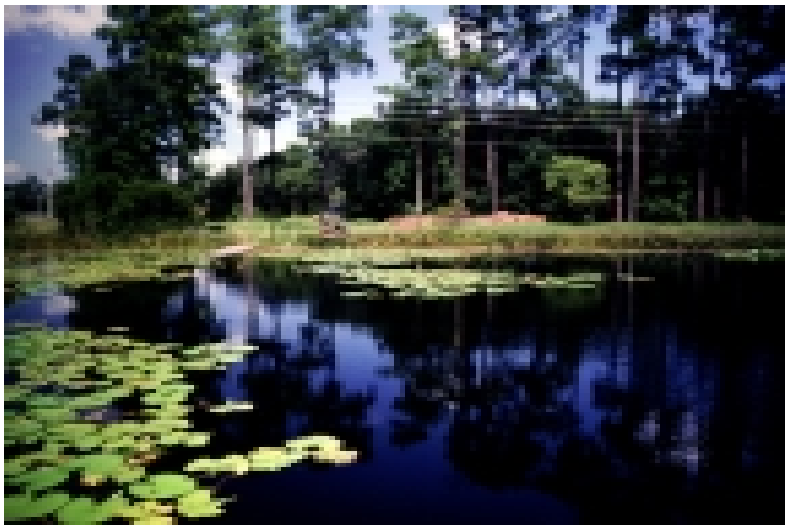
TRIPLOID GRASS CARP



Pond owners must be careful to choose a method to selectively manage, rather than eliminate, aquatic vegetation.

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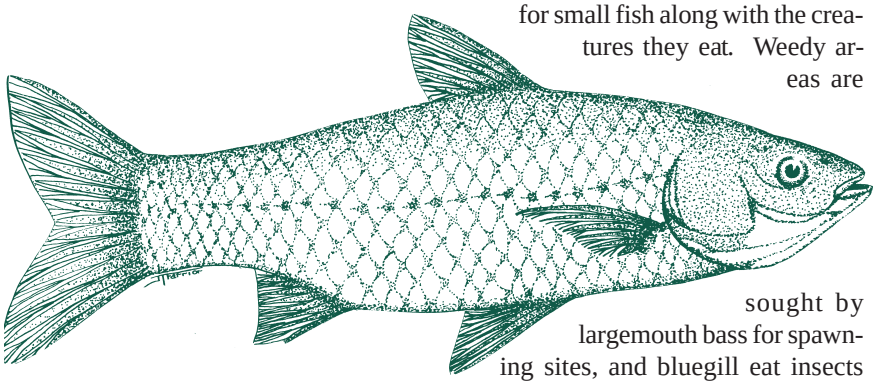
MANY FLORIDA pond owners face problems with nuisance aquatic plants. One of the more publicized solutions is the triploid grass carp, a fish imported from Asia and genetically altered at hatcheries so it will not spawn. One of the few fish species that eats aquatic vegetation, grass carp are effective in controlling **some** species of aquatic plants, particularly in small water bodies. However, this fish is not a magic solution for every pond owner.

This brochure is designed to help you evaluate whether grass carp are the appropriate solution to your problems, and how to properly acquire and stock this fish.

Thirty percent plant coverage is a healthy balance.

Do You Really Have a Plant Problem?

Plants are a natural part of most Florida lakes. Aquatic vegetation provides cover for small fish along with the creatures they eat. Weedy areas are sought by largemouth bass for spawning sites, and bluegill eat insects associated with water plants. Wading birds are common in shoreline vegetation.



Many ponds with weed problems also have desirable aquatic plant species. A pond with dense hydrilla in the middle may have a band of water lilies that the owner would like to maintain. In such cases, pond owners must be careful to choose a method to selectively manage, rather than eliminate, aquatic vegetation.

Although vegetation is not critical for good fishing in small ponds, fisheries biologists recommend up to 30 percent plant coverage as a healthy balance. If your pond or lake falls within these guidelines, you may want to consider whether the cost of treatment is worthwhile.

Are Triploid Grass Carp The Answer to Your Problems?

Grass carp are not the only way to control nuisance aquatic plants. Chemicals (herbicides) and mechanical harvesting are also used. Although grass carp are very effective in controlling some species such as hydrilla and naiad, they are not recommended for many common plants, including water lilies, bacopa and water hyacinths. See back cover for a description of which aquatic plants are controlled by grass carp.

