

# Public Meeting

## Honeoye Lake Algae & Weeds

What Can We Do About Them?

HVA Water Quality Committee 11/20/02

# Agenda

- Opening remarks
  - Meeting format, Committee members
  - Lake Management Consultant
  - Statement of problem, mission, & target vegetation
- Lake characteristics & realistic expectations
- Algae remediation options:
  - Block internal loading
  - Food web manipulation
- Weedbed remediation options:
  - Biological controls
  - Herbicides
  - Mechanical controls
- Q & A, comments, & inputs
- Wrap up; from here...

# Honeoye Lake Algae & Weeds

- Problem Statement: Heavy summer growth of aquatic weeds, filamentous algae, and other algae have impaired lake use and water quality for many residents/visitors; especially in 2002.
- Mission Statement: Identify near term options and recommend actions to limit undesirable aquatic vegetation and its impairments. These actions should be environmentally sound, and improve long term water quality for the varied recreational uses of Honeoye Lake.

# Honeoye Lake Algae & Weeds

- Targeted vegetation:
  - Tall rooted plants, attached algae, & suspended algae
- Extenuating factors/weather/introduced organisms
  - 20+ days > 90 degrees
  - Little rain, July – August
  - Zebra Mussels
- Year-to-year comparisons very difficult

# Honeoye Lake Characteristics/ Expectations

- Shallow/warm
- Eutrophic (nutrient rich)
  - High phosphorus dissolved in water column
  - High phosphorus in bottom sediment
- High biological productivity
  - Frequent algae blooms
  - Dense weedbeds
  - Rapid growth rates for fish

# Honeoye Lake Characteristics/ Expectations

- Requirements for Plant Growth
  - Water
  - Nutrients
  - Carbon dioxide
  - Sunlight
  - Long enough growing season
  - Suitable substrate (bottom) for rooted plants
  - Absence of inhibitory conditions

# Honeoye Lake Characteristics/ Expectations

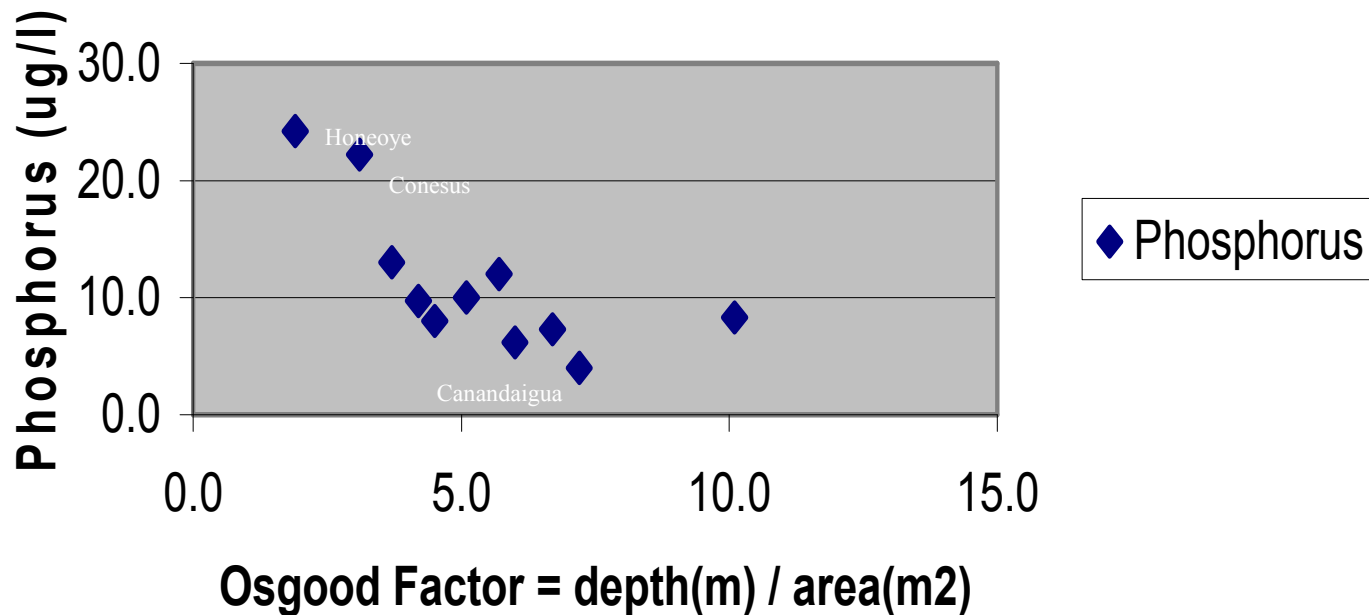
- Sources of Phosphorus
  - External loading
    - Shoreline septic, stream flows, runoff, waterfowl, precipitation, etc.
  - Internal loading
    - Release from bottom sediment

