Ohio Pond News

The Ohio State University

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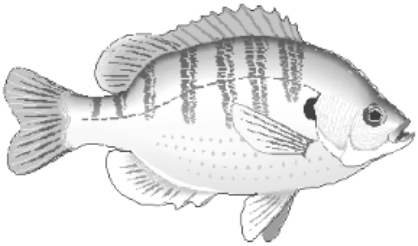

Inside this issue:

Filamentous Algae Management

The ice has come off the ponds and already the filamentous algae has appeared. This in turn has led to phone calls on control. I thought it would be appropriate in this newsletter to review what causes filamentous algae to become a problem and possible control measures.

Filamentous algae is a non-vascular aquatic plant lacking roots. Therefore, algae needs to obtain it's nutrients from the water itself rather than from the pond bottom. Phosphorus is typically the limiting nutrient that governs algae growth. In ponds experiencing problems with filamentous algae, excessive levels of phosphorus are present. There is no need to have expensive tests done to determine phosphorus levels. Excessive filamentous algae = more phosphorus than desired. The opposite is true. Low filamentous algae abundance combined with clear open water indicates low phosphorus levels.

What causes high levels of phosphorus? Typically, sources from outside the pond are the culprit. Canada geese can raise phosphorus levels in that they often go to farm field, parks, and golf courses to eat phosphorus rich food. They then return to the pond and deposit phosphorus rich feces in the pond's watershed. Fertilizing grass around ponds can increase phosphorus levels, particularly if a rain event occurs before the fertilizer is dissolved and completely used by the grass. Speaking of grass, constantly cutting the grass in a direction that causes the clippings to go into the pond can lead to algae problems. Agricultural fields that are very close to the pond can also be problematic as fertilizers and organic runoff from the field can raise phosphorus. Allowing domesticated animals to live and graze in the pond's watershed can also raise phosphorus levels. Runoff water from such enclosures can be very high in nutrients. Septic systems that are within a few hundred feet of a pond have been known to cause algae problems, particularly if they are not well designed and maintained. An overlooked source of unwanted pond nutrients is feeding fish. Keep feed amounts to a minimum, a couple of small handfuls a night at the maximum.

The most effective and cheapest way to control filamentous algae is to limit these unwanted, outside sources of nutrients. Do some detective work by looking for these sources of nutrients, and if at all possible, eliminate the source or at least significantly reduce the amount entering. You will be surprised how the pond will improve. Combining nutrient reduction with bottom, bubble aeration can greatly improve the overall health of a pond.

Manual removal with a rake is often attempted by pond owners, but is generally discontinued quickly. Filamentous algae growth can be explosive and raking will be a continual, labor intensive activity just to stay ahead of it's growth. Raking generally has to occur weekly.

Pond dyes are another option to reduce abundance of filamentous algae. Dyes limit sunlight penetration which limits how deep algae can begin to grow. The less area of the bottom receiving sunlight, the less algae that

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Did You Know?

- All pond owners know the largemouth bass of the genus *Micropterus*. Did you know there are two other *Micropterus* species in Ohio? The first is the smallmouth bass which prefers rivers & streams as well as very large lakes and reservoirs. The other is the spotted bass, which inhabits the Ohio River and it's tributaries and several large southern Ohio reservoirs.

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can grow. Pond dyes need to be added no later than early April as some algae species begin growth very early in spring. Keep in mind the dyes slowly degrade over time, allowing increased sunlight penetration. It is wise to have some extra dye on hand and occasionally add small amounts to maintain desired color. Supplemental additions can be terminated late in August as filamentous algae will begin a natural decline as day length decreases and water temperatures cool.

Pond owners stock grass carp (white amur) in attempt to control filamentous algae. Algae are not a preferred food for grass carp and they will consume all other plants before eating filamentous algae. Grass carp are not recommended for algae control although very high stocking densities will sometimes reduce algae abundance. The problem with high densities of grass carp is the negative effects they will have on other aspects of the pond ecosystem. They essentially create a biological desert by eating all green plants. The absence of a shoreline and underwater plant community can have significant impacts on the predator-prey interaction of fish species.

