Groundwater Phosphorus Project

In the summer and fall of 2017, we collected a limited data set of groundwater and phosphorus (P) fluxes into Lake Iroquois. The half-barrel seepage meters that we constructed proved to be functional, but limited in their ability to be installed in coarser sediments (gravel, cobbles, etc.) in the southern half of the lake. Measured groundwater fluxes of soluble reactive phosphate/ orthophosphate (SRP, the immediately bio-available form of P) correlate well with observed concentrations of total phosphorus (TP) in Lake Iroquois over the summer as measured by volunteers of the Vermont DEC's Lay Monitor Program.

However, differentiation between release of phosphorus from biogeochemical processes within the lake sediments (internal cycling) and physical transport of P from elsewhere in the basin (external sources) has proved difficult with our methodology. The seepage meter devices had to be left in place for several weeks in an effort to exhaust the internal supply of P in order to then be able to collect a "pure" groundwater sample. Approximately weekly measurements were taken at 36 sites along the northern and eastern shores. Extrapolation from these samples indicate that groundwater is a vector for up to several kilograms of phosphorus into the lake, annually.

While appreciable, this constitutes a very small portion of the overall annual load to Lake Iroquois. The lack of significant streamflow and runoff into the lake during the summer does indicate that groundwater is the dominant external source of P during these dry months. However, attempting to mitigate groundwater as a non-point source of phosphorus is presumed to be cost-prohibitive, and at best, only partially effective. Fortunately, the relatively small contribution of P via groundwater indicates that this is not an imminent threat to continued eutrophication of Lake Iroquois.

The next phase of our research will be focused on development of more versatile sampling devices that can be deployed in a variety of sediment types. We would probably want to test these designs in Lake Iroquois before attempting larger-scale installations such as in the St. Albans and Missisquoi Bays of Lake Champlain, thus developing a more robust data-set for your lake.

We are very grateful for your support of our research, and for so graciously permitting use of your beautiful lake and facilities for our project. on the way.

Matthew Trueheart's, University of Vermont

LIA, Inc.
P.O. Box 569
Hinesburg, VT 05461

The Lake Iroquois Monitor

Research, education and action for a healthy lake

June 2018

UPDATE FROM THE LIA PRESIDENT

As many of you know since the beginning of the Lake Iroquois Association, our mission and emphasis has been the health and wellbeing of Lake Iroquois and the surrounding ecosystem. All of the lake users and landowners have high expectations that our association will protect the health of this body of water for generations to come. Although we may have hit a setback when we were denied by the State the ability to use Sonar to clean up the Eurasian Watermilfoil (EWM) in the lake, the energy and efforts of the LIA continue to provide opportunites to beat this invasive species that has proliferated in the lake.

We do realize that the use of herbicide in any body of water as a control mechanism can be controversial and it certainly was here at Lake Iroquois. Since the state denied a permit to Lake Iroquois to use herbicide, the board has focused on other options for milfoil control. To that end, we will be placing bottom barriers at the fishing access to maintain a clear channel. We are also working with the LIRD to enable them to use some bottom barriers to enlarge the swimming area and reduce the proliferation of milfoil near the beach. Thanks to the generous donations of LIA members and fund allocations from the towns of Hinesburg and Williston, we will be able to once again bring the Diver Assisted Suction Harvesting (DASH) boat to the lake this summer. They will be here in late June and they will be coming back in August. If any individual property owners would like to have the DASH boat do some work in front of their property while the boat is here, contact , contact Bob Patterson at AB Aquatics for pricing and scheduling:
bob.patterson@abaquatics.com
603-475-1503 https://
www.facebook.com/abaquatics.usa/

This year LIA is grateful to have the opportunity to hire Williston resident Jimmy Johnson, who has worked for almost a decade at the LIRD Beach coordinating and overseeing the employees at the beach area. Jimmy has agreed to also coordinate and oversee the LIA greeters and the boat wash station at the state Fishing Access. We have expanded the greeter hours to include Friday late afternoon/evening. The greeters are the first line of defense against additional invasives entering our lake. They inspect and wash all vessels (motorized and non-motorized) entering and leaving the lake.

