

An Update from your Lake St. Catherine Conservation Fund's President

There are a couple of important developments that I want to bring to your attention. This note will also be posted on our website and Face Book page for others to read, so it may contain some information LSCCF members know very well.

Sincerely,

David Emmons
LSCCF President

Thank You For Your Support!

A resounding shout out and thank you to the LSCCF members who voted March 3 on Wells' Town Meeting Day (joined by many of your neighbors in the Town of Wells) in favor of a motion to grant \$20,000 to the LSCCF to offset the Fund's operational costs. The support from the people of Wells has been tremendous over the years and this year was no different – the motion passed with a substantial majority. These funds, which are for the fiscal year that starts on July 1, will support our weed harvesting program, the experimental dredging project on the northwest corner of Little Lake, and the restart of the aeration system. That last item won't be possible until we can secure authorization from the Vermont Department of Environmental Conservation, a key target for this year.

Clarifying A Difference of Opinion

Recently, a blogpost appeared on the Lake St. Catherine Association (LSCA) website and Facebook page that implied that the efforts to improve the quality of the Little Lake were inadequate or even harmful to reversing the shallowing and excess aquatic vegetation load of the lake. It was even asserted that the LSCCF efforts were negatively impacting the entire St. Catherine lake system. I want to take this opportunity to further clarify what the specific problems are in the Little Lake, how they differ from the "big lake", what we're doing about them and how you can help. We all want the same result – a clear, deep, aquatic nuisance-free lake system.

The Good News About Little Lake St. Catherine

The good news is that the water quality is excellent in the Little Lake and the LSCCF has a robust plan, supported by world renowned experts in the field of lake management, to deepen the lake to natural/historic levels and reduce invasive Eurasian milfoil. We are working with the Vermont Department of Environmental Conservation (VT DEC) on two permits to activate our multi-pronged plan.

Some Background on the Lake St. Catherine Conservation Fund

The LSCCF is a non-profit organization formed for the primary purpose of addressing the unique issues facing Little Lake St. Catherine, the southern-most body of water in the Lake St. Catherine system. With nearly 100 members, staffed by volunteer directors voted upon by the membership, and supported financially by the Town of Wells and donations, since 2009 the LSCCF's mission has been to improve the quality of the Little Lake.

Before that, many of the LSCCF directors worked as part of the Lake St. Catherine Association (LSCA) team to maintain water quality and accustomed uses for the entire lake including boating, fishing, swimming and other activities. We agree that the two non-profits ought to work together and could do more to support one another to assure that the entire lake is healthy and available for the residents and neighbors to enjoy.

What's Going on in Little Lake?

The Little Lake represents nearly 20% of the total acreage of Lake St. Catherine and suffers significantly from a decades-long build-up of sediment and invasive Eurasian water milfoil. This build-up has caused significant shallowing of the lake and, increasingly, navigation impediments. Studies have shown that Little Lake has sediment build-up of nearly 20 feet or more in many places, greatly reducing the navigability of the lake and negatively impacting the environment for wildlife.

Sediment builds up largely due to an excess aquatic vegetation load whose life cycle relies on the sediment for nutrients and access to the sun, and upon dying in the fall, adds to the sediment load and depth. This organic sediment overload can ultimately lead to the "death" of the lake through a process called eutrophication

which is characterized by blue algae blooms in its late stage. Thankfully, we're not there yet, but aggressive action is needed to turn around the trends we're seeing.

What We're Doing to Improve Little Lake

Our goal is the reverse this process and restore the natural depth and aquatic vegetation load while assuring a healthy environment for residents, visitors and wildlife alike.

Over several decades, the Little Lake residents, first through the LSCA and now through the LSCCF, have executed several remediation and renovation efforts including the application of full-lake and spot herbicides, mechanical harvesting of lake vegetation, shore-line dredging, fine bubble diffusion (aeration) and others.

1. ***Herbicides Do Not Work Effectively to Deepen Shallow/Sediment-Filled Bodies of Water:*** The Little Lake has deployed spot treatments of herbicides over the years with the help of the LSCA, primarily in the channel and northern end of Little Lake. In 2004, an expensive full lake SONAR application (single shot/one time only) was done in the Little Lake. As a condition of application, the Vermont DEC required that the longstanding mechanical harvesting program be suspended for five years. (The harvesters were sold). After initial success of two seasons with reduced Eurasian water milfoil, the invasive aquatic plant came back with a vengeance and became the dominant plant by 2009. The sediment base was not reduced by this treatment, so the nutrient load remained, and the sediment-rich shallow water contributed to this explosive return of milfoil and other aquatic plants.
2. ***Mechanical Harvesting by Itself does not Reduce Sediment or Fully Remove Invasive Eurasian Milfoil:*** The LSCCF now runs two harvesters in Little Lake to cut aquatic vegetation off 12-18 inches under the surface of the water. This helps boat navigation and marginally reduces sediment loading, but it is not the long-term answer to Little Lake's problems. In the 2019 season, the LSCCF harvested for 480 hours and extracted 1,685 cubic yards of water vegetation.
3. ***Shoreline Management Efforts to Control Phosphorus Loads Help but are not Adequate by Themselves:*** Both the LSCCF and the LSCA have helped

residents build effective shoreline barriers to slow/stop fertilizer and other nutrient flows into Little Lake. Additionally, septic system upgrades have been done at many properties. Finally, the open fields abutting the Little Lake are no longer being farmed. We continue to support VT DEC efforts to reduce the flow of phosphorus into the lake, but much of the source of these nutrients exist far outside and upstream of our jurisdiction.

