

Spring, 2019

Dear Friends of Lake Lillinonah:

As we begin our sixteenth (!) year, it is time to take a look at where we've been, where we are, and where we're heading.

Our long-standing mission, to improve the water quality of Lake Lillinonah for recreational enjoyment and long-term environmental protection, has seen significant accomplishment when it comes to floating debris, and a significant reduction in nutrients from wastewater treatment plants and agricultural sources. However, we have also had a negative impact on our mission from the exponential growth of Eurasian Milfoil due to the clearer water from the invasive Zebra Mussel. And, much more progress is needed for the ongoing debris issue, algae blooms and invasive species.

As conditions change, so must our efforts.

We hope this year's edition of the newsletter helps our membership become familiar with the projects we are working on, the areas of our focus, and the work that lies ahead.

CALLING ALL VOLUNTEERS!!!! We were short-handed during the 2018 debris survey, and we don't see enough new faces during Save-the-Lake Day, including the water-chestnut harvesting, or at the dine-around. And there are plenty of other areas where we need your help. Please, please contact us at [info@friendsofthelake.org](mailto:info@friendsofthelake.org) if you can offer some of your time to pitch in!

As always, we thank you sincerely for your membership and support. This lake deserves our help, and we are proud to be part of a community of neighbors that are truly - Friends of the Lake.

Wishing you a safe and enjoyable 2019 on the lake,  
Your Executive Team

### **2019 Membership Renewal Update**

Beginning this year, we are renewing memberships on a calendar year basis. In prior years, we were keeping track of when you had originally signed up and sending out requests for renewal based on that original date. To reduce our administrative effort, coupled with our new capability of renewing online, we have switched to a calendar-year basis. Thank you for your understanding.

### **Website**

Please visit our website often at [www.friendsofthelake.org](http://www.friendsofthelake.org). Use the 'Tools and Resources' page to check out the numerous articles in our library or see current real-time lake data (in season). See the 'News and Events' page to read about the latest events and issues we face. There are other handy tools and contact information for the Lake Lillinonah Authority and FirstLight Power Resources. See our

current members listing on the 'About Us' page. Renew your membership easily online using the 'Support Us' page. And there's more to come!

### **Nutrient Loading**

#### **THE DANBURY WATER POLLUTION CONTROL PROJECT REFERENDUM PASSES!**

On November 6, 2018, there was an issue on the ballot in Danbury of vital importance to those interested in protecting and improving the water quality in Lake Lillinonah.

Danbury residents voted to approve the following Referendum item:

"Shall the \$102,600,000 appropriation and bond authorization for the construction, reconstruction, upgrades, replacement and rehabilitation to the water pollution control plant and facilities system be approved?"

The water pollution control plant ("WPCP") project will:

- Comply with new discharge limits for phosphorus
- Allow for continued expansion and growth of the service area through 2040
- Replace or renovate equipment and systems that are not performing adequately

The last major plant upgrade was completed in 1993. The upgrades will include a new tertiary phosphorus treatment facility to comply with the new effluent phosphorus limits prescribed in Danbury's National Pollutant Discharge Elimination System (NPDES) permit.

The estimated total cost of construction and supporting engineering services for the WPCP Upgrade is approximately \$102.6 million. The Connecticut Clean Water Fund (CWF) allows a 50% grant on eligible phosphorus treatment facilities, a 30% grant on eligible nitrogen treatment facilities, and a 20% grant on all other facilities upgrade work. Remaining projects costs are eligible for a 2% CWF loan. Danbury will pay for 78% of the project loan costs while the remaining 22% of project loan costs will be reimbursed or paid by the participating communities of Bethel, Brookfield, Ridgefield and Newtown.

To receive the 50% phosphorus treatment grant, a construction contract must be entered into before July 1, 2019.

The new facilities are required to be installed and in operation by April 2022.

***This affirmative vote represents a major victory on a matter that Friends of the Lake and the Lake Lillinonah Authority have been working on for over ten years.***

## **Eurasian Milfoil Control Project**

As you may be aware from our prior emails and presentation last fall at the Brookfield Town Hall, Friends of the Lake obtained the services of the Aquatic Ecosystem Research company (AER) to provide a study of the history of invasive plants in Lake Lillinonah, study all available methods of control, and present suggestions for long-term control.

