

FISH KILLS AND HOW THEY CAN BE PREVENTED

David Ellison, Aquatic Biologist

We often hear questions and concerns about fish and other animals in the lake. Their overall health is extremely important to us and plays a major role in how we treat a specific lake or pond. Maintaining proper dissolved oxygen levels is essential to the health of fish in your pond. Low dissolved oxygen levels is a common cause of fish kills in ponds. Aeration of your pond is the best way to maintain proper dissolved oxygen levels. Oxygen is constantly added to the pond and helps maintain the healthy oxygen levels required by fish for survival. Installation of a submersed aeration system is the best approach for keeping oxygen levels at those most advantageous for fish.

Excessive aquatic plants can also lead to fish kills. These plants produce oxygen for the fish on sunny days, but

on consecutive cloudy days the large numbers of plants produce very little oxygen, thus causing the fish to become oxygen depleted, which leads to fish loss. Algae blooms, if left untreated, can also be harmful for fish. Early recognition and treatment of problems can help prevent vegetation from growing to excessive levels and limiting the amount of treatment required. When vegetation covers a pond, and large scale treatments are required, the treated plant material will begin to decay. This decaying process uses oxygen and the oxygen source for the fish (the plants) is no longer available. Loss of fish may then occur due to oxygen depletion. This scenario shows how important early treatments of weed and algae problems are. It is also vital that a qualified applicator do the treatment so that too much vegetation does not

die off too quickly and lead to fish kills.

Heavy rainfall that occurs quickly can rapidly circulate the water in a pond causing changes in the position of oxygen rich water in a short period of time. This quick turnover of the water can limit the amount of oxygen available to fish in some shallow ponds and lead to the possibility of fish loss. This situation is less of a problem in ponds that are the proper depth and do not accumulate a lot of sediment and debris.

Recognition of problem areas and regularly addressing them will benefit the fish in your pond before the fish suffer from oxygen depletion. A proper management plan and ensuring your pond is properly oxygenated is the best practice towards preventing loss of fish and maintaining a healthy pond.



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SUPER WEED

By Randy Bolin

The invasive strain of *Phragmites Australis*, otherwise known as common reed is thought to have originated in Eurasia. Researchers believe this common plant exudes from the roots an acid so toxic that it can disintegrate the structural protein in the roots of neighboring plants and has the potential for taking over the marsh world.

The strategy of this plant is to aggressively conquer its neighbors and invade new territory. Scientists have identified the toxin produced as 3, 4, 5, trihydroxybenzoic acid also known as gallic acid, the same acid used for tanning leather and formulating astringents. Within 10 minutes of exposure a tubulin of a marsh plant will start to disintegrate, Within 20 minutes the structural material is completely gone.

In Delaware, where the native *Phragmites* are few and far between, researchers have conducted extensive studies on the plant and are growing sterile cultures of the native and exotic strains for lab testing.

Finding naturally resistant *Phragmites* may be one avenue to preserve the native strain and control the invasive spread of toxins.

In New York, the Department of Environmental Conservation Office will involve biologists and foresters to develop ways to combat these invaders. Manual labor has been an effective deterrent in spots, but now non-native species are already well established and others are on the horizon that will require a more aggressive approach.

BE ON THE LOOK OUT...

Dustin Kennedy, Aquatic Biologist

There are many exotics to be on the look out for. Hydrilla, Eurasian Watermilfoil and *Phragmites* tend to be at the head of that list. Now there is a new front runner. The Giant *Salvinia*, also known as the water fern, has the potential to cause major damage to local waterways and wetlands. This floating exotic plant from South America is a fern with oblong leaves that tend to lay flat on the surface. The top of the leaves have distinct hairs that grow in an eggbeater shape. *Salvinia* can grow in large mats up to about two feet thick and these mats cause major disruption in the light and oxygen processes in lakes and ponds. This could lead to decline of native plants and animals. Giant *Salvinia* also reproduces very quickly under the correct conditions. In some cases the bio mass could double in about seven to ten days. There are many options to control Giant *Salvinia*. Eradication is usually achieved with aquatic herbicides and can be maintained by using a bio controls. If you come across this pest don't hesitate. Call a professional lake manager to assist you with your specific situation. Rapid identification and treatment is imperative to cost effective control and the prevention of this plant's invasion into neighboring bodies of water.



