

Keeping Ponds Pretty (and Usable)

The Ongoing Battle With Unwanted Aquatic Vegetation

Duckweed floating on the surface of a Kentucky pond is larger than watermeal (see image on pg. 12).

Photo courtesy: Bob Durborow

by Bob Durborow

Lots of folks want their fishing pond to be pristine and ultra-clear (just like those Colorado Rocky Mountain lakes!). But Kentucky's climate and altitude don't provide the right environment for that kind of lake. Those mountain lakes have cold water most of the year, especially at greater depths, and they really are deep lakes, often exceeding 50 feet. They are also low in nutrients. Our Kentucky ponds are just the opposite: they're filled with warm water much of the year, they are not all that deep (maybe averaging six to 10 feet), and they contain more nutrients. If we allow our ponds to remain clear, we're soon going to have a big problem on our hands—unwanted aquatic vegetation ... WEEDS!

University of Kentucky Cooperative Extension county agents around the state get asked about how to control aquatic weeds more than any other pond-related question. The weeds aren't good for a lot of reasons. They snag the hook when you're fishing, they provide a place for the small bluegills to hide, preventing the largemouth bass predators from catching them to prevent overpopulation, and they are basically not very attractive to look at.

So why does clear water bring on weeds? Clear water allows sunlight to penetrate easily to the pond bottom, encouraging vegetation to start growing there. Once it's established, some weeds grow up through the water column, and some break off at the bottom and float to the pond surface. When clear water combines

with an overly shallow pond, the problem gets even worse.

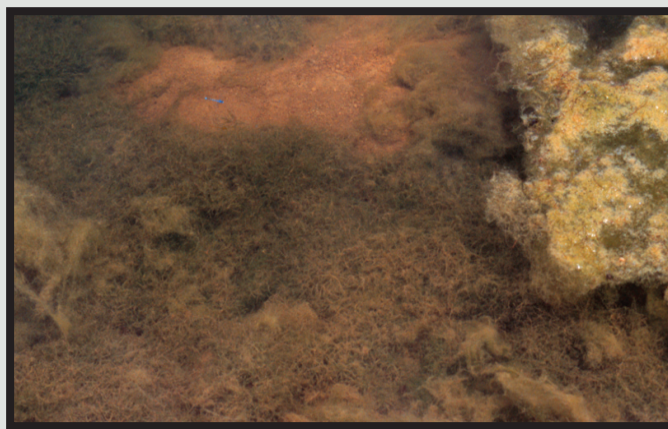
How can a pond owner prevent this from happening? The best ponds do not have shallow zones less than 2½ feet deep, and their pond bank slope is moderately steep (approximately a 3-to-1 slope; that is, three feet out toward the middle of the pond for each foot in drop toward the pond bottom). This increases the pond

depth around the edge, which helps to prevent the scrubby growth that tends to grow there. Also, the pond owner should not allow the water to be clear. Fertilizing can create a phytoplankton bloom (tiny, microscopic plant life that gives water its green color). This bloom does two good things: first, it shades the pond bottom, blocking the sunlight that would ordinarily stimulate weed growth, and, second, it provides a food source for the pond's tiny animal life (zooplankton). The bloom is the foundation of the pond's food chain that ultimately provides adequate nutrition for the bass, bluegill, and catfish that we catch and eat. Be careful, though; don't fertilize if you already have weeds in your pond. That will just make

matters worse. A common fertilization plan is to start fertilizing when water temperatures reach 60° to 65°F; make three applications at two-week intervals, then three more applications at three-week intervals, and then approximately once a month after that; stop fertilizing in September.

Older ponds are often deficient in phosphorous, so applying triple super phosphate (0-46-0) at 20 lb./surface acre is commonly done, or some people prefer a liquid fertilizer such as 11-37-0 or 10-34-0 (percentage of nitrogen-phosphorus-potassium) at one-gallon/surface acre.

Some newer ponds need a more balanced fertilizer because the potassium is usually lower than in older ponds. Before starting a fertilization program, it's probably best to check first with a fisheries biologist for the many minute details



The filamentous algae Pithophora starts growing like a mat on the pond bottom and then breaks off and floats into the water column.

Photo courtesy: Bob Durborow

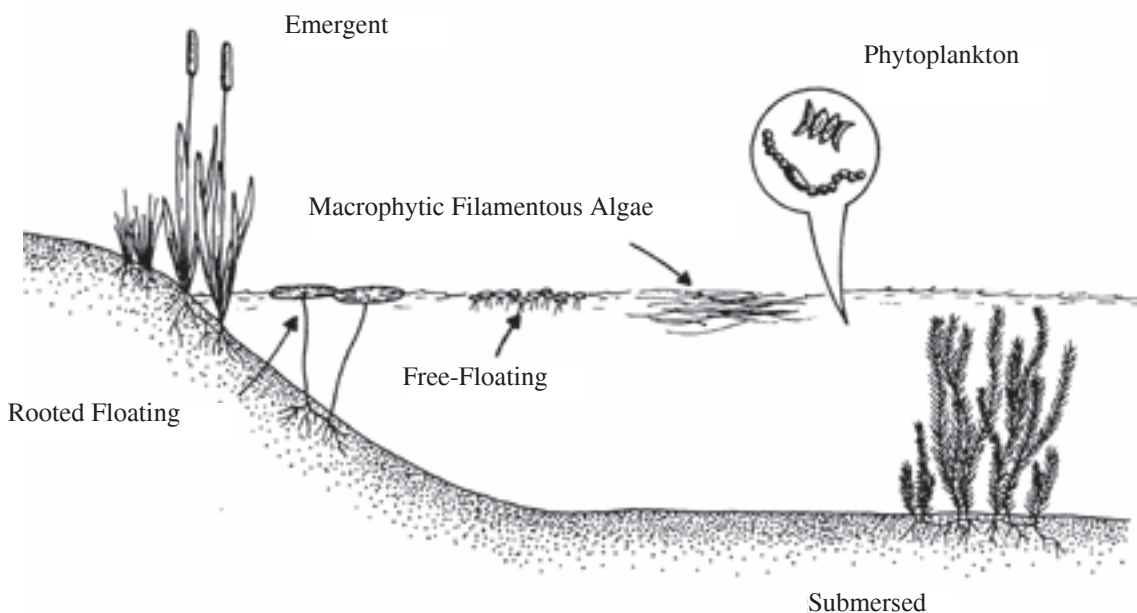
regarding fertilizing. Some ponds, for example, need to be limed with pulverized agricultural limestone, or calcium carbonate (calcite) before fertilizer is effective.