To summarize, the milfoil is growing at an exponential rate in the lake. There is plenty of food, sunlight and warm water available – the perfect habitat for this invasive weed. AER suggested that a new systemic herbicide, Florpyrauxifen-benzyl, be used to control the plant. Though more than five times as expensive to use than the common chemical 'diquat,' AER recommended its use for four reasons:

- “1) This herbicide can be applied in very low amounts to control Eurasian Watermilfoil, which allows for the retention of native species.
- 2) Florpyrauxifen-benzyl is effective in lakes with short retention times like Lillinonah and it degrades rapidly in the aqueous environment.
- 3) This herbicide has shown high efficacy for Eurasian Watermilfoil.
- 4) The toxicity profile of this chemical is favorable because it has been accepted as a 'Reduced Risk Chemical' by the EPA as it applies to human health and because it is essentially nontoxic to non-target organisms at the permissible application rates.”

Encouraging as that sounds, the Friends of the Lake executive committee has significant reservations about the use of a new chemical in our lake. 'Essentially nontoxic' could someday come back to haunt us all. There is an endless list of chemicals that were once thought to be harmless that turned out, years later, to be anything but.

For the summer of 2019, FOTL has no easy solution to the weed problem for our members. While the executive board discourages the use of chemicals in our lake, we understand the importance of safety in your swimming areas. Last year, two groups of lake residents obtained permits for diquat applications; we expect that to continue until a long-term solution is found. Before using diquat or other chemicals, we encourage you to research mechanical harvesting. There are local companies that provide this service in several forms. One of our executive members has found a product readily available online called the 'Weed Razor' to manually cut the milfoil, then he moves it onto the shoreline. It takes a few hours two or three times each season for very acceptable results.

Pursuant to other recommendations in the AER report, we have researched permitting requirements for the release of carp into Lake Lillinonah. We found that in order to obtain a standard permit, barriers must be installed for each possible exit (the dam, rivers, tributaries, upstream and downstream). It became quickly evident that the costs of doing so would be prohibitive. Non-physical (electronic) barriers would be required at the spillway of the Housatonic River and Shepaug River as well as at the Shepaug Dam. Physical barriers would be required at the other tributaries of Lake Lillinonah.

We are seeking to partner with an educational entity to develop a study to track movement of released carp using surgically implanted radio transmitters in a portion of the carp population. Numerous studies have been conducted in reservoir systems, concluding that movement from the release area was not significant. The unique feature of our study would be that the food source is milfoil. Other studies

had hydrilla as the primary food source. The CT DEEP Fisheries Department was involved in the Candlewood Lake radio-tagging project and mentioned in an annual report that they were looking forward to gaining research for future carp releases. We are searching for interested individuals to help us design the study and develop a proposal for the CT DEEP. We are optimistic that using a single release site in the middle of the lake with a limited number of carp could be our first step in getting permits to release carp into Lillinonah as an organic, long-term solution to our milfoil invasion.

Also being studied is the possibility of capturing milfoil weevils from the lake, cultivating them onshore, then releasing them back into the lake in larger numbers. A similar program was used in Vermont with success.

We are also gathering cost information for obtaining weed harvesting equipment, and will present those data when available.

We wish to sincerely thank Dr. Mark June-Wells and Larry Marsicano of AER for their experience and hard work generating their comprehensive and helpful report.

### **Citizen-Led Environmental Observatory (CLEO)**

CLEO, our dock monitoring program for water quality, is still going strong after 11 years! We would like to thank our 2017 and 2018 monitors: Ken Dougherty (Lovers Leap), The Marcus Family (Barkwood Point), The Boodry Family (Barkwood Cove), Greg Bollard (133 Bridge), Rebekah White (Shepaug) and Kendra Kilson (substitute).

We have monitors that will be leaving us for school, so we are looking for new monitors to learn the program and help us fill the shoes of those who have volunteered in this valuable, longstanding program. The training is just once a year and only requires one morning to complete. Data collection occurs 3 times per week and only takes 5 minutes. This program will disappear without volunteers! Please consider contributing to the lake by contacting [Rebekah.white@yahoo.com](mailto:Rebekah.white@yahoo.com).

The annual report for 2017 is available on our website. We shared our information with other lake organizations last fall at Connecticut Federation of Lakes Fall Forum. We are presenting our findings at the CT DEEP Volunteer Water Monitoring Conference in Norwich, CT on April 5, 2019. FOTL is a supporter of this event. Here is a link to that conference (and a great picture of executive member Rebekah White attacking the water chestnut!):

[https://www.ct.gov/deep/cwp/view.asp?a=2719&q=606274&deepNav\\_GID=1654](https://www.ct.gov/deep/cwp/view.asp?a=2719&q=606274&deepNav_GID=1654)

Visit [www.ctlakes.org](http://www.ctlakes.org) for more information on their forums and additional topics.

### **GLEON Buoy Update**

The sonde, which is the device on the interior of the buoy containing the water quality measuring sensors, was upgraded this year to a newer model to assure that we are reliably collecting the most accurate data possible. Thank you to new member Eric Wittmann for volunteering to assist us with the

technical side of the buoy! Please contact [Rebekah.white@yahoo.com](mailto:Rebekah.white@yahoo.com) if you are interested in learning more, or can assist us with the monthly maintenance and testing associated with the buoy.

