AQUAGUIDE

Missouri Department of Conservation

Cattail and Water Primrose Control in Ponds and Lakes

Aquatic plants are a beneficial and necessary part of Missouri ponds and lakes. Without them, most other organisms cannot survive. Plants keep the water oxygenated, provide food, cover and nesting sites, and stabilize the shoreline and pond bottom. Emergent plants are rooted in the bottom and extend above the surface.

Several types of emergent plants are commonly found in Missouri waters. Cattail and water primrose are examples of emergent plants that can become a nuisance if not controlled. Refer to our publication "Nuisance Aquatic Plants in Missouri Ponds and Lakes" for more information on aquatic vegetation.

Cattails may "ring" your pond and prevent anglers from casting from the shoreline. Water primrose may cover the surface and entangle fishing lures. Dense growth of primrose may provide too much protection for small bluegills and make it difficult for bass to obtain enough food for good growth. Bluegill also grow slowly in this environment due to excessive populations created by overly successful reproduction. Because of the difficulty of controlling established stands of cattails and primrose, the lake owner should not allow them to gain a foothold. If possible, construction plans for new ponds should include a 3:1 slope along the shoreline. This will usually discourage the development of cattail and water primrose populations. If this is not possible then diligent efforts to remove all sprouts of these two plants in new waters will save money and hours of effort later.

Ideally, 10 to 20 percent of a pond's bottom and surface should have aquatic plants. If more than 20 percent of the pond has aquatic plants, or if aquatic vegetation is interfering with some pond uses, mechanical, biological, or chemical control methods should be considered.

Mechanical Control

Cutting

Cutting cattails with a sickle bar mower or a handheld "weed eater" provides temporary control, but the plants will still spread by rhizomes or seeds. If the cutting effort is continued and plants are never allowed to grow more than a foot tall, seeds will not be produced and eventually the plant will die as the stored food in the roots and rhizomes is depleted.

Shading

Shading areas with large sheets of black plastic (8-millimeter thickness) will kill virtually all aquatic plants under the sheet within 30 days. Float the plastic on the surface and anchor it by fastening the corners to concrete blocks, or sink the sheet over the weed bed with weights. Be sure to puncture the sheet in several places so

gasses can escape. Wind and wave action can move and damage plastic. This method can be difficult, cumbersome, and requires daily monitoring.

Unfortunately, the plants will return from seeds and rhizomes requiring repeated or different treatment. Shading is, however, an excellent method of getting a nuisance population under control in preparation for other treatments.

Water dyes do not kill plants but can be added to inhibit or slow plant growth. Dyes should be added in the spring and periodically retreated to maintain effectiveness. Follow product label for treatment instructions.

Manual

Some aquatic plants can be controlled by pulling, digging, cutting, and raking. Both are effective temporary controls for water primrose. However, cattails must be pulled by hand or loosened with a potato fork and pulled. Constant removal will be necessary for both species. The removed vegetation should be disposed of over the dam, or somewhere it cannot get back into the pond. If this is done faithfully, eventually the available seeds will be eliminated and the need for constant attention will diminish. Regardless of whichever approach you try, the process isn't particularly enjoyable and may involve intense physical labor. It, however, may be effective (and cheap) if practiced regularly.

Water Level Drawdown

Drawing down the water level and exposing and drying sediments is effective for controlling certain nuisance aquatic plants. However, other control methods are more effective for cattails and water primrose.

Biological Control

Grass Carp (*Ctenopharyngodon idella*)

The grass carp (or white amur) is a plant eating member of the minnow family. However, grass carp are generally not effective at controlling cattails, water primrose and other emergent plants.

Chemical Control

ALWAYS READ AND FOLLOW THE PRODUCT LABEL FOR PRECAUTIONS, DIRECTIONS, RESTRICTIONS AND WARNINGS.

Herbicide Use Considerations

1. Proper identification of aquatic plants is critical prior to applying herbicide as different aquatic plants require different herbicides for control.
2. Herbicides rarely eradicate aquatic plants and usually provide temporary control. Retreatment each year might be necessary to control the nuisance vegetation.
3. Read herbicide label for personal protective equipment needed, and restrictions associated with watering livestock, swimming, or irrigation and proper application techniques.
4. Treat the target aquatic plants when they are actively growing, and water temperatures are between 65°F and 80°F. (Typically mid-May through late-June)
5. Treat no more than one-third of the target aquatic plants at 10-day to two-week interval. Dying and decaying aquatic plants remove dissolved oxygen from the water through decomposition. A possible fish kill could result if too much of the target aquatic plant is treated at once.
6. Some herbicides require the use of another product called a surfactant in order to be effective. The surfactant, or "sticker" binds the herbicide to the plant leaf and enables it to "work."

