

Milfoil in Lake Fairlee

A contemporaneous chronicle of our efforts to control this invasive nuisance

Archive for the 'Milfoil Eradication' Category

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Spot Treatment with Herbicide Proposed for 2012

Friday, November 18th, 2011

In [a prior post](#) we reported on the low incidence of E. milfoil found in the September 2011 survey, but noted that “we are very cautious about the low incidence of milfoil reported here.” Based on anecdotal information we expected that considerably more milfoil has returned to the lake. Now we have received a report from Lycott titled *Summary of 2011 Eurasian Milfoil Observations & 2012 Management Recommendations* which confirms our fears.

You can download the three page document by clicking [this link](#), but here are the high points:

- Milfoil was observed at fourteen locations around the lake this summer.
- Ten of these exhibit only “sparse” growth. We believe that these can be managed with hand pulling next summer.
- Three areas have “moderate” growth. In these locations we will employ either hand pulling or install bottom barriers, as the situation warrants.
- At the mouth of Middle Brook there is an eight acre patch with heavy milfoil growth. Lycott recommends that we again apply the herbicide *triclopyr* to this area for three reasons:
 - The existence of native species in moderate to heavy densities makes finding E. Milfoil difficult
 - Wide distribution of E. Milfoil over 8+ acres will be difficult to target with bottom-barrier
 - Sediment deposits in this area can greatly reduce visibility during hand-pulling and therefore increase the chance that plants will be missed

The report includes maps showing the locations where milfoil was found.

This comes as somewhat of a surprise to us, as we had come to believe that the 2010 herbicide treatment might last a few years. Apparently this is not the case. We are learning that milfoil is a pernicious weed (alright, we already knew that), and that its roots can survive in the ground under the lake for years. We do not know whether the newly grown milfoil is growth from submerged rootstock, if it is newly seeded from introduced plant fragments, or if some of it is coming into the lake down Middle Brook.

Based on this information we are beginning to explore just what this will mean for Lake Fairlee and for the Association. We will be meeting with representatives of the State DEC to discuss permitting, notifications, testing, and funding. As we know more it will be posted here.

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In related news, we have learned that our sister Lake Morey intends to apply an herbicide treatment next summer as well. They treated portions of their lake in the summers of 2007, 2008, and 2009. Now the area they treated in 2007 is again densely infested with E. milfoil.

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[Year Two Aquatic Vegetation Survey Report](#)

Tuesday, November 8th, 2011

Lycott Environmental has submitted their *Aquatic Vegetation Survey Report* to the State. Jumping to the chase, here is the conclusion of their report:

The surveys conducted in 2011, the year following herbicide treatment of 120 acres of E. Milfoil in the littoral zone of Lake Fairlee, show that the treatment both significantly reduced the distribution of E. Milfoil and allowed for continued growth of non-target, native species. Of the thirteen (13) species observed during the 2009 pre-management survey, more than half were observed at the same or greater densities during the September 2011 survey.

Although E. Milfoil was documented at only one of the data points surveyed during September 2011, growth of this invasive species extends beyond this single point. Additional work conducted by Lycott as part of the Lake Fairlee Association's management efforts, including diver surveys and hand-pulling efforts, have further mapped distribution of E. Milfoil. The details of these surveys and additional management efforts conducted under 2009-C08 HB will be provided with the forthcoming 'Final Report for Year Two of Eurasian Milfoil Management in Lake Fairlee'.

The entire report is available [HERE](#). It is a 23 page pdf file with color graphs and maps.

PLEASE NOTE: We are *very* cautious about the low incidence of milfoil reported here. This survey collected data only at predefined locations. We have reason to believe that the "Final Report" mentioned above will show more milfoil. In addition, we are watching closely the experience of our sister Lake Morey, which will again be treating portions of their lake with *tricopyr* next summer, as milfoil is regrowing vigorously in the north end of the lake.

