

Citizen Science Sites, 2019 to 2025

The Lake Wallenpaupack Citizen Science program involved many volunteers sampling at 41 different sites around the lake between 2019 and 2025 (Figure 1). Sites are typically sampled weekly from June through September each year. Participants collect both qualitative and quantitative data, including water temperature, Secchi depth, and water color/appearance.

Algal bloom in 2025

Algal blooms occur when algae populations rapidly achieve high abundance. Algal abundance was determined by analyzing chlorophyll *a* concentration in water samples every two weeks from June to September. The average algal abundance in 2025 was higher than all previously sampled years (Figure 2). 2025 chlorophyll concentrations rose in late June and peaked on July 12th sampling date.

Levels remained high, relative to past years' data, through the remainder of the sampling season. Over the sampled years, algal blooms have typically occurred in August and September, making the bloom in 2025 early relative to previous years. Over the 2019 to 2025 dataset, higher algal abundance was most often seen in the SW section of the lake (Figure 3).

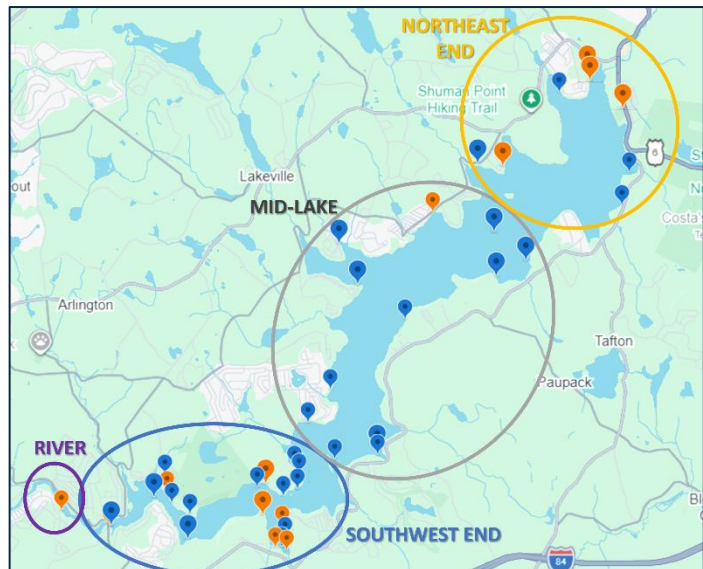


Figure 1: Sampling sites on Wallenpaupack. Open ellipses denote lake zones. Orange dots were sampled in 2025; many of these sites were sampled in previous years as well. Blue dots denote sites that were sampled only in years prior to 2025.

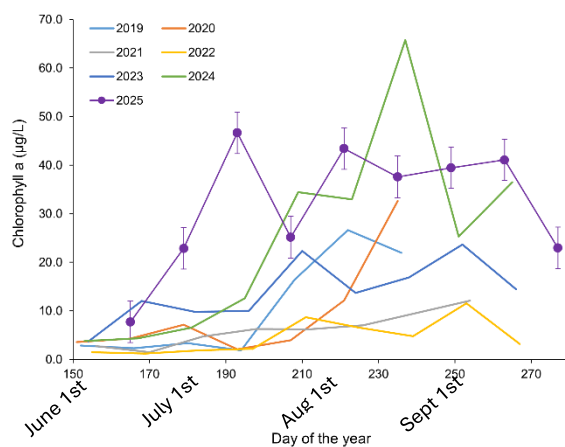


Figure 2: Average chlorophyll *a* concentration over the sampling season in 2019-2025. Vertical lines are standard error. River sites were excluded.

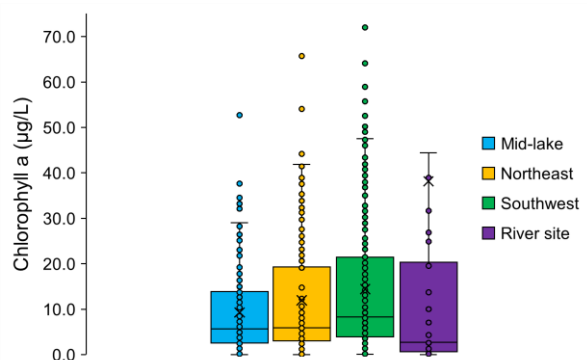


Figure 3: Algal abundance in Wallenpaupack as chlorophyll *a* concentration by lake zone, 2019-2025. Horizontal lines and X symbols within boxes show the median and mean concentration within zones, respectively. Outliers for the River Site in 2025 are not shown.

