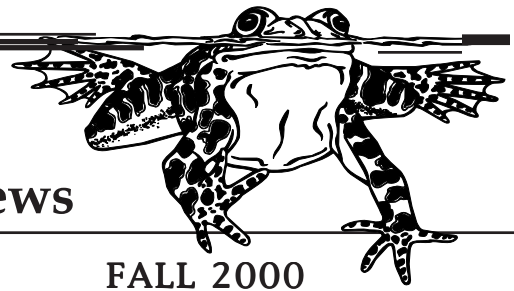


WATER'S EDGE

Gratiot Lake Conservancy News



Volume 2

FALL 2000

Second Open House

Gratiot Lake Conservancy's Second Annual Open House had a perfect day and a wonderful turn out. Eight-five lake residents and friends attended the event at the restored Noblet Field Station. The cabin's new solar panels powered a video player lent by John and Reva Lizzadro. Those who were unable to attend "What's in The Mud" (see p.6) viewed a replay of that evening's presentation. Leonard Bohmann, the Michigan Tech professor who supervised the solar panel project, was on hand with his family.

Raven and Mike Scheiwe of Headwaters spoke with visitors about their educational and research programs at Gratiot and led some on a new path on Conservancy land. Headwaters student interns Jake Musser and Brett Harrison shared their observations of the birds of Gratiot.



L.to r.: Mike Scheiwe, Justin McGrath, Howard Hosking, Marilyn Jones

Many residents and friends contributed treats from delicious brownies to spicy salsa dip to the festivities. Some visitors arrived on the Peck pontoon boat which ferried a large contingent over from the North shore.



Community officials, Don Keith and Frank Stubenrauch dropped in. It was great to see

representation from the broader Keweenaw community. All in all, the day was a nice opportunity for visiting and relaxing.

Thanks to all who assisted in the planning and execution of this day!

The **Gratiot Lake Conservancy** is a Michigan Not-For-Profit Corporation formed in 1998 to preserve and protect Gratiot Lake and land within the Gratiot Lake watershed. Through education programs and materials, the Conservancy encourages good stewardship of the watershed and an understanding of its history and ecology. We promote research to further understand the Lake and its watershed. The Gratiot Lake Noblet Field Station located in the SE corner of the Lake is the staging area for many of the Conservancy's education and research activities.



l.to r.: Ray Peck, Bonnie Hay, and John Eister at the Open House

New at Noblets

Two of the old Noblet cabin appliances were replaced this summer. The Conservancy purchased a new all gas stove to replace the old gas/wood one that had a lot of character but which had pinpoint leaks in its works and was deemed unsafe. Art Dion generously donated a good quality used gas refrigerator to replace the old Servel which hadn't worked in years. Now meals for the student researchers can be more varied with fewer trips for provisions.

Chuck and Janice Anderson donated a hand pump. Those using the Field Station have depended on purified lake water or bottled water for drinking—and there is no running water in the cabin. Installing a usable outdoor pump will make life a bit easier for everyone!

Thanks to Steve Stackhouse for the sturdy wood duck nest box which will be installed next year at the preserve.

Take a Look at the Conservancy Web Site

Now you can enjoy online photos of Gratiot when work or weather keeps you elsewhere. GLC has a presence on the web at: <http://members.bellatlantic.net/~jah2/GLC/>
Log on for program updates and information related to the Lake.

Look for Conservancy membership details in the next Water's Edge.

Thanks goes to :

Water's Edge proofreaders Mimi Lytle and Jim Hay.

Joe Lizzadro and Raven and Mike Sheiwe, and Jim Hay for photos in this publication.

Janet and Bud Avery for the use of their photo copier this past summer.

Recording Gratiot's Past

If you have a story from the lake's past which you would like to have printed and shared, please send it along to the Conservancy via letter, e-mail, or audio tape. The Conservancy will compile and save stories submitted. Mimi Lytle has generously offered to transcribe any stories sent in on audio tape. We plan to compile the stories in a binder and reprint excerpts in upcoming newsletters. The Conservancy reserves the right to edit any submissions.

About *Water's Edge*

Water's Edge is the newsletter of the Gratiot Lake Conservancy. Its purpose is to report Conservancy news, to share information about the ecology and history of Gratiot Lake and its watershed, and to suggest ways to improve stewardship of the Lake and its watershed. If you have questions, comments, or offerings for *Water's Edge* please write to: Bonita Hay, Editor *Water's Edge*, 6699 Springbank Street, Philadelphia, PA 19119 or e-mail: belh@bellatlantic.net. Our website is located at : <http://members.bellatlantic.net/~jah2/GLC>

Lake Level Lows

Low lake levels were on everyone's mind this past summer. Several years of drought in the region are affecting the Great Lakes' and inland lakes' water levels. The prediction for Spring 2001 is for Lake Superior to be reaching levels just above its all time recorded low mean levels of 1926. Michigan Lakes and Streams Association Regional Vice President Arnold Domanus reports that several U.P. lakes are down a foot or more from their average levels.

