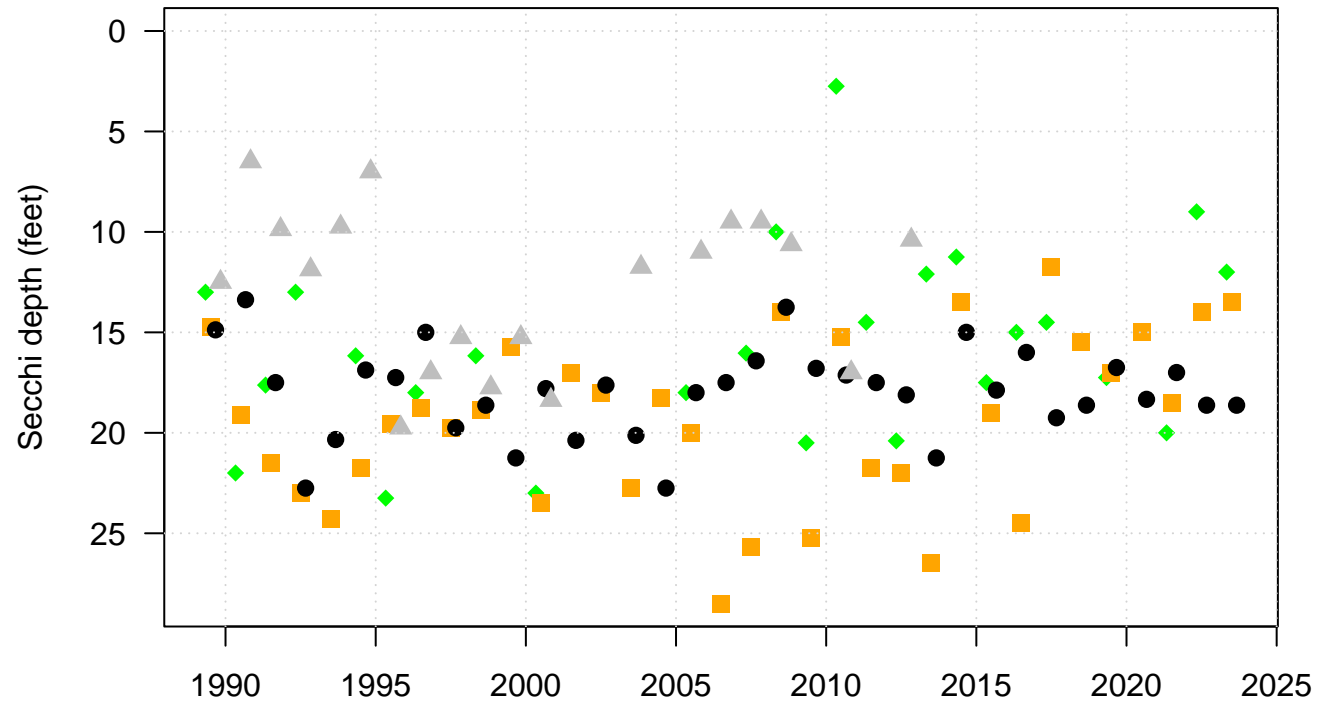
Oligotrophic: low levels of nutrients, high clarity, lower risk of hypoxia

Average Annual Water Clarity (July and August only)



Secchi disc depth is a measure of water clarity made by measuring the depth at which a black and white disc is just barely visible in the water. The above figure shows average Secchi disc depths calculated from all **July and August** readings each year. Low values indicate low water clarity, which can be caused by nutrients fueling the growth of algae, by particles suspended in the water, or from dark staining by dissolved tannins (naturally occurring compounds in leaves).