With current discovery in hand and pursuing further research, we can determine and pinpoint exactly how the invasive *Phragmites* has become such a "Super Weed".

Our staff works diligently to stay educated on this and many other important issues for the benefit of our customers and our environment. Please let us know if you have any questions or need help with this, or any other aquatic related problem.

Inside this issue:

- 2 Ageless Aquatics
Greg Blackham
- 2 Healthy Ponds 101
*Terry Owens,
Environmental Scientist*
- 3 A Case of Mistaken Identity
*Kyle Finerfrock,
Environmental Scientist*
- 4 Fish Kills and How They Can Be Prevented
*David Ellison,
Aquatic Biologist*

AGELESS AQUATICS

Greg Blackham, Aquatic Specialist

Every year damage to your pond is occurring. It is inevitable. The habits of civilization and the forces of nature constantly batter at your aquatic resource, sometimes violently, but usually subtle and quiet. Your pond may be somewhat resilient, yet these elements take their toll. The questions are, can you do anything? What do you look for to determine if problems are developing? The answer to the first question is always yes. There is a definite approach to restoring stability, function and beauty to your pond, but at what cost?

If problems are found early, the costs are significantly lower, which brings us to “early warning” diagnostics. Most of the structural issues can be found preemptively with a thorough inspection a couple times a year. Pollution and excess nutrient loading are usually easier to see with inspection of the overall water quality. If excess algae or noxious weeds are present, there is a problem. Also, if foul smells waft from the pond or large mosquito infestations exist, something is wrong.

Apart from the obvious problems, a complete walk-through of the area should be done, looking for a variety of tells. Are there animal burrows? Do the side slopes, inlets, outlets, or emergency spillways show signs of erosion? Is the area around your pond settling, cracking, bulging, or showing signs of deteriorated structure? Is the outflow pipe damaged or clogged? Are there trees or saplings present around the pond? Their roots may be damaging the integrity of the embankment.

Is there a vegetative buffer zone between the neighboring grass and the pond? Are there piles of grass clippings or other debris building up around the pond? Is there scattered trash in or around the pond? Is there evidence of encroachments, vandalism or other destructive activities taking place? Do you need a fence to protect your pond, or children from entering the pond? If there is one, is it in good working order? Is there evidence of oil, grease, or other pollutants leeching into the pond? Are there large amounts of animal feces surrounding the area?

Answering these questions and solving the problems that are identified will greatly increase the life of your pond. Most of these problems, when addressed early, are more cost effective to correct and make it much easier to restore a natural balance and pleasing appearance to your pond. Will your pond stand the test of time?

HEALTHY PONDS 101

Terry Owens, Environmental Scientist

The spring season is quickly approaching and with it comes the resurgence of aquatic plants. Unfortunately not all of these plants make your pond look healthy and attractive. With warmer temperatures comes the growth of unwanted algae and aquatic weeds. However there are some preventative measures that can decrease the chances of having uncontrolled algae blooms and minimize the proliferation of unwanted aquatic weeds.