Another way to prevent weeds from appearing in your pond is to stock triploid grass carp (which are sterile because they have three sets of chromosomes instead of the usual two). They have bony plates in their pharynx that they use to grind up many kinds of weeds. A preventive stocking density would be about 5 to 10 per acre. And if weeds are already there, you can stock 10 to 15 per acre for moderate infestations and 15 to 25 (or more) for heavy weed growth.

Another approach to getting rid of established weeds is to use herbicides. They are, however, very expensive and not always effective. It's far better to prevent aquatic weeds than to have to treat them, but if you need to use herbicides, the table on page 12 gives some generalized recommendations for herbicides to use on some kinds of weed species in the categories filamentous algae, submersed weeds, emergent weeds, and floating weeds.

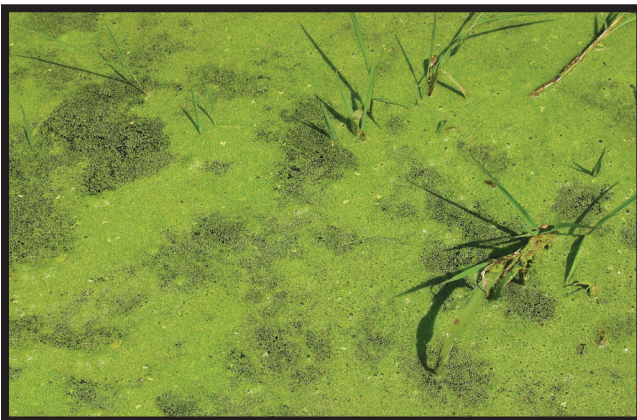


*Willows are an emergent plant that grow along the shoreline.
Photo courtesy: Bob Durborow*



The figure above shows examples of the weed groups represented in the table on page 12.

General Weed Category	Recommended Herbicides
Filamentous algae (excluding Pithophora spp.) and musk grass (Chara spp.) ¹	Copper Sulfate; Chelated Copper such as Cutrine®, Cutrine Plus®, K-Tea®, Komeen®, Captain®, AlgaePro®, Agritec®, Cleargate®, and Nautique®; Percarbonate such as GreenCleanPRO® can be used in small garden ponds
Pithophora spp.	Hydrothol 191®
Many (but not all) submersed weeds ¹	Diquat such as Reward® and Weedtrine D®; Aquathol, Aquathol K®, and Aquathol® Super K®; Fluridone such as Sonar®, and Avast®; Triclopyr such as Renovate 3® and Garlon 3A®
Many (but not all) emergent weeds ¹	Glyphosate such as Rodeo®, Aquamaster®, AquaNeat®, Eraser AQ®, Eagre®, AquaPro®, Glypro®, Aquastar®, and Shore-Klear® 2,4-D liquid such as Navigate®, WeedRhap®, Weedar 64®, and Aqua-Kleen® Imazapyr such as Habitat®
Many (but not all) floating weeds ¹	Diquat such as Reward® and Weedtrine D®; 2,4-D liquid such as Navigate®, WeedRhap®, Weedar 64®, and Aqua-Kleen®; Fluridone such as Sonar®, and Avast®; Triclopyr such as Renovate 3®, and Garlon 3A®; Imazapyr such as Habitat®



Watermeal floats on the pond surface and feels gritty like corn meal.
Photo courtesy: Bob Durborow

¹ Check with the author of this article for specific species of weeds that will respond to the recommended herbicides. The 2007 booklet *Aquatic Weed Control in Ponds* published by Kentucky State University offers more detailed and specific recommendations for certain weed species.

Check with an aquatic biologist before administering any herbicide for tips on safety and making the treatment most effective. Some of these herbicides require a chemical applicator's license for the person purchasing and applying them. If you want to find out more details on keeping your pond weed-free, contact your county Extension agent and ask for assistance. Also ask for a copy of the 2007 edition of *Aquatic Weed Control in Ponds*, a helpful publication done by the author, Dr. Craig Tucker at Mississippi State University, and Dr. Jack Whetstone at Clemson University.

Author:

Bob Durborow, Ph.D.

Dr. Durborow is a professor at Kentucky State University in Frankfort. He has a split appointment in Aquaculture Extension and Teaching. Bob works with pond owners and aquaculturists in Kentucky and surrounding states in pond management, weed control and fish health maintenance. He has a fish disease diagnostic laboratory at KSU and can monitor the health of your fish and water quality at no charge.

Dr. Durborow is located at the Aquaculture Center, 103 Athletic Road, Kentucky State University, Frankfort, KY 40601. Phone: 502.597-6581; Fax: 502.597.8118; E-mail: robert.durborow@kysu.edu