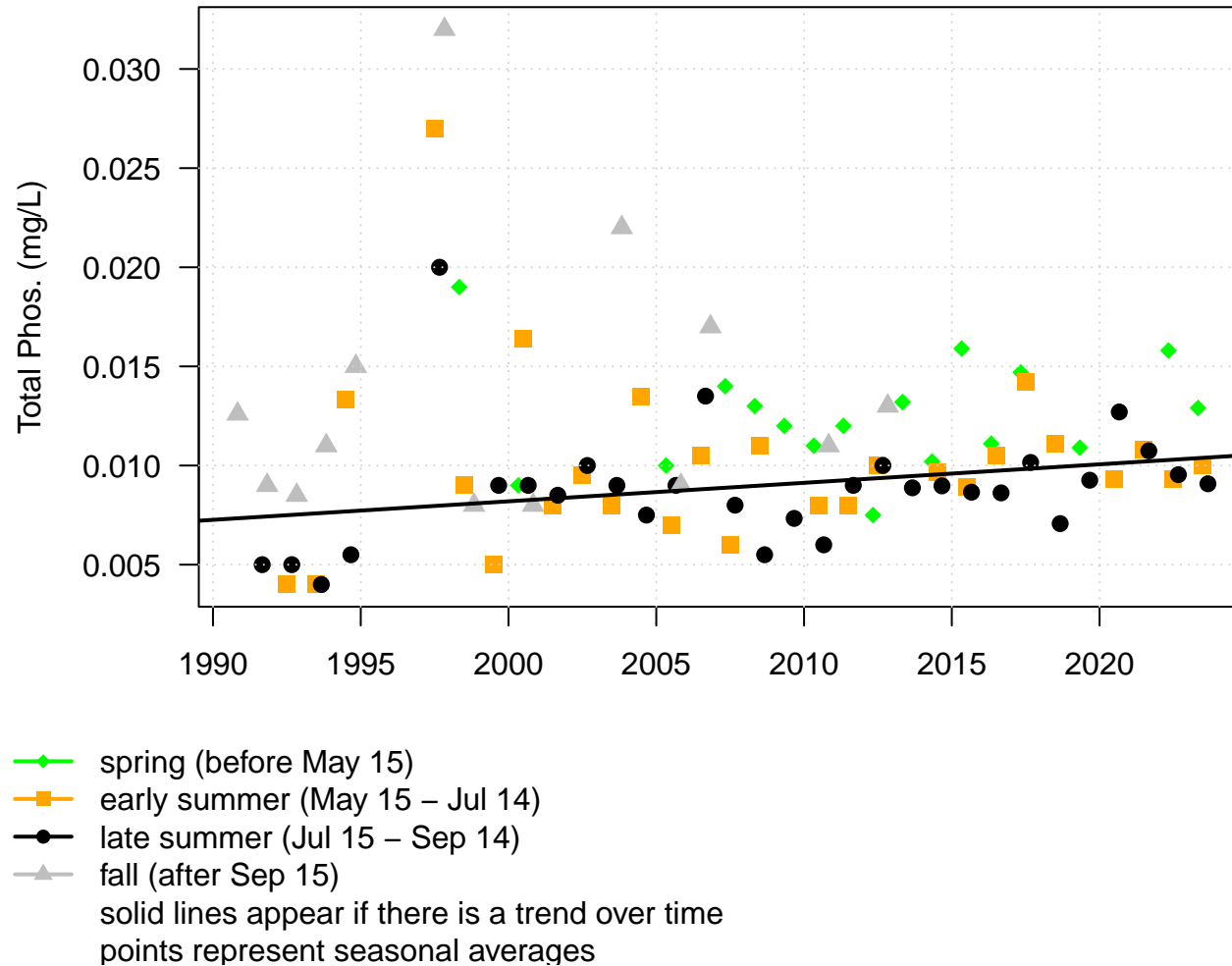
Trends in Secchi Depth Over Time



- ◆ spring (before May 15)
 - early summer (May 15 – Jul 14)
 - late summer (Jul 15 – Sep 14)
 - ▲ fall (after Sep 15)
- solid lines appear if there is a trend over time
points represent seasonal averages