AQUATIC VEGETATION SURVEY REPORT
Year Two of *Myriophyllum spicatum* Management
LAKE FAIRLEE
Fairlee, West Fairlee & Theford
Vermont
2011



SUBMITTED: NOVEMBER 3, 2011

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Click above to download the entire report

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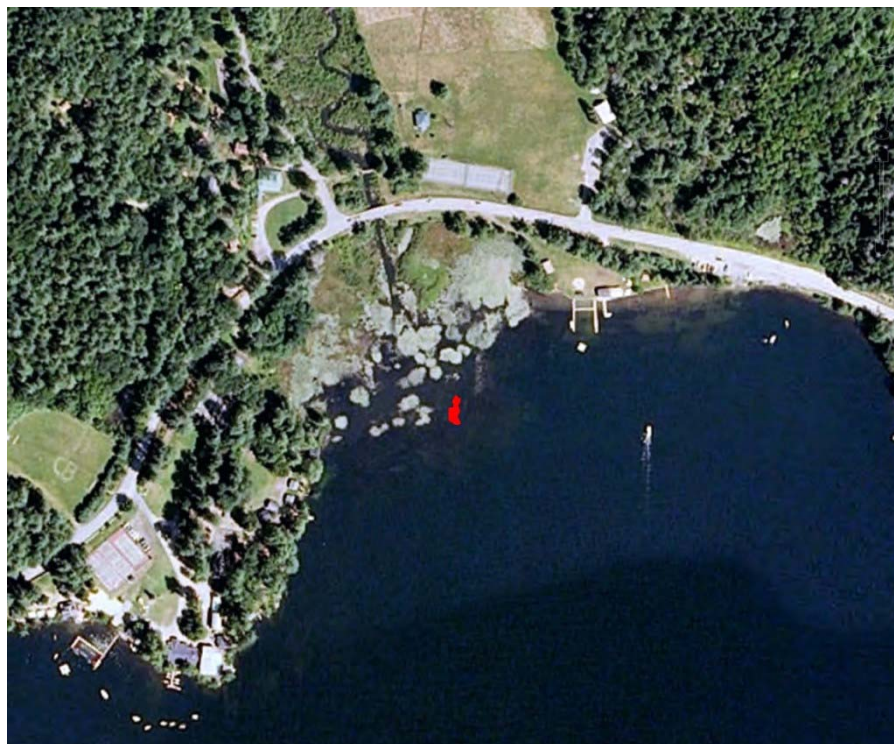
[Some Bottom Barriers Will Be Used this Year](#)

Thursday, July 28th, 2011

On July 23rd and 24th weekend divers from Lycott came to remove the milfoil growth that had been identified in June. They located and hand pulled individual plants from locations near Camp Aloha Hive and Camp Lochearn. They also identified an area or about 2500 square feet near where Middle Brook flows into the lake where the milfoil growth is dense enough to warrant using bottom barriers. After determining that this would be the most cost effective way to proceed, we engaged Lycott to install bottom barriers to completely cover this patch.

Lycott has prepared and submitted a permit application to the State, and will send notifications to abutting landowners as required. Once we receive approval from the State, Lycott's divers will perform the work, probably in the first half of August. We are still planning to have them return again nearer the end of the summer. Then they will swim the entire perimeter looking for milfoil and removing any they find.

The following satellite photo shows the portion of the lake near the mouth of Middle Brook.



The area of milfoil to be treated is indicated in red. Above it you can see the mouth of Middle Brook, which meanders down from the top of the photo. Camp Billings is at the lower left, the Horizons docks stick into the lake right of center, and the state fishing access is at the wide part of the paved road to the right. Click on the photo for a larger image.

[if you look closely you can see that Camp Billings has mowed their initials into their field on the northwest side of the road -- perhaps for the benefit of the frequent balloons that fly over from the Post Mills Airport]

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The following enlargement shows the shape and extent of the milfoil patch more clearly. It is about 33 feet by

80 feet. The Lycott divers use software which collects their GPS locations and maps them onto Google Earth, which then shows the area in context. If you are so inclined you can download the KML data [here](#).



