

TLA Quarterly

OCTOBER 2007

President's Letter

The leaves are changing fast and the colors are just beautiful. The loons are gone but we're still hearing some cackles from the Sand Hill cranes over at Grass River. We've had some much needed rain and the lakes are up a bit, which will help die-hards like me get my boat off the hoist before it freezes.

Our last Education event of the summer, "In the Drink IV," was very successful with 115 riparians and non-riparians attending for great information and a pontoon cruise. We focused on land conservation, shoreline protection and fish cover along with the excellent work that TLA continues to do concerning water quality.

We had another great summer with our student interns. They will be making a power point presentation at our next board meeting about the results of their water quality testing.

We thank the many TLA member volunteers for all your work this summer. Your help is invaluable and makes our association strong and vital.

Please don't forget your membership renewals. Have a great fall!

Best regards,
Bob Bagley

TORCH LAKE SHORELINE SURVEY: "The end is in sight!"

Would you believe that The Watershed Center survey crew evaluated the shoreline greenbelt buffer on 1,820 parcels of property in the six townships around Torch Lake in only four short months? They couldn't have finished this huge project without the help of dedicated volunteers! More than twenty volunteers from the Three Lakes Association and the Torch Lake Protection Alliance drove along the roads and recorded house descriptions, provided boats and drivers, as well as gave assistance recording GPS readings and other data on the survey sheets.



Baykeeper John Nelson at the helm and Lucy McArtor, TLA volunteer, recording data on the shoreline in Milton Township.

Pictures were taken of every parcel on the 45 miles of Torch Lake shoreline. Now, they must be numbered with the township name and street address. Then they will be attached to the appropriate survey sheet in a notebook for each township.

Later this fall, the data from every survey sheet will be entered into a master database to establish a baseline of the condition of the greenbelt buffer around the lake.

This baseline will enable us to identify erosion sites on both public and private property. It will also provide us with model sites which show various

See Survey on page 2 for continuation

In this issue

- **President's Letter**
See this page
- **Torch Lake Shoreline Survey**
See this page
- **TLA Website**
Page 2
- **Yacht Club Boat Washing**
Page 2
- **High School Intern Project**
Page 3
- **In the Drink IV**
Page 3
- **E. coli Summary for TLA Watershed**
Page 4
- **"Thank you" meetings with Eight Townships**
Page 4
- **Progress Report: Torch Lake Water Clarity Reserach**
Page 5
- **Membership**
Page 6
- **Clam Lake**
Page 6
- **Clam Lake Clams**
Page 6
- **TLA 41st Annual Meeting**
Page 7
- **Craven Pond Dredging Update**
Page 7

The Mission of the Three Lakes Association is to provide leadership to preserve, protect, and improve the environmental quality of the chain of lakes watershed for all generations.



THREE LAKES ASSOCIATION

Founded 1966

OFFICERS

- Bob Bagley, President
- Dean Branson, Vice President
- Becky Norris, Treasurer
- Dorothy Clore, Secretary
- Dick Garcia, Past President
- Norton Bretz, Executive Director

ZONE DIRECTORS

- A. Clearwater Township: George & Faith Bushnell, Tina Fields
- B. Milton Township: Bob Oswald, Carl Schiele
- C. Torch Lake Township: Arlene Westhoven, Becky Norris
- D. Central Lake Township: Alan Hickman, Patricia Roush
- E. Forest Home Township: Al Gibbs, Art Hoadley
- F. Helena Township: Trish Narwold, Judy Stuart
- G. Custer Township: Tom Turner, Bob Probst
- H. Kearney Township: Shirley Hetzel, Duane Drake

DIRECTORS AT LARGE

- Chuck Drouilliard, Stan Dole, Len Franseen,
Bob McClelland, Dave Rowe, Bob Kollin

COMMITTEE CHAIRS

- Bob Oswald, Water Quality
(Unfilled), Water Safety
- George Bushnell, Public Relations
- Alan Hickman, Membership
- Becky Norris, Financial Stability

**The TLA Quarterly is published by
the Three Lakes Association**

**Please direct comments or questions to Norton Bretz
Three Lakes Association
P.O. Box 689 • Bellaire, MI 49615
info@3lakes.com**

Survey (continued from front)

ways to achieve a greenbelt around Torch Lake.