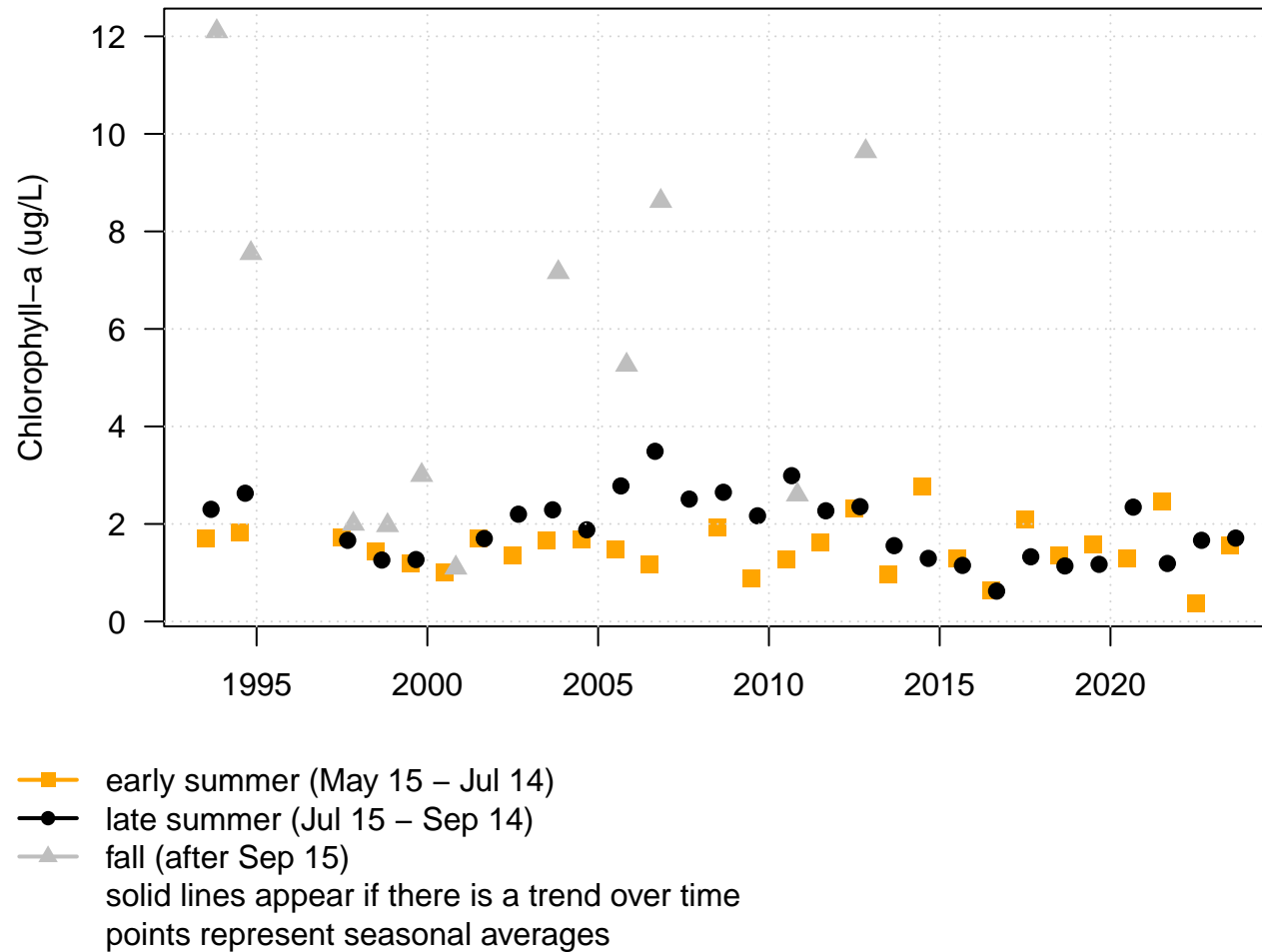
Secchi depth exhibits no trend over time in spring, early summer, late summer, and fall.

Trends in Total Phosphorus Over Time



Total phosphorus is increasing over time in late summer. Total phosphorus exhibits no trend over time in spring, early summer, and fall.

Trends in Chlorophyll-a Over Time



Chlorophyll-a exhibits no trend over time in early summer, late summer, and fall. Not enough data to calculate trends in spring.