Gratiot's water level is lower now than in most residents' memory. The loss of beaver dams and beavers in the Lake's outlet exacerbated the problem.

Lake level fluctuations are natural and normal. It is the extremes that are worrisome to lakeshore property owners. Low lake levels mean docks must be placed further out and if water is drawn from the lake, intakes may need to be extended. Exposure of more beach may be a blessing to some property owners, but it may expose some fragile "wild" shoreline areas to use and abuse. The lowered volume of water in some lakes could increase concentration of nutrients such as nitrate and phosphate that would encourage unwanted algal blooms.

Some are asking what can be done. Could damming the outlet be an answer? Man-made dams often cause more problems than they solve. Artificial control of water levels can have adverse effects on the ecology of a lake, for example by altering the spawning of fish. Artificially damming the outlet would certainly adversely affect the ecology of the Little Gratiot River as well.

Before lake levels can be controlled in any artificial way, normal lake levels must be officially determined. According to an article by Clifford Bloom in the August 2000 issue of the *Michigan Riparian* magazine, once lake level is established, several legal governmental hurdles must be surmounted before it can be altered artificially. At least 2/3 of the landowners affected by such alteration must be in agreement. Even if State approval is obtained, design and

installation of a structure can be prohibitively expensive.

The Conservancy hopes to recruit university students to research the lake level issue further. Of course, a heavy snowfall this winter and normal precipitation next spring coupled with the possibility of beavers recolonizing the outlet could put an end to this discussion for a while!



Eagles 1—Loons 0

Gratiot Lake eagles successfully raised another eaglet this summer. The nest which is reused with addition of fresh branches each year is now immense.

According to Sergej Postupalsky, the official Eagle Counter for the Michigan Department of Natural Resources, there were two eagle nests in Keweenaw County which produced babies this year. In the Keweenaw Peninsula and Isle Royale, 18 eaglets were raised compared to 15 last year. Some of you may have seen and heard the DNR hired airplane flying low over the Lake as Sergej did his aerial survey. He swears that this procedure, while it may ruffle the eagles' feathers a bit, is not harmful to them.

Loons were not as lucky. Although two nesting platforms, funded by Art Dion, were placed on the Lake by the Copper Country Audubon, neither was used by loons. Dana Richter of Copper Country Audubon reports that on seven lakes which had artificial loon nesting platforms in the U.P. this year, three had nests, but only one of these nests produced viable young. Part of the problem

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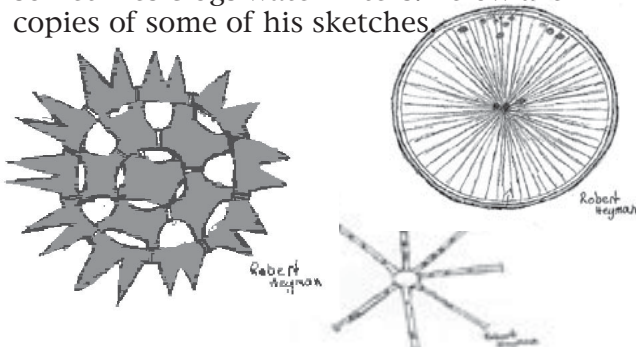
Headwaters Resident Ecology Research Internships and Field Studies

It was another exciting season of education and research at Gratiot as Diane Raven and Mike Scheiwe brought their exceptional programs to the Noblet Field Station. Three of their student interns are highlighted in this issue. Look for others in the Spring Issue.

The Conservancy hosts the Headwaters programs at the Lake but students must pay a fee to enroll in these studies. Those wishing to help provide full or partial sponsorships may donate to help defray this cost. Rita Sandretto has generously provided a partial sponsorship in memory of her husband.



Robert Heyman, a student at Houghton Middle School, examined the algae in the lake through a microscope. He found many species including tabellaria and cyclotella that are usually indicators of clean water and closterum a species that sometimes clogs water filters. Below are copies of some of his sketches.