This winter, a committee of representatives from The Watershed Center, the Three Lakes Association and the Torch Lake Protection Alliance will be formed to determine how the survey results can be used most effectively. In the spring, the committee will present the survey results to each township Board of Trustees and Planning Commission and to each lake association's Board of Directors. We hope this effort will improve the condition of the greenbelt buffer around Torch Lake, because this buffer is the most effective way to stop phosphorus and sediments from entering the lake.

Peg Comfort

TLA Website

The TLA website www.3lakes.com has been moved to a new server under the management of David Branson, Dean Branson's son, who is Coordinator of Information Technology Services Support Center at Saginaw Valley State University. This arrangement seems to work well and at a minimal cost to us. This website has a calendar, information on current events, the TLA Newsletter, and copies of many reports that have been discussed in these pages. In particular the Predictive Nutrient-Based Water Quality Model reports for both Torch Lake and Clam/Bellaire are there along with the land-use model for their watersheds. Furthermore, there is an ACUTE project summary, several presentations that have been given recently, and all the high school intern reports. We will be adding more information to the website this winter and solicit suggestions for improvements.

Approximately, 230 of our members have given us their e-mail addresses in addition to other contact information. Our plan is to launch a "ListServe" initiative for those TLA members with an e-mail address who would like to receive timely notification of TLA-related activities and "hot" issues. The first e-mail message will be a request for your authorization to include your e-mail address on TLA's ListServe for this purpose. Shortly thereafter we will begin sending a limited number of very short messages and announcements to you by this method. Your e-mail address will not be visible to others receiving the messages. If you do not wish to receive these messages, there will be a simple way to remove your e-mail address from TLA's ListServe distribution.

Yacht Club Boat Washing

One June 20 - 23 the Torch Lake Yacht and Country Club hosted the 2007 MC National Championship Regatta. The regatta attracted eighty-eight boats from all over the country to sail in a seven race series held over a three day period. TLA was asked to provide a boat washing station to insure the boats and trailers did not bring unwanted guests to Torch Lake. The station was coordinated by Alan Hickman and manned by a number of TLA volunteers: Faith and George Bushnell, Tina and Becky Norris, Chuck and Judy Stuart, and Norton Bretz. We not only kept away unwanted guests from our lakes, but also handed out information that may assist our sailing visitors in helping keep their own lake waters clean as well. Big thanks to all our volunteers. Your efforts were greatly appreciated.

Alan Hickman

HIGH SCHOOL INTERN PROJECT

Glacial Relicts: Report Completed

(Below) TLA high school interns on board the Inland Seas: Danielle Haydell and Courtney Platte of Central Lake High School and Jesse Belanger and Brittani Miskiewicz of Bellaire High School.



The high school interns have completed their project on “Glacial Relicts” finishing their final report this last August: Glacial Relicts of the Elk River Chain-of-Lakes, Antrim County, Kalkaska, and Grand Traverse Counties, Michigan. The TLA and the Elk-Skegemog Lake Association (ESLA) worked together all summer taking dredge and net samples from Lake Bellaire, Torch Lake, and Elk Lake. Interns from Central Lake, Danielle Haydell and Courtney Platte, Bellaire, Jesse Belanger and Brittani Miskiewicz, and Elk Rapids, Maggie Petersen, Andy Mach, and Cameron Schaefer completed a sixteen page report on this work. Brittani is off to college at Alma but the others began either their junior or senior years this September. They will be presenting their results to their respective lake association boards and their school boards in the next few months. Norton Bretz and Trish Narwold of TLA and Thom Yocum of ESLA were their primary mentors for the project. You can find the report on the TLA website www.3lakes.com.

This internship project has been the fifth one that TLA has run. We started in 2003 with a beach survey of E. coli and have supported three to five interns each year since then. For the last two years this has been a cooperative project with ESLA. We continue to need both ideas for projects and volunteers to staff the activity. Because so many young women have participated TLA feels strongly that we especially need more women volunteers too. So, we encourage you to get involved with our high school

interns next year. These students are incredibly enthusiastic and fun to work with. Although the program is open to anyone with a B average, we have been getting the very best students from our schools to apply. For them it is an opportunity to participate in a cutting edge environmental science project, to get an independent study credit for their graduation, to add a community service activity qualifying them for college scholarships, and to get a taste of how precious a resource we have in our lakes. In addition the TLA staff has written letters of recommendation for college applications to help them compete with graduates of urban and suburban schools which have many more opportunities for internships.

