SOME THOUGHTS FOR RESTORATION AND MANAGEMENT OF URBAN LAKES

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Lakes and ponds are valuable resources that provide ecological, aesthetic, and recreational services

Lakes can be stressed by anthropogenic or natural influences

- Eutrophication
- Sediment buildup
- Shore line erosion
- Aquatic weeds
- Invasive species

Eutrophication

Eutrophication

Eutrophication - definition

Excess nutrient and sediment load into lakes at a rate sufficient to increase the potential for high biological production and a decrease in basin volume

Eutrophication

- Excess nutrients and silt entering lake system from runoff
- Nutrients can be sorbed on silt which can later become available to algae and plants
- Excess plants deplete oxygen and release more nutrients as they decay
- Nutrients can be released from sediments

Eutrophication

- Reduced clarity (turbidity)
- Large daily oscillations in dissolved oxygen
- pH shifts
- Algal blooms
- Excessive weed growth
- Fish kills
- Odor, aesthetic, and

Eutrophication

DEVELOPMENT HAS A COST

BUT AT WHAT COST?

VICTIM – URBAN LAKES

– THESE LAKES ARE NOT OURS, WE HAVE BORROWED THEM FROM OUR CHILDREN

– WE NEED TO GIVE BACK TO THEM IN GOOD CONDITION

– THAT'S CIVILITY

Why Desiltation?

- Deepening
- Limit nutrient cycling
- Reduction of macrophyte nuisances
- Removal of toxic sediments

Sediment source control

- Identify the source of sediments
- Control the source to reduce the need to dredge again in the near future
- Provision for silt traps along SWDs

MANAGEMENT OF LAKES

- BIO-MANIPULATION
- AERATION
- SHORE LINE RESTORATION
- AQUASCAPING

BIO-MANIPULATION

- Reduction of phosphorous load by fishes
  - Silver carp and Catla– surface phytoplankton feeders
  - Rohu – Column zooplankton feeder
  - Gambusia and Guppies – larvivorous fishes for mosquito conrol

BIO-MANIPULATION

Grass carp

Biological

- Provides oxygen for aerobic decomposition of organic matter
- Controls blue-green algae
- Prevents fish kills
- Liberates dissolved gasses in to the air instead of allowing them to build to harmful levels in the pond (NH_3, CO_2, H_2S and methane

SHORE LINE RESTORATION

PREDOMINANT

Causes of Erosion

- Run off
- Wave Action

SHORE LINE RESTORATION

- Avoid revetment with stones or concrete

Instead restore bund or shore line with sturdy water resistant vegetation

AQUASCAPING

"Water Gardening"

- The use of aquatic plants to create desirable plant community
- Plants compete with algae for nutrients
- Serve as habitat for zooplankton to compete with algae for nutrients
- Stabilize shoreline
- Improve aesthetics and habitat


Thank
you