According to biology professor Dr. Jennifer Klug of Fairfield University, who guides the GLEON buoy program for FOTL, “the new sonde measures algal biomass, water temperature, dissolved ions, pH, and dissolved oxygen. Preliminary results suggest that the instrument performed well! We also measure dissolved oxygen near the bottom of the lake. In 2018, there was a 10-day period in July where dissolved oxygen near the bottom was too low to support most life. Fortunately, the stormy conditions in August led to mixing which restored healthy oxygen conditions to the entire lake. CLEO volunteers recorded frequent algal blooms in August which could also be related to the storms washing nutrients into the lake. The 2018 CLEO report will be available later this month.”

Dr. Klug and colleagues published a paper last fall titled “Wind and trophic status explain within and among-lake variability of algal biomass.” Here is the link to the paper:

<https://aslopubs.onlinelibrary.wiley.com/doi/full/10.1002/lol2.10093>

For more information, contact Jen Klug at [jklug@fairfield.edu](mailto:jklug@fairfield.edu)

### **2018 Debris Survey Results**

Please find below the 2018 report from Conwood Foresters, the vendor who takes our volunteer’s data and compiles them into this summary report. This year’s report showed a substantial reduction in the cubic feet of debris present on the shoreline. While we are hopeful that this may be true, we are uncertain of its accuracy, especially with the FirstLight Power collection vessel ‘Lillizaurus Rex’ being out-of-commission for much of the season, and will be reviewing our survey data and methodology to make sure our program is as accurate as possible.

There were fewer debris ‘events’ in 2018, even though there was plenty of boat traffic and high water. We are hopeful that our efforts may be paying off!

### **Summary of Lake Lillinonah Shoreline Woody Debris By Connwood Foresters, Inc. CONNWOOD.COM**

Data Collection:

On 9/15/2018 volunteers collected woody debris data for 41 sample plots along the shore of Lake Lillinonah. Volunteers traveled to each sample plot by boat. Sample plots were randomly located and evenly distributed around the shore of the lake (~4600’ spacing). Plots were mapped with ArcView GIS and then the lat/long coordinates of these plots were located and flagged on 9/11/2018. The 41 plots are a 2% sample of the total length of the shore (39.5 miles). These are the same plot locations as 2014-2017; plot locations from 2012 and 2013 and are located roughly half way between the new plot locations.

Each plot consists of 100' of shoreline, from the water's edge to the high-water mark. At each plot the following was recorded: average plot width, adjacent land use, the dimensions of all woody debris whose large end falls within plot, dimensions of all woody piles whose center falls within plot, and the decay class of each piece/pile. Pieces must have a small diameter of more than 1" and have over a half foot of length to be recorded. Forks off a main tree stem are tallied as separate pieces.

Methods are based on USDA Forest Service Guidelines: "Sampling Protocol, Estimation, and Analysis Procedures for the Down Woody Materials Indicator of the FIA Program Report NRS-22"

Results:

**Adjacent Land Use:** 6 residential plots (15%) and 35 forested plots (85%) – assumed same as last year  
**Plot Size:** Plots averaged 7' wide and total sampled plot area was 28,300 square feet – assumed same as last year

**Plot Debris:** 962 pieces having 1,119 cubic feet of material, with an average of 1.2 cubic feet/piece

**Piles:** 26 piles having 754 cubic feet of material, with an average of 29 cubic feet/pile

**Entire Lake:** 95,321 cubic feet of material in 48,960 pieces and 1,323 piles

	2012	2013	2014	2015	2016	2017	2018
Shoreline feet	208,666	208,666	208,666	208,666	208,666	208,666	208,666
Plots	40	41	41	41	41	41	41
Sample feet	4,000	4,100	4,100	4,100	4,100	4,100	4,100
Lake cubic feet	101,041	81,328	123,882	114,822	167,982*	246,320**	95,321
Lake pieces	104,750	91,050	68,453	43,922	47,077	36,338	48,960
Lake piles	574	1,171	3,512	2,443	1,934	2,545	1,323

\*Year 2016: large increase in debris volume is entirely the result of an increase in the average volume per pile from 23 cubic feet / pile in 2015 to 58 cubic feet/pile in 2016. The number of piles actually decreased from 2,443 in 2015 to 1,934 in 2016. The amount of 'Individual Piece' debris had a slight decrease from 2015 (59,453 cubic feet to 56,363 cubic feet).