In the Drink IV: Environmental Education Event

In the Drink IV was celebrated Aug. 22 at the Shanty Creek Beach Club and featured guided pontoon cruises on Lake Bellaire. Over 100 guests of TLA, TLPA, and GRNA enjoyed wine and hors d'oeuvres under the Beach Club shelter. Fortunately, the shelter was not needed as the weather was warm and sunny. Posters with information on the TLA Predictive Water Quality Model estimate of the effect of the proposed dredging Craven Pond on Lake Bellaire (see summary in this newsletter), the TLA/ESLA summer high school intern project on Glacial Relicts (see the summary in this newsletter), the shoreline survey of Torch Lake (see summary in this newsletter), fish stocking and fish covers in Lake Bellaire, and a summary of the ACUTE project on TCE groundwater contamination. TLA has played a major role in all of these projects. We all thank Melynda Bagley for her efforts in coordinating and planning all this. Former TLA President, Dick Garcia, spent most of the afternoon in the water helping pontoon boats and groups in and out of the harbor and Duane Drake spent the afternoon pouring wine for guests. Dick will receive the honorary TLA Rubber Ducky Award for his service.



TLA member and GRNA volunteer, David Hulefeld, and TLA Executive Director, Norton Bretz

E. coli Summary for TLA Watershed

TLA volunteers Becky Norris, Bob Oswald, Bob McClelland, Norton Bretz, and Dean Branson have taken E. coli samples from most of the tributaries to our three lakes. These samples were taken in triplicate and the mean E. coli level for the three samples is shown in the following table. E. coli is a bacteria that is an indicator of sewage contamination from human or animal fecal matter. Generally, these organisms are not harmful themselves but are indicators of disease causing bacteria or viruses that can make people sick. The M-DEQ standard for beaches requires that the coliform E. coli level be below a geometric mean of 300 colonies per 100 ml sample in five separate sample groups over a 30 day period. Drinking water standards are much more strict requiring a level of zero. However, higher E. coli levels are not uncommon in our streams as our table indicates. Recently high levels of E. coli have been measured in McGuire and Mitchell Creeks in Milton Township. Both creek are in the Grand Traverse Bay watershed. E. coli levels over 10,000 have been seen in individual samples in Mitchell

Location	Date	Mean Colonies per 100 ml
Meggison Creek, E. Torch Lake Dr.	8/30/2007	220
West Butler Creek, Bellaire Hwy.	8/30/2007	164
Cedar River, Cedar River Rd. and Schuss Mtn. Rd	8/30/2007	19
Cedar River, Burrell Rd.	8/30/2007	68
Shanty Creek, M88	8/30/2007	26
Cold Creek, 0.5 mi. above Glacier Springs Fish Hatchery	8/30/2007	17
Cold Creek, Tyler Rd.	8/30/2007	22
Finch Creek, Alden Hwy	8/30/2007	20
Spencer Creek, Alden Harbor	8/30/2007	144
Unnamed Creek, 253 NE Torch Lake Dr.	8/30/2007	55
Wilkinson Creek, E. Torch Lake Dr.	8/6/2007	158
Eastport Creek, M-88	8/6/2007	206
Unnamed creek, Near McLachlan Rd. on W. Torch Lake Dr.	8/6/2007	451
	9/21/2007	1393
	10/2/2007	133
Culvert, McLachlan Rd. and W. Torch Lake Dr.	9/21/2007	0
Unnamed creek, Near Campbell Rd. on West Torch Lake Dr.	8/6/2007	26
Unnamed creek, 6049 W. Torch Lake Dr	8/6/2007	700
	9/21/2007	225
Unnamed creek, 6543 W. Torch Lake Dr.	8/6/2007	230
Unnamed creek, Powel Construction on W. Torch Lake Dr.	8/6/2007	55

2007 TLA E. coli Test Results on Three Lakes Tributaries

Creek. Milton Neighbors, many of whose members live near this creek, have been concerned about these high levels and have tied to them with the

use of human septage in farm fertilization in the area. The M-DEQ Water Bureau has recently completed a six week trial and has concluded that Mitchell

Creek exceeds state standards along its entire length from Mud Lake to Lake Michigan but the source of contamination has not been identified.