Posted in [Bottom Barriers](#), [Management](#), [Milfoil Eradication](#) | [No Comments](#) »

[Results of Herbicide Treatment](#)

Monday, July 4th, 2011

Summary

In June of 2010 we treated the lake with the herbicide *triclopyr*. Details of this expensive and politically difficult undertaking can be found elsewhere in this blog. By the end of the summer we were enthusiastic about the success of our project. Virtually all of the Eurasian Milfoil was lying dead on the bottom of the lake and decomposing. The [year-end report](#) required by the State confirmed this observation.

This June aquatic biologists from Lycott performed a detailed examination of the lake. Our program this summer would depend on how much milfoil they found. It is possible that in the denser beds of milfoil some rootstock may not have had exposed stalks or leaves, and could have escaped the herbicide. They did indeed find some milfoil, but an amount that can be easily managed this year with hand harvesting.

Our conclusion is that the herbicide treatment was a resounding success. Yes, there is still some milfoil in the lake, but it is substantially all gone. You can read the details of what they found below, but it is a minuscule fraction of the pervasive infestation of the entire littoral area of the lake in recent years.

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Details

LYCOTT aquatic biologists have conducted three (3) surveys during June of 2011. The first survey was conducted June 14th. Its primary purpose was to track the effectiveness of the 2010 herbicide treatment. In an email summarizing their work, the scientist wrote:



Click here for larger image

“E. Milfoil was found in one location during the littoral zone survey and in one of the three areas where Brittany dove. As you can see from the map, the first location was at the Middle Brook inlet, relatively close to the State boat ramp. There are plants scattered among the native species in this shallow area. Attached is a photo of the heaviest growth we found – you can see a lot of *Elodea* in the background.

Brittany dove at three locations where growth was heavy in 2009 – near Passumpsic Point (?), the beach at Treasure Island, and the large patch that was close to the camp at Lochearn Rd. As you can see from [the map](#), the second location of growth was off of Passumpsic Point. She picked everything in her field of view while swimming ~150 ft. and came up with about 5 plants.”

The second survey was conducted June 24th and 25th. Two SCUBA divers swam the entire circumference of the lake. their purpose was to direct the proposed 2011 hand-pulling operation. After the first day the diver wrote:

“So far we’ve identified only three places with milfoil. Two are in Middlebrook Bay and the third is east of Aloha Hive, north of their swim area. Middlebrook Bay has at least one small, dense bed.. other sites are very sparse and fairly unhealthy looking plants.”

And after the second:

“Nothing much more to report. Found scattered plants in Middlebrook Bay along with one small, but dense patch of plants.”

The third visit was by Will Stevenson, the president of Lycott, accompanied by Sarah Miller, a representative of the herbicide’s manufacturer. I met with them on the lake, and received the impression that they are very pleased by the success of the treatment.

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This Year’s Program

What does this mean for our milfoil program this year? Here is our consultant’s recommendation:

“Based on the findings of the three June 2011 surveys, LYCOTT recommends deploying a 2-person dive crew to conduct two separate 2-day hand-pulling events to remove Eurasian Milfoil plants. The first event will be conducted in early July to focus on removal of identified plants in the Middle Brook inlet

area and the area adjacent to the Aloha Hive Camp, north of the swim area. The second 2-day hand-pulling event will be scheduled for late August to re-survey the littoral area and hand-pull any late-summer growth that emerges.”

The LFA board will likely accept Lycott’s recommendation and hire them to perform the indicated hand pulling. We also plan to continue our Courtesy Greeter program at the boat ramp. (more [here](#))

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[Plans for Summer 2011](#)

Friday, March 11th, 2011

Over the winter we have been thinking about what our milfoil program next summer might look like. We prepared the following narrative for our State grant-in-aid application. Any plans made this early are necessarily educated guesses at best, subject to revision when we see how much Eurasian milfoil we find growing when the ice is gone.

