

# Monitor Toolkit

LCC Cyanobacteria Monitoring Program



Photo by Anthony Lebeau St-Onge © Lake Champlain Committee

2026



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# Introduction

## History of the Cyanobacteria Monitoring Program

[The Lake Champlain Committee](#) (LCC) developed a cyanobacteria monitoring program for Lake Champlain in 2003 and 2004 and has overseen the community science-based program ever since. The focus of the program is to raise awareness of the issue, build a database of information on bloom frequency, and identify and publicize any potential health hazards. The information gathered helps us better understand the triggers for blooms and aid in the work to reduce their frequency.

LCC coordinates our monitoring program closely with Vermont and New York health, environmental, and recreation agencies. We annually train hundreds of community members in methods to assess and report on water conditions. We also conduct trainings for state and municipal park staff, town health officers, and public water supply operators. LCC monitors provide important data on lake health from more than 200 Lake Champlain and inland lake locations.

If you'd like to become a monitor or simply want to learn how to recognize cyanobacteria, [let us know of your interests via this online form](#).



# What are Cyanobacteria?

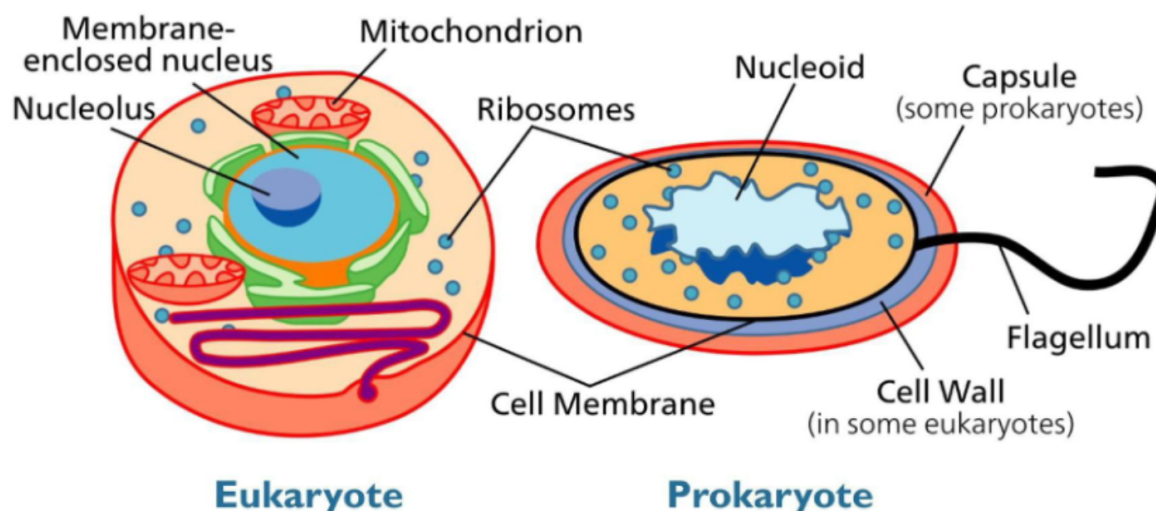


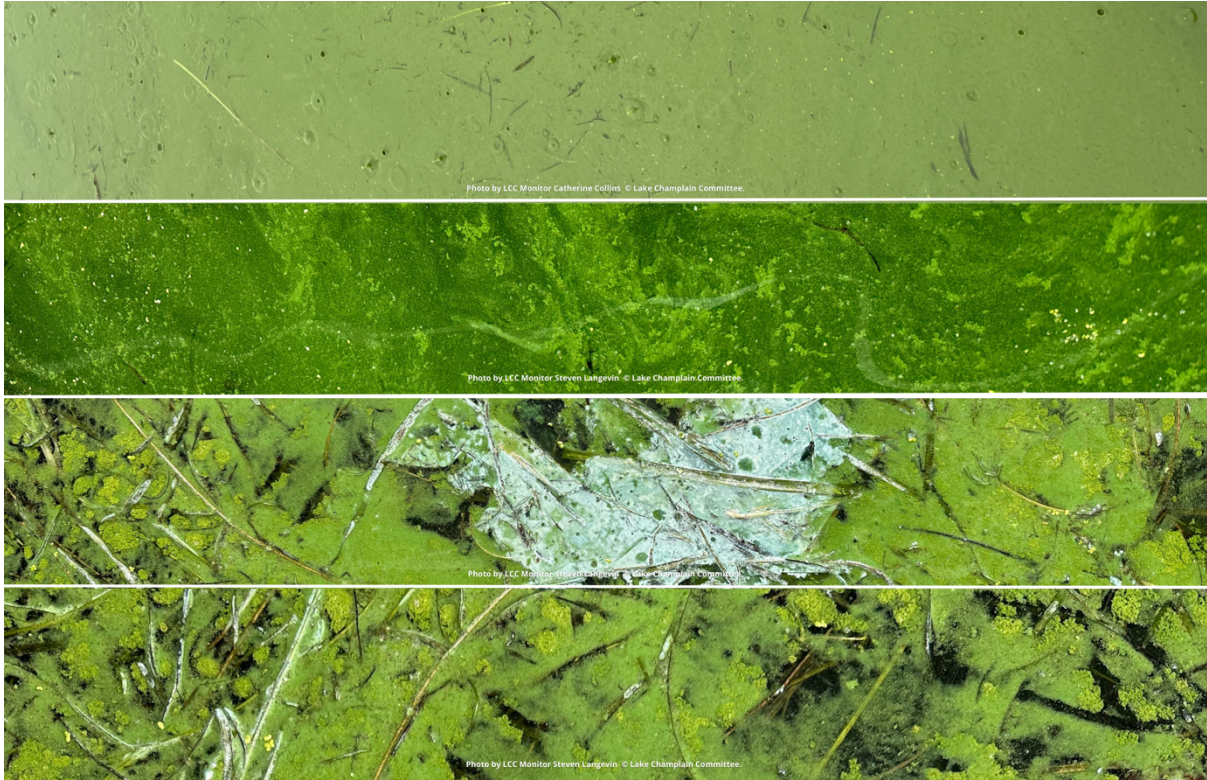
Image courtesy of Science Primer, NCBI, NIH. Public Domain.

Cyanobacteria are microorganisms that naturally occur in fresh and saltwater ecosystems and have existed on earth for millions of years. They live in diverse environments from hot springs and desert cryptobiotic soils, to under ice and on rocks. Under the right conditions in water, they can form large accumulations and surface scums referred to as blooms. Some cyanobacteria produce toxins, which release into the water when the cells die and break down. The toxins can present a potential hazard to people, pets, and livestock. However, not all cyanobacteria produce toxins, and even those species that can produce toxins do not do so in all instances. You cannot tell by looking at a bloom whether or not toxins are present. Specialized tests are required to tell whether a particular bloom contains toxins.

## Quick Facts

- Cyanobacteria, Harmful Cyanobacteria Blooms (HCBs), Harmful Algal Blooms (HABs), and Blue-green Algae (BGA) all refer to the same organisms; the terms cyanobacteria and HCBs are more accurate.
- The biggest distinction between cyanobacteria and algae is their classification. Most algae are eukaryotes and cyanobacteria are prokaryotes. Eukaryotic cells have a distinct nucleus containing the genetic material. Prokaryotic cells don't have a nucleus—the genetic material is free-floating.
- Cyanobacteria use sunlight to make their own food.
- Many species of cyanobacteria can regulate their buoyancy, which enables them to move up and down in the water column.
- Cyan refers to the color blue.
- Cyanobacteria are the oldest known fossils—they're around 3.5 billion years old!

# Cyanobacteria | Recognize It



## What are cyanobacteria blooms?

- A bloom is a concentration of cyanobacteria that discolors the water.
- Cyanobacteria can multiply quickly, forming blooms that spread across and/or below the water surface.
- Not all cyanobacteria blooms give off cyanotoxins.
- You cannot tell if a bloom is producing cyanotoxins by looking at it. The only way to confirm the presence of cyanotoxins is through a lab analysis of a water sample.

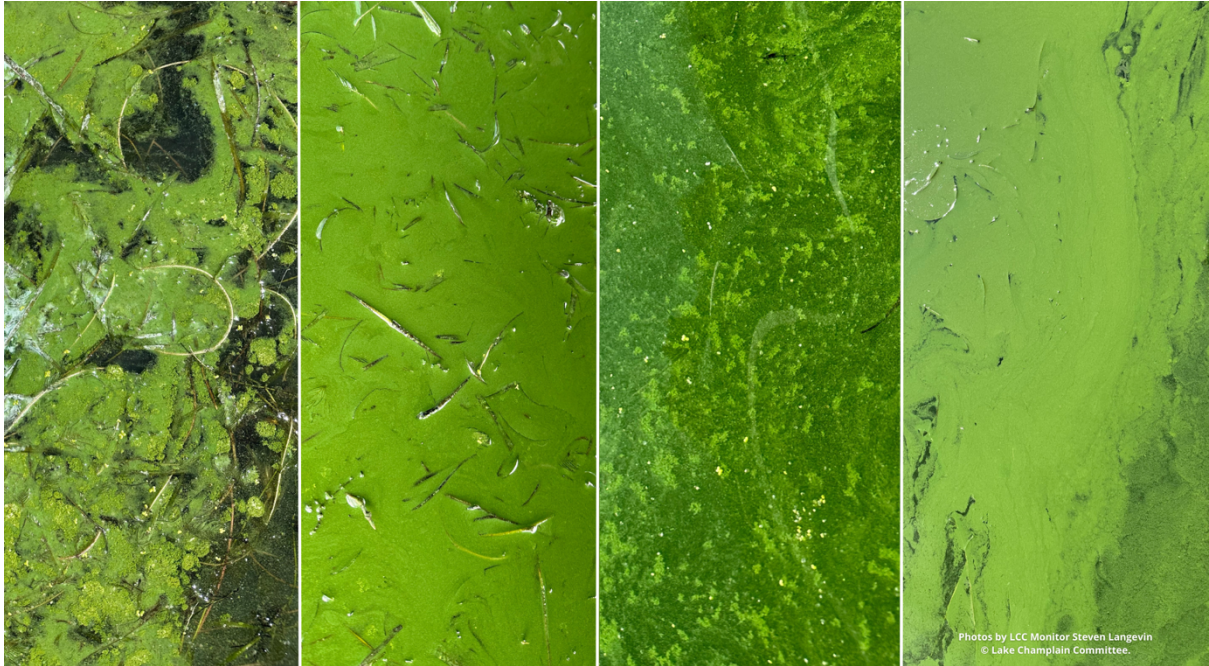
## What are bloom-causing factors?