Trophic State Index Samples and Observations

| Date | Secchi depth (ft) | Secchi hit bottom | TSI_Secchi | Total phosphorus (mg/L) | TSI_TotalP | Chlorophyll-a (ug/L) | TSI_Chla | Water color | User perception |
|------------|-------------------|-------------------|------------|-------------------------|------------|----------------------|----------|-------------|-----------------|
| 2023-05-04 | 12.00 | no | 41 | 0.013 | 48 | | | BLUE | 1 |
| 2023-06-16 | 13.50 | no | 40 | 0.010 | 46 | 1.6 | 38 | BLUE | 1 |
| 2023-07-21 | 17.50 | no | 36 | 0.009 | 45 | 1.4 | 37 | BLUE | 1 |
| 2023-08-25 | 19.75 | no | 34 | 0.009 | 45 | 2.1 | 40 | BLUE | 2 |

| User perception rating | Meaning |
|------------------------|--|
| 1 | Beautiful, could not be nicer |
| 2 | Very minor aesthetic problems |
| 3 | Enjoyment somewhat impaired (algae) |
| 4 | Would not swim but boating OK (algae) |
| 5 | Enjoyment substantially impaired (algae) |

Temperature and Dissolved Oxygen Data

| Start date | Depth (ft) | Dissolved oxygen (mg/L) | Temperature (F) |
|------------|------------|-------------------------|-----------------|
| 2023-05-04 | 3 | 10.6 | 41.1 |
| 2023-05-04 | 9 | 10.7 | 41.6 |
| 2023-05-04 | 15 | 10.7 | 41.4 |
| 2023-05-04 | 20 | 10.7 | 41.3 |
| 2023-05-04 | 25 | 10.7 | 41.2 |
| 2023-05-04 | 30 | 10.6 | 41.1 |
| 2023-05-04 | 35 | 10.6 | 40.8 |
| 2023-05-04 | 40 | 10.5 | 40.6 |
| 2023-05-04 | 45 | 10.4 | 40.1 |
| 2023-05-04 | 70 | 0.6 | 40.0 |

| Start date | Depth (ft) | Dissolved oxygen (mg/L) | Temperature (F) |
|------------|------------|-------------------------|-----------------|
| 2023-06-16 | 3 | 10.1 | 66.3 |
| 2023-06-16 | 9 | 10.5 | 63.4 |
| 2023-06-16 | 15 | 11.1 | 62.6 |
| 2023-06-16 | 20 | 12.7 | 52.8 |
| 2023-06-16 | 25 | 13.6 | 49.1 |
| 2023-06-16 | 30 | 13.6 | 46.8 |
| 2023-06-16 | 35 | 12.3 | 45.0 |
| 2023-06-16 | 40 | 9.5 | 43.8 |
| 2023-06-16 | 45 | 7.3 | 43.2 |
| 2023-06-16 | 60 | 5.9 | 42.2 |
| 2023-06-16 | 70 | 2.5 | 41.9 |