We are also proud to say that due to the hard work and effort put into the greeter program over the last 10 years, the LIA program is now recognized as being one of the finest greeter programs in the state and is being promoted by the Vermont Department of Environmental Conservation as a model program for other lake associations . It is because of the support and work of LIA members and volunteers that we have been able to accomplish this!

As you can see elsewhere in this newsletter, the LIA continues to undertake many projects to protect and enhance the health of the lake and the lake ecosystem. But we can't do this without your help and support. I hope you will continue to support the efforts of the LIA financially. But more than that , we need you. I hope that you will consider becoming involved in this important work protecting our lake by volunteering with the LIA . There are many and varied opportunities, including becoming a member of the board. Please don't hesitate to contact me or any other board member to discuss possibilities and projects. All board member contact info can be found on the LIA web site: www.lakeiroquois.org.

Enjoy the summer in Vermont and on our beautiful lake!!

Chris Conant

The annual membership meeting will be 6PM, July 19 at Chris Conant's camp, 744 Beebe Lane. All are welcome. Officers for the year will be elected..

The Greeters are Back! Summer 2018

The greeters have returned to check boats at the Lake Iroquois Boat Access to ensure invasive species (plant and animal) do not enter the lake. Their responsibilities include boat inspection and boat washing. They are scheduled for all summer weekends
(including Friday evenings) and holidays. A new VT law, Act 67, requires that a boat be washed if a greeter is on duty, the washer (at Lake Iroquois for the second year) is operating at the time, and the greeter determines that the boat needs to be washed. These conditions apply for boats entering AND leaving the water. The greeters have documentation that more completely explains this law. This station has been designated by the state as an Approved Aquatic Nuisance Species Inspection Station, and all greeters have been trained in all duties by the Vermont Department of Environmental Conservation. Just one more step LIA is taking to improve lake water quality.

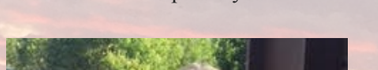
Emilie Bernier: Emilie is the only returning greeter from last year. She is a junior at Carleton university in

Ottawa, majoring in environmental studies. Emilie is from Hinesburg.

Jim Jarvis: Also from Hinesburg, Jim is semi-retired. He is a former tool maker and engineer. He also has a background in radio and sports broadcasting. Jim is currently

teaching in the electrical engineering department at the Williston campus of Vermont Technical College. He has been an avid sailboater his whole life and is also on the board of trustees at the Carpenter-Carse library.

Michelle Villeneuve: Michelle is a Hinesburg resident with a long background in physical therapy. She has worked for the VNA, Rehab gym, and a number of school districts. For the past 8 years



Michelle has been working for Chittenden East schools to help provide assessments and treatments for the students in that district. She has a Master's from Ithaca College.

Michael "Zeke" Haskins: Zeke has

a background in construction and worked for a while at Blodgett manufacturing ovens. He has just recently returned to Vermont from working as a contractor in Minnesota. He is an avid fisherman and loves to play guitar.

Zachary Dubie: A senior from Hinesburg at the Center for Technology in Essex. Zack is looking at a career in heavy equipment. He has previously worked at the Public House in Hinesburg and as well as at the Mobil station.

Both Zeke and Zack also work over at the LIRD beach.

Jim Johnson Greeter and Beach Manager: Jim is a Williston resident and graduate of the University of Vermont. Jim has been managing the beach for the Lake Iroquois Recreation District for many years and has now added overseeing the LIA Greeters to his responsibilities. Jim grew up on a family dairy farm that still operates in Williston. He has worked as a bus driver full-time for Champlain Valley Union High School for 29 years. He has also worked part- time driving a bus for CCTA/GMT in Burlington for the past 7 years.