# Honeoye Lake Characteristics/ Expectations

- Shallow versus deep lakes
  - Shallow lake
    - Lack of thermal stratification
    - Wind generated mixing of entire lake volume
    - Internal loading of Phosphorus

# Honeoye Lake Characteristics/ Expectations

Plot of Osgood Factor / Phosphorus for  
Finger Lakes



# Honeoye Lake Characteristics/ Expectations

- Weedbeds and algae are natural organisms that occupy a vital position within a healthy lake plant/animal food web with numerous positive benefits
- Our options should aim to control their extreme proliferation, but not to unrealistically target their necessary role in a healthy Honeoye Lake

# Honeoye Lake Characteristics/ Expectations

- Options for Weedbed and Algae control
  - Control /manage growth (proactive)
  - Decrease biomass of nuisance plants (reactive)

# Algae Remediation

## Block Internal Loading

- Options
  - Alum sealing
  - Bottom aeration

# Algae Remediation Block Internal Loading

- Characteristics of Phosphorus in Bottom Sediment
  - High oxygen levels - phosphorus bound with iron in sediment
  - Low oxygen levels – phosphorus released into water column > **Algae**

# Algae Remediation

## Block Internal Loading

- Alum ( Aluminum Sulfate )
  - Binds with phosphorus > not released in low oxygen conditions
  - Algae control only
  - Lifetime = 5-15 years
  - Treat only deep areas of lake (20+ ft.)
  - Estimated cost \$150 - \$200 per treated acre
  - Numerous examples of effectiveness
    - Irondequoit Bay in 1986
    - Lake Mohawk in NJ (similar to Honeoye )
  - Safe to people and environment with proper application

# Algae Remediation

## Block Internal Loading

- Aeration
  - Pump oxygen or air to bottom to prevent low oxygen conditions
  - Algae control only
  - Must be done continuously July-Oct. (low oxygen periods)
  - Requires site for equipment
  - Numerous examples of its application
    - Irondequoit Bay (operating costs \$20-30,000 per year)
  - Safe to people/environment

# Algae Remediation: Block Internal Loading

- Discarded Options:
  - Sediment removal
    - Impractical & harmful to environment
  - Sediment oxidation
    - Impractical & very expensive
  - Artificial circulation
    - Impractical on large lakes

# Algae Remediation: Food Web Manipulation

- Increase predator pressure on planktivorous fish thereby increasing zooplankton which graze on the algae
  - Stock fingerling walleyes vs. fry
  - Investigate increasing minimum walleye size to 18”
  - Requested DEC to conduct walleye population study in 2003
  - Encourage monitoring project if undertaken
  - May negatively impact yellow perch and sunfish numbers

# Weedbed Remediation Methods: Biological Controls

- Stock/encourage Milfoil moths/weevils to severely reduce milfoil densities
  - Inventory lake weevil & moth populations – May FLCC/Cornell
  - Based on survey, stock or improve habitat
  - Encourage FLCC/Cornell ongoing monitoring
  - DEC would support introduction of moths/weevils
  - Safe to environment and people
  - Some successes: Cayuga & Findley Lakes
  - Weevils commercially available, moths not
  - If successful, self perpetuating

# Weedbed Remediation Methods: Biological Controls

- Dismissed option:
  - Sterile Grass Carp
    - Hard to meter stocking
    - Turbid, Add substantial fertilizer to water
    - Don't like Milfoil, eat native plants first
    - Harmful to other fish and environment
    - Impossible to isolate to lake
    - DEC would strongly oppose based on poor experience in large scale 12 year monitored stocking in Walton Lake (2001 report)

# Weedbed Remediation Methods: Herbicide Controls

- Advantages of herbicides
  - Relatively certain outcome if properly applied
  - Should be safe if properly applied
  - Relatively easy to implement
- Drawbacks to herbicides
  - Require repeated annual or biannual applications, recurring expense
  - Require DEC & other(?) approvals
  - Public perception
  - Potential unanticipated damage to lake ecology
    - Impact to invertebrates, spawning habitats, cover for juvenile fish, increased turbidity

# Weedbed Remediation Methods: Herbicide Controls

- Sonar (fluridone)
  - For Full Lake treatment
  - May control Eurasian Milfoil selectively with controlled application rate
  - To be effective, it must be applied to the whole lake at low concentration for a long period of time
  - Attempts to use it in localized areas have met with limited success
  - Would probably require use approximately every 2-3 years
  - DEC approved use of Sonar in Saratoga Lake (Waneta Lake has applied for permit)
  - Has few water use restrictions

