



Grass Carp Control Weeds in Ponds and Lakes



Aquatic plants are a beneficial and necessary part of Missouri fishing lakes and ponds. They are a vital first link in the food chain that leads through fish to people. These plants are the main food source for tiny invertebrates which are in turn the chief nutrient base of small fishes.

In their various forms, whether that be submerged, floating or emergent, aquatic plants provide important habitat structures, for a variety of aquatic insects, crayfish, frogs, waterfowl, and shoreline birds. Dense beds of vegetation also act as escape cover for fish, collecting and concentrating populations of fish for the astute angler.

By virtue of photosynthesis aquatic plants convert solar energy into stored chemical energy and contribute dissolved oxygen to the water.

Rooted Aquatic plants also help stabilize shorelines, preventing bank erosion by wave action. Besides restricting erosion this also enhances water clarity by restricting the amount of suspended material introduced to the system.

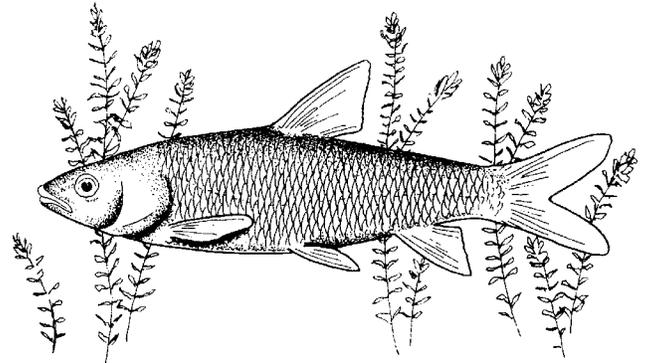
Aquatic plants also have great aesthetic value with marvelously attractive leaf patterns, colors and flowers.

Unfortunately as beneficial as aquatic plants are they also easily overpopulate and become a nuisance to the landowner.

Too Many Weeds

Although necessary for a diverse and thriving aquatic community, plants allowed to spread unchecked interfere with boating, swimming, fishing, irrigation, livestock watering and most other uses of lakes or ponds. Plants can also harm the fishing potential of a body of water. An excess of decaying plants can lower the amount of oxygen in the water to a level that can kill fish. In some waters, an abundance of plants overprotects sunfish and other prey species, allowing them to overpopulate and outstrip food supplies.

The result is inadequate growth, or stunting, of the fish. When aquatic plants hurt, rather than help, a lake, they technically become weeds, and some form of control becomes necessary. Aquatic herbicides are commercially available to control weeds, but they can be expensive, need to be reapplied frequently and are potentially hazardous, if misused.



A Biological Alternative

A non-chemical method of aquatic weed control is now possible, thanks to a weed-eating member of the minnow family.

The white amur (*Ctenopharyngodon idella*), commonly called grass carp, is a long, slender, silver-colored fish. This Asian minnow, which can grow up to 100 pounds, has a terminal mouth (not sucker-like, as does the common carp) and has large throat teeth that help it tear and shred plant material.

Grass carp feed almost exclusively on aquatic plants. They can eat 2-3 times their weight each day and may gain 5-10 pounds in a single year. The larger they get, the more plant material they consume.

Since grass carp cannot reproduce in ponds and lakes they make an excellent biological control agent. They affect the impoundment only during their individual life span. They are usually most effective after their first growing season to about age eight. It is because of this growth period that weed decline is usually not apparent in a pond until the end of the second year, depending on the number of fish stocked.

If aquatic plant growth has become so abundant that it restricts impoundment use it may be advisable to use a combination of control agents. Spot treatment of the nuisance plants with a herbicide to gain immediate control and a reduced stocking of grass carp to prohibit the return of the offensive growth.

Common Name	Scientific Name
<i>Pondweed</i>	<i>Potamogeton, Najas</i>
<i>Milfoil</i>	<i>Myriophyllum</i>
<i>Coontail</i>	<i>Ceratophyllum</i>
<i>Waterweed</i>	<i>Elodea</i>
<i>Muskgrass</i>	<i>Chara</i>
<i>Cattail</i>	<i>Typha spp.</i>
<i>Water Lilies</i>	<i>Nymphaea odorata</i>

Table 1. *Some common aquatic plants eaten by grass carp.*

Stock With Care

As effective as grass carp may be it should always be remembered that they are an exotic species. Their introduction to an impoundment has little lasting impact as they cannot reproduce there. When released into the flowing waters of a large stream or river the grass carp can then reproduce at an astounding speed. Due to this precautions should always be taken to restrict the carp from escaping the impoundment. This can be as simple as placing a mesh screen across the spillway.

Though an an effective response to an aquatic plant problem, grass carp should never be stocked as a preventative measure. The introduction of grass carp into a new impoundment before the aquatic flora is established can lead to an impoundment denuded of all vegetation, a problem equal in severity to overgrowth of vegetation.

When stocked at the conservative rates recommended by the Conservation Department, grass carp offer a trouble-free ongoing control method for most plant species.