TRIBUTARY MONITORING 2018

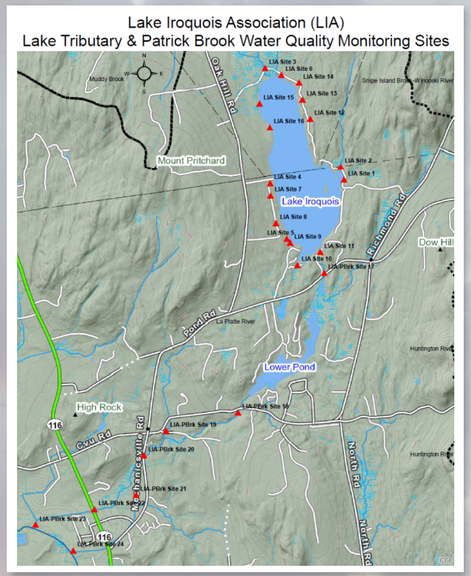
The LaRosa Water Quality Tributary Monitoring project returns to Lake Iroquois for the 2018 sampling season following a successful sampling season in 2017. LIA will continue to collect samples at Sites 1-5, and 7-11. Site 6 on Beebe Lane was not sampled in 2017 but will be included in the 2018 sampling regime. Although the site is ephemeral in nature, its seasonal flow data may contribute useful information key to gauging seasonal inputs to the Lake. Sites 5, 7, 8 and 9 will continue to provide valuable data on the west side of the Lake and should realize improvements to water quality with the remediation efforts adopted following Clean and Clear, Better Backroads, and Ecosystem Restoration Program (ERP)-funded remediation projects.

The Lake Iroquois Association (LIA) added five additional tributaries on the north end of the Lake. Three are located off Beebe Lane to the east and two on tributaries leading from Oak Hill Road to the west. The value in adding these sites lie in assessing other potential nutrient sources. Should nutrient sources prove insignificant, the LIA would elect to remove these from the sample schedule in future years.

The Lake Iroquois Association additionally proposed to sample eight sites on Patrick Brook, which drains Lake Iroquois and Sunset Lake leading to its confluence with the LaPlatte River. The brook is identified as a 'Stressed stream' from the LaPlatte River up to the Lower Pond based on historic land development and channelization. In addition, the Lake Champlain Direct Drainages Tactical Basin Plan identifies Patrick Brook among the implementation priorities for stormwater improvements. With the aid of our Tactical Basin Planner, Karen Bates, LIA successfully convinced the Vermont Department of Environmental Conservation (VT DEC) to fund sampling of eight additional sites on Patrick Brook at select locations throughout its length. The additional locations include two sites on the Patrick Brook Canal. One site lies parallel with Mechanicsville Road and the other is located just above the Canal's confluence with the LaPlatte River.

We look forward to analyzing the data to see where our efforts have contributed to nutrient reduction, and where others may yet require additional work.

Shannon Kelly



2018 Lake iroquois Garden Tour and Picnic

This year we are having the second annual LIA Likewise Garden Tour. Amy Picotte, Lakeshore Manager from the Vermont Department of Environmental Conservation will join us again to lead tours through lakeside properties and give us insight into how using native plants and best practices can result in beautiful properties and a healthy lake.
Corrinna Panapay, District Manager, Winooski Natural Resources Conservation District, will join us again to talk about shore erosion projects taking place at the south end of Lake Iroquois right now and how she can help get grants to work on other properties on Lake Iroquois.
Shannon Kelly will speak about the Ecosystem Restoration Project on Pine Shore Dr. which began in August 2017 and will be completed this August.
Chris Conant is offering to sell native plants that you can pre-order and pick up at the party that will follow the tour. He will again donate profits from this plant sale to the LIA. This year we are going to have a family picnic for the lake community.
We hope you will join us for all or part of the day.

Saturday July 28

Tours: 3-5

Picnic: 5-7, 129 Wood Run (Marj Meyer and Randy Kay's camp)

Volunteers who would like to help are welcome and should contact: janemarinsky@gmail.com.

Common Loons on the Lake

Eric Hanson of the Vermont Loon Recovery Project and the Vermont Center for Ecostudies was assisted this May by two LIA volunteers in building and siting a floating platform behind the island. Nesting on the island had failed the last two seasons, and there was hope that loons would choose the raft for nesting. However, on June 7th a nest was found at the north end of the lake by an alert Boy Scout. Signs were set out asking boaters to not disturb the loons.