“Thank You” Meetings with Eight Townships

Norton Bretz and Dean Branson completed their eighth presentation to the townships touching our three lakes September 6th at Forest Home Township Hall. Each of these townships supported TLA's application to the M-DEQ for the grants to develop a Predictive Nutrient-Based Water Quality Model in 2005 and 2006. With the completion of the second project in January 2007 the TLA road show went to each township board to thank them for helping us with letters of support and \$14,000 in direct contributions. Each township was given a copy of the three reports (Torch Lake, Lake Bellaire and Clam Lake, and Land-Use), over 350 pages of material, and an accounting of how the grant money and their contribution was spent. A Power Point presentation was made describing the highlights of the project and what the model can do for the community. Two model scenarios were described briefly: the proposed sewerage of the town of Alden and the proposed dredging of Craven Pond. The impact of these changes on nutrient levels in the lakes is predicted by the model.

Each township was asked to contribute the name of an individual that would be willing to meet with us and develop a collaboration

to maintain water quality through appropriate legislation using some of these tools. Now we have a list of names and will be convening a meeting in the coming months. The object would be to develop consistent township ordinances covering water quality, shoreline protection, septic maintenance, phosphorus limits, storm water and runoff control, overlay districts, mooring and road end use, etc. Since these issues are of concern not only to TLA but other groups and county agencies, a coordinated effort will be needed. The Grand Traverse Watershed Center has recently been awarded a grant for 2008 to help townships and other units of local government develop and enact exactly these types of ordinances. TLA is formally identified as contributor of in-kind matching volunteer time in this grant. TLA will be working with the Antrim County Conservation District, Tip of the Mitt, Grand Traverse Watershed Center, TLPA, Grass River, and other groups to develop a coordinated approach to Antrim and Kalkaska Counties and the townships that we have recently visited.

Finally, TLA gave each township board a framed map of the Elk River Chain-of-Lakes from Michigan Maps, Inc. of Elk Rapids.

Progress Report: Torch Lake Water Clarity Research

The following article was prepared by Elizabeth Homa, a PhD student working with Professor Steve Chapra at Tufts University. Prof. Chapra is the author of the computer model Lake2K that underlies the TLA Predictive Nutrient-Based Water Quality Model for our three lakes. TLA has helped support this research by collecting water samples and water quality data every two weeks during the summer of 2006 and by sponsoring the analysis of the water samples. On August 16th 2007 Elizabeth presented a paper on the modeling of calcite precipitation in Torch Lake at the 30th Congress of the International Association of Theoretical and Applied Limnology in Montreal, Canada. The following article is a synopsis of her presentation.

WHY CALCITE?

Water clarity changes due to appearance of very small particles of calcium carbonate (CaCO_3 or calcite) that are directly visible in Torch Lake every summer. In addition to the obvious visual effects, why else should we be motivated to consider modeling the precipitation of calcite? First of all, the process of calcite precipitation is part of the carbonate chemistry equilibrium and therefore can affect pH and alkalinity levels in the lake, which in turn regulate many critical biochemical processes. Also, the critical nutrient, inorganic phosphorus can adsorb to the microscopic calcite particles and settle to the sediments instead of being available for phytoplankton growth. Lastly, there is more and more interest in quantifying the amount of carbon involved in annual calcite cycles in lakes in order to generate accurate carbon budgets for lakes as a whole. Lakes, like forests, play a role in regulating atmospheric CO_2 and in the understanding of global warming.

WHY TORCH LAKE?

Why is Torch Lake an interesting place to study calcite precipitation? In addition to being a high calcium, high alkalinity lake where calcite precipitates consistently every summer, Torch Lake has a few unique characteristics.