Brett Harrison, a student at Houghton Middle School, focused on cavity nesting birds. His keen observation of eastern kingbirds, black capped chickadees, tree swallows, wood ducks, red breasted nuthatches, yellow-bellied sapsuckers, and downy woodpeckers culminated in sensitive sketches including the one reproduced below.



**A silence not my own
A silence of the Lake
Gratiot
The gold of the sunlit dawn
The cry of the morning Loon**

Freedom

**A sadness not my own
A sadness of a Ringed-billed Gull
Maimed
The trees so still
Silence is their language**

Freedom of a sort

**A Swamp Rose
Sweet and motionless
Whirring with bees
On the banks of the Little Gratiot
First picked alive and vibrant
Parched as old paper
Curling where it once was straight
Trapped by her own means
A gift of her own**

**A deepness of my own
A spurt of realization
Then it's gone**

But leaves me all the wiser

**The silence of a Great Blue Heron
Searching
Questing
Knowing more
More than I could ever hope,
Ever hope to know**



Kate Flynn, a student at Hancock Middle School, came to Gratiot as a creative writing intern. She movingly displays her response to the lake in excerpts from her writing at left.

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with Gratiot Lake's platforms was that they sat too high off the water. Loons, with feet placed far back on their torso, are built more like penguins than ducks. They are designed more for powerful swimming and diving than for walking.

Next Spring the platforms, modified to float at water level, will be put in again. This year Dana Richter depended on assistance from club members to put in and remove the platforms. It is quite a feat to put the platforms out and securely anchor them each year. If you would like to help, contact Dana Richter by phone during the day at 906-487-2149 or write to him at:
Copper Country Audubon Club
P.O.Box 124
Houghton, MI 49931



Gratiot Lake Sediment—A Detective Story

Some of the secrets of Gratiot Lake's past were revealed by Sharon Simpson in her presentation of "What's in the Mud" held on July 16 at the Eagle Harbor Schoolhouse. Joined by David Long and Joel Fett also of the Geology Department at Michigan State University and Neal Godby an aquatic biologist from Michigan's Department of Environmental Quality, Ms. Simpson presented the team's results of sediment core research on some of Michigan's inland lakes, and Gratiot in particular.

The program hosted by the Gratiot Lake Conservancy was well attended by Gratiot Lake and Eagle Harbor residents and by others interested in lake quality issues. At the suggestion of Bruce Wagner Eagle Harbor township officials graciously offered the use of the Schoolhouse for this event.

Mr. Godby explained in his introduction that sediment research is one part of an overall program, supported in part by Michigan's Clean Water Fund, to provide water quality protection data. Other components include checking for fish contamination, surface water monitoring, watershed habitat assessment, and evaluation of pollution sensitive wildlife such as bald eagles. In this manner water quality trends can be assessed and emerging pollution issues can be identified and addressed.

The core sediment samples extracted from the deepest part of the lake (78 feet) are as Ms. Simpson put it a "cross-section in time." Layers in the sediment can be dated by measuring the accumulation of lead present. By taking a "geochemical fingerprint" of 1/2 cm. thick sections of the core sample, the changes and trends in the chemistry of the lake from 1826 to the present can be examined. An instrument called a mass spectrometer scans each layer for concentrations of 23 elements. The combinations of elements present in each layer over time serve as clues to natural and human influences affecting the lake at any given time.

So what did Gratiot reveal? The profile of lead in Gratiot's sediment steadily rises throughout the 1900's until the early 1970's and then steadily drops was mirrored in the other four lakes tested. This finding shows the increase in lead in the environment due to the use of leaded gasoline and then the improvement in environmental quality that resulted from the banning of unleaded gas in cars in the early '70's. It is a graphic example of the benefit of environmental legislation. Gratiot's lead followed the same trend lines as the lakes further south but concentrations were less. Presumably because less population means fewer cars.

Although there was never a mine on Gratiot's shores, the sediment reveals that the lake felt the impact of copper smelting. From the turn of the Twentieth Century through the 1950's there was a steady increase in the amount of arsenic, copper, cadmium, and zinc found in the sediment. All are copper mining "signatures".

There was a sudden mysterious increase of all the chemicals in Gratiot sediment in the years 1994 and 1995. This trend was not seen in the four other lakes tested, so it must have had a local cause. It may have been caused by the road building which took place at this time. Gratiot Lake residents gave other suggestions of possible causes including the clearing for and opening of the Great Lakes Minerals mine site above the lake and other clearing for building (which would cause erosion) near the lake.

