

# Algae & Society

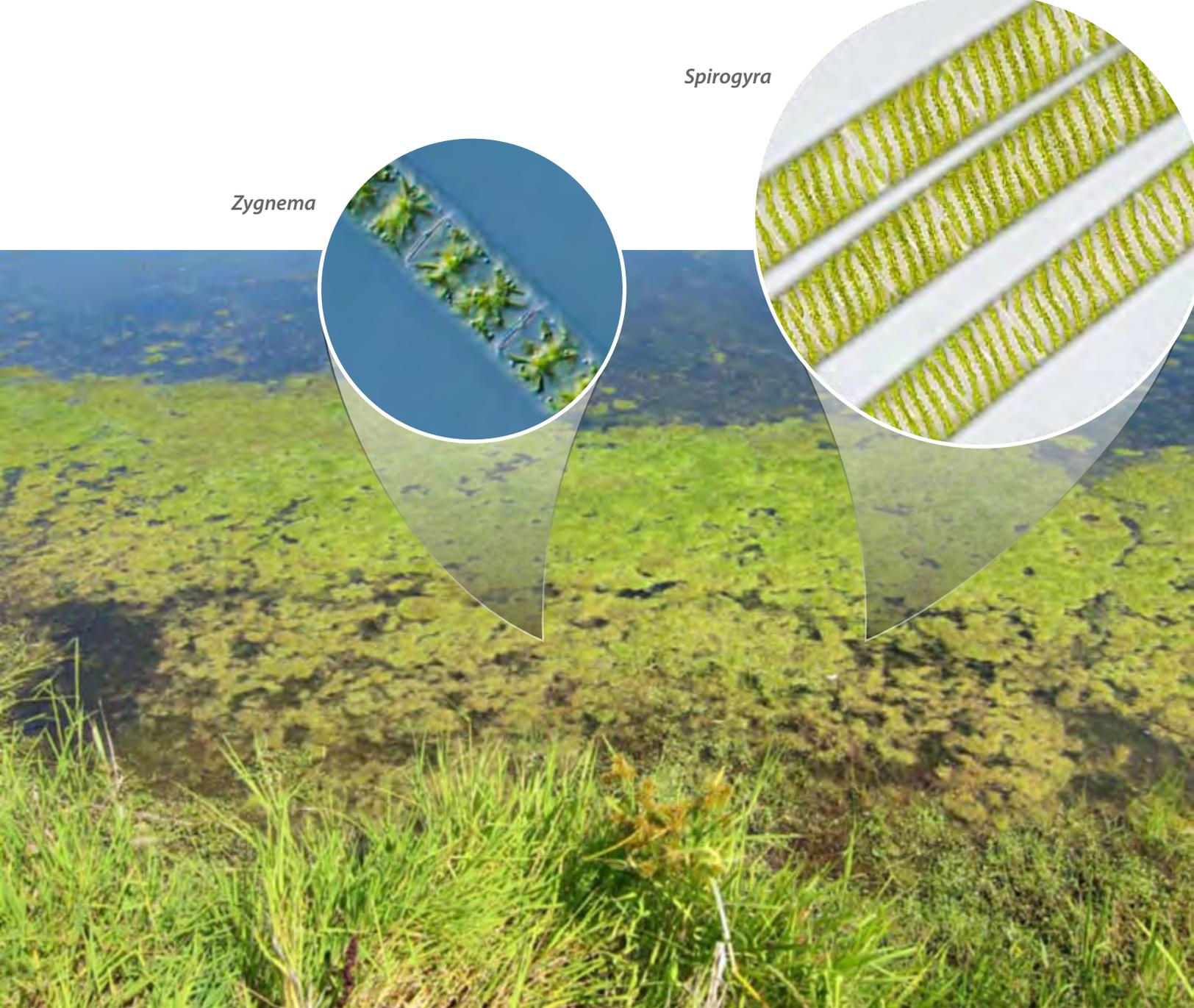


## Pond Algae

**Ponds** are popular features of municipal landscaping projects as well as gardens large and small. You'll see ponds everywhere, in cities as well as suburban and rural backyards. In many places, retention ponds are constructed as a way to prevent erosion, flooding, and harm to nearby lakes or streams. Whether ornamental or functional, ponds attract both people and wildlife.

Ponds contain diverse types of beautiful microscopic algae that are beneficial, and indeed essential to other pond life. That's because algal photosynthesis produces the oxygen and organic food needed by fish and other aquatic organisms, just as land plants generate oxygen and food humans and other terrestrial animals require. If the mineral fertilizer content of a pond is relatively low, you might never know those helpful algae are there.





*Zygnema*

*Spirogyra*

But if too many mineral nutrients wash into ponds from recently fertilized fields or lawns, the algae will grow to conspicuous large populations called “algal blooms.” In some cases the blooming algae are harmless to people and the environment, but in other cases algal blooms harm people, pets, livestock, and wildlife.

Examples of harmless pond algae are frothy leaf-green growths whose oxygen bubbles float them to the surface. These algae are *Spirogyra* and close relatives that are also closely related to land plants; they even reproduce using colorful structures that are the algal versions of flowers. You can verify their presence by touch because they feel slimy. Such frothy, leaf-green, slimy surface algae are not known to harm people or wildlife in any way. In fact, take a deep breath of the oxygen they so abundantly produce and appreciate their beauty.