The large volume of water in Torch Lake relative to the amount of inflow results in a long residence time of the lake water. We are thus able to focus on the internal processes in the lake while not concerning ourselves too much with variations in external impacts. Torch Lake is also highly oligotrophic, meaning that it is very nutrient poor and hence has relatively minimal algal growth. Very few lakes in the world have lower phosphorus and chlorophyll-a values. We have hypothesized that this will allow us to investigate the chemical and physical processes affecting calcite precipitation since the biological

factors should be minimal.

WHY MODEL?

We have been able to use the data from Torch Lake to evaluate different mathematical equations for the rate of the precipitation. The initial version of this extension to Lake2K has allowed us to predict water clarity (Secchi depth) as well as changes in alkalinity, pH and particulate calcite concentration.

This model has been used to propose answers to such questions as whether calcite precipitation in Torch Lake is primarily driven by the seasonal change in temperature instead of algal growth as we had originally expected. Model simulations do show that the rise in temperature in Torch Lake increases the level of calcite over-saturation significantly more than the removal of CO_2 from the water by algal growth. We have also learned from model simulations that the loss of CO_2 to the atmosphere after the ice leaves appears to increase the pH as much as the removal of CO_2 by algal growth

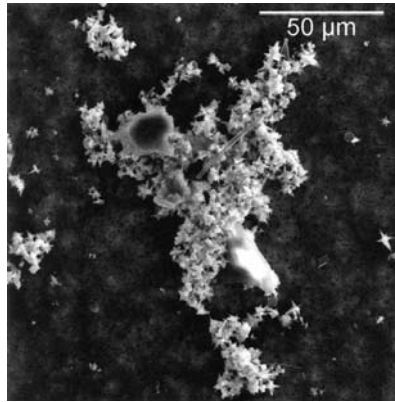
As part of the 'Torch Lake Calcite Project' data collection effort in the summer of 2006, the Upstate Freshwater Institute provided us with valuable information about the calcite particles in Torch Lake, which was generated by Scanning electron microscopy interfaced with Automated image and X-ray analyses and Individual Particle Analysis (SAX-IPA). The analyses of samples made in July and August of 2006 show over 70% of the particles are calcium rich and thus likely to be some form of calcite. This new particle data has been used to develop a next generation calcite model that links the rate of calcite precipitation to the available seed

surface area. In other words, the hypothesis is that the amount of particulate matter already in the water impacts the rate of growth of the calcite particles. Initial results from this model show an improved predictive ability over the models that assume a constant available surface area.

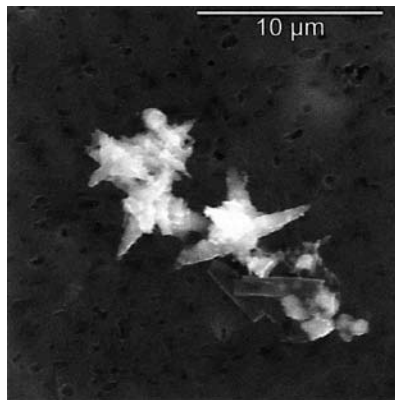
THE FUTURE

We are currently working on publishing our initial results, analyzing the addition of the surface area variable, adding a phosphorus co-precipitation model as well as developing a proposal for further study.

Prior to our research, it was not possible to accurately predict the impact of watershed development on the clarity of Torch Lake. If our research proceeds as planned, we will for the first time be able to make such assessments and in so doing help improve efforts to maintain the high quality of this precious and unique resource.



Calcite particles form aggregates here.



A closer look at calcite with SAX

Membership

Membership through September is 450. This represents just about where we were at this time last year. Please help us finish the year with a bang. Check the mailing label on this newsletter. If you are not current for 2007, please renew now! There are still 54 of those receiving this newsletter who are not current. TLA is the leader on water quality issues. Water quality is the most important asset we all share, the most important asset that brought us here in the first place. Please help us reach 500 by renewing your membership today.