Herbicides can be purchased online or from local farm supply stores.

Herbicides that Provide Control for Cattails and Water Primrose

	Diquat	Flumioxazin	Glyphosate	Imazamox	Imazapyr	Triclopyr	2,4-D
Cattail	G		E	E	E		
Water Primrose		G	E	E	E	E	E

E = Excellent G = Good

Notes:

- *Start treating as soon as you notice new growth. The seeds of some plants stay viable for many years.*
- *Using a combination of treatment methods is often the best way for lasting plant control.*

For alternate sources of chemicals and more information on treating aquatic plants, contact your local MDC office or visit **mdc.mo.gov**.

Additional Options

If the above approaches do not work for your situation, or to maintain long term control, you might need to reduce nutrient inputs into your pond or lake. The final approach would be a total pond renovation.

Minimizing Nutrient Inputs

Excess nutrients (nitrogen and phosphorus) should not be allowed to wash into ponds and lakes. Aquatic plants in ponds can grow to nuisance levels in a short time if given the extra nutrients. Sources of nutrients may include runoff from feedlots, fertilized fields or lawns, septic tank seepage, and access by cattle. Nutrients will also accumulate naturally as the pond gets older.

Establishing and maintaining a 100 foot or wider buffer strip of grass and trees around the pond's edge will help filter excess nutrients from runoff water. The construction of small silt retention ponds in the watershed will help settle out nutrients before they enter the pond. Localized nutrient inputs from feedlots or other sources may be avoided by tilling or constructing a water diversion terrace below the nutrient source to direct its runoff away from the pond. Fencing livestock from the pond's edge and watering them from a tank below the dam is also a helpful protective measure. The Natural Resources Conservation Service (NRCS) office for your area can provide information on these and other practices.

Pond Renovation

Deepening pond edges with a backhoe can limit the amount of shallow water available for aquatic vegetation growth. A three-to-one slope to four feet of depth should be created. A long-armed backhoe can be used to remove large populations of cattails (their roots, rhizomes and seeds) as well as creating the proper slope to control future regrowth. All excavated material should be removed from the pond's watershed so that unwanted seeds, nutrients, and sediment do not wash back into the pond. Manual control, as described in the previous paragraph, will be necessary to control new growth.

Draining a pond and drying the basin might be necessary to remove years of sedimentation and accumulation of black muck. This material is a storehouse for nutrients and seeds. Deepening many of the pond's shallow areas to a depth below where light penetrates (3 to 4 feet) may reduce the severity of plant problems. Usually, this technique requires that the water level be drawn down and the pond bottom be allowed to dry enough to allow access for a bulldozer or backhoe. If you can see the bottom of your pond or lake past a depth of five feet, deepening the edges may be impractical as a means of plant control.

Cattail *(Typha spp.)*

Water Primrose *(Ludwigia peploides)*

Determination of Acre-Feet to Calculate Total Amount of Herbicide Needed

If the acreage of the area to be treated is known, the number of acre-feet can be determined by multiplying the number of acres by the average depth (average depth = 1/3 of the maximum depth). For example: A two-acre area is to be treated and has an average depth of three feet. The volume of the water is six acre-feet.

2 acres x 3 feet (average depth) = 6 acre-feet

If the dosage of herbicide recommended is 2 gallons of herbicide per acre-foot, the total herbicide needed would be 12 gallons.

6 acre-feet x 2 gal/acre-foot =12 gallons (total herbicide needed)

If the number of acres is not known, it can be estimated by measuring the number of square feet and dividing by 43,560. The square feet in many cases can be closely approximated by multiplying the average width in feet by the average length in feet. For example:

A shoreline area is to be treated. The weeded area is 500 feet long and averages 10 feet wide. The total surface area is 5,000 square feet or 0.115 acres.