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Water Clarity

Secchi depth was used as a measure of water transparency. July 2025 average Secchi depth was the lowest (least clear) across the dataset (Figure 4). Secchi depth tends to decrease throughout the summer, indicating a decrease in water clarity over the dataset. Greater algal abundance has often been associated with shallower Secchi depths, indicating that algal levels play a role in water clarity in Wallenpaupack. Water clarity can also be impacted by precipitation/runoff and boat activity.

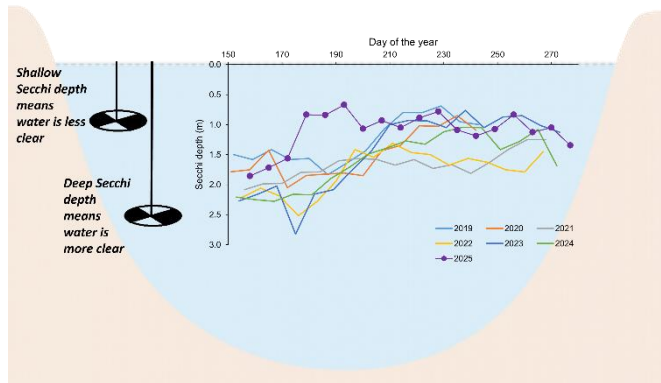


Figure 4: Average Secchi depth over the sampling season in 2019-2025.

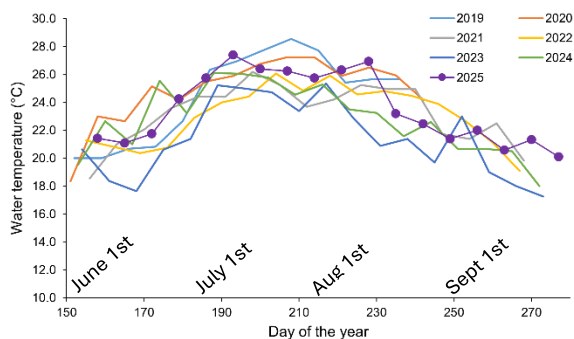


Figure 5: Average water temperature over the sampling season in 2019-2025.

Water Temperature

Water temperature was recorded at 1 meter depth. Summer water temperatures were greatest in 2019 and 2020 and coolest in 2023 (Figure 5). In 2025, water temperatures rose through mid to late June and remained relatively high through early August. There appears to be no correlation between water temperatures and algal abundance over the seven years of data.

Recreational Suitability

Participants utilizing the Lake Observer website were asked to rank the recreational suitability of the lake at their specific location and date. Recreational Suitability was reported on 312 dates and/or sites from 2020 to 2025, with 26% reporting ideal conditions, 37% reporting minor impairment, and 37% reporting moderate to severe impairment (Figure 6). Conditions generally worsened over the summer, as reports of ideal conditions decreased and substantial impairment reports increased through July, August, and September (Figure 7).

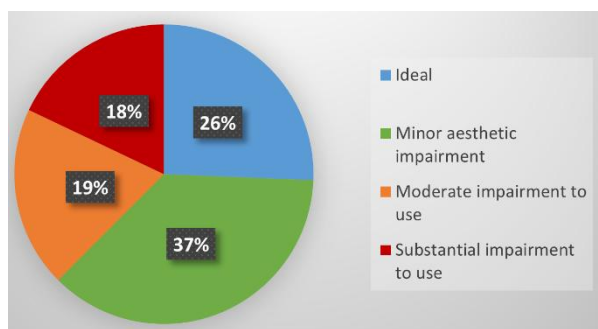


Figure 6: Percentages of reported recreational use conditions, 2020 to 2025.



Figure 7: Photo displaying “spilled paint” appearance of algae in the north-eastern section of the lake on August 22, 2025. Photo by Theresa Black.