- Nutrients | High levels of phosphorus or nitrogen
- Temperature | Warm water temperatures, above 60°F, during the summer and fall
- Weather | Calm, still, or hot conditions; storm events that wash nutrients into the water.

## What do cyanobacteria blooms look like?

- Detecting cyanobacteria is like learning a new instrument or sport: it takes practice.
- When cyanobacteria start to be visible in water, they often appear as tiny specks or fuzzy balls.
- Looks Like: floating dots, streaks, clumps, globs, mats, scum, spilled paint, or pea soup.

- Color: various shades of green, blue, or blue-green; can be red, purple, brown, or white



## Cyanobacteria | Avoid It

### Background on Toxins

- Cyanobacteria can produce liver toxins and neurotoxins, otherwise known as cyanotoxins.
- Children and pets are more vulnerable to blooms because of their small body size, likeliness to drink water when in it, and attraction to smelly or colored water.

### Potential Health Effects

- **Humans | Exposure**
  - Skin irritations, such as rash
  - Allergy-like symptoms, such as runny nose, sore throat, watery eyes, and itchiness
- **Humans | Ingestion**
  - Abdominal pain, diarrhea, or vomiting.
  - Dizziness
  - Liver damage
  - Tingling fingers and toes; numb limbs
- **Dogs**
  - Weakness or staggering
  - Difficulty breathing
  - Diarrhea or vomiting

If you come in direct contact with cyanobacteria, immediately rinse off with clean water. If you or a pet experience symptoms, contact your health care provider or vet.

## What Not to Do If There's a Bloom

- Swim, boat, fish, or wade in areas with blooms, suspicious-looking water, or posted with cyanobacteria warning signs.
- Drink, prepare food, cook, make ice, or brush your teeth with untreated lake water.
- Allow dogs in water with cyanobacteria or let them lick their fur, hair, or paws if they've come in contact with a bloom.
- Use the water if you suspect a bloom near your water intake. Chlorine, ultraviolet (UV) light, and other in-home treatment systems won't remove cyanobacteria toxins and boiling water can make conditions worse by dispersing toxins in the air.



## Cyanobacteria | Report It

### What do I do if I see a bloom?

#### Report Blooms To:

- **New York**
  - NYS Department of Environmental Conservation at [HABsInfo@dec.ny.gov](mailto:HABsInfo@dec.ny.gov)
- **Vermont**
  - [VT Department of Health Cyanobacteria Tracker](#)
  - VT Department of Health at [BloomAlert@vermont.gov](mailto:BloomAlert@vermont.gov)

#### Report Bloom-Related Symptoms To:

- **New York**
  - NYS Department of Health at [HarmfulAlgae@health.ny.gov](mailto:HarmfulAlgae@health.ny.gov)
  - Your Local Health Department at [health.ny.gov/EnvironmentalContacts](http://health.ny.gov/EnvironmentalContacts)
- **Vermont**
  - VT Department of Health | 1-800-439-8550

# Important Links for Online Reporting & Current Water Conditions

## Cyanobacteria Reporting

- Vermont Department of Health (VDH) Online Report Forms
  - [Trained Volunteer Reporter Reporting Form](#)
  - [Untrained Reporter](#)
  - [Lake Champlain Committee Online Report Form](#)

## Cyanobacteria | Current Conditions

- [Vermont Department of Health Cyanobacteria Public Tracker](#)
- Lake Champlain Beaches — check with local beach authorities for current conditions
- [New York Inland Lakes](#)
- [Quebec](#)

## Drinking Water | Current Conditions

- [Vermont Drinking Water Facilities Report](#)



# How to Submit Vermont Department of Health Online Report Forms

## Vermont Department of Health Online Report Forms

### Hardware & Browser Guidance

The VDH form was updated and improved thanks to a lot of diligent work by our VDH partners. The reporting form should work for most devices, including desktop and laptop computers with Windows 10 or iPad/Galaxy type tablets and modern smartphones. Browsers that have been successfully tested are Chrome, Edge, Firefox, Safari, and Mozilla. Internet Explorer (and Edge) should not be used, as they are being phased out by Microsoft. You should also be able to access the form through your mobile devices, though logging in may be cumbersome if your phone does not save login information.

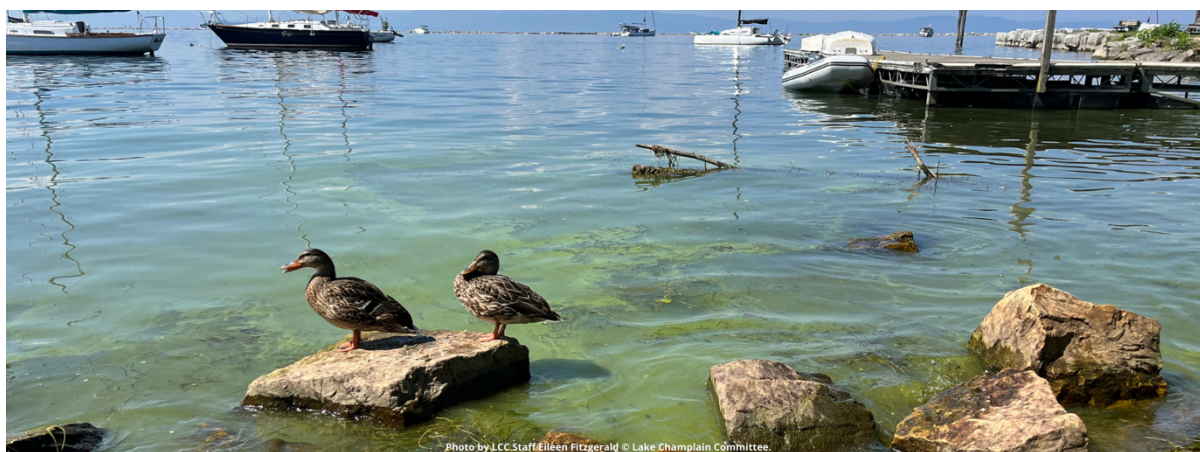
### Entering Your Report Data

- See our “LCC Guidance on How to Submit a Report on the VDH Tracker” guidance document in the Appendix of this toolkit.

## How to Submit a Lake Champlain Committee Online Report Form

### LCC Report Form

If you haven't received a site number and site name, have trouble logging in, or encounter any other problems, you can submit your reports through the [Lake Champlain Committee Online Report Form](#). Please be sure to fill out the section of the form describing the specific problems you experienced with the cyanobacteria reporter website, as this will help the Vermont Department of Health team improve the data entry system. Include what device you were using (PC, laptop, tablet, cell phone, etc.), your operating system and browser, and provide information on the issue(s) you had.



# 2026 Cyanobacteria Monitoring Team

## Main Contacts –



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## Other LCC Contacts –

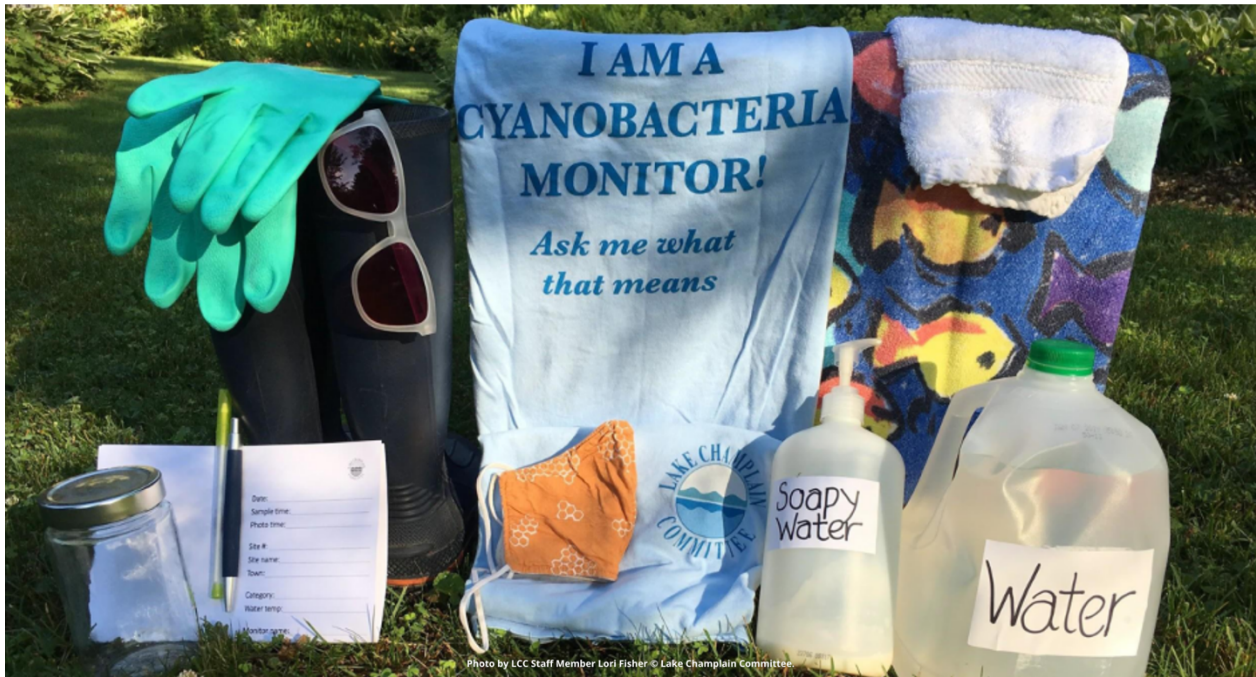


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# Cyanobacteria Monitoring Guidelines



## Cyanobacteria Monitor Gear Checklist

- Shin-high waterproof boots
- Gloves
- Glass jar with lid – no labels or embossments should be on the jar.
- Photo card (Now Laminated\*)
- Expo Marker\*
- Timekeeper
- LCC Cyanobacteria Monitor t-shirt.
- Stick
- Sunscreen and hat
- Towel
- Jug of soapy water or container of liquid soap
- Jug of clean water

Do not use alcohol-based hand sanitizer when monitoring. Alcohol is a dermal transmitter and if you've had contact with cyanobacteria, it could increase skin absorption.