Also our possible funding shortage (see [this post](#)) might constrain what we can afford to do.

Project Description

Lake Fairlee is a medium sized lake, surrounded by the three towns of Fairlee, Thetford, and West Fairlee. The Lake Fairlee Association is a not for profit membership corporation created to “preserve, protect, and enhance the distinctive ecology and natural resources of Lake Fairlee and its surrounding watershed.” The Association works in partnership with the applicant Town of Thetford to manage the milfoil control program.

In 2010 we were granted a permit to treat the affected areas with the herbicide triclopyr, as part of a five-year plan. The results were very satisfactory, with substantially all of the growing milfoil killed. Nonetheless we do not know how much regrowth to expect this season. Because there were mature well developed beds of milfoil, there may be rootstock that was not killed by last year’s herbicide treatment, from which new plants might appear.

With the help of our consultant, Lycott, Inc., our plan this summer will be intensive inspection and rapid response. We will begin with a thorough survey of the entire lake early in the growing season. Where there are isolated plants, they will be picked. Where there are larger growths, they will be marked and a crew scheduled to return and pull them. And if there is extensive growth, we will deploy benthic barriers.

In addition Lycott will conduct a third “scientific” survey in the late summer as required by our permit.

Education and Prevention

For four years the Lake Fairlee Association has developed and operated a greeter program at the State boat access. It is our belief that prevention of the spread of E. milfoil is of paramount importance. This is our most effective way of combating the transport of nuisance species in and out of our lake.

This year we hope to significantly increase the number of hours that the boat ramp will be attended, extending both the daily hours and the days covered. We will employ three greeters, and hope to have a greeter present about 70 hours per week through July and August, and perhaps slightly fewer hours before and after, beginning Memorial Day weekend and lasting into mid September. We will try to schedule more coverage during the early morning and late afternoon hours preferred by many fishermen.

Each year we gain more experience hiring people with the requisite qualifications, and training and equipping them to do the job well. We will improve our record keeping, including gathering more demographic information about those with whom we speak. We will continue to explore the possibility of a boat washing station convenient to the launch. Other educational activities that we will continue include:

- We will continue to use our 'blog' for education and outreach.
- We will increase our participation in events that train the public in identifying E. milfoil and other invasive species and properly removing them.
- We will raise public awareness of the threat milfoil poses to Vermont lakes and what can be done to impede its spread. We will make presentations to the towns and to interested groups about the milfoil threat and what we can do about it.
- We will continue to publish a periodic newsletter, which will include information about milfoil and our control program.
- We will engage the public generally and enlist volunteers to monitor milfoil introduction and spread.

Personnel

Again this year we will not employ our own divers. Instead we will contract with Lycott, who will provide the personnel and equipment to conduct the surveys and the milfoil control activities. Volunteers will search the lake for new milfoil growth. Our only employees will be our greeters.

Posted in [Milfoil Eradication](#), [Milfoil Education](#), [Off Season](#) | [No Comments »](#)

[Year One Herbicide Report](#)

Tuesday, October 26th, 2010

FINAL REPORT FOR YEAR ONE OF
HERBICIDE MILFOIL MANAGEMENT
LAKE FAIRLEE
FAIRLEE, WATY FAIRLEE & THETFORGE
VERMONT
2010

PROPOSAL/CONTRACT #248-10



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248-10, 10/25/2010



Report from Lycott Environmental, Inc.

In late August biologists from Lycott conducted another scientific survey of Lake Fairlee, collecting data on plant species at 120 pre-determined points around the lake. Their report to the State was published yesterday. Since the June 2nd treatment of the lake, the spread of milfoil has decreased from 26% of the lake to just about 0%. By any measure our treatment has been a success. There are links to download the complete

report below.