- 1 Keep excess nutrients from entering your lake... Excess nutrients allow for undesirable aquatic plants like algae and duckweed to grow much more rapidly. Excess nutrients come from additions of fertilizers and organic materials like grass clippings and leaves washing into your pond. By minimizing these additions it will help lower the chances of unwanted algae and aquatic weeds.
- 2 Increase dissolved oxygen in the water... Dissolved oxygen is the amount of available oxygen present in the water column. Low dissolved oxygen usually results in high concentrations of carbon dioxide, which is required for aquatic weeds. By increasing the amount of dissolved oxygen present it can retard the growth of submerged aquatic weeds. Increasing dissolved oxygen also helps promote aerobic respiration which helps aerobic bacteria break down and decompose dead plants and algae. This further prevents the release of nutrients as well as organic build up in your pond. The most effective way to increase dissolved oxygen is through submerged aeration and secondarily through surface aerators such as floating fountains.
- 3 Decrease light reaching the bottom of the lake... Algae and other submerged aquatic weeds start their growth from the bottom of the lake. Aquatic plants can not grow when there are low light levels. By lowering the light levels within a lake it will slow the ability for algae and aquatic weeds to establish and spread through the lake. These lower light levels can be achieved through the application of lake dyes and other light retardants.

Addressing some or all of the issues addressed above will go a long way towards preventing aquatic problems in your lakes and ponds.

A CASE OF MISTAKEN IDENTITY

Kyle Finerfrock, *Environmental Scientist*

Aquatic plants and algae can often be wrongly identified. If you want to properly maintain the health of your lakes and ponds it is very important to know exactly what problems you face. Many aquatic species can resemble other species, but have very different treatment methods. Some algae species such as Muskgrass (*Chara* spp.) may be identified as a plant like Coontail (*Ceratophyllum demersum*). Also some plant species like watermeal (*Wolffia* spp.) can be wrongly identified as floating algae. If aquatic plants and algae are not properly identified any treatments that are attempted will likely produce undesirable results. By choosing the wrong product you will have wasted your time and money. It could also potentially be harmful to beneficial aquatic species and to the environment. The aquatic pesticide industry has developed products to be selective in treating target species. By using target specific pesticides you can minimize the amount of product necessary to eliminate your problem while leaving desirable beneficial species relatively unaffected. It is also important to note that there can be a lot of misleading information regarding aquatic products. Therefore, it is very important to have a knowledgeable aquatic specialist to help identify and properly treat your aquatic problems.

Algae

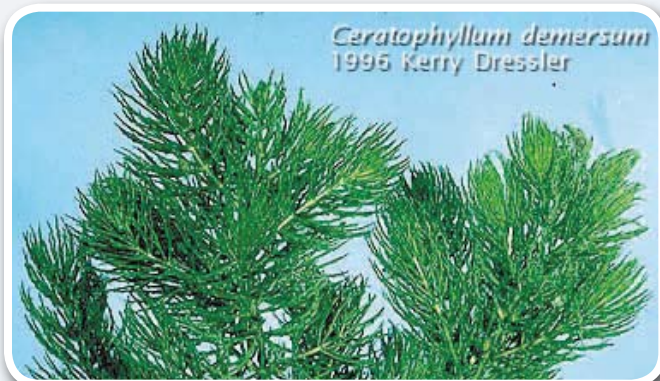
Musk grass, *Chara sp*



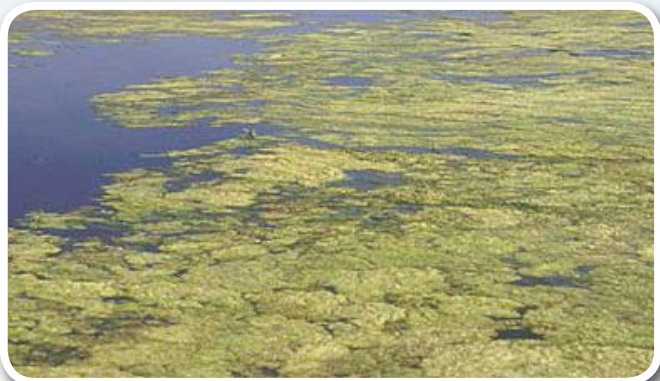
Vs

Aquatic Plant

Coontail, *Ceratophyllum demersum*



Filamentous Algae



Vs

Watermeal

Wolffia sp.



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