\*New for 2026 Season

## Weekly Reports

To ensure data quality, observations should be made between **10:00 AM** and **4:00 PM**. To the extent possible, observations should be made on the same day each week.

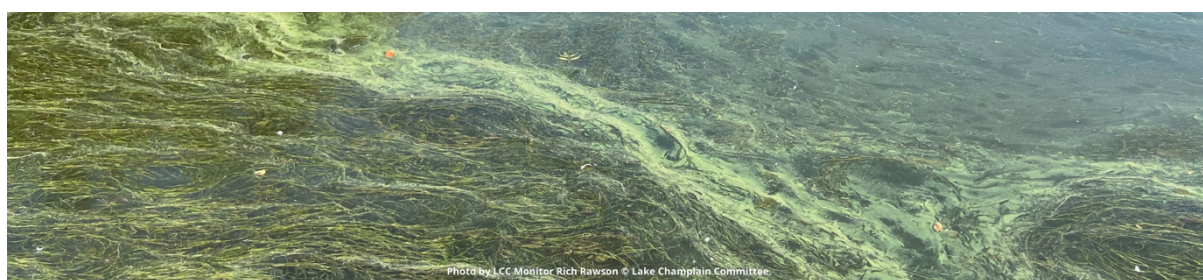
The 10:00 AM start time is because cyanobacteria can regulate their position within the water column. They will move towards the surface as the sun comes out and the water warms.

Observations before 10:00 AM may not accurately indicate the presence or absence of cyanobacteria. The 4:00 PM cut-off time is more fluid. At some point, cyanobacteria will move back down in the water column; we want to get observations before the sun gets too low in the sky. If you see blooms outside of these times, please report them right away.

## Regular Reporting Day

If you haven't let us know which day of the week will generally be your reporting day, please provide that information in the "Additional Details" section of the VDH report form.

Reporting the same day of the week and the same time of day whenever possible, helps ensure the integrity of the data. Please make your online report as soon as possible after observing conditions so that we can provide timely information. Vermont state law requires health officials to conduct public outreach within an hour of determining that a bloom is a public health hazard. Your timely notice of water conditions can help keep everyone informed.



## Reporting a Bloom Outside of Your Routine Weekly Report

If you observe a bloom at your routine site(s) outside of your routine day, or at a non-routine location, please submit a form as soon as possible. Reference the report type as a "Supplemental" report. Continue to make daily reports through the time the bloom has dissipated, if possible. This approach helps us inform the public with timely information about water conditions.

## Daily Reporting

If you are interested in providing daily reports, regardless of whether or not a bloom is occurring, please let us know. Daily observations provide further information on water conditions and how blooms develop and dissipate. You will still submit a weekly online report for your site(s), but we will also email you an Excel spreadsheet for recording your daily observations.

Whenever you observe bloom conditions outside of your routine day, you should submit a supplemental report as soon as you observe the bloom and then record those details in your Excel spreadsheet as well. (This helps us get the information out to health agencies and up on the cyanobacteria tracker map promptly.) For non-bloom conditions, we will collect your daily reports mid-way through and at the end of the season. Please email us at [cyano@lakechamplaincommittee.org](mailto:cyano@lakechamplaincommittee.org) to receive a spreadsheet for daily reporting.

## How to Take a Jar Test Water Sample

When collecting a water sample to photograph, take care to avoid exposure to cyanobacteria. Don't wade or immerse yourself in the water. It is okay not to collect a physical sample if you are uncomfortable doing so.

- Wear gloves
- Enter the water to collect your water sample in knee-deep water—this gives a representative sample by collecting more than just the surface scum.
- Take the water temperature where you plan to collect the water sample, if you have a thermometer.
- Turn the jar upside down above water, then submerge the jar in the water—don't skim across the top of the water.
- Tip the jar at a slight angle while it's under the water to fill it, then remove it from the water.
- Exit the water and let the jar sit, unlidged, for 30 minutes in the sun.
- Wash any exposed portions of your body immediately after collecting the sample and wash the gloves before reusing them.
- Wipe the outside of the jar to remove any water drops, plant matter, or other phenomena that might interfere with assessing what's inside the jar.
- Take a photograph of the jar sample with the photo card and include the following information on your photo card template:
  1. Date (MMDDYYYY)
  2. Site Number
  3. Site Name
  4. Site Town
  5. Sample Time (AM/PM)
  6. Photo Time (AM/PM)
  7. Report Type
  8. Water Temp. (°F)
  9. Water Surface
  10. Water Conditions
  11. Bloom Intensity
  12. Extent along shore (ft.)
  13. Extent into water (ft.)
  14. Additional Details



## How to Photograph Blooms

Please take digital photographs of the water when you observe category 1d, 2, or 3 conditions. Any time you see confusing phenomena, you can also submit photographs.

The pictures we need for category 1d, 2, or 3 conditions:

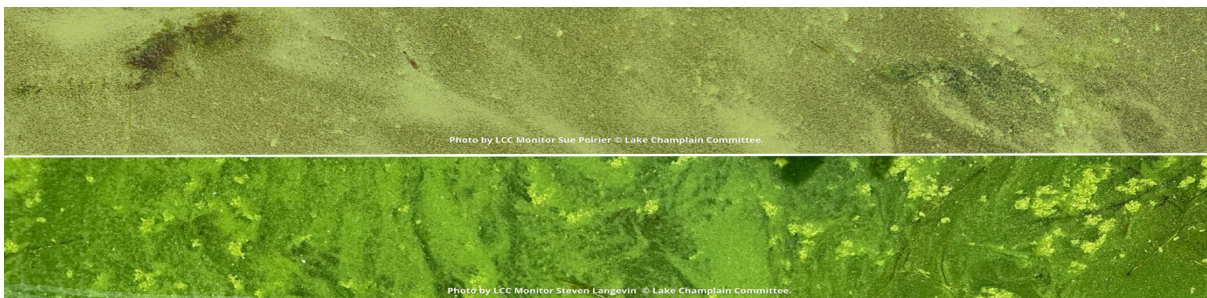
1. **A broad view of the water in the vicinity.**
2. **A close-up of the water surface.**
3. **A close-up of a water sample in a clear glass container.**

[Here is a link to the 2026 photo card template.](#) It is also included in the Appendix of this toolkit.

## Important Details

- Only use your jar for water sampling and make sure it's clearly labelled to avoid someone inadvertently using it for drink or food items.
- The jar sample picture should be taken about a half hour after you've taken a water sample. Cyanobacteria will generally rise to the top of the jar and sediment and debris will settle to the bottom after about 30 minutes of sitting in the sun.
- If you witness a bloom, don't delay in sending in your report and photos, but in most cases, a half hour will have elapsed between the time you took your water sample and the time you have filed your report.

- Avoid visual or written personal identifiers of you or anyone else in the photo(s) as they will show up on the VT Dept. of Health Cyanobacteria Tracker.
- Photos should be your own or you should have permission to use them. If the photo was taken by someone else, please note who the photographer is in the “additional details” section of the reporting form and indicate that you have permission to use the picture; this is important because the photos will be used by LCC and state partners to further our work and they will be viewable on the Cyanotracker.



## How to Name Your Files

It is helpful to LCC staff, although not required, if you can label your photographs with the format below:

**YYYYMMDD\_FirstNameInitialLastNameInitial\_SiteNumberSiteName\_Cat#\_PhotoType**

Examples:

- 20250717\_AS\_42OakledgeParkBlanchardBeach\_Cat2\_Broad
- 20250717\_AS\_42OakledgeParkBlanchardBeach\_Cat2\_Close
- 20250717\_AS\_42OakledgeParkBlanchardBeach\_Cat2\_Jar

 [Click here to attach photos](#)

Select File

20250717\_AS\_42OakledgeParkBlanchardBeach\_Cat2\_Broad.png  
3.85kb
×

20250717\_AS\_42OakledgeParkBlanchardBeach\_Cat2\_Jar.png  
4.75kb
×

20250717\_AS\_42OakledgeParkBlanchardBeach\_Cat2\_Close.png  
3.85kb
×

**Due to the public-facing nature of your photographs and their associated filenames on the Vermont Department of Health Cyanobacteria Public Tracker, we suggest that monitors use their initials only, not their full names when**

**labelling photos you submit with your reports. If you do use your full names, know they will show up on the public tracker.**

If you use the first initial of both your first and last name, LCC will be able to identify you internally, but your full name won't show up on the photos that appear on the VDH Cyanobacteria Public Tracker. LCC will attempt to credit you as the photographer whenever we use your photos for outreach. Note that if you are using the LCC reporting form, file uploads are limited to 10Mb total per form.

## **Stay Safe**

When collecting a water sample to photograph, take care to avoid exposure to cyanobacteria. Wear gloves don't wade or immerse yourself in the water and wash any exposed portions of your body immediately after collecting the sample. Forego taking a physical water sample to photograph if you feel at risk in any way. If you see a bloom, avoid contact with water containing cyanobacteria and file a report as soon as possible.

