Crystal Lake Annual Meeting

Agenda
2003 Activities Summary

- Spring and Fall milfoil surveys to monitor progress in control of lake weeds
- Spring application of herbicides for the beaches and west end of the lake
- Newsletter article regarding milfoil management
- Continued monitoring of surface flows to and from the lake by the City of Crystal Lake
2003 Activities Summary

- Volunteer Lake Monitoring (VLMP)
- Phase I Clean Lakes grant application to IEPA
- Annual Lake Meeting
- Investigation of beach sand regulatory issues
- Lake Advisory Committee Meeting
- Investigation of aquatic organisms
Eurasian Watermilfoil Eradication Project
Eurasian Watermilfoil Infestation Areas in 2002
Eurasian Watermilfoil
Areas Treated in 2003
Eurasian Watermilfoil Areas Treated in 2003
Eurasian Watermilfoil Infestation Areas in 2004
Chara
Sago Pond Weed
Eel Grass
Clean Lakes Grant
Clean Lakes Grant

- In-lake water quality monitoring
- Bacterial monitoring of the beaches (McHenry Health Dept.)
- Aquatic plant survey
- Fish survey (IDNR)
- Bathymetric and sediment mapping
- Bottom sediment core sampling
- Storm event monitoring (City of Crystal Lake)
Clean Lakes Grant

- Water level monitoring
- Preparation of water, sediment and nutrient budget
- Summary of historic water quality
- Evaluate management alternatives
- Prepare management plan
- Public participation
## Clean Lakes Grant

### Activity Schedule

<table>
<thead>
<tr>
<th>Activity</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality Sampling</td>
<td>J</td>
<td>F</td>
<td>M</td>
</tr>
<tr>
<td>Collect Non-water Quality Information for Diagnostic Study</td>
<td>M</td>
<td>A</td>
<td>M</td>
</tr>
<tr>
<td>Summarize Water Quality Data</td>
<td>A</td>
<td>S</td>
<td>O</td>
</tr>
<tr>
<td>Prepare Water and Nutrient Budgets</td>
<td>S</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>Identify Water Quality Management Alternatives</td>
<td>N</td>
<td>D</td>
<td>J</td>
</tr>
<tr>
<td>Identify Advantages, Disadvantages and Costs of Alternatives</td>
<td>D</td>
<td>J</td>
<td>A</td>
</tr>
<tr>
<td>Selection of Final Management Plan</td>
<td>A</td>
<td>S</td>
<td>O</td>
</tr>
<tr>
<td>Prepare Final Report</td>
<td>O</td>
<td>N</td>
<td>D</td>
</tr>
</tbody>
</table>

### Timeline

- **2004**: All activities are scheduled from January to December.
- **2005**: Activities include January, March, May, and June.
- **2006**: Activities include January and June.
Water Level Observations
Hydrologic Budget
Historic lake Level and Precipitation Data
Crystal Lake Stage (NGVD)

[Graph showing the lake stage (NGVD) from November 1998 to February 2004, with dates and lake stages indicated.]
Cumulative Departure From Normal Precipitation (in)

Graph showing cumulative departure from normal precipitation in inches of water from November 1998 to November 2004.
Monthly Precipitation (in)
Precipitation v. Lake Stage

The graph illustrates the relationship between precipitation excess/deficit (in) and lake stage (NGVD) over a period from November 1998 to February 2004. The y-axis represents precipitation excess/deficit in inches, ranging from -10 to 10, while the x-axis represents the month from November 1998 to February 2004. The graph shows two lines: one for cumulative excess/deficit (in) and another for lake stage (NGVD).
Lake Freezing Issues
Temperature v. Ice Formation

<table>
<thead>
<tr>
<th>DATE</th>
<th>TEMPERATURE (DEG F)</th>
<th>ICE THICKNESS (IN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/1/2003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/11/2003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/21/2003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/31/2003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/10/2004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/20/2004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/30/2004</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exotic Species

“We are under attack”
Exotic Species

Plants (18)