Although not likely to reduce mature stands of cattails or water lilies, they may eat the new sprouts and prevent further expansion by these plants (see Table 1).

Grass carp will not control filamentous algae (moss) growth, except at stocking rates far beyond those suggested, which leads to other complications. Following the guidelines presented in the Aquaguide entitled Algae Control in Lakes and Ponds will be far more effective for the management plan of most landowners.

Varying densities of stocking rates for grass carp have been investigated for several years, but there are no guidelines that will fit all situations. Each pond or lake is different, having its own combination of fertility, water clarity, shallow water and chemical makeup. Each of these variables affect the number of grass carp required to achieve the level of plant control desired. In addition, different pond owners often desire different amounts of

weed control. All of these elements combine to make each situation somewhat unique.

Stocking rates may vary from as low as one to as many as 20 grass carp per acre, depending on the amount and types of vegetation.

Table 2 suggests an approximate number of grass carp to stock per acre, based upon percentage of weed coverage. These numbers may be modified based upon the variables mentioned above. If in doubt, contact your local Conservation Department office. Fisheries personnel will provide grass carp stocking information specific to your pond or lake.

Percent of plant coverage in lake:	Number of carp per acre of water:
10-20	Mechanical or chemical spot treatment
20-40	2-5
40-60	5-10
over 60	10-20

Table 2. *Suggested grass carp stocking rates.*

The standard recommended size of stocked grass carp is 8-12 inches. Fish at this size are large enough to escape being eaten by bass.

Grass carp may be obtained from commercial fish dealers throughout the state. For the names of nearby grass carp sources, you may contact either your local regional MDC office or write to:

Fisheries Division, Fish Dealers List
 Missouri Department of Conservation
 P.O. Box 180
 Jefferson City, MO 65102-0180

If you have access to the Internet it may be more convenient to visit us at the MDC public web-site at www.conservation.state.mo.us.

If more immediate assistance is required, call 573/751-4115.

Keep in mind that aquatic weed control with grass carp takes time. It will help you monitor their progress if you make a simple map of the vegetation at the time the grass carp are stocked.

After three growing seasons, refer to the map. If the desired results have not been achieved you may want to consider increasing the number of grass carp in the pond, but do not exceed the next highest rate shown in Table 2.

Harvesting the Fish

There are generally two circumstances that initiate the decision to harvest grass carp from a pond. The first occurs when the nuisance plant growth has been brought under control, particularly in ponds stocked to the maximum density (20 grass carp per acre). Efforts should be made to reduce their numbers by about 50 percent. This will prevent over grazing and eventual denuding of the pond bottom.

The second circumstance is determined by the growth rate of the fish. Even though the grass carp is a relatively long lived species it will not reproduce in a pond environment. This means that the only grass carp in a pond are those that have been stocked there. When those fish reach a mature enough age that their feeding habits decline it is time to restock. Observations of plant growth and reference to your vegetation map will help to decide when restocking has become necessary. Before restocking it is very important that a similar number of fish be removed from the pond. There are several methods of attempting this.

Grass carp can be very difficult to catch with a pole and line. They are a very cautious and reclusive fish preferring to feed unobserved. Their capture makes the effort worthwhile though, grass carp are spectacular fighters on a line and very difficult to land. If you decide to attempt pole and line fishing for grass carp, try first chumming the area to be fished with whole kernel canned corn. Then fish the area using canned corn as bait. Worms, pieces of vegetation like lettuce, pea pods or cherry tomatoes, or a dough bait with a vegetation base are also viable baits. Remember, grass carp are in the main herbivores. This results in vegetable baits being the most effective.

Bow-fishing is often an effective method of harvesting grass carp, especially in smaller ponds. Grass carp are a challenging to pursue and exciting to capture prey. If you do not bow hunt, contacting a local bow hunters organization will usually produce willing volunteers to remove the excess grass carp. Many bow hunters are eager for the challenge of stalking these wary prey.

Their willingness to perform spectacular leaps to escape a seine make grass carp difficult to capture alive. Usually the most effective method of seining grass carp involves repeatedly baiting a small cove. This allows the land owner to then block off the cove while the fish are eating. Then if the fish avoids the seine it has a much smaller area to escape to. If they can be captured alive grass carp may be stocked into other waters with weed problems. The land owner then avoids waiting for the fish to reach a large enough size to affect the vegetation. Grass carp killed during their capture may be prepared for the table. They are considered an excellent food fish worldwide, often praised for both their flavor and texture.



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Pond Area Estimation Chart

To determine the approximate acreage of an impoundment paced off the shoreline. Multiply the number of steps paced by the average length of your stride (usually somewhere between 1.5 and 3 feet). This number is the perimeter of the impoundment. Match it to the corresponding number on the chart and follow that line to the intersection point of it and the line corresponding to the impoundments shape. Look to the number directly to the left of this intersection point. That will be the approximate acreage of the impoundment.