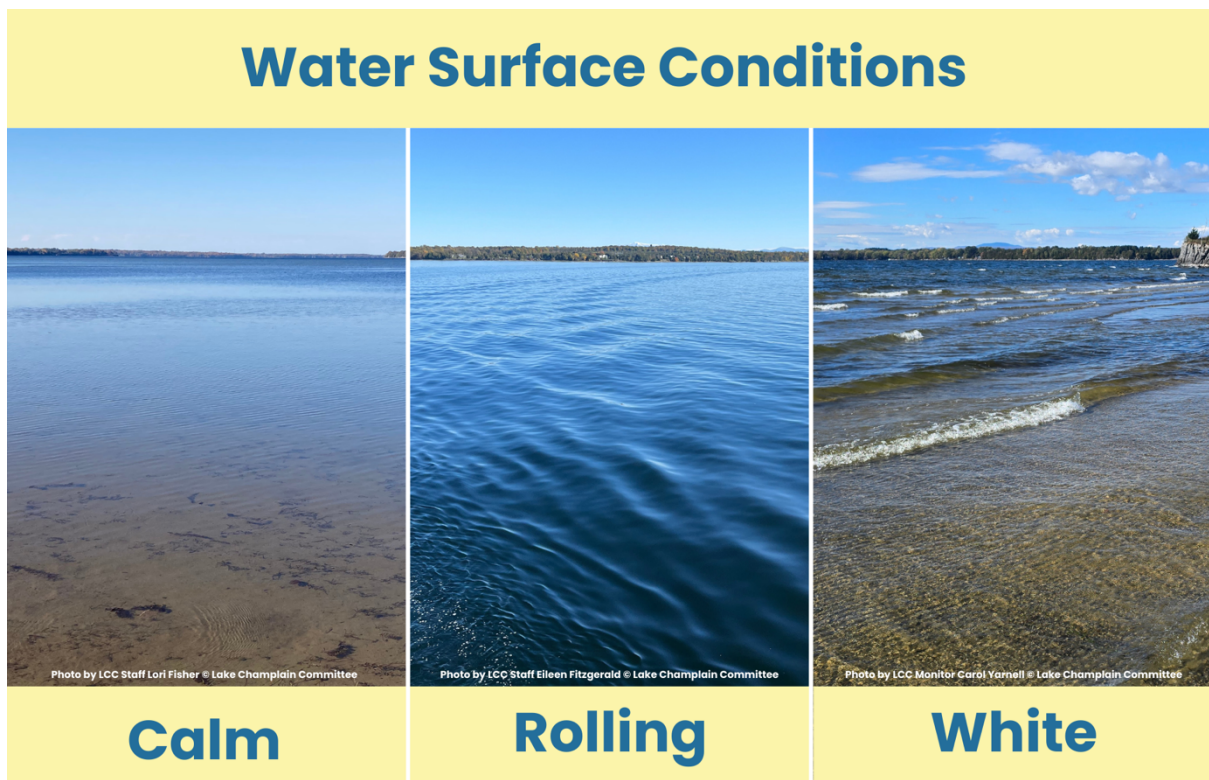
# Categorization of Water Conditions

## General Instructions

- Remember to avoid direct contact with Category 2 and 3 conditions.
- All observations that are submitted and approved will be posted on the [Vermont Department of Health Cyanobacteria Public Tracker](#).
- Please report between 10:00 AM and preferably by 4:00 PM. Blooms most frequently appear during this timeframe because cyanobacteria have had a chance to rise from lower in the water column in response to light and heat. Reports of good conditions outside of this timeframe may be rejected.

## Anyone Providing Reports Should Include the Following Information:

- **Water Surface**
  - Calm
  - Rolling
  - White Caps



- **Water Temperature (°F)**
  - If you have an accurate thermometer

- **Water Conditions or Bloom Intensity**

The rating scale runs from 1 (a, b, c, or d) to 3, with 1a being no cyanobacteria observed—clear water and 3 being a high alert cyanobacteria bloom observed in progress.

- Category 1a: No cyanobacteria observed—clear water.
- Category 1b: No cyanobacteria observed—brown or turbid water.
- Category 1c: No cyanobacteria observed—other material present.
- Category 1d: Little cyanobacteria observed—recreation not impaired—tiny specks present, but no streaks or patches—include photos.
- Category 2 (**low alert**): Cyanobacteria present, but at less than bloom levels—include photos.
- Category 3 (**high alert**): Cyanobacteria bloom in progress—include photos.

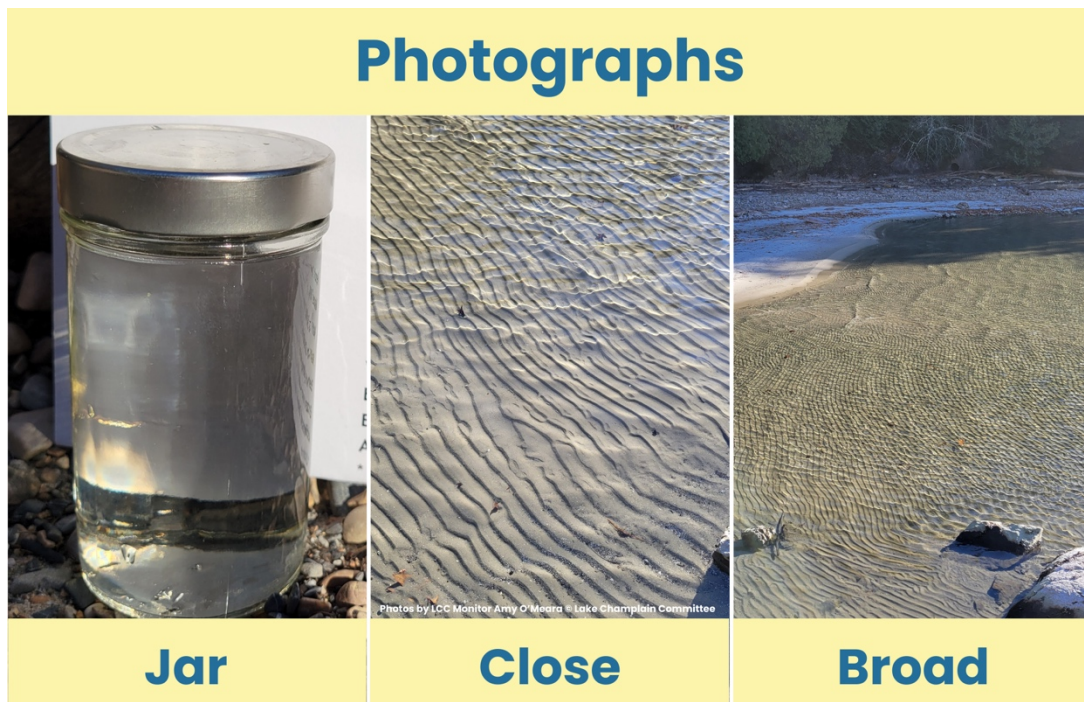
- **Approximately how far along the shore the bloom extends (in feet).**

- **Approximately how far out into the water the bloom extends (in feet).**

- **Photographs**

For category 1d, 2, and 3 conditions, three digital photographs should be submitted via the online reporting form:

- Jar
- Broad
- Close



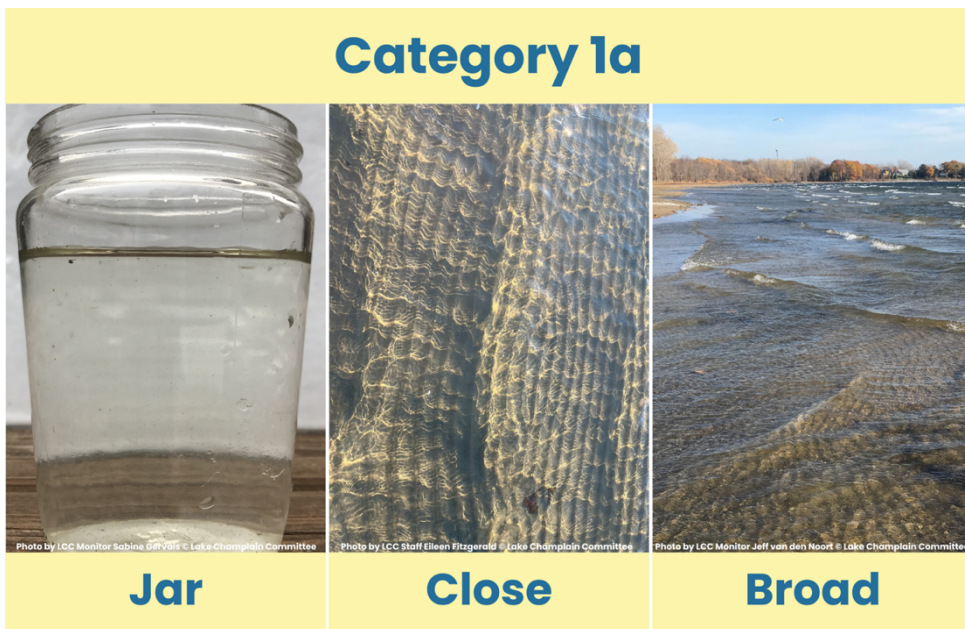
# Water Conditions or Bloom Intensity

**Category 1a: No cyanobacteria observed—clear water.**

There is high visibility through the water column. Objects lower in the water column—sand, rocks, or plants—are clearly visible. The overall appearance of the water is clear.

**What you may observe:**

- Foam
- Shed of insect skin
- Sporadic plants, such as duckweed or American eelgrass

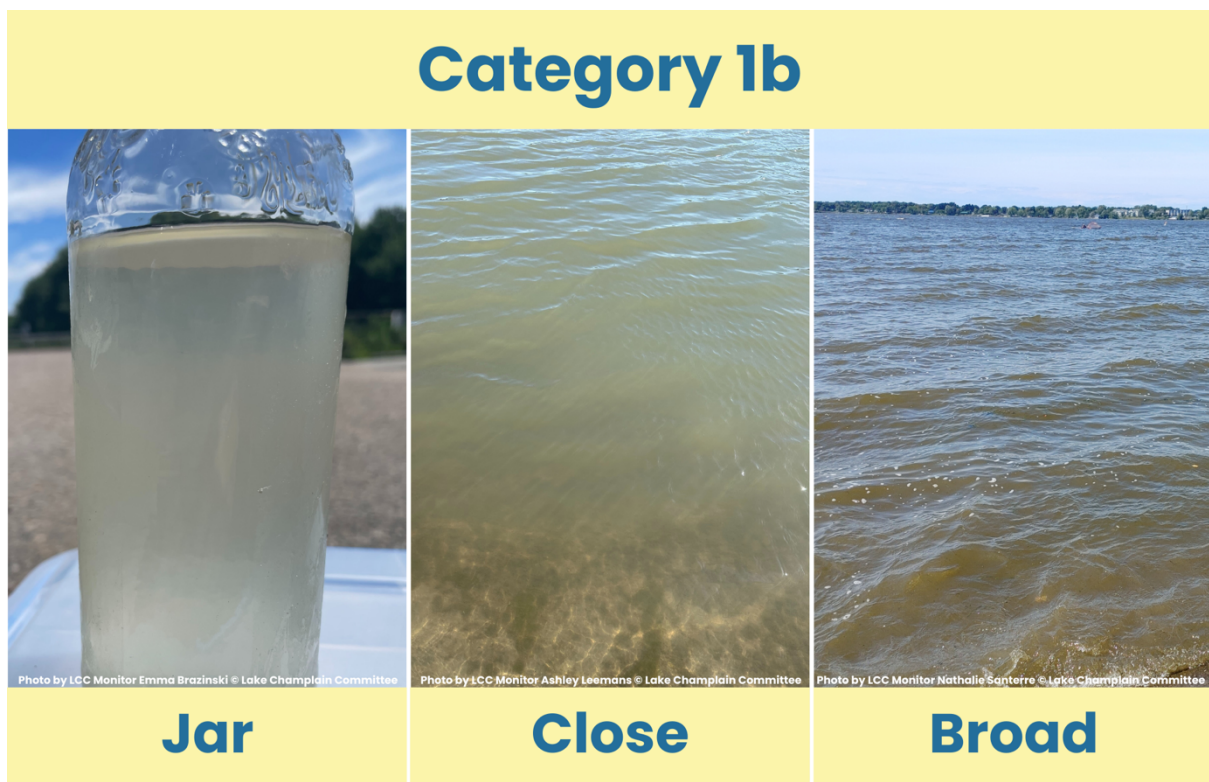


## Category 1b: No cyanobacteria observed—brown or turbid water

There is low visibility through the water column. The overall appearance of the water is brown and cloudy.