The Triploid Grass Carp

The grass carp, also known as white amur, is the largest member of the minnow family and is native to eastern Asia. Grass carp were first introduced into the United States in 1963 to test their effectiveness for controlling aquatic plants.

Grass carp were brought to Florida in 1972. Early research found grass carp were effective in controlling hydrilla, a rapidly growing exotic aquatic plant. However, at high stocking rates, virtually all other aquatic plants were eliminated as well.

Because so many of Florida's fish and wildlife species depend on aquatic vegetation at some stage of their lives, controlling distribution of grass carp is a major concern. Spawning requirements are similar to those of striped bass, a species that spawns in a few north Florida river systems. Uncontrolled reproduction could have a long-term impact on desirable aquatic plants, ultimately resulting in degradation of fish and wildlife habitat.

In 1984, a method for producing sterile grass carp was developed. During artificial spawning, hatcheries use a process that results in three sets of chromosomes (triploid) instead of the normal two sets (diploid). This results in a functionally sterile triploid grass carp, greatly reducing the possibility of habitat destruction by escaped fish.

Pros and Cons of Using Triploid Grass Carp

If grass carp will control your problem plant, there are several advantages in using this fish instead of chemical or mechanical methods. Triploid grass carp typically cost $20 to $250 per acre, avoid excess chemical use, and provide long-term control, often 2 to 6 years before restocking is necessary. Chemical treatments range from $200 to $600 per acre, while cost for mechanical control can exceed twice that amount. In addition, chemicals or harvesting may be required twice a year or more.

There are disadvantages in using triploid grass carp. At low stocking rates (generally two to five fish per acre), it often takes six months to a year before plants decrease. Higher rates are more expensive and often lead to elimination of all plants, including desirable species that provide cover for fish and other animals. When plants are removed, fish such as shad and crappie may increase, while bass and bream may become more difficult to locate and catch. Also fewer bird species use the water body if nesting and feeding sites are removed.

If you overstock and later change your mind about aquatic plants, it is difficult to remove grass carp. Triploid grass carp can live more than 10 years, and once vegetation has been eliminated, very few fish can keep a pond plant-free. Triploid grass carp can be caught on hook-and-line using bread, dough balls, dog food and live worms, but the bottom line is that once triploid grass carp have removed all the plants from your pond, it is likely to stay that way for awhile.

To ensure that only triploid grass carp are sold in Florida, each grass carp is tested using scientific equipment that measures red blood cells nuclei. Because of their extra set of chromosomes, triploids have larger blood cells than diploids.

Along with declines in some types of fish and wildlife, pond owners may notice green water, resulting from an increase in microscopic algae. As the problem plants are removed, algae multiplies rapidly. These algae "blooms" can turn the water green, and, in severe cases, the appearance of a "paint scum" may form on the surface. At their worst, blooms lead to fish kills, as algae die and decompose.

In water bodies over five acres, we recommend using triploid grass carp together with chemical or mechanical control. An initial herbicide treatment followed by a low triploid grass carp stocking rate generally results in more effective aquatic plant management at lower long-term cost.

Triploid grass carp grow rapidly,reaching 20 inches and about three pounds in one year from a stocking size of 10-12 inches and one-half pound.

Triploid Grass Carp Checklist

Identify your problem plant.

Triploid grass carp efficiently control some types of plants, such as hydrilla and naiad. Other species are better controlled with other methods. Refer to back cover for common Florida aquatic plants. Applicants may take plant samples to local offices of the Agricultural Extension Service, the Commission, or Department of Environmental Protection for identification.

Do you want to eliminate or selectively manage aquatic plants?

Canals, golf courses, and small ponds may not need vegetation; some aquatic plants are beneficial in larger ponds and lakes where fishing is important. Determine what degree of control is appropriate for your water body.

Contact the Fish and Wildlife Conservation Commission for a permit application.

