

Are there Cyanobacteria in Lake Sunapee?

Gloeotrichia echinulata, or "Gloeo," is a cyanobacterial species that has been appearing in Lake Sunapee regularly since 2004. (See LSPA's *Gloeotrichia echinulata* pamphlet). Gloeo is a cyanobacterium that contains low levels of toxins and can form a thin yellowish-green layer on the lake surface primarily in late August and September.

There are a few other species of cyanobacteria that have been identified in Lake Sunapee, such as *Anabaena* and *Microcystis*, but significant surface blooms have not been recorded.



Anabaena under a microscope
www.lernz.co.nz/research-themes/harmful-algal-blooms/species

How can we manage Cyanobacteria blooms?

The most important preventive measure to reduce cyanobacteria is to limit nutrient loads of nitrogen and phosphorus into a lake. Most cyanobacteria are dependent on high levels of phosphorus in lake water and lake sediment. Increased phosphorus levels in lakes are often caused by agricultural and lawn fertilizers in runoff, excess sediment from construction and other disturbed sites, certain detergents, and leaky septic systems.

Want to know more about
Cyanobacteria?

Contact LSPA
if you have further questions.



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Cyanobacteria in our Lakes



Cyanobacterial (*Gloeotrichia echinulata*) bloom,
Lake Sunapee, September 2013

LSPA

*Devoted to the Environmental Quality
of the Lake Sunapee Watershed*

Cyanobacteria, formerly known as blue-green algae, are some of the oldest organisms on earth. Cyanobacteria were responsible for filling the atmosphere with oxygen three billion years ago and made the planet habitable for humans and animals. Unfortunately, in current times, cyanobacteria can pose problems for humans by blooming in both saltwater and freshwater. Their blooms often have a distinct odor, a yellow or green discoloration of water, and may be toxic.

What are Cyanobacteria?

Cyanobacteria are photosynthesizing bacteria that are commonly classified as algae. The cyanobacteria taxonomic group is extremely large and very diverse. The size of a cyanobacterial colony varies per species, ranging from microscopic to almost 1/16th of an inch. Some cyanobacteria form spherical colonies, while others exist as long filaments. Within a lake, different species have different life cycles, and some species live in the water column, while others reside on rocks or in the sediment.

Where do Cyanobacteria live?

Cyanobacteria can exist in some of the most diverse and harsh habitats on the planet, including polar ice caps and hot springs. You can find cyanobacteria in almost all bodies of water, as well as within most soils.

What gives Cyanobacteria an advantage over other algae?

Because cyanobacteria have lived on the earth for such a long time, many species have evolved special traits that enable survival.

- ◇ Most cyanobacteria have the ability to produce nitrogen, an important nutrient for algal growth.
- ◇ Many species are able to control their buoyancy with gas bubbles, allowing them to move from lake bottom to the water surface to maximize use of light and temperature.
- ◇ Some cyanobacteria produce special cells that become dormant at times of low light or temperatures, allowing the population to survive stressful environmental conditions.

Are Cyanobacteria helpful?

Most cyanobacteria photosynthesize, producing oxygen that humans and animals can breathe. They help keep soils moist and aid the survival of many important organisms, such as fungi, lichens and ferns.

Are Cyanobacteria harmful?

Certain species of cyanobacteria have evolved the ability to produce toxins to resist being eaten by predators. These toxins can also be harmful to humans and animals, and there have been approximately 50 recorded human deaths worldwide believed to be due to cyanobacteria-contaminated water. Not all cyanobacterial species produce toxins, and only a very high density of toxic cyanobacteria would be unsafe. The NH Department of Environmental Services routinely monitors public beaches and conducts site visits at lakes and ponds where a bloom is suspected.