Another of the sediment cores was analyzed for certain "organic" chemicals. Many of these compounds cause health and reproductive problems for wildlife and humans. The good news is that although a low level of the DDE, a breakdown product of DDT, and chemicals were found in the 1960's and 1970's there was a steadily decreasing trend to the present. No PCB's were detected. These results were far lower than in the southern lakes.

Ms. Simpson noted that Gratiot Lake is in good shape. Although many chemicals are now present in greater amounts than in “pre settlement” times, current chemical levels are well within the guidelines for good quality Michigan lakes. Toxins buried deep in the lake sediment are unlikely to pose any immediate health risks.

The team promises to get back to the Conservancy with its final analysis of the sediment which will include the mercury profile for the Lake.

In closing, Ms. Simpson noted “...you can see through these profiles that the lake really does change and it’s very influenced by what goes on around it. In fact, what you do in your backyard affects what we see in your lake!”

If you missed the presentation or would like to review it, Jim Hay video taped the evening and that tape is available to borrow. Just contact the Conservancy.

Comparison Concentrations

(ppm)	Gratiot surface	Gratiot 1829	MI lakes* surface
Cd	0.79	0.64	0.2-3.6
Cu	68.21	66.94	7.2-178
Pb	43.21	3.09	13-440
Zn	91.71	54.89	28-320

*Lakes in Michigan with no municipal/ industrial discharge

Editors Note: The table above is from “What’s in the Mud? Chemicals in Sediment Cores: What They Reveal About Gratiot Lake”



l.to r.: Dorothy Jamison, Ed Kaeding, Bonnie Hay, and Sharon Simpson at the “What’s in the mud?” program.

Gratiot Lake’s Clarity

Ed Kaeding submitted the data from weekly (June through September 2000) secchi disk monitoring to the Michigan Lakes and Streams Association. Secchi sampling measures the transparency and clarity of Gratiot’s waters. The readings from the weekly sampling at Gratiot’s deepest point will be added to a data base which the Michigan Department of Natural Resources keeps on inland lakes. The depth at which the disk was visible varied from 11’ to 18’8”. The depths were generally the greatest in June and July and the least in August and September. This is the first year weekly readings have been taken at Gratiot. Historically the occasional secchi sampling done by the DNR had shown depths from 15’ to 20’ which is considered deep for Michigan lakes.

Double Rainbows and Shooting Stars

Frequently spectacular and unusual events at the Lake are casually reported in conversation. Sometimes these casual observations of interesting natural events become Gratiot Lake legends! We would like to start a log of unusual natural sightings at the Lake. Please write or e-mail if you have seen something interesting at Gratiot. For instance, late this spring Ed Stoneman reported that he and others at the lake saw a wolf, presumably from the Eagle Harbor pack, walk through a neighbor's yard. A year ago, wolf tracks were seen on the shore.

Winter residents in particular have the privilege of experiencing Gratiot in ways seasonal residents can only imagine. What's it like when the ice cracks in the Spring? Can someone get a photo of that huge flock of loons that comes to rest at Gratiot in the Spring before dispersing to other lakes? Jot down the date, time, location, and circumstances of such observations and send the report along.



What's Croaking?



The worldwide decline in frog populations has made headlines over the past several years. Scientists have theorized everything from increased solar radiation to bacterial infection to hormone mimicking chemicals may be a possible contributing factors to this decline. Frogs, because of their extremely permeable skin and the fact that they live both on land and in water, may serve as environmental bellwethers much as the canaries did in coal mines. As a result, frog numbers and deformities are being closely watched and tallied worldwide.

Not long ago students at Houghton Middle School joined in this effort when they searched for frogs with deformities such as extra or erratically attached toes, legs—or heads!

The Michigan Department of Natural Resources through the Natural Heritage Program has organized a volunteer program to collect data on frogs and toads. Volunteers throughout the State participate by

- learning the life histories of their local frogs through tapes and training provided
- locating and registering ten sites to monitor for frog and toad calls
- listening three times a year after dusk for ten minutes at each site
- submitting findings yearly to the database

Last summer the Conservancy identified several potential listening sites within the Gratiot Lake watershed and a few within twenty minutes of the Lake. We will register this route with the State. **If you might be interested in helping with monitoring, please let us know by writing or e-mailing to the Conservancy.**

Information on the frog and toad survey is available on the web at the Natural Heritage Program website: <http://www.dnr.state.mi.us/wildlife/Heritage/default.htm>

or by writing

National Heritage Wildlife Division MDNR

P.O. Box 30180

Lansing, MI 48909-7690



Information can also be obtained at the U.S. Geological Survey Frogwatch USA website: <http://www.mp2-pwrc.usgs.gov/frogwatch/>