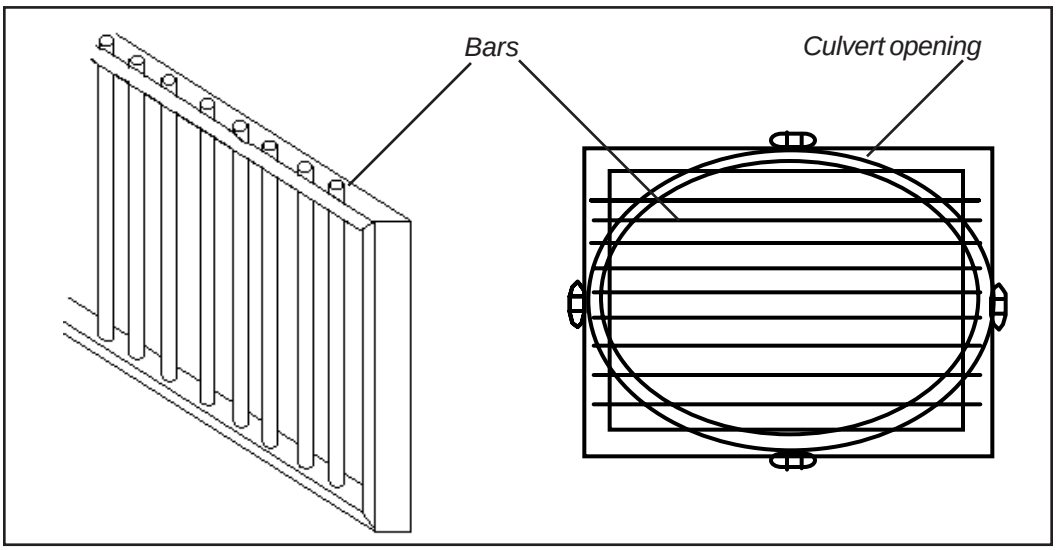
The triploid grass carp is a restricted fish in Florida and can only be possessed by permit issued through the Commission. Your application details the size of the water body, a map showing its location, and its principal use (agriculture, fishing, etc.); what the suspected problem plant is; if your lake or pond has any connection to any other water body; and if you are the sole owner of the pond or lake, or a member of a waterfront property owners' association.

Obtain a permit.

A Commission biologist will evaluate your aquatic plant situation, and check for possible escape routes that may impact other waters. If the permit is approved, the biologist will recommend the number of triploid grass carp to deal with your problem. Generally, two to ten fish per acre are used. Each permit is issued for a specific site and a specified number of fish. If your site has escape routes, you will be required to install an approved barrier before your permit is issued. Consent of all private waterfront property owners or the homeowners association is required prior to permitting.

Find a certified supplier.

The Commission provides a list of suppliers approved to sell triploid grass carp in Florida with each permit. In 1999 there were 34 approved suppliers, 28 of which are in Florida. The cost of triploid grass carp varies depending on the number and size of the fish ordered. As of 1999, for large orders (several hundred) the cost is generally around $5 per fish. The average homeowner with a small pond will probably pay $7 to $10 per fish. **You must use only triploid grass carp obtained from an approved supplier.**



Basic Barrier Designs - A maximum gap of 1.5 inches between bars is allowed.

Grass Carp Barrier Designs

Triploid grass carp are attracted to flowing water and will escape through open connecting streams, marshes, ditches, culverts and drainage structures, particularly if aquatic plants are scarce. Grass carp have been known to leap several feet to leave a water body. In most cases, a fish barrier can be installed at potential escape routes. Such barriers are required to be installed and maintained by the applicant for a permit to be issued by the Commission.

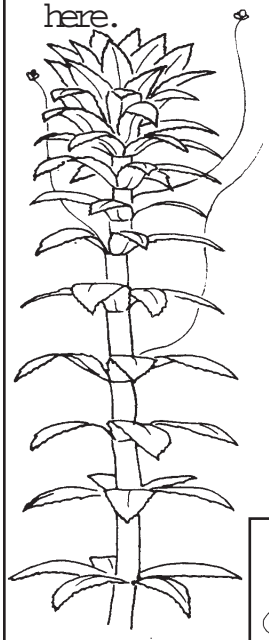
Barrier designs often consist of corrosion-resistant screening placed over a culvert pipe or drain structure. If an area is subject to high flow, a more advanced barrier with a parallel bar design may be necessary to minimize debris build-up which may cause flooding. Barrier requirements must be acceptable to local storm water management agencies. **The permit applicant is responsible for obtaining approval.**

A maximum gap size of one and a half inches will block passage of 10-inch triploid grass carp. If smaller fish are stocked the gap size must be narrower. A leaflet titled "Barriers to Restrict the Movement of Grass Carp for Management of Aquatic Weeds" is available at no cost from Commission offices.