A pond with harmless frothy, leaf-green, surface algae that are not only related to the grasses in the foreground, but should likewise be appreciated for their beauty and beneficial properties.



This pond has murky, pea soup-like water full of potentially harmful algae. Notice that this grassy lawn reaches right down to the edge of the pond. Fertilizer applied to this or nearby lawns can run right into the lake, boosting algal growth and causing blooms.



*Anabaena*



*Microcystis*

Unfortunately, many people don't appreciate the benefits and beauty of such harmless pond algae. Under the mistaken idea that blooms of any type are harmful in some way, people may be tempted to add chemical products to kill the algae. Such chemicals—known as algicides—work similarly to the commercial herbicides people might use to control weed growth in crop fields or lawns. Though using algicides may generate pleasingly clear waters at first, algicide use, which is expensive, can also worsen algal problems in the long run. Here's why:

When algicides kill algae, cell contents spill out into the water, adding to pond fertility. As soon as the algicides have been rendered ineffective by microbial action, algae will become abundant again, perhaps even more so, and the replacement species may not be so harmless.

Ponds that are rich in the mineral nutrients that boost algal populations have a greater tendency to contain blue-green algae, also known as cyanobacteria. Blue-green algal blooms, which give water a bluish-green or olive cast, are known to produce harmful toxins. When blue-green algae are abundant, so are the toxins they release into the water. These toxins can sicken people, but can be lethal to dogs, which are very sensitive. To be on the safe side, dogs

A microscopic view of a water sample taken from the murky pond shows "blue-green" algae (cyanobacteria) that are associated with the production of toxins. When abundant enough to make water murky, these algae can injure the health of humans and other animals. The spherical dark structure is an aggregation of tiny cells known as Microcystis (whose name means "small cells"). This Microcystis appears black rather than blue-green because the algal cells contain structures that help them float, but also refract light. The thin filaments are cyanobacteria known as Plankothrix (which means "floating threads").



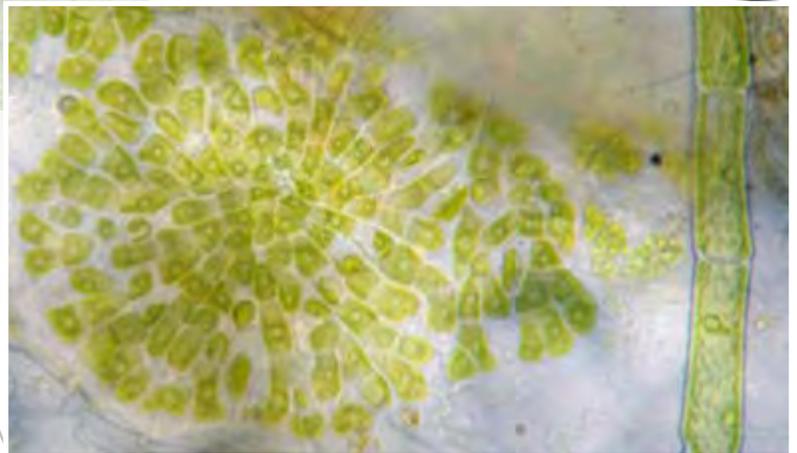
This urban retention pond, whose edges have been planted with attractive native flowering plants, does not harbor blooms of potentially toxic algae. The plants sponge up fertilizer that would otherwise run off nearby grassy slopes and into the pond. Because the fertilizer in run-off has been intercepted, it does not foster harmful algal blooms. Many types of algae occur in this pond, but they are of beneficial types that do not harm humans or wildlife.

should not be allowed to play in or drink water that has a conspicuous algal bloom.

Fortunately, easy steps can be taken to improve the appearance of ponds while also reducing the potential for toxic algal blooms to develop. One attractive method is simply to plant native flowering plants around pond edges. These plants' roots will intercept fertilizers that would otherwise wash into the pond. The extra fertilizer boosts the production of attractive flowers that benefit butterflies and other wildlife. Since the plants take up the excess fertilizer, the pond water will not be over-fertilized, which makes algal blooms of any type less likely to form.

You say you want to get close to the water's edge? Build a walkway that allows you to walk through the planting to the water. Then you will be able to watch frogs, dragonflies and other wildlife that will be attracted to your edge-planted pond.

Other measures that will decrease the growth of algae in ponds include fertilizing nearby lawns or fields when rain is not predicted. This action increases the odds that grass or crops will take up most of the fertilizer before it can wash into the pond. It's better to use expensive fertilizers to boost grass or crop growth than to overfeed pond algae! ■



A microscopic view of algae from the edge-planted, urban retention pond shows harmless, leaf-green species that provide oxygen and other benefits to pond inhabitants. The radiating, flower-shape is *Coleochaete*, which is so closely related to plants that it is used as a laboratory research model for plants. The filament at right is *Oedogonium*. When this wiry alga grows too abundantly, there is no need for algicides, because *Oedogonium* can easily be removed from ponds by using a leaf rake.