http://plants.ifas.ufl.edu/plant-directory/panicum-repens/

Grass Carp Feeding Preferences

Grass Carp *Ctenopharyngodon idella* - are a species of carp from Asia that have become known worldwide for their voracious appetite and ability to eat many noxious aquatic weeds namely Hydrilla. Much research and application has been done with these fish but due to their size, diet, and prodigious breeding they have become invasive in many areas. In the United States you can obtain permits for sterile Triploid Grass Carp. These carp can no longer reproduce giving you a fixed number to control a certain biomass of plants. The amount generally ranges between 8-30 fish per treatment acre of infested water due to: plant type, carp size, predation, initial removal, total plant biomass, and feeding preferences. Due to these various factors you will need to talk to a carp supplier after obtaining a permit. These fish can easily live ten or more years and have quite a bit of personality in a small water body giving a long term, no chemical control. If the water body is heavily overgrown grass carp may shift the plant types from thick algae mats and invasive plants to planktonic algae which turns water green. This type of algae is more easily controlled with chemicals, dyes, fish, beneficial plants, and may even just leave ponds with routine flow. Talk to local dealers after obtaining a permit from the Florida Fish and Wildlife (FWC) for exact stocking information to your particular pond.

While the FWC recommends a stocking rate of 3-10 carp per acre it can be extremely variable between the total biomass, area of pond, type of vegetation, and number of predators[1]. Lakewatch has also found that should too few carp be used then vegetation control might not be achieved or eradication of invasive species such as hydrilla be obtained with less than 10 fish per acre[2]. For this reason when dealing with very low biomass or trying to reduce but not eliminate the amount of native species we recommend 3-5 carp per treatment acre. However for dense infestations of invasive plants such as Hydrilla or less readily eaten species such as Hygrophila or Limnophila we highly suggest at least 10-13 carp per acre if not more to provide adequate removal and attempted eradication. In areas of mixed native and non-native plants that are still in high abundance look to the below species chart to see what species are most affected and stock between 3-10 carp per acre.

Readily Eaten – Actively selected for by grass carp and are removed first, even if other vegetation is present.

- Brazilian Elodea
- Duckweed - Sometimes Native
- Elodea - Native
- Hydrilla
- Muskgrass / Chara - Native
- Pondweeds - Usually Native
- Slender Spikerush - Native
- Southern Naiad - Native
- Widgeon Grass - Native

Occasionally Eaten – These are selected after preferred food choices are removed, may require higher stocking densities to remove these plants.

- Filamentous Algae - Variable but usually Native

- Baby Tears - Native
- Bacopa - Native
- Banana Lily - Native
- Bog Moss - Native
- Young Bulrush - Native
- Young Cattails - Native
- Coontail - Native
- Fanwort - Native* Invasive captive bred strain released
- Hygrophilia
- Knotgrass
- Limnophilia
- Maidencane - Native
- Marine Naiad - Native
- Stonewort *Nitella sp.* - Native
- Rush Fulrena - Native
- Young Soft Rush - Native
- Southern Water Grass - Native
- Water Meal - Native
- Water Shield

Rarely Eaten - Do not stock for these, carp will not eat them. They may have small amounts of damage.

- Planktonic Algae - Variable but usually Native
- Alligator Weed
- American Lotus - Native
- Azolla - Native
- Burhead Sedge - Native
- Arrowhead: Common, Duck Potato, Dwarf - Native
- Valisneria Eelgrass - Native
- Frog's Bit - Native
- Para Grass
- Parrot's Feather
- Pennywort - Native
- Pickerelweed - Native
- Red Ludwigia - Native
- Salvinia
- Sedges - Native usually
- Smartweed - Native
- Spatterdock - Native
- Torpedograss
- Water paspalum
- Water Hyacinth
- Water Lettuce
- Water Lily - Native most species
- Wild Taro

For more information and applications to receive Triploid Grass Carp see the below links.

FWC information on grass carp http://myfwc.com/wildlifehabitats/invasive-plants/grass-carp/

FWC Permit for New Applicants https://public.myfwc.com/crossdoi/triploidgrasscarp/PrShowQuestionaire.aspx

1. https://myfwc.com/wildlifehabitats/habitat/invasive-plants/grass-carp/
2. Sandra G. Hanlon, et. al. 2000. Journal of Aquatic Plant Management. Evaluation of macrophyte control in 38 Florida lakes using triploid grass carp. 38: 48-54

Most Triploid Grass Carp are stocked as juveniles around 8in to 12in long and as juveniles eat more than their adult counterparts. At this life stage they often fall prey to bass, otters, gators, and wading birds with adults generally surviving the full ten years after they hit 36in. At this point only age, disease, or fishing can remove them and they offer long term plant control. It is important to always release carp near shelter or structures in a pond so they can hide from predators such as the picture below where they were released next to a deep water planting where they could hide but not be trapped. Also some carp simply die during transit or do not survive the stocking such as the below individual from stress or poor water quality. This further necessitates the need to overstock especially with the desire to eradicate plants and not simply reduce invasive species.