Alan Hickman

NEW TLA MEMBERS SINCE JULY

Mary and Patrick Richards
7539 Briar Lane
Bellaire, MI 49615

Gary and Lyn Petty
2902 SE Torch Lake Dr.
Bellaire, MI 49615

David Horne
3960 Thierry Circle
Kewadin, MI 49648

Albert and Janet Bernat
6673 NW Torch Lake Dr.
Kewadin, MI 49648

Frank Palermo
10809 Sparkling Waters Ct.
South Lyon, MI 48178

John and Kellie Hetzel
546 Ridgecrest Rd.
Atlanta, GA 30307

Mary Smith
PO Box 876
Bellaire, MI 49615

Craig and Ginger Hupp
462 SE Torch Lake Dr.
Bellaire, MI 49615

Steve and Pat Biegel
4274 SE Torch Lake Dr.
Bellaire, MI 49615

William and Phyllis Donberg
4241 NW Torch Lake Dr.
Kewadin, MI 49615

Gary and Lyn Petty
2902 SE Torch Lake Dr.
Bellaire, MI 49615

Tim Palmisano
4301 South Oak Court PT
Grand Rapids, MI 49525

Mr and Mrs. (Bob) Gerrity
1970 SE Torch Lake Dr.
Bellaire, MI 49615

Steve and Emily Anderson
415 N. Lincoln Ln.
Arlington Heights, IL 60004

Michael and Mary Lajiness
7241 Cottage Dr
Bellaire, MI 49615

Clam Lake

Bob Oswald (the only one who fell in), Bob McClelland and Jack Norris surveyed Clam Lake this summer, following up on the 2004 survey carried out by Tim Hannert and a crew of 6. Tim's never said how many of them fell in.

In the 2004 survey, 11 sites were found with Cladophora Index figures of over 50 – a real cause of concern, while in 2007, there were 10 sites found with CI numbers worth noting, but none as high as 50. The Cladophora growth persisted into September in four of the ten 2007 sites, and those were lab-tested for possible septic leachate. No E. coli figures resulted which would suggest any septic pollution.

A press release has been prepared for the papers and letters have been sent to the four property owners where off-shore water samples were taken for analysis. They should be pleased.

Still, there is a warming trend, and thanks to the zebra mussels' depredation of the food chain, there is clearer water letting light and heat deeper into the lakes, so it is becoming more important to get puritanical about letting nutrients into the water. Time to actually create those natural buffers we've talked about between lawn and water. Time to use no fertilizer, or second-best, only zero-



Jack Norris and Bob Oswald in search of cladophora on Clam Lake.

phosphorus brands.

This year's brief blue-green algal bloom (cyano-bacteria), along the northern shore of Clam Lake, was certainly encouraged by warmer water, clearer water, and nutrient content, and should be taken as a warning that we must pay closer attention to factors that influence water quality. Those algae can be toxic. Time to volunteer for next year's shoreline Cladophora survey.

Jack Norris

Clam Lake Clams

We may be seeing the local extinction of the clams for which the lake was named. During the cladophora survey, we never saw a live clam. We picked up seven clams that looked as though they might be alive, but no, they were vacant shells covered with zebra mussels. On one typical clam shell, I counted over 2,000 zebra mussels, many tiny – many of them also dead.

The American freshwater clam has had a tough time of it. They could live over a hundred years, but only began reproducing when about 10 years old, but the native tribes and the arriving Europeans liked to eat them before they got to that age. Then there was the great 1850s Pearl Rush: somebody in Ohio found a big pearl in a freshwater clam, and hundreds of thousands of others were then slaughtered by pearl hunters – who never found another pearl of value. Then there was the button production rage that took 600 million clams a year, followed by their use in cultured pearls. Every cultured pearl has at its center a little bead of American clam

shell to act as an irritant around which the pearl oyster forms a pearl. And these hardy animals even survived the clam chowder enthusiasts around these lakes. But it looks as though the zebra has finally done the trick. A live American freshwater clam siphoned about 10 gallons of water a day through its feeding apparatus, taking out whatever it had a taste for, tiny nutritious critters and bits of flotsam, even bacteria and blue-green algal cells. But with hundreds of zebra mussels on its back, each siphoning the same things out of a gallon a day, the clam didn't stand a chance. The ones we found in Clam Lake just starved.

Michigan tried to save its freshwater clams, passing a law several years ago making it illegal to possess a live or dead freshwater clam or even the shell of one (GLSC Fact Sheet 2000-5). If readers have any ideas on how we might save the species, if we find a few living examples, please share them.