### What you may observe:

- Shades of brown water
- Cloudy water
- Shed insect skins
- Sporadic plants, like duckweed or American eelgrass



## Category 1c: No cyanobacteria observed—other material present

### *Other material that isn't cyanobacteria.*

What you may observe: Daphnia sp., duckweed, filamentous green algae, iron bacteria, or pollen. See images and descriptions of each phenomenon below.

### Daphnia sp.

- **What:** a genus of planktonic crustaceans, commonly called water fleas; their resting eggs (winter or dry season) are commonly confused with cyanobacteria
- **Looks Like:** oval seeds
- **Color:** brown
- **Where:** the water surface of lakes, bays, ponds, marshes, rivers, and streams

## Category 1c - Daphnia



## Duckweed

- **What:** a tiny free-floating aquatic flowering plant
- **Looks Like:** a miniature lily pad; individual plants often converge to form floating mats
- **Color:** green
- **Where:** the water surface of lakes, bays, ponds, marshes, rivers, and streams

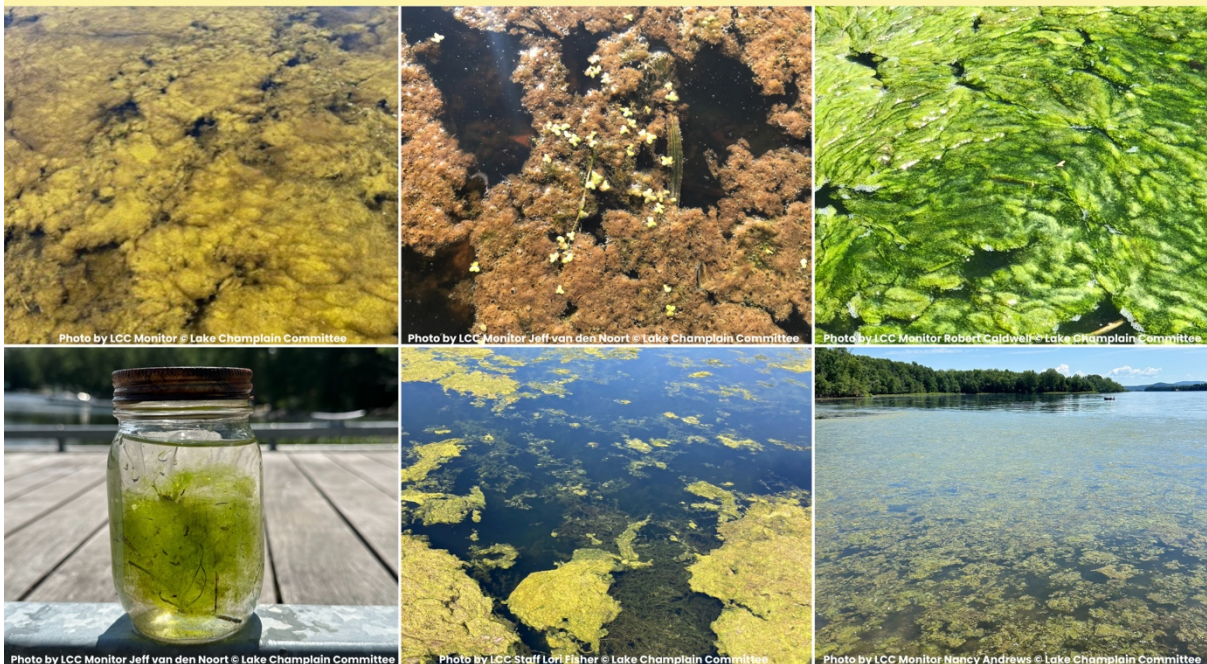
### Category 1c – Duckweed



## Filamentous Green Algae

- **What:** a non-toxic group of algae
- **Looks Like:** stringy, hairy, silky, or clumpy; strands that tangle around paddles or boat hooks; wet fabric attached to rocks or the lake bottom; floating rafts or thick mats of bubbling scum
- **Color:** green or brown
- **Where:** the water surface or bottom of lakes, ponds, rivers, and streams; attached to rocks above and below the water

### Category 1c – Filamentous Green Algae



**Not sure if you're seeing potentially toxic cyanobacteria or non-toxic filamentous green algae?** A stick test is a good way to differentiate cyanobacteria from plant matter. If you can pick it up with a stick or paddle, or see plant leaves, it's generally not cyanobacteria.

Keep in mind that the stick test is not 100% reliable because some types of cyanobacteria, like benthic cyanobacteria, can be picked up with a stick.

## Filamentous Green Algae Stick Test



Photo by LCC Monitor Jeff van den Noort © Lake Champlain Committee



Photo by LCC Staff Lari Fisher © Lake Champlain Committee



Photo by LCC Monitor Jeff van den Noort © Lake Champlain Committee

**Benthic cyanobacteria is typically darker, thicker, and more clumped together when picked up with a stick (top photo) compared to green algae, which usually appear bright green and grow as loose filaments or hair-like strands rather than cohesive mats (bottom photo).**

You can find more information on benthic cyanobacteria on page 47.



Photo by Ismar Biberovic from Tetra Tech



Photo by LCC Monitor Jeff van den Noort © Lake Champlain Committee

## Iron Bacteria

- **What:** organisms that obtain energy by oxidizing dissolved iron
- **Looks Like:** red, orange, or brown slime and oily sheens
- **Color:** red, orange, and brown
- **Where:** locations that have iron in the soil and are frequently wet

### Category 1c – Iron Bacteria



## Pollen

- **What:** a fine, powdery fertilizing element of flowering plants
- **Looks Like:** a thin film of sawdust on the water
- **Color:** mustard yellow
- **Where:** the surface of any body of water, especially at shorelines; accumulating on hard surfaces like vehicle windshields, sidewalks, and parking lots

### Category 1c – Pollen



## Category 1c - Pollen



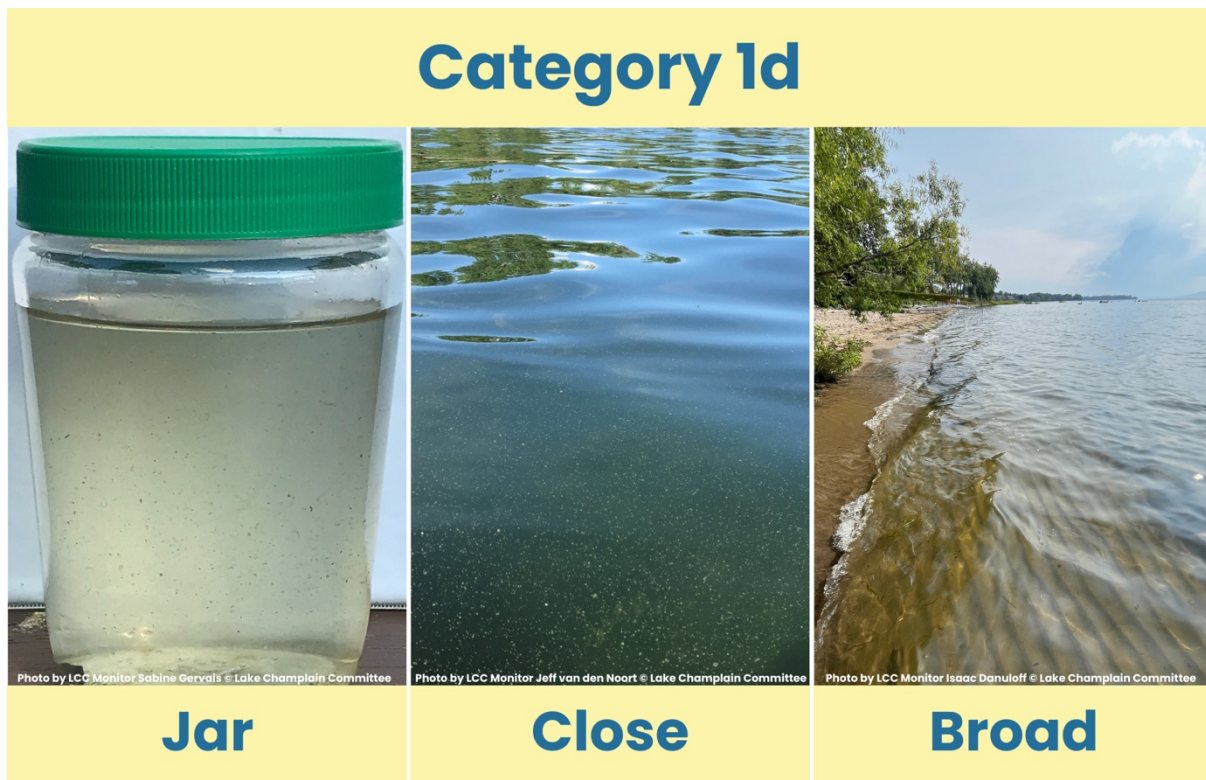
Cyanobacteria are generally restricted to the water, whereas pollen can show up not only on the waterbody, but also in the vicinity. Reference the image below to see pollen on the windshield of a parked car (left), in a parking lot (middle), and along a shoreline (right).

