Algal Community Composition Analysis

Background

The algal communities were sampled on Highland and Sullivan Lakes once a month for the months of July, August, and September. The purpose of conducting algal community composition analysis is to better understand the biological drivers of water quality conditions and bloom development. While traditional monitoring such as TP and Chl-a quantify nutrient levels and overall algal biomass, they do not identify which algal groups are present. By analyzing the full algal assemblage, dominant algal groups can be identified (e.g., cyanobacteria/blue-green algae, diatoms, green algae).

- Detect the presence and relative abundance of potentially harmful cyanobacteria species

- Evaluate seasonal shifts in community composition (July–September)

- Determine whether high Chl-a concentrations are driven by harmful, or more benign algal

- Better understand bloom timing, intensity, and risk to recreation and aquatic life

This information supports more targeted lake management decisions. For example, If non-harmful taxa are dominant, different ecological drivers may be influencing lake conditions.

|	Functional Group	What does it indicate?
BG	Non-harmful Cyanobacteria	Generally benign and indicative of good water quality.
CER	Ceratium	Often present in tannic/high organic content water bodies. Active migrator in the water column. May cause significant taste and odor at high densities.
CP	Cryptophytes & Dinoflagellates	Often dominate in spring, or in tannic/high organic content water bodies. Generally indicate good water quality.
DY	Chrysophytes, Haptophytes & Diatoms	Generally indicate good water quality. If high densities, can cause significant taste and odor.
E	Euglenophytes	Often present in high organic content water bodies. Co-occurs with Cryptophytes and non-coliform bacteria. High densities can be indicative of poor water quality.
G	Chlorophytes	Generally indicate good water quality. If very high densities, indicates high nitrate concentrations.
TO	Taste and Odor Producers	Algae that often produce taste and odor issues. Diatoms that can produce taste and odor problems, but do so less often, are not included in this group.
HAB	Harmful Cyanobacteria	May produce toxins, but not always producing. Toxins are generally detectable above 5000 cells/mL. Indicative of poor water quality often with high phosphate or low TN:TP ratios.
M	Miscellaneous	All other groups, generally neutral. Includes small Chlorophytes or Cyanobacteria less than 9um in diameter.
U	Unclassified	Images that the classifier cannot confidently identify. Includes small flagellates entrained in detritus, taxa not yet included in the classifier, partial images and images with multiple taxa.

Algal Community Composition Analysis (cont.)

Sample 1

Sample ID: D20250905T182002
Customer ID: 435
Tracking Code: 250005-435
Sample Info: ACD

System: Sullivan Lake
Site: Sullivan Lake
Station: 02-0082-00-201
Level: Composite

Date Sampled: 9/4/2025
Date Received: 9/5/2025
Date Analyzed: 9/5/2025

Legend: BG | CER | CP | DY | E | G | HAB | M | TO | U

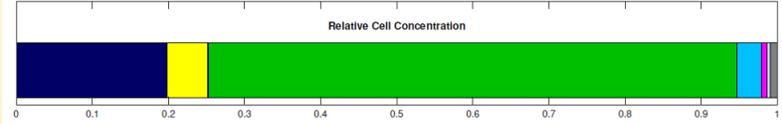Relative Cell Concentration

Relative Biovolume
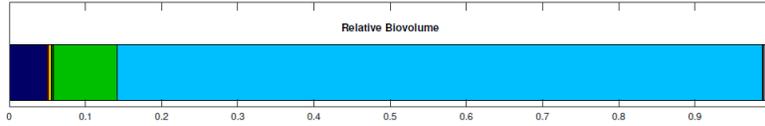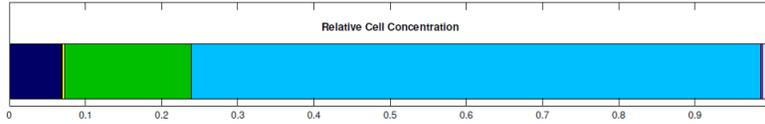
Sample 2

Sample ID: D20250905T191257
Customer ID: 435
Tracking Code: 250006-435
Sample Info: ACD

