

E n v i r o n m e n t S e r v i c e s & R e s e a r c h O r g a n i z a t i o n



K a s h m i r E n v i r o n m e n t N o d e

An Electronic Networking for Sustainable Development in Kashmir

E Magazine Hard Facts

Dal Lake Weed Nuisance & Scope of Grass Carp

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Lakes & Water Ways Development Authority had consistently used Mechanical Dewatering as single approach for weed control since decades resultant environmental impact assessment of Mechanical Dewatering on Dal Lake has already published by esro (see M.Dewatering & Lake) .

Mechanical Dewatering is in operation since 1984 , C-Flow technology has recently being incorporated on experimental basis for bottom aeration , construction on 3 STP's all along the Dal Lake periphery has been started .

The aquatic weed control with grass carp is far superior to chemical control, mechanical control, or no control. Long term chemical effects upon fish populations are either unknown or definitely detrimental and expensive. **Mechanical control is temporary and expensive, long term operation cause continuous large scale ecological destruction of the waterbodies of the valley .**

The alternative which has the least effect upon fish populations and other wildlife and costs nothing directly, is no control. However, a weed-choked lake has little

tourist appeal, and if the ultimate goal is to satisfy the greatest number of tourist , have efficient water flow, boating, or navigation, *no control* is not a viable alternative.

Our lakes are managed for the benefit of people related to tourism & fishery and in these managed lakes where submersed weed control is desired the grass carp is an effective and desirable tool. In spite of known facts about the feeding habits of the grass carp , to have great potential as a biological weed-control agent, **concerns existed particularly about the grass carp reproducing in the wild and becoming an environmental nuisance, destroying valuable areas such as wetlands, swamps and waterfowl feeding grounds.**

Because of these environmental concerns breakthrough has been achieved and Grass Carp can now be successfully used with no or minimum environmental concerns .

Now lets know facts about this natural creature

- **Common Name:** Grass carp, White amur
- **Scientific Name:** Ctenopharyngodon idella
- **Identification:** The grass carp is a long slender member of the minnow

family. It resembles the common carp because of its large size and scales. Grass carp differ from the common carp with the lack of a sucker-like mouth, and the absence of barbels on the mouth. Furthermore, grass carp are usually silvery-white, rather than the brownish-yellow of the common carp.

- **Range & Habitat** : The grass carp is native to China and has been introduced as a biological way to control aquatic vegetation. They prefer rivers but have adapted well to reservoirs.
- **Life History** : Grass carp spawn in flowing water and do not reproduce in lakes and ponds. Reproductive success is largely dependent on an adequate flow of oxygen rich water to suspend the eggs until they hatch. Juvenile grass carp rely on plankton--one celled plants, for food. Larger fish feed on a variety of aquatic plants, but they prefer submerged vegetation. This species will not eat algae. Grass carp grow rapidly and attain weights of 50 Kg's in their native waters.
- **Adult Size**: Grass carp are usually stocked when they reach 8 to 12 inches.
- **Fishing Methods**: Although not commonly captured by anglers, grass carp are occasionally caught on small pieces of vegetation or with worms.
- **Feeding Habits**: Until they are about 2 inches long, grass carp feed

almost exclusively on microscopic animals called zooplankton. They become dedicated vegetarians, however, after they reach a length of about 4 inches. The amount of vegetation they will consume depends upon several environmental conditions, such as water temperature, water chemistry, and the kinds of plants available. Consumption rates also vary with fish size. For example, until they reach weights of about ,2.5 Kg's grass carp may eat 100 percent of their body weight in vegetation per day. (This is equivalent to a 70 Kg's human eating 70 Kg's of food per day.) As they grow larger, consumption decreases; up to about 5 Kg's, they will eat 75 percent of their body weight per day, and above 5 Kg's, they slow down to about 25 percent of body weight per day.

Grass carp prefer soft, low fiber aquatic weeds such as duckweed and various underwater plants. If the more desired species of plants are not available, they will feed on plants above the water surface; and in cases where no aquatic food is available, they have been observed feeding on overhanging brush and tree branches. It is this voracious appetite for plants that makes grass carp useful in controlling aquatic weeds.

LOW

Alligator weed
Cattail
Eel grass
Maidencane
Milfoil
Parrot feather
Reeds
Sedges
Spatterdock
Torpedo grass
Water

MODERATE

Bladderwort
Coontail
Duckweeds
Fanwort
Filamentous
algae
Pondweeds
Water
pennywort
Water primrose

HIGH

American
elodea
Hydrilla
Musk-
grass
Naiads

hyacinth
Waterlily
Watermeal
Watershield
Yellow cowlily

- **Origin:** Grass Carp are native to China and Malaysia. Amur are native to the river systems of northern China, and southern Siberia.
- **Economy:** Grass Carp or White Amur can effectively control aquatic vegetation in ponds and lakes. Grass carp are very economical . Stocked at 10 per acre (the stocking rate will vary depending upon your aquatic environment) You have an investment of for 6 to 8 years. They will live longer, **but larger fish do not control vegetation like the younger actively growing fish.**
- **Size:** Grass Carp can reach a size of 1 Mtr. Their maximum life expectancy is 8 to 12 years. Some do live longer than that, but the larger they get the less they eat so they are less effective in plant control. Older fish give the impression of being related to submarines.
- **What do amur eat ?** Grass carp prefer some plants over others just as some people don't like spinach or broccoli. Plants that are not preferred will be consumed only after the favorites are gone. Grass carp **DO NOT** control algae.

Some Plants that Grass Carp are considered to control.

Bladderwort
Chara
Coontail (Ceratophyllum)
Fanwort
Hydrilla

Naiads
Parrotfeather (Myriophyllum)
Pond weeds (Potamogeton)
Widgeongrass
Spikerush

Some plants that Grass Carp do not control.

Alder	Rushes
Alligatorweed	Sedges
American lotus	Smartweed
Arrowhead	Spatterdock
Buttonbush	Southern watergrass
Cattails	Torpedograss
*Duckweeds	Water hyacinth
**Filamentous algae	*Watermeal
Fragrant water lily	Water pennywort
Frogbit	Water primrose
Maidencain	Water shield
Pickrelweed	Willows
Planktonic algae	White water lily

* Grass Carp will consume duckweeds and watermeal but they may not be able to control the populations of these plants.

**Filamentous algae may be controlled by grass carp 2-4 inches in length in ponds without predators. Larger fish may consume filamentous algae but it is not a preferred food and effective control may be unpredictable.

- **Effect on other fish** :Grass carp have had practically no effect upon total standing crop, shad biomass, numbers of catchable. **One effect of grass carp upon the environment that can be predicted with certainty is the removal of submersed plants.** This is considered beneficial. It renders the water more accessible, more suitable for fishing, for swimming, for pumping, for boating, and for fish population

manipulation.

* **Team esro** is working out for a PFR for introducing Grass Carp as weed control

Tool in Dal Lake.

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