## Category 1d: Little cyanobacteria observed—recreation not impaired—tiny specks present, but no streaks or patches—include photos

When cyanobacteria start to be visible in water, they often appear as tiny specks or fuzzy balls; cyanobacteria can occur in densities so low that they do not impair recreational enjoyment of the water.

### What you may observe:

- Water can appear clear, but **green tiny specks** or fuzzy balls may be visible upon close inspection
- No surface or shoreline accumulations of cyanobacteria

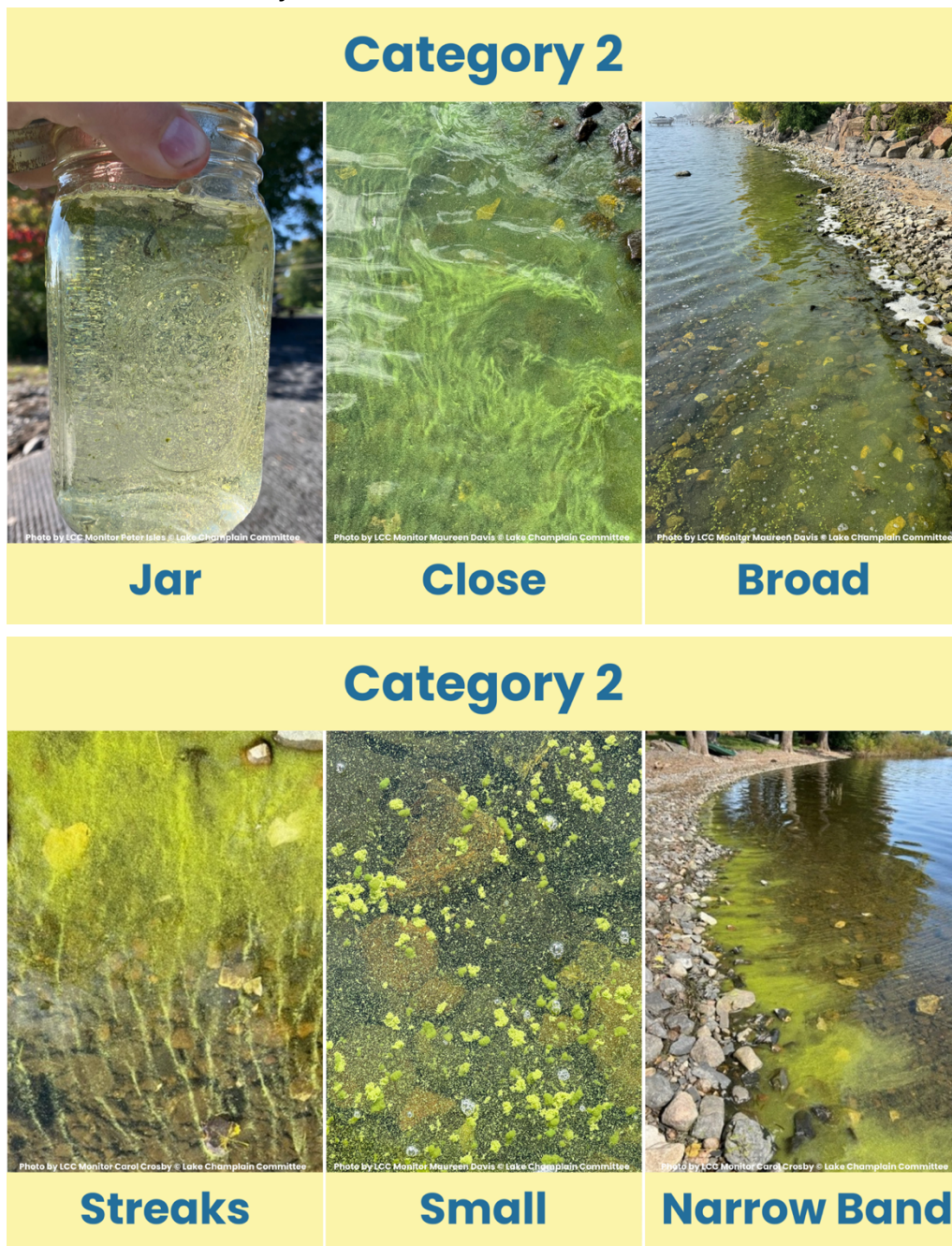


## Category 2: Cyanobacteria present, but at less than bloom levels—include photos

Some cyanobacteria accumulate in the water column or on the surface, but not a continuous layer.

### What you may observe:

- Open water **does not** appear green, blue, or blue-green
- **Streaks** of cyanobacteria on the water surface, but not a continuous layer
- **Small patches** of cyanobacteria on the water surface, but not a continuous layer
- A **narrow band** of cyanobacteria accumulation at the shoreline



## Category 3: Cyanobacteria bloom in progress—include photos

Extensive cyanobacteria accumulation in the water column or on the surface, forming a continuous layer.

### What you may observe:

- Open water **does** appear green, blue, or blue-green
- Continuous layer of **surface scum** on the water
- A **wide** band of cyanobacteria accumulation at the shoreline that extends at least 10-15 feet offshore



While all blooms in this category indicate a high density of cyanobacteria, they can appear differently based on factors like water movement, bloom density, and cyanobacteria species. It's also common to observe combinations of these types within the same bloom, as environmental conditions can create mixed patterns. Below are the primary types of Category 3 cyanobacteria blooms that you may observe:

- Green Water
- Striations
- Spilled Paint
- Scum
- Globules
- Speckled
- Dried Crust

## Green Water

### What you may observe:

- Water appears uniformly green, ranging from pale green to dark green.
- No distinct streaks, patches, or scum visible; the color is evenly dispersed.
- Can give the appearance of dyed or murky water.
- Often occurs in calm, nutrient-rich areas.

### Category 3 - Green Water



# Striations

## What you may observe:

- Cyanobacteria form linear streaks or bands across the water surface.
- Alternating patterns of denser cyanobacteria and clearer water.
- Water currents or wind patterns visibly influence the alignment of the bloom.
- Found in open water, near docks, or along flowing river systems.

## Category 3 - Striations



# Spilled Paint

## What you may observe:

- Water surface appears smooth and opaque, resembling spilled paint.
- Dense, continuous coverage of vibrant green, blue-green, or teal colors.
- Little to no visible texture or separation in the bloom.
- Typically accumulates in calm areas, such as bays or along sheltered shorelines.

## Category 3 – Spilled Paint



Photo by LCC Monitor Amy Meller © Lake Champlain Committee



Photo by LCC Monitor Bruno Turfelli © Lake Champlain Committee



Photo by LCC Monitor Steven Langevin © Lake Champlain Committee

## Why are some paint spill blooms teal?

Teal blooms are a specific type of "spilled paint" cyanobacteria bloom, characterized by their striking teal or blue-green coloration. This unique color is due to the release of phycocyanin, a pigment found in cyanobacteria. Phycocyanin becomes more visible when the chlorophyll in the cells begins to degrade, often during the later stages of a bloom or as the cells start to decay.

Teal blooms are commonly associated with calm, nutrient-rich waters and can accumulate along shorelines or in sheltered areas. They may also indicate a high density of cyanobacteria, as well as cell breakdown and the potential for toxin release.

# Category 3 – Teal Spilled Paint



Photo by Andy Watt © Lake Champlain Committee



Photo by LCC Monitor Tony Tanneberger © Lake Champlain Committee



Photo by LCC Monitor Nathalie Santerre © Lake Champlain Committee

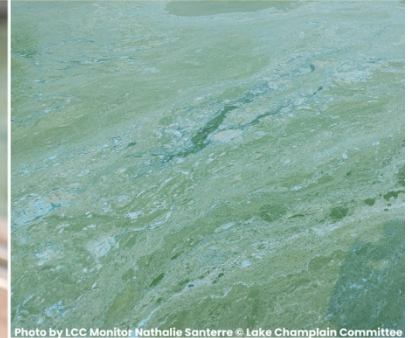


Photo by LCC Monitor Nathalie Santerre © Lake Champlain Committee



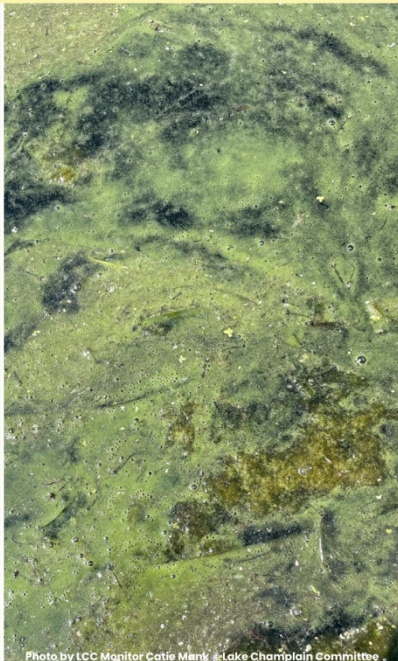
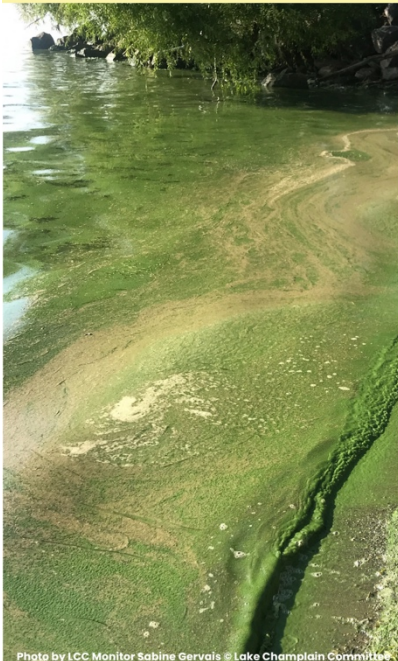
Photo by Diane Larose © Lake Champlain Committee

# Scum

## What you may observe:

- Thick, foamy, or gelatinous layers floating on the water surface.
- Often bright green, blue-green, or yellow, with a shiny or slimy appearance.
- Accumulates along shorelines, in corners of water bodies, or in stagnant areas.
- May emit an unpleasant odor as it decays.