- Eurasian Watermilfoil, Myriophyllum spicatum
- Purple Loosestrife, Lythrum salicaria
- Curly-leaf Pondweed, Potamogeton crispus
- Hydrilla, Hydrilla verticillata
- Salvinia, Salvinia spp.
- Water Hyacinth, Eichhornia crassipes
- Phragmites, Phragmites spp.
- Western Salt Cedar, Tamarix spp.
- Parrot Feather, Myriophyllum aquaticum
- Brittle Naiad, Najas minor
- Alligator Weed, Alternanthera philoxeroides
- Floating primrosewillow, Ludwigia peploides
- Uruguayan primrosewillow, Ludwigia uruguayensis
- Chinese Tallow Tree, Triadica sebifera
- Flowering Rush, Butomus umbellatus
- Japanese Knotweed, Polygonum cuspidatum
- Australian Water Clover, Marsilea mutica
- Asian Spiderwort, Murdannia keisak

Mississippi Interstate Cooperative Resources Association
Exotic Species

**Microorganisms (3)**
- Carp Spring Viremia, Rhabdovirus carpio
- Yellow Perch Parasite, Heterosporis
- Whirling Disease, Myxobolus cerebralis

**Crustaceans (4)**
- Spiny Waterflea, Bythotrephes cederstroemi
- Rusty Crayfish, Orconectes rusticus
- Fish Hook Waterflea, Cercopagis pengoi
- Red Swamp Crayfish, Procambarus clarki

**Mollusks (5)**
- Zebra Mussel, Dreissena polymorpha
- Asian Clam, Corbicula fluminea
- Quagga Mussel, Dreissena bugensis
- New Zealand Mud Snail, Potamopyrgus antipodarum
- Southern Mapleleaf Mussel, Quadrula apiculata
Exotic Species

Fish (15)

- Common Carp, *Cyprinus carpio*
- Bighead Carp, *Hypophthalmichthys nobilis*
- Silver Carp, *Hypophthalmichthys molitrix*
- Black Carp, *Mylopharyngodon piceus*
- Grass Carp, *Ctenopharyngodon idella*
- Round Goby, *Neogobius melanostomus*
- White Perch, *Morone Americana*
- Ruffe, *Gymnocephalus cernuus*
- Alewife, *Alosa pseudoharengus*
- Sea Lamprey, *Petromyzon marinus*
- Rudd, *Scardinius erythrophthalmus*
- Blueback Herring, *Alosa aestivalis*
- Nile Tilapia, *Oreochromis niloticus*
- Red Shiner, *Cyprinella lutrensis*
- Rainbow Smelt, *Osmerus mordax*
Eurasian Watermilfoil
Eurasian Watermilfoil
Zebra Muscles
Zebra Muscles

- A European species, was first discovered in Lake St. Clair in June 1988
- Have caused major ecological shifts in the Great Lakes
- Concern they may cause imbalances with other native species
Zebra Muscles

- Block water intakes
- Have sharp edges and can cut feet and hands
- Crust over on boat hauls and piers
Goby Fish
Goby Fish

- **Common Names:** Round goby, goby
- **Length:** 4 to 10 inches
- Is a freshwater fish native to Eurasia
- The round goby is an aggressive bottom dwelling fish
Goby Fish

- Found in Lakes: Michigan, Huron, Erie, and Superior and Illinois River
- They had not been found in the Great Lakes prior to 1990
- Presumably, the fish arrived in ballast water discharged by trans-oceanic ships
Goby Fish

- Their aggressive nature and ability to become abundant quickly may allow them to outcompete some of our native species for food resources and spawning habitat.
- They will feed on small native fish, including darters, and native fish eggs.
- Their aggressive feeding nature will be a nuisance to fishermen who have difficulty catching target sport fish in areas where goby are present.
Goby Fish

- Fin may be tinged in green
- Black spot
- Eyes raised and frog-like
- Thick lips
- Body mostly slate gray or black, mottled with black or brown spots
- Single scallop-shaped pelvic (bottom) fin
Goby Fish

- Round Goby
- Sculpin
Ruffe

- **Length:** 4 to 6 inches (25 cm)
- **Common Names:** Eurasian ruffe, river ruffe, pope
- It was introduced into Lake Superior's Duluth/Superior harbor area in the mid-1980s in the ballast water of an trans-oceanic ship
Ruffe

- A relative of the perch
- Because the ruffe grows very fast, has a high reproductive capacity and adapts to a wide variety of environments, it is considered a serious threat to commercial and sport fishing.
- It also has the potential to seriously disrupt the delicate predator/prey balance vital to sustaining a healthy fishery.
Spiny and Fishhook Waterfleas