System: Highland Lake
Site: Highland Lake
Station: 02-0079-00-451
Level: Epi

Date Sampled: 9/4/2025
Date Received: 9/5/2025
Date Analyzed: 9/5/2025

Legend: BG | CER | CP | DY | E | G | HAB | M | TO | U

Relative Cell Concentration
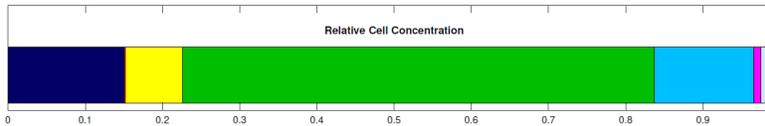
Relative Biovolume
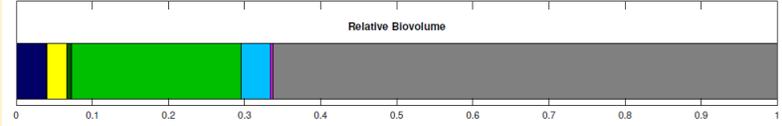
Sample 3

Sample ID: D20250808T193326
Customer ID: 435
Tracking Code: 250004-435
Sample Info: ACD

System: Highland Lake
Site: Highland Lake
Station: 02-0079-00-451
Level: Epi

Date Sampled: 8/7/2025
Date Received: 8/8/2025
Date Analyzed: 8/8/2025

Legend: BG | CER | CP | DY | E | G | HAB | M | TO | U

Relative Cell Concentration
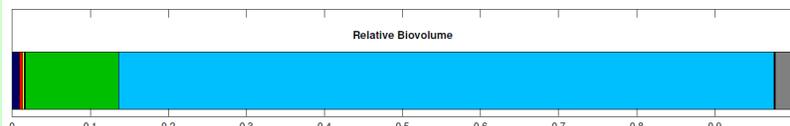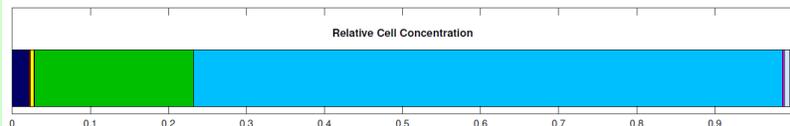
Relative Biovolume
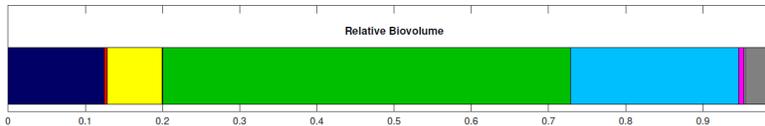
Sample 4

Sample ID: D20250808T184940
Customer ID: 435
Tracking Code: 250003-435
Sample Info: ACD

System: Sullivan Lake
Site: Sullivan Lake
Station: 02-0082-00-201
Level: Epi

Date Sampled: 8/7/2025
Date Received: 8/8/2025
Date Analyzed: 8/8/2025

Legend: BG | CER | CP | DY | E | G | HAB | M | TO | U

Relative Cell Concentration

Relative Biovolume

Sample 5

Sample ID: D20250728T213841
Customer ID: 435
Tracking Code: 250002-435
Sample Info: ACD

System: Highland Lake
Site: Highland Lake
Station: 02-0079-00-451
Level: Composite

Date Sampled: 7/24/2025
Date Received: 7/28/2025
Date Analyzed: 7/28/2025

Legend: BG | CER | CP | DY | E | G | HAB | M | TO | U

Relative Cell Concentration

Relative Biovolume
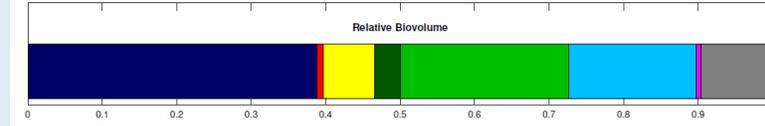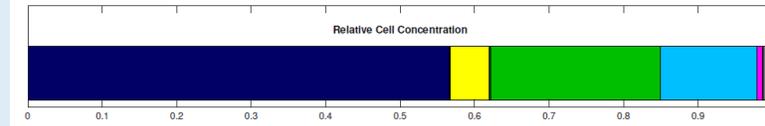
Sample 6

Sample ID: D20250728T165444
Customer ID: 435
Tracking Code: 250001-435
Sample Info: ACD

System: Sullivan Lake
Site: Sullivan Lake
Station: 02-0082-00-201
Level: Composite

Date Sampled: 7/24/2025
Date Received: 7/28/2025
Date Analyzed: 7/28/2025

Legend: BG | CER | CP | DY | E | G | HAB | M | TO | U

Relative Cell Concentration

Relative Biovolume