## Category 3 – Scum

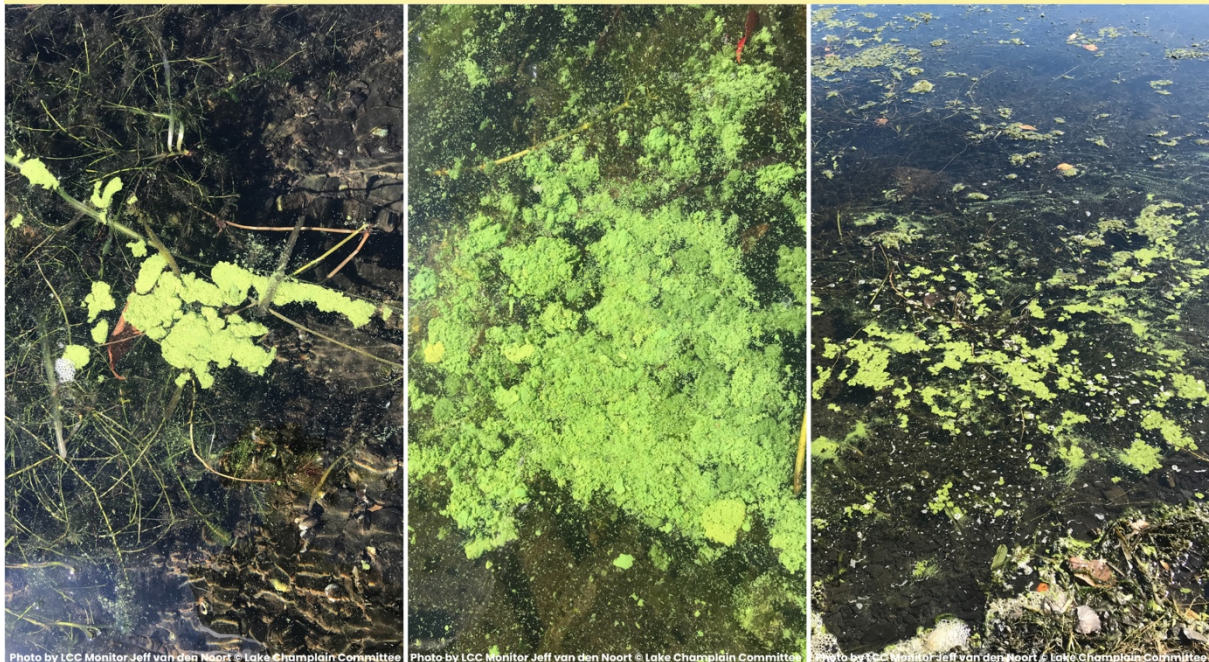


## Green Globules

### What you may observe:

- Small, round clumps or globules floating within the water column or on the surface.
- Typically green or blue-green, with a jelly-like consistency.
- Can appear suspended beneath the surface or aggregated in patches.
- Common in still water with high cyanobacteria densities.

### Category 3 - Globules

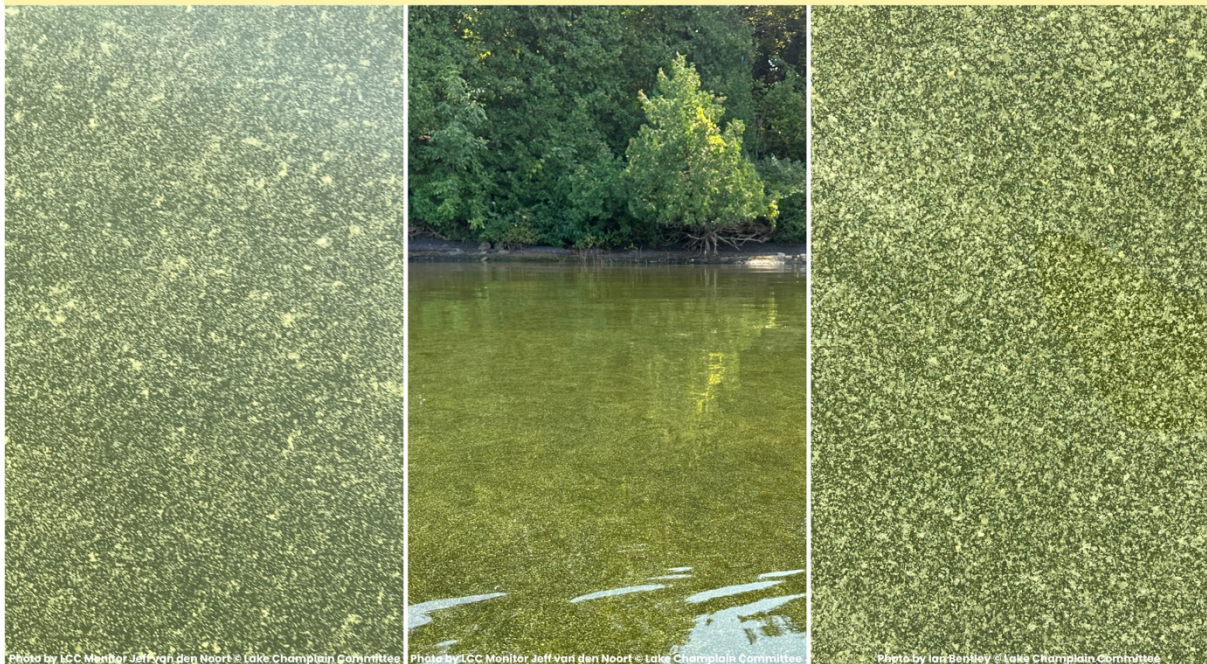


# Speckled

## What you may observe:

- Concentrated amount of specks or fuzzy balls floating throughout water column
- Often green or yellow-green, with powder-like appearance
- Visible separation between specks but can present even dispersal

## Category 3 – Speckled



## Dried Crust

### What you may observe:

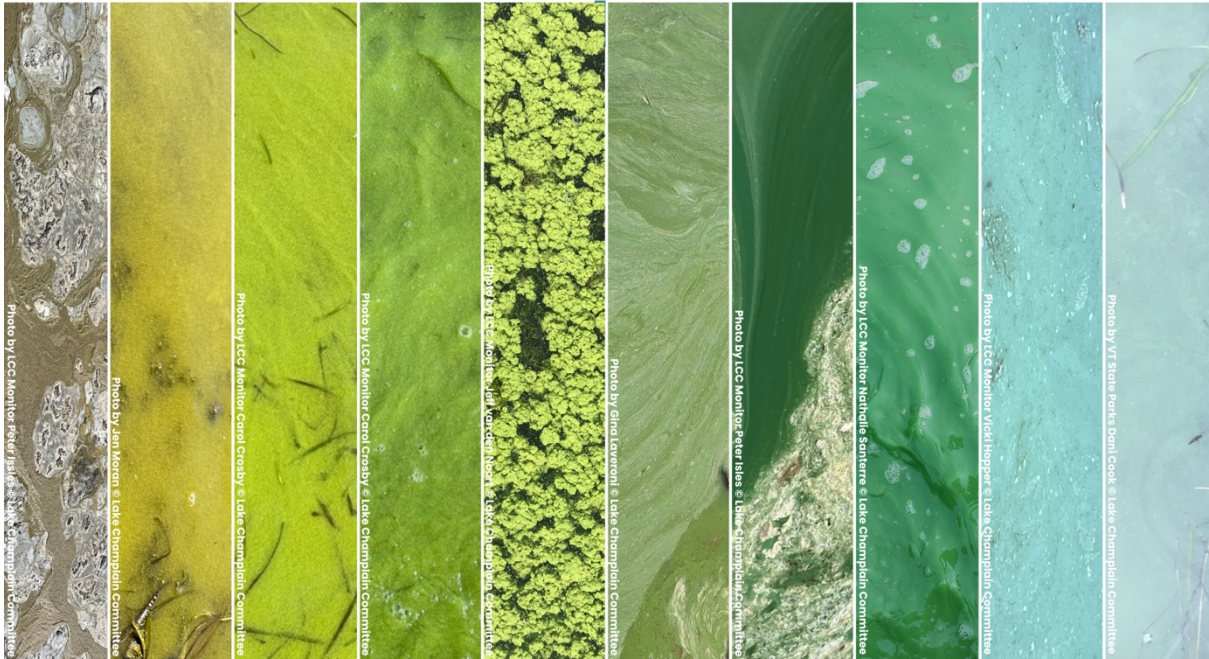
- Cyanobacteria that have dried along shorelines or on exposed surfaces.
- Appears as a flaky, crusty layer, often green, brown, or black.
- Found on rocks, sand, or vegetation exposed to air after water levels drop.
- May release a musty odor when disturbed.

## Category 3 – Dried Crust



Category 3 cyanobacteria blooms can present a wide variety of colors, ranging from brown and yellow to vibrant green and teal. These colors are influenced by the pigments within the cyanobacteria, environmental factors, and the stage of the bloom. Observing bloom color can provide clues about its density, composition, and whether decay processes are occurring, with teal hues often indicating the release of phycocyanin during cell breakdown.