- (Bythotrephes cederstroemii)
- (Cercopagis pengoi)
Spiny and Fishhook Waterfleas

- Both are already a notorious nuisance for fouling fishing lines - indicative of their astonishing abundance.
- The biggest threat they pose is at the very foundation of the native food web, where they prey voraciously on native zooplankton and thus deprive larval fish of food, while larger fish find them unpalatable as prey because of their namesake spiny and fishhook tails.
Cylindrospermopsis

- Group of blue green algae
- In high numbers can cause taste and order problems
- Can cause ear, eye and skin irritation in bathers
Cylindrospermopsis

- Spreading north from subtropical regions
- Has been found in 8 lakes in Southeastern Wisconsin, and several reservoirs in northern Indiana
- No known method to safely and effectively rid a lake of Cylindrospermopsis
What Can You Do to Stop the Spread of These Exotics

- Learn about the these exotics, how they spreads, how to identify them, and the threats they pose, and share this information with others.
What Can You Do to Stop the Spread of These Exotics

- Inspect boat, trailer, and other recreational equipment carefully for mussels and aquatic vegetation. Remove and discard in the trash.
What Can You Do to Stop the Spread of These Exotics

- Drain all water from boat, including bilge, live well and engine cooling system, and other recreational equipment that might trap water.
What Can You Do to Stop the Spread of These Exotics

- RINSE your boat and equipment with hot (104°F) high pressure tap water or
- Dry boat and trailer in sun for at least two days or if using boat sooner, rinse off boat, trailer, anchor, anchor rope and chain, bumpers, engine, etc... with tap water or at a car wash.
What Can You Do to Stop the Spread of These Exotics

- Leave live aquatic bait behind--either give to someone using the same waterbody, discard in the trash, or dump it onto the land when you are finished fishing. Do not dump it into the water. Live bait is collected and transported all over the Midwest, and once released into new waters non-native fish may grow and reproduce.
If you can find an exotic species:

- Keep it and place it in a bag with a label noting the date and location where it was captured. It is important for us to have the actual specimen in order to confirm the sighting.
- Place it in the refrigerator or freezer.
- Contact IDNR or the Crystal Lake Park District.
<table>
<thead>
<tr>
<th>Lake County Lake With Eurasian Watermilfoil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand Pond (IDNR)</td>
</tr>
<tr>
<td>Diamond Lake</td>
</tr>
<tr>
<td>Gages Lake</td>
</tr>
<tr>
<td>Butler Lake</td>
</tr>
<tr>
<td>Gray's Lake</td>
</tr>
<tr>
<td>Lake Minear</td>
</tr>
<tr>
<td>Countryside Lake</td>
</tr>
<tr>
<td>Liberty Lake</td>
</tr>
<tr>
<td>Druce Lake</td>
</tr>
<tr>
<td>Third Lake</td>
</tr>
<tr>
<td>Crooked Lake</td>
</tr>
<tr>
<td>Hastings Lake</td>
</tr>
<tr>
<td>Fourth Lake</td>
</tr>
<tr>
<td>Lake Miltmore</td>
</tr>
<tr>
<td>Lake Charles</td>
</tr>
<tr>
<td>Spring Lake</td>
</tr>
<tr>
<td>Sun Lake</td>
</tr>
<tr>
<td>Lake Catherine</td>
</tr>
<tr>
<td>Fox Lake</td>
</tr>
<tr>
<td>Bangs Lake</td>
</tr>
<tr>
<td>Round Lake</td>
</tr>
<tr>
<td>Channel Lake</td>
</tr>
<tr>
<td>Long Lake</td>
</tr>
<tr>
<td>Cedar Lake</td>
</tr>
<tr>
<td>East Loon Lake</td>
</tr>
<tr>
<td>Slocum Lake</td>
</tr>
<tr>
<td>Grass Lake</td>
</tr>
<tr>
<td>Lake Marie</td>
</tr>
<tr>
<td>Lake Zurich</td>
</tr>
<tr>
<td>Antioch Lake</td>
</tr>
<tr>
<td>Pistakee Lake</td>
</tr>
<tr>
<td>Nippersink Lake</td>
</tr>
<tr>
<td>Redhead Lake</td>
</tr>
<tr>
<td>West Loon Lake</td>
</tr>
<tr>
<td>Tower Lake</td>
</tr>
<tr>
<td>Duck Lake</td>
</tr>
<tr>
<td>Wooster Lake</td>
</tr>
<tr>
<td>Island Lake</td>
</tr>
<tr>
<td>Highland Lake</td>
</tr>
<tr>
<td>Timber Lake (South)</td>
</tr>
<tr>
<td>Little Silver Lake</td>
</tr>
<tr>
<td>Lake Fairview</td>
</tr>
<tr>
<td>Lake Napa Suwe</td>
</tr>
<tr>
<td>Seven Acre Lake</td>
</tr>
<tr>
<td>Grandwood Park Lake</td>
</tr>
<tr>
<td>Peterson Pond</td>
</tr>
<tr>
<td>Lake Leo</td>
</tr>
<tr>
<td>White Lake</td>
</tr>
<tr>
<td>Timber Lake (North)</td>
</tr>
<tr>
<td>Lambs Farm Lake</td>
</tr>
<tr>
<td>Pulaski Pond</td>
</tr>
<tr>
<td>Nielsen Pond</td>
</tr>
<tr>
<td>Dugdale Lake</td>
</tr>
<tr>
<td>Schreiber Lake</td>
</tr>
<tr>
<td>Drummond Lake</td>
</tr>
<tr>
<td>Old Oak Lake</td>
</tr>
<tr>
<td>Lake Lakeland Estates</td>
</tr>
<tr>
<td>Fairfield Marsh</td>
</tr>
<tr>
<td>Cross Lake</td>
</tr>
<tr>
<td>Lake Tranquility</td>
</tr>
<tr>
<td>McGreal Lake</td>
</tr>
<tr>
<td>Lake of the Hollow</td>
</tr>
<tr>
<td>Ames Pit</td>
</tr>
<tr>
<td>International Mining and Chemical Lake</td>
</tr>
<tr>
<td>Werhane Lake</td>
</tr>
<tr>
<td>Harvey Lake</td>
</tr>
<tr>
<td>Deep Lake</td>
</tr>
<tr>
<td>Dunn's Lake</td>
</tr>
<tr>
<td>Bluff Lake</td>
</tr>
<tr>
<td>Fish Lake</td>
</tr>
<tr>
<td>Fischer Lake</td>
</tr>
<tr>
<td>Petite Lake</td>
</tr>
<tr>
<td>Turner Lake</td>
</tr>
<tr>
<td>Taylor Lake</td>
</tr>
<tr>
<td>Salem Lake</td>
</tr>
<tr>
<td>Old School Lake</td>
</tr>
<tr>
<td>Sterling Lake</td>
</tr>
</tbody>
</table>
Lake County Lake With Zebra Muscles

- Gages Lake
- Lake Minear
- Third Lake
- Spring Lake
- Lake Catherine
- Fox Lake
- Bangs Lake
- Cedar Lake
- Grass Lake
- Lake Zurich
- Pistakee Lake
- Nippersink Lake
- West Loon Lake
- Tower Lake
- Independence Grove
- Bluff Lake
- Petite Lake
- Sterling Lake
Other Issues
Shoreline Stabilization
Shoreline Stabilization

5. 6. 2004
No Phosphorus Fertilizer
Storm Sewer Stenciling

DUMP NO WASTE
DRAINS TO LAKE
Ice Safety
2004 Proposed Work Program

- Spring and Fall milfoil surveys to continue to monitor progress in control of lake weeds
- Spring application of herbicides for the beaches and west end of the lake as needed
- Installation of water level recorder
- Four newsletter of website articles regarding lake management and lake status
2004 Proposed Work Program

- Continued monitoring of surface flows to and from the lake by the City of Crystal Lake Fishery survey (IDNR)
- Monitoring of lake water column quality for eight sample dates spread through the year
- Volunteer Lake Monitoring (VLMP)
- Annual report on lake quality using data collected by City and VLMP data
2004 Proposed Work Program

- Boat count (volunteer effort)
- Bird survey (volunteer effort)
- Phase I Clean Lakes work when funded by IEPA
- Annual Lake Meeting
- Aggressive management of invasive species
Public Comments and Questions
No-Wake Areas