4. ***Full Lake Dredging is Cost Prohibitive and Negatively Impacts Wildlife:***

We have a permit from the VT DEC to dredge a small area in the northwest part of Little Lake and are making plans to execute that permit as funding allows. However, we do not have, nor are we seeking, a permit from the VT DEC to execute full lake dredging as it would be cost prohibitive, extremely degrading to fish and wildlife populations, and dramatically and adversely impact use for residents and visitors

5. ***Aeration to Increase Diffused Oxygen and Enzymes to Reduce Sediment Naturally Offer Our Best, Natural Option:***

From 2012 through 2018, the LSCCF deployed an increasing number (from 9 to 27) of fine bubble diffusers near the eastern and western shorelines of Little Lake. The purpose was to increase oxygenation and reduce sediment levels. This aeration process is a technique supported by scientists and academics across the world as safe and effective to achieve our objectives. Numerous lakes across the globe deploying this technology have shown impressive results including Austin and Indian Lakes in Michigan, Lake Peekskill in New York and Lake Harmony in Pennsylvania. Every month during the deployment of the diffusers in Little Lake, the LSCCF used scientifically sound measurement protocols to show that these diffusers were working to deepen the lake and reduce the sediment nutrient load that fueled invasive milfoil expansion. LSCCF measurements showed several feet of deepening at the eastern shoreline diffusers. However, the VT DEC declined to renew the permit for the 2019 season based on what they saw as inconclusive evidence. We have been working since the Spring of 2019 with the DEC on two new permits to reinstate and expand this system as well as introduce safe, benign non-chemical enzymes to accelerate the reduction of muck.

Our Current Plan of Attack

As mentioned above, we have been working closely with the VT DEC leadership, local politicians and civil servants, residents, lake renovation contractors and esteemed scientists and academics to design a project roadmap and implementation to achieve our objective – a lake we can all enjoy.

We have submitted two permits to the VT DEC – the first one for the installation of 46 fine bubble diffusers covering most of Little Lake (while protecting the wetlands) and the second one for the introduction of safe and effective enzymes to speed the decomposition and eradication of sediment levels which will deepen the lake and reduce the nutrient load that fuels Eurasian milfoil growth. The powerful one-two punch of the combination of aeration and enzymes have shown impressive success in lakes around the world including Paradise Lake in Michigan where the milfoil cover has been reduced by 73%.

As part of our commitment to the VT DEC, we have assembled a team of three world renown scientists in this field who have executed and evaluated the effectiveness of numerous freshwater lake installations round the world that have shown real and material improvement in lake depth and invasive vegetation reduction. These scientists will be providing guidance and counsel, as well as support the assessment of progress to our objectives. Additionally, we will be contracting with a third party to implement a scientifically sound measurement program to assure maximum transparency and success assessment.

Residents and interested parties can find out more about our plan, our permit requests and the science behind all of this on our website. Additionally, we are hoping to execute an ongoing set of review sessions between the LSCCF and the LSCA to make sure we are working effectively together to reduce milfoil across the lake and reduce the 16+ feet of sediment (milfoil nutrient fuel) in the Little Lake.

We are excited about the prospect of implementing this plan with the support of the VT DEC, our scientific partners, our contractors and the support of residents. Our goal is to work in partnership with the LSCA to achieve our mutual objective.

A Step toward a Meeting of the Minds?

Encouraged by two Little Lake property owners, who have been members of both associations, key directors from the LSCCF and LSCA boards met on February 29 to discuss how best to tackle the problems of Eurasian water milfoil and excess muck in Little Lake.

The discussion was frank and constructive. Both sides recognize that we share a common interest in improving water conditions throughout the Lake St. Catherine system and that we need to avoid working at cross purposes.

The LSCCF outlined its action plan including a proof-of-concept dredging project, continuation of mechanical harvesting, and renewal and expansion of its aeration program, to be supplemented by bioaugmentation through the use of enzymes. The LSCCF asked the LSCA to inform the VT DEC that it endorses the LSCCF's pending permit applications for expanded aeration with bioaugmentation.

The LSCA leaders laid out their interest in reintroducing the use of herbicides in Little Lake to control milfoil in an effort to gain better control over milfoil lake-wide. The two sides also discussed how they might support each other's activities in general. Both agreed to share these discussions with their respective boards, with an eye toward continuing the dialogue and building new areas of cooperation.