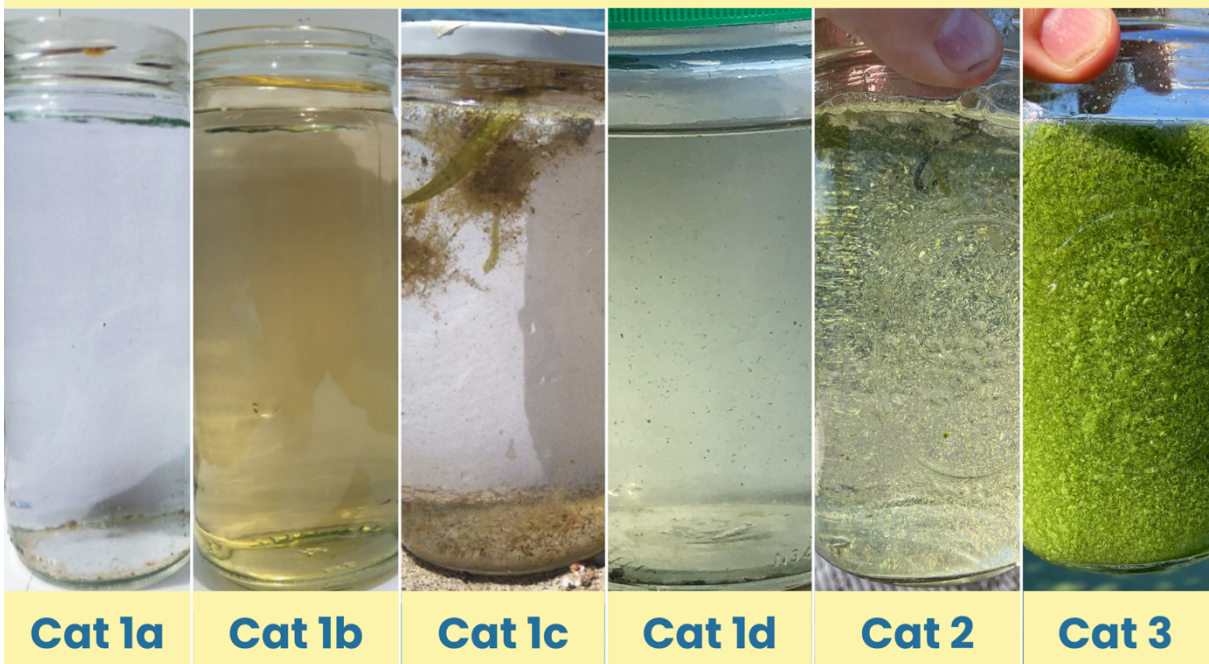
# Category 3 - Bloom



## Jar Test of Each Category

The jar test line-up compares and contrasts the six bloom intensity categories: 1a, 1b, 1c, 1d, 2, and 3. View instructions for taking water samples here.

## Jar Test





LCC photo by Lori Fisher

## Where to Send a Water Sample

If you observe water conditions that you don't know how to categorize, take pictures as described in the "How to Photograph Blooms" section of this toolkit and also take a water sample, following this protocol:

1. Collect a water sample at least the size of a quarter.
2. **Double-bag your sample in sealable plastic bags:**
  - a. Bag 1: put the water in the first bag and squeeze most of the air out of the bag.
  - b. Bag 2: put the first bag containing the water sample in a second outer bag and add a little extra air to it so it acts like bubble wrap.
3. **Place your sample in a cool place (either a fridge or a cooler).**

Email both [cyano@lakechamplaincommittee.org](mailto:cyano@lakechamplaincommittee.org) and [Peter.Isles@vermont.gov](mailto:Peter.Isles@vermont.gov) to let us know what prompted you to collect the sample. Include pictures and a description to help us understand what you viewed in the field. We will be in touch with where to send / drop off the sample.



## What Happens to the Data Monitors Collect

Weekly data from LCC and other monitors is used to populate the VDH Cyanobacteria Public Tracker map housed on the Vermont Department of Health (VDH) website. All reports are vetted by the Lake Champlain Committee (LCC) or our partners at VDH and the Vermont Department of Environmental Conservation (VT DEC) before they show up on the tracker. You can check the map throughout the season for data on the Lake Champlain sites as well as several inland lakes. The vast majority of information provided on the site comes through LCC's cyanobacteria monitoring program. It's a clear illustration of the critical role community scientist monitors play in assessing lake conditions. The weekly reports are also provided to public health, environmental, and recreation agencies and interested community members. [Please pass on this link](#) to anyone you think might be interested in signing up to receive our weekly emails.

### Reports from Past Years

If you're interested in the results from the 2022 cyanobacteria monitoring program or from previous years, click on the listings below to access a PDF of the final report from the VT DEC website, [click here for a link to a PDF of the Final Report](#).

Reports from prior years can be accessed by scrolling down to the bottom of this page on the VT DEC website and clicking on the report of interest.

- [2022 Season Cyanobacteria Monitoring Annual Report](#)
- [2021 Season Cyanobacteria Monitoring Annual Report](#)
- [2020 Season Cyanobacteria Monitoring Annual Report](#)
- [2019 Season Cyanobacteria Monitoring Annual Report](#)
- [2018 Season Cyanobacteria Monitoring Annual Report](#)

- [2017 Season Cyanobacteria Monitoring Annual Report](#)
- [Find older reports here, title search "cyanobacteria"](#)

## Less Common Cyanobacteria / Benthic Cyanobacteria

### *Gleotrichia* sp.



### *Gleotrichia* sp.

A genus of benthic cyanobacteria that forms yellow-green spherical colonies that are approximately 1/16<sup>th</sup> of an inch wide and look like coriander (cilantro) seeds on the lake surface. They produce resting cells—referred to as akinetes—near the end of their growth cycle and under adverse conditions; these cells are resistant to cold temperatures and can overwinter in lake sediments. In the spring, the resting cells grow in the sediments, feeding off nutrients. The cells then divide and expand to form colonies. Gas vesicles within the cells enable them to rise to the water surface.

The left photo shows a jar test of *Gleotrichia*, where the spherical colonies rose to the water surface in response to heat and light (when the jar was unlidded). The middle photo exhibits how the colonies appear on the water surface, up close, and the right photo displays how colonies can appear on the water surface from a distance.

## Benthic Cyanobacteria: Globules

# Benthic Cyanobacteria: Globules



There are several types of benthic cyanobacteria (or cyanobacteria that grows on the bottom of lakes and rivers) that form small rounded colonies, or globules, that can look very similar in the field. Photos required!

### What you may observe:

- Small colonies with gelatinous or leathery textures and a round or elongated shape.
- Colonies attached directly to rocks, sediment, or other substrates (can detach and float to the surface).
- Colors ranging from green to yellow, brown, or black, sometimes with multiple colors present within the same colony.
- Forms pea- to egg-sized gelatinous spherical colonies.

## Benthic Cyanobacteria: Floating Mats

### Benthic Cyanobacteria: Floating Mats



Some benthic cyanobacteria can detach from the bottom and form floating mats, which may resemble other algae or organic debris in the field. Photos required!

#### What you may observe:

- Loose mats or clumps floating at the water surface or just below it, often accumulating along shorelines or in calm areas
- Colors ranging from dark green and olive to brown, yellow, or black, sometimes with multiple colors within the same mat
- Typically darker, thicker, and more clumped together when picked up with a stick compared to green algae, which usually appear bright green and grow as loose filaments or hair-like strands rather than cohesive mats.



## Benthic Cyanobacteria: Attached Mats

### Benthic Cyanobacteria: Attached Mats



There are several types of benthic cyanobacteria that grow attached to the bottom and form a carpet like mats. Photos required!

#### What you may observe:

- Dark brown, black, olive, or deep green mats attached to cobbles, boulders, or other submerged surfaces
- Velvety, slimy, or felt-like coatings that spread across rocks and may form patchy or continuous carpets
- Typically darker, thicker, and more clumped together when picked up with a stick compared to green algae, which usually appear bright green and grow as loose filaments or hair-like strands rather than cohesive mats.

## Spread the Word

As monitors and partners in this program, please help spread awareness about the risks of cyanobacteria and actions to take, particularly if you see people or pets recreating in bloom conditions. Your outreach builds a more informed and engaged community. No one should be drinking untreated lake water, regardless of whether or not there is a bloom. If you draw water from the lake and suspect a bloom near your intake, don't drink, cook, wash dishes, brush your teeth or shower with the water. Boiling water doesn't destroy cyanotoxins and can release them into the air. Posting to Front Porch Forum.

## Cyanobacteria Monitoring Program

### Funders & Partners

The Lake Champlain Committee's cyanobacteria monitoring program is funded by LCC members and the Lake Champlain Basin Program. Key program partners include the Vermont Department of Health (VDH), Vermont Department of Environmental Conservation (VT DEC), Vermont Department of Forests, Parks, and Recreation (VT FPR), New York Department of Environmental Conservation (NYSDEC), New York Department of Health (NYSDOH), the Lake Champlain Basin Program (LCBP), New England Interstate Water Pollution Control Commission (NEIWPCC), and the University of Vermont Rubenstein Ecosystem Science Lab.

This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement (LC00A01526) to NEIWPCC in partnership with the Lake Champlain Basin Program (LCBP). NEIWPCC manages LCBP's personnel, contract, grant, and budget tasks and provides input on the program's activities through a partnership with the LCBP. The contents of this document do not necessarily reflect the views and policies of NEIWPCC, the LCBP, or the EPA, nor does NEIWPCC, the LCBP or the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

# Appendix

## Photo Card Template

Date: \_\_\_\_\_

Site Number: \_\_\_\_\_

Site Name: \_\_\_\_\_

Site Town: \_\_\_\_\_

Sample Time\*: \_\_\_\_\_ AM | PM

Photo Time\*: \_\_\_\_\_ AM | PM

Report Type\*: Routine | Supplemental

Water Temp. (°F): \_\_\_\_\_

Water Surface\*: Calm | Rolling | White Caps

Water Conditions\*: 1a | 1b | 1c | 1d | 2 | 3

Extent along shore (ft.): \_\_\_\_\_

Extent into water (ft.): \_\_\_\_\_

Additional Details: \_\_\_\_\_



\* Circle

Date: \_\_\_\_\_

Site Number: \_\_\_\_\_

Site Name: \_\_\_\_\_

Site Town: \_\_\_\_\_

Sample Time\*: \_\_\_\_\_ AM | PM

Photo Time\*: \_\_\_\_\_ AM | PM

Report Type\*: Routine | Supplemental

Water Temp. (°F): \_\_\_\_\_

Water Surface\*: Calm | Rolling | White Caps

Water Conditions\*: 1a | 1b | 1c | 1d | 2 | 3

Extent along shore (ft.): \_\_\_\_\_

Extent into water (ft.): \_\_\_\_\_

Additional Details: \_\_\_\_\_



\* Circle

## **LCC Guidance on How to Submit a Report on the VDH Tracker**

You can access informational documents on how to file a cyanobacteria monitoring report at the following links:

- [How to Submit a Cyanobacteria Monitoring Report Via the VDH Online Report Form on a Desktop](#)
- [How to Submit a Cyanobacteria Monitoring Report Via the VDH Online Report Form on a Desktop](#)