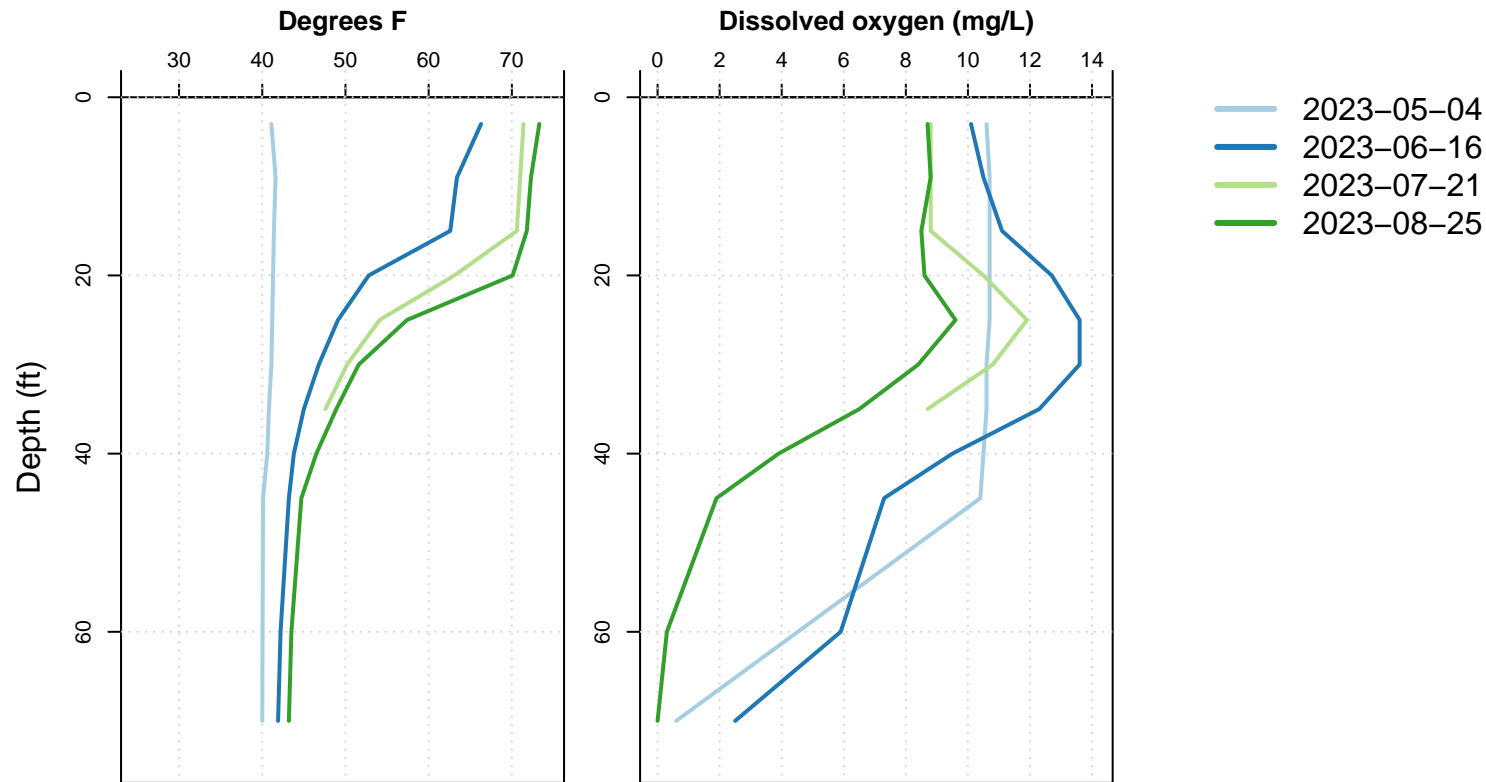
| Start date | Depth (ft) | Dissolved oxygen (mg/L) | Temperature (F) |
|------------|------------|-------------------------|-----------------|
| 2023-07-21 | 3 | 8.8 | 71.4 |
| 2023-07-21 | 9 | 8.8 | 71.0 |
| 2023-07-21 | 15 | 8.8 | 70.6 |
| 2023-07-21 | 20 | 10.5 | 63.1 |

(continued)

| Start date | Depth (ft) | Dissolved oxygen (mg/L) | Temperature (F) |
|------------|------------|-------------------------|-----------------|
| 2023-07-21 | 25 | 11.9 | 54.1 |
| 2023-07-21 | 30 | 10.8 | 50.2 |
| 2023-07-21 | 35 | 8.7 | 47.6 |

| Start date | Depth (ft) | Dissolved oxygen (mg/L) | Temperature (F) |
|------------|------------|-------------------------|-----------------|
| 2023-08-25 | 3 | 8.7 | 73.3 |
| 2023-08-25 | 9 | 8.8 | 72.3 |
| 2023-08-25 | 15 | 8.5 | 71.8 |
| 2023-08-25 | 20 | 8.6 | 70.1 |
| 2023-08-25 | 25 | 9.6 | 57.4 |
| 2023-08-25 | 30 | 8.4 | 51.6 |
| 2023-08-25 | 35 | 6.5 | 48.9 |
| 2023-08-25 | 40 | 3.9 | 46.5 |
| 2023-08-25 | 45 | 1.9 | 44.7 |
| 2023-08-25 | 60 | 0.3 | 43.5 |
| 2023-08-25 | 70 | 0.0 | 43.2 |

Temperature and Dissolved Oxygen Data



The plot on the left shows how temperature changes from the lake surface (at the top of the plot) to the lake bottom on each sampling date. The plot on the right shows how dissolved oxygen changes from the surface to the bottom. Look for seasonal changes. In spring and fall, most lakes will have steady temperatures and oxygen concentrations throughout the water column. In summer, some lakes will warm near the top and remain cool near the bottom. Those lakes may also have low concentrations of oxygen near the lake bottom.