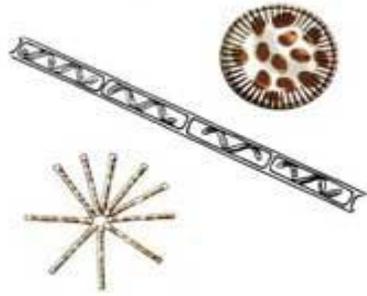


Algae and Lakes

Algae are primitive, usually microscopic, organisms found in every lake. Like green plants, most algae have pigments that allow them to create energy from sunlight through the process of photosynthesis. Algae use this energy and nutrients such as nitrogen and phosphorus to grow and reproduce. Algae form the base of the food web in lakes. Small animals called zooplankton feed on algae. In turn, zooplankton become food for fish. Algae also produce some of the oxygen found in lake water and in the atmosphere



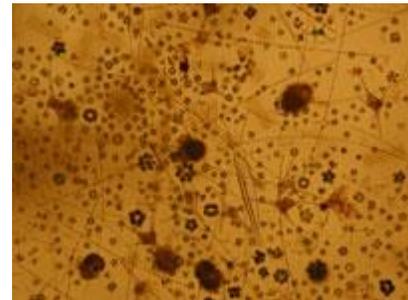
Drawings from IFAS, Center for Aquatic Plants, University of Florida, 1990; and U.S. Soil Conservation Service, Water Quality Indicators Guide: Surface Waters, 1989.

What types of algae live in my lake?

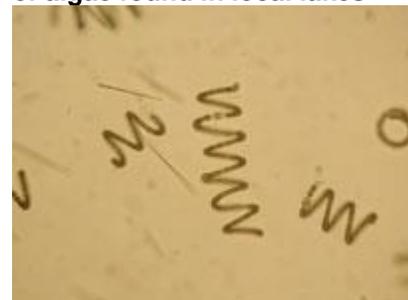
There are thousands of species of freshwater algae living in lakes around the world. Most species of algae in Snohomish County lakes are free-floating, collectively known as phytoplankton. There are also many species of algae that attach to rocks, docks, and aquatic plants, called periphyton.

There are three main groups of algae—the green algae (Chlorophyta), the golden brown algae (Chrysophyta) which also includes a large group called diatoms, and the blue-green algae (Cyanobacteria)—as well as several smaller groups (euglenoids, cryptomonads, and dinoflagellates). Under the microscope, many algae have beautiful shapes and colors.

Algae are important for healthy lakes. Without algae, your lake would likely be devoid of fish and other wildlife. Most algae are inconspicuous and do not cause problems. Unfortunately, a few types of algae can cause water quality problems in lakes.



A typical microscopic view of algae found in local lakes



Anabaena, a common blue-green algae in its spiral form

What makes algae grow in my lake?

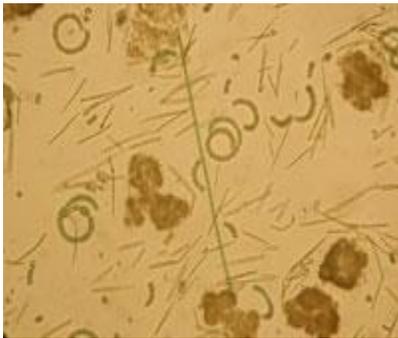
Algae grow when there is adequate sunlight, enough nutrients (especially phosphorus), and the right temperatures for their particular needs. Both the amount and types of algae in a lake can vary through the seasons. The amount of algae tends to be high in spring and early summer because of increasing water temperature, more sunlight, abundant nutrients from winter rains, and low amounts of grazing by zooplankton (microscopic floating animals). Because of their rapid growth, diatoms are often the algae that proliferate in the spring. In early summer, green algae usually dominate. By

mid-summer, the amount of algae may begin to decline as they outgrow the available nutrients and zooplankton grazing increases. Late summer and fall may be dominated by blue-green algae.

Can algae cause problems in my lake?

Although algae are essential for a healthy lake, too much algae, especially nuisance types, can cause problems. Algae can coat docks and pipes, cloud the water enough to inhibit plant growth, deplete oxygen when they die and decay, create odor and taste problems, and cause skin problems similar to swimmers itch. Dense growths of algae are called "blooms". Algae blooms sometimes create thick, unpleasant scums on a lake's surface. Given the right conditions, some algae even produce toxins which can be deadly to pets and livestock, and threaten human health. Algae blooms and their associated problems are usually the result of excess nutrients in the water, especially excess phosphorus.

What types of algae cause problems?



Several common blue-green algae species including: *Aphanizomenon*, *Microcystis*, *Oscillatoria*, and *Anabaena*

When lakes suffer from algae problems, often the main culprits are blue-green algae. Blue-greens are classified as bacteria (cyanobacteria) but have many characteristics of true algae. Blue-greens also have qualities that make them especially prolific. They have odd shapes and other defenses which discourage zooplankton from eating them, so there are fewer natural controls on their growth. Some blue-greens can also fix nitrogen directly out of the atmosphere if there is not enough of this nutrient in the water. Blue-greens can also control their buoyancy to move to the most advantageous depths in a lake to reach light or nutrients.

Blue-greens are responsible for toxic algae blooms that can occur in lakes. The presence of blue-green algal blooms with surface scums is a strong indication that a lake is receiving excessive amounts of nutrients.

Filamentous green algae can also cause problems in a lake. These algae are long, stringy, and slimy. They form mats over the top of aquatic plants or billowing clouds just below the surface. As they die, filamentous green algae can also form thick, messy mats on the lake surface. Nutrient-enriched lakes often experience problems with nuisance filamentous green algae. Fortunately, these algae do not produce toxins.

How can I help my lake avoid algae problems?

Algae blooms and their associated problems are usually the result of excess nutrients in the water. Therefore, the primary strategy for preventing algae problems is to control the sources of nutrients washing into the lake. Using no-phosphorus fertilizers, maintaining septic systems regularly, diverting roof and driveway runoff into grassy areas rather than directly to the lake, disposing of pet wastes in the garbage, and planting a buffer of native plants next to the lake shore are the best actions to help prevent nutrients from reaching the water. Find out more about how to reduce nutrients and prevent algae in a lake near you.



Algae bloom that occurred during the summer of 2008

Where can I find more information about algae in my lake?

With the help of citizen volunteers, Snohomish County has collected data about algae levels in local lakes. Chlorophyll a, the active green pigment in algae cells that is used for photosynthesis, is a common measurement of the abundance of algae in a lake. You can find chlorophyll a data for most public-access lakes in the [individual lake reports](#). In addition, water clarity measurements described in these reports help give a picture of the algae in Snohomish County lakes. Because the presence of algae in the upper waters reduces water clarity, measurements of clarity often indicate the relative amount of algae present in a lake. In most cases, more algae will result in poorer water clarity.

Related Topics

- Toxic Algae
- Algae Bloom Examples
- Filamentous Algae
- Snohomish County Algae Projects