Jack Norris

TLA 41st Annual Meeting

The 2007 TLA Annual Meeting was held July 11 in the Pelican Room next door to the Blue Pelican restaurant on East Torch Lake Drive. There were over 100 guests in attendance who ate a nice meal prepared by the Pelican staff. Bob Bagley presided over the meeting where a new slate of officers was voted in: Bob Bagley, President, Dean Branson, Vice-President, Becky Norris, Treasurer, Dorothy Clore, Secretary, and Norton Bretz, Executive Director. A new Central Lake Zone Director, Patricia Roush, was nominated and elected as well. Everyone participated in a silent auction raising a total of \$1,053. The featured speaker was TLA Executive Director, Norton Bretz, who described what has been learned from the new Predictive Nutrient-Based Water Quality Model and other recent work on our lakes. The Pelican Room was a new venue from the recent past and seemed to work well. We welcome your comments on how we may improve upon this next year.



Lois and Bob Kollin enjoying the TLA Annual Meeting

Craven Pond Dredging Update

The Predictive Nutrient-Based Water Quality Model was used to predict the impact on Lake Bellaire this summer. Our conclusion, as reported in the last TLA July Newsletter was that the increase in phosphorus on Lake Bellaire in the summer following a fall dredging would be observable but small. As a result of this, we recommended to the Village Council that they go ahead with the dredging as long as it started in the fall and efforts were made to minimize the mixing of the sediment with pond water during the dredging operation itself. When the dredging occurs, TLA will be taking samples to make sure that the actual effect is in line with the model prediction. Of course, if it is not TLA will have to reassess its recommendations and the model itself.

In August a letter was sent to each riparian on Lake Bellaire and Intermediate River, approximately 300 in all, summarizing these results and recommendations. Along with the letter a copy of the viewgraphs showing details of the model prediction and the changes that are expected over a five year period after the dredging. To see this detail consult the TLA website: www.3lakes.com. To date there has been only one response to these letters from a Lake Bellaire summer resident. However, we would like to hear from anyone who is concerned about this.

In order to carry out the dredging the Village of Bellaire applied for a M-DEQ permit. This permit required that the dredging be limited to the current open water area of the pond. Thirty years ago the pond was significantly bigger but much of that area is now classified as wetland. The wetland portion was excluded from dredging. Furthermore, the M-DEQ required sampling of the sediment in Craven Pond in order to make sure that there were no toxic materials present. Oddly, the DNR did not require testing for phosphorus or estimates of its effects downstream. This permit process is nearly complete. As of our last information, some resampling was required, but we expect that the permit will be issued soon. This permit will be valid for three years, but the Village of Bellaire will not dredge this year mainly because of budgetary constraints.

Norton Bretz and Dean Branson

membership counts!

BASIC DONOR STEWARD BENEFACTOR LIFE

Michigan Riparian Magazine Subscription

(Please include an additional \$10)

TOTAL AMOUNT ENCLOSED: \$ _____

* * * * *

NAME: _____

SUMMER POSTAL ADDRESS: (Street, P.O. Box) _____

TOWNSHIP: _____

TOWN: _____ ZIP: _____

SUMMER PHONE: _____

WINTER POSTAL ADDRESS: (Street, P.O. Box) _____

CITY: _____

STATE: _____ ZIP: _____

WINTER PHONE: _____

EMAIL: _____

May we include your name in our newsletter donor list?

Yes No

Three Lakes Association is a 501(c)(3) corporation. Your dues and other contributions are tax deductible. Gifts, memorials, and bequests can also be made to the Three Lakes watershed Conservation Foundation administered by the Grand Traverse Regional Community Foundation. Michigan residents receive a 50% state tax credit for contributions to this fund. Call for further information.

* * * * *

To join Three Lakes Association please return this form with your check to:

**THREE LAKES ASSOCIATION
P.O. Box 689
Bellaire, MI 49615**

Three Lakes Association
P.O. Box 689
Bellaire, MI 49615
231-533-4852
www.3lakes.com

NON PROFIT ORG
US POSTAGE PAID
BELLAIRE, MICH
PERMIT NO.5

The Mission of the Three Lakes Association is to provide leadership to preserve, protect, and improve the environmental quality of the chain of lakes watershed for all generations.

October 2006 issue of the TLA Quarterly

**THREE LAKES
ASSOCIATION**