Sadly, on June 13 it appears that they have abandoned the nest. Eric suspects raccoons but we are not yet sure. It is likely too late for them to nest again this year, but hopefully we can still enjoy their presence and vocalizations the rest of the summer.

Please enjoy the loons from a respectful distance.

----*Chip Wright*

Cyanobacteria (blue-green algae) Tracker

Lake Iroquois has two monitoring sites for cyanobacteria: one at the north end of the lake and one at the south end. Each week, observers report conditions to the Vermont State Department of Health and results are posted on their Cyanobacteria Tracker. You can find the information for Lake Iroquois as well as all the other monitored lakes in the state at: https://apps.health.vermont.gov/vttracking/cyanobacteria/2018/d/index.html This site also contains additional information about cyanobacteria, including pictures of what a bloom looks like. While not all algae blooms are toxic, it is best to be safe. If you suspect an algae bloom in the lake, make sure to keep everyone, including pets out of the water and please contact our Lake Iroquois monitors*: Chip and Jo Wright at wrights8@gmail.com or 802-482-2937.*

Milfoil Control Update Summer 2018

In the fall of 2016, the Town of Williston submitted a permit application on behalf of the Lake Iroquois Association (LIA) for a whole lake treatment of Lake Iroquois with the herbicide Sonar, to control the invasive aquatic plant Eurasian Watermilfoil (EWM). After issuance of a draft permit, a written public comment period that concluded last April, a May public hearing held in Hinesburg, and an extended review, staff from the Vermont Department of Environmental Conservation's Lakes and Ponds Management and Protection Program informed LIA via a conference call in February of their intention to deny the permit. This permit application had been modeled on others that had received approval for use in other Vermont waterbodies.

LIA Milfoil Project Working Group Chair and Board Secretary, Jamie Carroll, LIA President, Chris Conant, and LIA Director and Immediate Past President, Pat Suozzi, met with DEC staff on Tuesday, February 20th to gather more information about the herbicide permit situation and the reasons that DEC will not be issuing this permit. DEC staff indicated that public comments on this permit revealed deficiencies in the review process and that they plan to undergo a formal rulemaking procedure to improve their process. A long-settled concern over a potential breakdown product N-methyl formamide (NMF), although it has never been observed in a natural system was also mentioned as a concern and some neighboring states utilize Sonar in water bodies used for drinking water. We also discussed other control options for the EWM infestation and collaborating on a long-term management plan for Lake Iroquois. Jamie and Chris then attended the Williston Selectboard meeting Tuesday evening, February 20th. The result of that discussion is that LIA and the Town of Williston have decided not to withdraw the permit application but rather to await the DEC's formal written denial. The reason for this is that in issuing a denial DEC will provide the rationale for the denial and share the comments received on the permit, which will inform future management efforts. As of this writiing, the state still has the permit under review and has not yet issued the formal denial.

LIA remains committed to working to control the EWM infestation in the lake and to our mission to enhance water quality and the health of the lake and the surrounding ecosystem. As part of our efforts to control EWM, we have received a grant from the Lake Champlain Basin Program for $15,000 for Diver Assisted Suction Harvesting (DASH) this summer. This DASH effort will focus on the area around the rocks island and at the fishing access and in conjunction with the LIRD some DASH will also be done around the beach area. If individual property owners would are interested in having the DASH boat harvest EWM in front of their property, contact Bob Patterson at AB Aquatics for pricing and scheduling: bob.patterson@abaquatics.com 603-475-1503 https://www.facebook.com/abaquatics.usa/

LIA will also deploy benthic barriers near the state fishing access to maintain a clear navigation channel and reduce the risk of EWM spreading to other waterbodies. LIA is working with the LIRD to also submit an application to install benthic barriers near the LIRD beach to better control the EWM in that area. Volunteers are needed to help lay these bottom barriers. If you are interested, please contact Jamie Carroll: jamie@jamiecarroll.com