

Algae, sponges and snails oh my!

Many lakefront owners alarmed by what are often natural processes

Some folks living on North Woods lakes have noticed for the first time biological happenings relating to various aquatic critters.

"Lately, several local residents have experienced algae blooms, freshwater sponges, and snails in their water bodies, and have asked us where they come from and whether they are detrimental to water quality on their lake," said Patrick Goggin, county conservationist with the Vilas County Land and Water Conservation Department.

"Learning about these aquatic occurrences can be interesting, providing us with clues to a lake's overall ecology and health," suggested Goggin. "In most cases, the events that residents notice and bring to our attention are a part of the natural lake ecosystem, and reflect the conditions of their particular water body."

Algae blooms

"Blue green algae gets noticed," says Ron Struss, University of Minnesota Extension Educator. "All types of algae can experience periods of rapid growth known as 'blooms.' But in Wisconsin lakes it is the blooms of blue green algae, also known as cyanobacteria, that seem to draw the most attention."

Goggin said blue-green algae are common in Wisconsin lakes and can reach concentrations during summer that cause smelly, nuisance blooms on the water surface that make swimming and other water-recreation unappealing.

"Some of these algae can produce natural toxins that are short-lived, but may pose health threats to wildlife, pets, livestock and even humans if present in high concentrations," said Goggin.

Algae are unicellular or small aquatic plants. An algal bloom is a dense concentration of these plants.

"If a lake has high concentrations of nutrients, especially nitrogen and phosphorus, a few types of algae may be out-competing the many other types of algae, becoming so abundant that the water appears murky," he said.

Two common bloom-forming groups of algae are diatoms and blue-green algae.

Diatom blooms usually occur in the late spring or early summer, turning the water brown, but not creating surface scums or odors.

Blue-green algae blooms create greater problems for lake users. The most obnoxious forms are buoyant during the day and can form thick surface scums, especially on a calm sunny afternoon. This scum may be blown into shallow water making the shoreline appear slick with blue-green paint.

"Sometimes surface algae are literally shocked by sunlight and die. As they decompose, the odor can be unpleasant and the oxygen in the water is depleted. If enough algae die and the oxygen in the water is consumed faster than the atmosphere can recharge it, hydrogen sulfide, which smells like rotten eggs and is very toxic to fish, builds up in the bottom water, said Goggin. "Unionized ammonia can also build up to concentrations toxic to fish and other aquatic organisms.

In fall, as lake water cools, populations of blue-green algae crash and surface scums disappear.

"Algae get kind of a bum rap. Algae aren't all bad; in fact a lake without algae would be a very dull place. That's because algae form the base of the aquatic food chain. No algae, no zooplankton. No zooplankton, no fish!" said Goggin.

Many factors, including human activity in the watershed, affect the water quality of a lake. Just as fertilizing a lawn promotes growth, nutrients seeping into a lake can cause algae and other aquatic plants to grow.

He said different types of land use in the watershed may be inadvertently adding nutrients to the lake. As an example, excess fertilizer from lawns can cause algae to bloom which, in turn, decreases light for other plants and animals.

He said water quality may worsen at the peak of the growing season when sunlight and nutrients are plentiful. Also, erosion and sediments washing in from disturbed shorelines or construction sites can bring additional nutrients and muddy the water.

Freshwater sponges

Freshwater sponges are relatives of ocean sponges, which are familiar to most people. Although most of the more than 5,000 known sponges are found in marine environments, 150 species live in freshwater. Freshwater sponges can be found in clear, shallow ponds, streams, and cleaner lakes here in Wisconsin.

He said these sponges are really colonies of tiny animals that are almost microscopic in size. The tiny sponge animals surround themselves with a skeleton of "spongin". Spongin is chemically similar to silk and horn. It is both tough and soft. A protective layer of flattened, stronger cells covers the outside of the colony. This layer has many pores or openings. These pores or openings lead into tubes. Water can easily circulate through these tubes to all of the tiny animals," said Goggin.

Individual animals make up the living jellylike cells of the sponge. He said they feed by filtering microscopic plants and animals from the water.

Sponges filter large volumes of water through their pores, capturing tiny particles for food. Freshwater sponges are much smaller than the average saltwater sponge.

He said the colonies vary in size from a few millimeters to more than a meter across. Sponges grow on rocks, but more commonly on submerged sticks and branches. They usually look like soft blobs of old foam cushion.

"In color, they are a dull creamy brown to medium brown. Many colonies take on a green color because they contain algae. The algae are trapped in the pockets or pores that go all through the sponge," said Goggin.

To keep the sponges from collapsing, he said sponge animals produce rod-like 'spicules' or pillars of silica. Silica is the main substance that makes up sand or glass".

The hard spicules, along with the unpleasant smell of wastes given off by the sponge, help protect the sponge from predators.

"Some small animals are able to attack the soft, jelly-like cells inside the sponge. These are the main enemies of the sponges," notes Goggin.

He said sponges die when the water becomes too cold in the fall or winter. They leave small round structures called "gemmules". The gemmules drop to the bottom of the lake when the dead sponge rots.

"These gemmules are hard and tough. They can survive cold, winter conditions. In the spring, when the water warms up, the gemmules float up from the bottom to start new sponge colonies on submerged branches and rocks," he said.

Sponges are homes and protection for many small animals including worms, insect larvae, and mites. The animals also protect their sponge home against the small animals that would eat the sponge.

Mystery snails

Another critter that has raised eyebrows for some lake residents is the Chinese mystery snail or *Cipangopaludina chinensis*.

"We've had several reports from area lake residents that snails are more prolific this year than in years past on their lake. These snails seem to be a cyclic animal, with a rising and falling to their numbers over a period of years," said Goggin.

There are anecdotal reports as far back as 1892 (Wood) that the snail was offered as a food item in Chinese markets in both San Francisco and Vancouver, B.C. However, it is equally likely that it was introduced to U.S. waters from hobby aquariums emptied into nearby ponds and lakes.

Snails are offered in pet stores for controlling algal growth on the glass walls of aquariums and for reducing the accumulation of litter by their habitat of feeding on bottom detritus.

"Chinese mystery snails can typically be found partially buried in the mud or silt of lakes, ponds, roadside ditches, or slower stretches of streams. They prefer quiet water where there is some vegetation and a muddy substrate. Their size - large specimens reach 65mm in length - make them easier to spot in the shallow water of area lakes," he said.

In addition to their size, other identifying characteristics include a smooth outside of the thin shell, a greenish-brown color, and a hard covering of the shell hole called the operculum.

Goggin says researching the impact these snails have on native species may prove a difficult task.

"For the folks who feel they have excess amounts of the snails in their near-shore habitat can consider gathering up buckets of the snails to discard, he said.

"If you bury the snails on your property, adding some lime to them before you cover them completely to deter raccoons and other scavengers from digging them up."