FOR INTERNET ACCESS: http://www.state.fl.us/fwc/fishing/

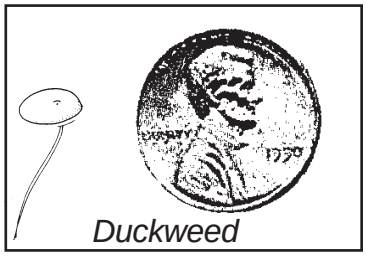
PLANT IDENTIFICATION

Triploid grass carp will control these commonly found plants.
Grass carp also will consume other plants not shown here.

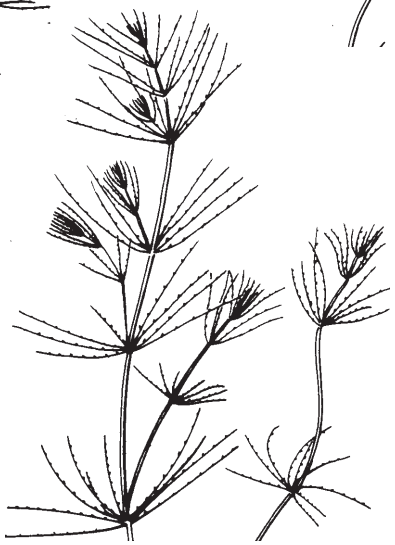


Hydrilla

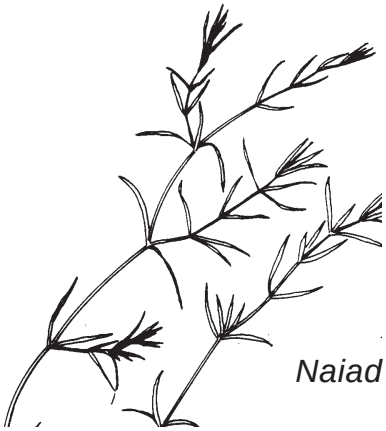
Coontail



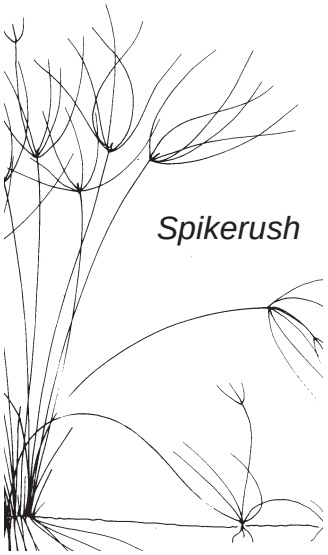
Duckweed



Muskgrass or Chara

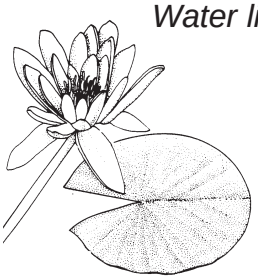


Naiad



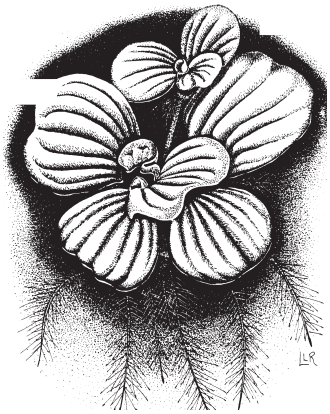
Spikerush

Triploid grass carp will not control these plants.



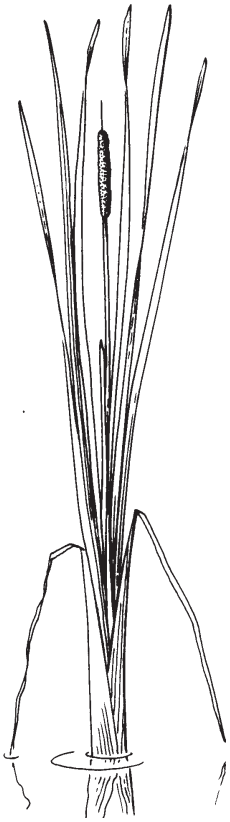
Water lily

Water hyacinth



Water lettuce

Torpedo grass



Cattail

All plant illustrations provided by: IFAS, Center for Aquatic Plants
University of Florida, Gainesville, 1990