10 feet x 500 feet = 5,000 square feet

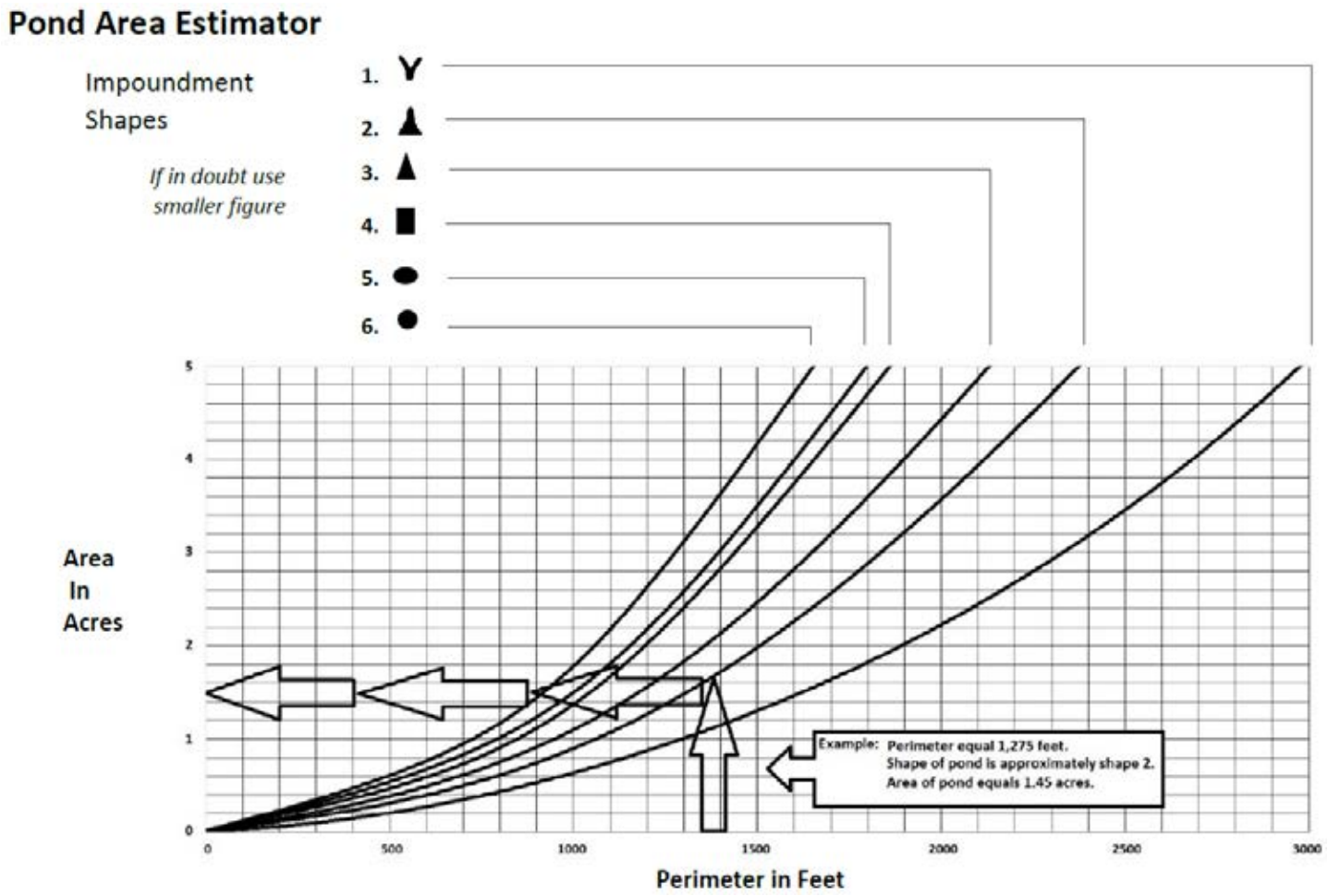
$$\frac{\text{5,000 square feet}}{\text{43,560 (square feet in an acre)}}$$

The average depth of water in this shoreline is 1 foot. The total acre-feet is 0.115.

0.115 acres x 1 foot (average depth) = 0.115 acres-feet

If we assume that 4 gal/acre-foot was the recommended dosage, then 0.46 gallons would be needed.

4 gal/acre-foot x 0.115 (acre-feet) = 0.46 gallons (total herbicide needed).



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