We must temper this very good news with caution. First, the report mentions that several plants which appeared dead were sending out new green sprouts. We are advised by the scientists that unless these shoots can take root in the bottom of the lake they will not survive the winter. Nonetheless they represent *new* milfoil growth, and cause for worry. Second, we know that even if we start next spring with absolutely no milfoil growing in the lake, it is only a matter of time until it is reintroduced, despite our best efforts to the contrary.

Download the full report here: (these are *pdf* files)

- [Report body](#) (8 pages)
- [Maps](#) (7 pages)
- [Data](#) (5 pages)
- [Survey Methods](#) (3 pages)

In sum, we congratulate ourselves and offer heartfelt thanks to our many supporters. Next year we will start the season with another thorough survey, ready to take whatever steps necessary to prevent the lake from being again taken over.

Posted in [Herbicide](#), [Milfoil Eradication](#) | [No Comments »](#)

[Getting the Bottom Barriers Up](#)

Wednesday, September 8th, 2010

Pursuant to our contract with the State, this week a dive crew from Lycott arrived and began removing the two acres of bottom barriers that were still deployed in various locations in the lake.



Rolling up sheets of heavy plastic on the Aloha Hive field

We will keep these sheets in storage, against the possibility that we will need to use them again.

Posted in [Bottom Barriers](#) | [No Comments »](#)

Final Triclopyr Test Results

Wednesday, September 1st, 2010

Earlier this week we sampled two locations in the lake and submitted them to the lab. The concentration of triclopyr in the lake is now about 10 parts per billion. The warning signs around the lake will have to stay up for the full 120 days, until the end of September.

The following table shows these results, as well as those for all of the other tests this summer. The concentrations are expressed in parts per billion.

	Applied	June 3rd	June 9th	June 15	June 21	June 28	July 28	Aug. 30
	0 days	1 day	7 days	13 days	19 days	26 days	56 days	89 days
Site 1	1500	202	121			38		
Site 2	1500	930	127			66	13	11
Site 3	1500	510	113	98	59	50		
Site 4	2000	85				47		
Site 5	2000	160				39		
Site 6	2000	145				42		
Site 7	2000	123		93	65	42	17	10
Site 8	2000	332		88		40		
Site 9	0.0	15				30		
Site 10	0.0			31		0.0		

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Testing Results After Two Months

Sunday, August 1st, 2010

Even though the State does not require it, we are continuing to measure the herbicide residue after it was measured as less than 75 parts per billion, and the State declared the lakewater to be “safe to drink*.” We only sampled from two locations, because the cost of analyzing each sample is in excess of \$100.00. We chose the two locations where we had found the highest concentrations of triclopyr in earlier tests, one from each end of the lake.

As expected, the concentration has declined significantly. Although the sites tested are where the chemical was applied, we believe that by this time the chemical has diffused throughout the lake, and that concentrations measured anywhere would be similar.

Location	Applied	June 3rd	June 9th	June 15	June 21	June 28	July 28
	0 days	1 day	7 days	13 days	19 days	26 days	56 days
Site 1	1.5 ppm	202 ppb	121 ppb	n/a	n/a	38 ppb	n/a
Site 2	1.5 ppm	930 ppb	127 ppb	n/a	n/a	66 ppb	13 ppb
Site 3	1.5 ppm	510 ppb	113 ppb	98 ppb	59 ppb	50 ppb	n/a
Site 4	2.0 ppm	85 ppb	n/a	n/a	n/a	47 ppb	n/a
Site 5	2.0 ppm	160 ppb	n/a	n/a	n/a	39 ppb	n/a
Site 6	2.0 ppm	145 ppb	n/a	n/a	n/a	42 ppb	n/a
Site 7	2.0 ppm	123 ppb	n/a	93 ppb	65 ppb	42 ppb	17 ppb
Site 8	2.0 ppm	332 ppb	n/a	88 ppb	n/a	40 ppb	n/a
Site 9	0.0	15 ppb	n/a	n/a	n/a	30 ppb	n/a
Site 10	0.0	n/a	n/a	31 ppb	n/a	0.0 ppb	n/a

We plan to test the water at least once more, in late August, around 12 weeks after the chemical application.