\*\*Year 2017: large increase in debris volume is entirely the result of an increase in the average volume per pile from 23 cubic feet / pile in 2015 to 73 cubic feet / pile in 2017. This increase is due to four very large piles that were recorded in coves in the south end of the lake. Without these piles, the average volume per pile is 18 cubic feet and the total lake volume drops to 106,666 cubic feet. The amount of 'Individual Piece' debris had only a slight increase from 2015 (59,453 cubic feet) to 2017 (60,190 cubic feet).

### **FirstLight Power Debris Harvester accident and plans**

FirstLight Power reported an accident with the 'Lillizaurus Rex' last summer that caused the 'Rex' to capsized. Fortunately, nobody was injured. Unfortunately, the 'Rex' was rendered unseviceable.

FirstLight used pontoon boats during the duration of the summer to collect wood debris, and has found

that to be a more cost-efficient and productive method of harvesting. They reached out to all stakeholders recently to ask for comments about their request to modify their license to not require a vessel specifically designed for wood debris collection. Our position is that we don't object to any means they use, as long as the debris is collected in quantities sufficient to overcome the continual inflow of debris from our shores and from upriver.

By the way, this highlights the main purpose of our annual debris survey; to make sure that FirstLight Power is living up to their license requirement to control the debris in order to maintain 'navigable waterways.' We wish, and have been pleading for years, that they would take the next step and either keep the water level lower during peak summer weekends, or employ collection resources and methods with sufficient capacity to reduce the debris to the point where high water, low wind, and lots of wakes don't continue to give us the floating debris mess that we are all too familiar with. We can't urge you strongly enough to help with our annual debris survey.

Also, please take pictures of debris issues and forward them to [info@friendsofthelake.org](mailto:info@friendsofthelake.org), along with the date and a description of what you encountered.

### **Lake Lillinonah Authority Update**

The Lake Lillinonah Authority meets on the first Tuesday of each month at 7:30 PM at the Brookfield Town Hall. We encourage you to attend! Friends of the lake schedules an executive member to be present at each meeting.

A review of the 2018 minutes shows that the LLA has received approvals to install a new dock and fueling station for the marine patrol just south of the route 133 bridge in Brookfield. The bulkhead was installed in April. The LLA hopes to have the dock operational in 2019.

It was reported in the August minutes that Pittsfield MA passed a \$74 million project for phosphorus removal, which should result in 80 pounds less of phosphorus being discharged into the Housatonic River each day.

Other issues the LLA is working on include invasive plants, water quality grants, permits for homeowner's groups to apply diquat for milfoil control, website upgrade and enhancement, improved communications and technology, buoy deployment for navigation and hazard alert, and as always providing boats and salaries for the marine patrol.

Currently, there are two vacancies on the LLA for New Milford volunteers, one vacancy for Bridgewater and one for Roxbury. Please contact your town's mayor or selectperson if you are interested in joining the LLA.

### **Event Dates:**

#### **Save The Lake Day: June 15**

Meet at the route 133 boat ramp at 9AM to help us clear man-made litter from our shores! Or, if you prefer, make your way to Addis Park in New Milford to help our crew pull water chestnut (another invasive plant species) from the shallows upriver. You will need to bring your kayak or canoe to participate there. Enjoy a (hopefully) beautiful morning with friends and neighbors directly and

immediately helping to improve this lake. It is always a good feeling to see how much garbage we remove. Each year we find less and less; let's keep it up!!! As always, we desperately need pontoon boats to help shuttle volunteers around the lake. If you can, please contact us at [info@friendsofthelake.org](mailto:info@friendsofthelake.org) to volunteer the use of your pontoon boat. See you there!

Fireworks: July 6, with a rain date of July 7

Dine Around: July 20

Back by popular demand, the annual dine-around evolves each year.

Enjoy a fun-filled afternoon cruising along our beautiful lake in a pontoon boat, meeting neighbors and re-connecting with members you've met, while enjoying a four or five-course meal with cold beverages. What could be better? Adult FOTL members only please. Details to be provided as we get closer. Attendance limited to pontoon boat capacity.

If you live on the lake and haven't hosted yet, please offer to do so – it is really a fun thing to do. And, of course, we always need pontoon boats and captains! Just send a note of interest to [info@friendsofthelake.org](mailto:info@friendsofthelake.org) and we'll contact you. It would be great to get more new people involved! We want to get to know you!!!

16<sup>th</sup> Anniversary Party: August 8

Details to follow – always an amazing evening. Mark your calendar!

Annual Debris Survey Data Collection: September 14

We had a difficult time getting enough volunteers for this event in 2018. We need your help! It only takes one morning to collect this very important data. Debris Survey data are used to compare the inflow / collection progress each year. The results are absolutely vital to our ongoing efforts to make sure that the floating debris issue is being tackled effectively.