# Weedbed Remediation Methods: Herbicide Controls

- Endothol (Aquathol K- liquid / Aquathol granular / Hydrothol 191)
  - For Spot Applications
  - More water use restrictions than Sonar
  - Controls a wide range of submerged aquatic plants
  - Works quite quickly
  - Can only be applied to approximately 10-25% of the lake at a time
  - Recommended application rates to control some aquatic plants, may be toxic to fish

# Weedbed Remediation Methods: Herbicide Controls

- Examples of Herbicide use or plans
  - Saratoga Lake – Used spot application of Sonar with so-so results
  - Conesus Lake - Considering the use of Aquathol on a spot basis
  - Waneta Lake - Planning on treating Waneta in spring 2003 and Lamoka in Spring 2004
  - Lake George – working since 1996 to obtain test permit

# Weedbed Remediation Methods: Herbicide Controls

- Due to the technical knowledge required to determine:
  - Unintended potential impacts
  - The best products to use
  - Application rates
  - Times
  - Methods
  - Advisability vs other possible actions for Honeoye Lake
- Any recommendations await the analysis of a Lake Management Consulting Firm & further study

# Weedbed Remediation Methods: Physical Controls (Harvesting)



- Misconceptions
- Public Perceptions
- Pro's & Con's
- Approach Ideas

# Weedbed Remediation Methods: Harvesting Misconceptions

- *The Harvester creates all the floating and shoreline weeds*
  - Do not forget about boats & other watercraft
  - Water activities
  - Wave action/storms
  - Natural fragmentation
- *Uncollected weeds are only a nuisance if you get into them*
  - Keep in mind stagnated water is a great place for algae blooms to build up, decay to happen and insect breeding. Don't forget the Smells.
  - With the right wind and waves they can move to where you are

# Weedbed Remediation Methods: Harvesting Misconceptions

- *We have more weeds due to the Harvester not collecting enough of the weeds it cuts*
  - Experimental and historical data shows that aquatic vegetation beds have not become more dense over time, rather they have extended into deeper waters due to increased water clarity in spring and early summer months.

# Weedbed Remediation Methods: Perceptions Held by Some People

- Hardly ever see harvester cutting weeds
- Harvester docked at other end of lake
- Harvester collects a smaller percentage of the weeds it cuts than advertised
- Cut weeds not collected by the harvester wash to shore or sink to bottom and re-root
- Harvester seen cutting but not collecting weeds (Front sickle bar moving, but conveyor belt not moving)

# Weedbed Remediation Methods: Harvesting

## Pro's

- Removes vegetation that would decay and increase sediment rate & internal loading
- Clears path through Aquatic vegetation (weeds) to provide blocked in residents lake access
- Improves habitat for foraging fish & removes overabundant juvenile sunfish

## Con's

- After the fact method (mostly reactive not preventative, may not remove enough nutrients to be preventative)
- Aquatic vegetation growth can get far ahead of harvesting efforts during peak of the summer.

# Weedbed Remediation Methods: Harvesting Approach Ideas

- Help Increase harvesting efficiency
  - Identify and secure additional unload stations
  - Support additional equipment purchase (such as)
    - 1 or 2 Transporters to keep Harvester working at site
    - Second small Harvester to work closer to shore & docks
    - Floating weed collectors (Trash hunters if a Harvester or Transporter cannot do this)
- Keep the public better informed
  - Post schedules
  - Current collection data at multiple places (ex: Web & Town Hall)

# Weedbed Remediation Methods: Harvesting Ideas

- Collect floating weeds before they get to shore
- Increase Harvester operational hours during peak season (evenings and/or weekends)
- Create summer job program for students to help lake residents with shoreline cleanup
- Look into a volunteer program for aiding with Harvesting and shoreline cleanup
  - May need volunteer help to offset costs

These ideas to increase harvesting resources will be pursued in concert with Bob Pierce, who has worked very hard with limited resources, to make harvesting as effective as possible

# Public Meeting

## Honeoye Lake Algae & Weeds

- Questions/Answers
- Inputs/Comments

# Public Meeting

## Honeoye Lake Algae & Weeds

- Meeting summary
- From Here...Tentative timetable
  - Interview and select Lake Consultant Firm(Dec)
    - Obtain approval of HVA board for consultant funding(Dec)
    - Provide lake data to consultant(Jan)
    - Firm analyzes data and produces report identifying recommended actions and plan (Jan/Feb)
  - Public meeting to review recommended actions(Mar)
  - Apply for grants & funding to implement actions for 2003 & 2004(Mar)
  - Present to Town Boards for support/funding?(Feb/Mar)
  - Implement most promising and funded options(2003/4)