* The State has determined that 75 ppb is a safe amount of triclopyr in drinking water. Nonetheless we do not recommend drinking from the lake – for a variety of other reasons.

Posted in [Herbicide](#) | [No Comments »](#)

[Milfoil in Lake Fairlee – July 2010 Update](#)

Friday, July 9th, 2010

[We were asked to provide a brief statement on the milfoil in Lake Fairlee to be used by the guides on the boat tours of the lake offered as part of LAKEFEST 2010. We include it here, as it provides a concise summary.]

Eurasian Milfoil is a floating aquatic plant native to Europe, Asia, and northern Africa. It was imported and sold in the United States as a decorative aquarium plant. It has become a problem in many northern lakes, and has been in our lake for over fifteen years. It grows faster than many native lake plants, and tends to crowd out the native plants and can drastically alter a lake's ecology.

Because it roots in the lake bottom and reaches for the sunlight at the surface, it grows primarily in water less than 15 feet deep. Even a small fragment can take root, so it spreads easily within a water body and from lake to lake, traveling on boat bottoms and trailers. In the spring it is frail and brittle, and easily fragmented. In the summer it grows strong and thick. If allowed to spread unchecked it threatens to clog the lake with dense mats of plant material. Parts of the lake can become inhospitable to boaters and swimmers, and ultimately property values and tax revenues may suffer.

The Lake Fairlee Association recognized the threat posed by Eurasian Milfoil fifteen years ago, and began a series of escalating responses intended to eliminate or at least control it. Initially we used hand pulling of the plants and their roots. In 2002 we began using bottom barriers for some of the most problematic areas. In 2004 we built and deployed a suction harvester to make the hand pulling much more efficient.

These methods were not sufficient. In fact, the milfoil has continued to spread in spite of our best efforts. Scientific surveys we had conducted last summer found moderate or dense milfoil growth in 26% of the lake. Late this spring we obtained a permit from the State to treat the lake with an herbicide, triclopyr, to which the milfoil is particularly susceptible. In early June Lycott Environmental, Inc., a firm licensed to do this kind of work in Vermont, applied triclopyr to the areas of heavy milfoil growth.

The chemical has had its effect, and the milfoil in the lake is now dead or dying. Most of the plants can be seen decaying on the bottom of the lake. There has been negligible effect on other species of plants, and no observed effects on fish, birds, or other animals in the lake. We have been testing the lake water in ten locations since the treatment, and the State has declared the lake's water safe for drinking – at least as far as the herbicide concentration is concerned!

Late this summer another detailed survey will ascertain just how successful our treatment has been. Until then we will enjoy swimming and boating in the open water of the lake. *And* we will redouble our efforts at educating boaters how to wash their boats and equipment to curtail the further spread of milfoil and other aquatic nuisances from lake to lake.

Posted in [Herbicide](#), [Milfoil Eradication](#), [Milfoil Education](#) | [No Comments »](#)

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• Pages

- [Read the Blog HERE](#)
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- [Winter 2011 Newsflakes](#)

• Categories

- [Divers](#) (17)
- [Finances](#) (6)
- [Just for Fun](#) (4)
- [Lake Environment](#) (12)
- [LFA Business](#) (12)
- [Membership](#) (3)
- [Milfoil Eradication](#) (73)
 - [Alternatives](#) (11)
 - [Bottom Barriers](#) (4)
 - [Herbicide](#) (48)
 - [Management](#) (8)
 - [Suction Harvesting](#) (3)
- [Milfoil Education](#) (22)
 - [Greeter Program](#) (5)
- [News Coverage](#) (4)
- [Non-LFA](#) (2)
- [Off Season](#) (9)
- [Outside Links](#) (1)
- [The Dam](#) (3)

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