A number of algaecides are on the market to help control filamentous algae. The "original" algaecide and still used extensively is copper sulfate. Copper sulfate can be effective if applied correctly, but caution must be exercised when applying to ponds where fish communities are important. High, localized levels of copper can kill largemouth bass and bluegill eggs and newly hatched fry. A pond's bluegill population spawns over several months in Ohio ponds and inadvertently eliminating a week's worth of their eggs and fry will not likely cause problems. Earlier and later hatches will provide sufficient numbers of fry. Largemouth bass are more focused in their spawning activities, typically the entire population spawns at nearly the same time. A mistimed copper sulfate application when bass are spawning can have serious consequences on the fish community. If the pond owner sees male bass guarding their nest or guarding schools of small fry, he or she might want to delay treatment for several weeks.

A major problem associated with copper sulfate is "spotty" control, meaning filamentous algae was controlled in parts of the pond and not in other areas. This is largely due to the fact copper sulfate can quickly become bound to pond materials and be rendered ineffective. It is imperative the pond owner insure the required amount of copper sulfate is uniformly spread throughout the pond quickly. This cannot be easily achieved by throwing the granular sulfate crystals throughout the pond. It is best accomplished by dissolving the copper sulfate flakes or granules in water and spraying the suspension evenly around the algae infested areas. Another useful tip is to apply in the early morning on a sunny day. This maximizes uptake by filamentous algae before the copper can become bound and rendered ineffective.

In response to problems associated with copper sulfate, the chemical industry developed ***chelated*** copper compounds to help control filamentous algae and other algae species. These are copper compounds that do not easily become bound to pond materials and remain in the water column for several days. This greatly enhances the uptake of the copper, particularly if several sunny days occur in succession. Eggs and fry of largemouth bass and bluegills seem more tolerant of chelated copper compounds, but the owner should still try to minimize creating localized high concentrations of the chelated copper. Again, even application of the product chosen can minimize impacts on fish. Chelated copper products come in both liquid and granular formulations. Liquid is easy to use when treating large volumes of water, while the granular formulations work well to spot treat small patches of filamentous algae along the shoreline. They are slow-release granules and do not have the problems associated with the copper sulfate granules.

Sodium carbonate peroxhydrate is a relatively new algaecide on the market that is considered bio-safe by the US EPA. That is because it decays into oxygen, water and trace minerals that are already present in ponds. It works by oxidizing the chlorophyll out of the relatively thin cell-walled filamentous algae. The algae turns a white or yellow color shortly after application. It comes in granule form and is particularly effective at controlling patches of algae near shore. It does not oxidize the chlorophyll out of submerged plants or the higher algae *Chara* (muskgrass) due to the thicker cell walls.

The last algaecide available is endothall amine salts which can control both submerged plants and filamentous algae when the labeled rate for submerged plants is followed. Lower application rates will control algae but not submerged plants. This is the only product I'm aware of that allows the pond owner to control both algae and submerged plants simultaneously.

Finally, a pond owner would be well served by developing an integrated approach in controlling filamentous algae by using several, if not all, of the following:

- Limit /eliminate outside sources of nutrients from entering the pond.
- Bottom, bubble aerate the pond.
- Dye the pond blue to reduce sunlight penetration.
- Rake out small patches of algae on a weekly basis.
- If algae is a little more abundant, keep granular products on a hand to do periodic spot treatments.
- If algae is overabundant, treat with a liquid chelated copper compound first, then use the above items to stay ahead of re-infestation.

Coping with Burrowing Crayfish

Burrowing crayfish can cause problems for pond owners when they become over abundant. Their tunnels can undermine the structural integrity of dams and levees by weakening the compacted clay and by causing leaks that only become larger with time. Most owners equate burrowing crayfish with their mud chimneys located throughout their lawn. Typically, these chimneys are located close to the pond (or stream) but it is amazing how far from water they can be found. These chimneys can be as tall as 6 inches or so, and when dry are very hard. A large, dry chimney can damage the deck of a lawnmower.

Why do these crayfish dig burrows? Male and female crayfish dig burrows as a refuge from predators and as a resting place during molting and inactive periods. However, crayfish release their young in water and young spend most of their life in water. Adult crayfish are willing to exit the pond and dig burrows but young crayfish are not. In drought conditions, females may lay their eggs in the burrows but few if any survive due to a lack of food.

The best method to minimize or even eliminate the appearance of burrows in the dam or yard is to maintain good populations of largemouth bass and bluegills in the pond. Young crayfish are a favored food of these two fish species and few survive to

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Pond Factsheet Update

Available

Placing Artificial Fish Attractors in Ponds and Reservoirs: OSUE Factsheet A-1.

Pond Measurements: OSUE Factsheet A-2.

Controlling Filamentous Algae in Ponds: OSUE Factsheet A-3.

Chemical Control of Aquatic Weeds: OSUE Factsheet A-4.

Muddy Water in Ponds: Causes, Prevention, and Remedies: OSUE Factsheet A-6.

Understanding Pond Stratification: OSUE Factsheet A-7.

Winter and Summer Fish Kills in Ponds: OSUE Factsheet A-8.

Planktonic Algae in Ponds: OSUE Factsheet A-9.

Fish Species Selection for Pond Stocking: OSUE Factsheet A-10.

Cattail Management: OSUE Factsheet A-11.

Algae Control with Barley Straw: OSUE Factsheet A-12.

Ponds and Legal Liability in Ohio: OSUE Factsheet ALS-1006.

Ice Safety: OSUE Factsheet AEX-392.

Farm Pond Safety: OSU Factsheet AEX-390.

Notifying the Ohio EPA Prior to Applying Aquatic Herbicides: OSUE Factsheet A-13.

Duckweed and Watermeal: Prevention & Control: OSUE Factsheet A-14.

When to Apply Aquatic Herbicides: OSUE Factsheet A-15.

Pond Dyes and Aquatic Plant Management: OSUE Factsheet A-16.

Benefits & Problems of Aquatic Plants in Ponds: OSUE Factsheet A-17.

Note: these factsheets are available at ohioline.osu.edu.

2008 Pond Clinic Schedule

These are currently the pond clinics scheduled for 2008. If you want a pond clinic scheduled in your county during 2008, contact your county OSU Extension or SWCD office and let them know of your desire. They are always appreciative of folks who offer their pond as a clinic site.

April 30, Wednesday - Coshocton County

May 15, Thursday - Montgomery County

May 22, Thursday - Ottawa County

June 12, Thursday - Hardin County

June 17, Tuesday - Crawford County

Sept. 16, Tuesday - Farm Science Review—numerous pond presentations

Sept. 17, Wednesday - Farm Science Review—numerous pond presentations.

Sept. 18, Thursday - Farm Science Review—numerous pond presentations.

The Ohio State University

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Coping with Burrowing Crayfish. . . *(Continued)*

adulthood if these fish species are present. Keeping submerged aquatic plants and filamentous algae abundance low reduces crayfish hiding places and allows for more effective control by fish.

Numerous kinds of wildlife will also eat crayfish from shallow water as well as those crawling on the lawns. These non-fish predators include bullfrogs, turtles, snakes, herons, as wells as raccoons and mink. Encouraging wildlife use of your pond by properly managing shoreline and adjacent habitat will help control burrowing crayfish. Mown grass all around a pond is not attractive to wildlife other than Canada geese. And the farther the mown grass extends from the pond, the less wildlife will use your pond.

Trapping is another method to remove crayfish from a pond. A simple double funnel minnow trap baited with meat scraps, fish heads, etc will attract crayfish and trap them. Make sure the funnel opening inside the traps are 2 inches in diameter. If several traps are collecting large numbers of crayfish, the pond owner needs to add additional traps and check them frequently. Also, trapping many crayfish should cause a re-evaluation of the fish community and plant abundance to insure control by previously mentioned techniques. A benefit of trapping crayfish is they are edible.

Chemical control options are limited. Pouring diesel fuel or Clorox into burrows was often recommended as a control measure but is no longer recommended. These chemicals are considered pollutants when used in such a fashion and also kill other soil and aquatic organisms. Making a solution of 50% cheap pepper sauce / 50% water and pouring a cup or so into each burrow has worked for me. It is not unusual to see the crayfish exit the hole quickly due to the capazin in the pepper sauce.