Upper Saranac Foundation

It still is, and always will be, about Water Quality.

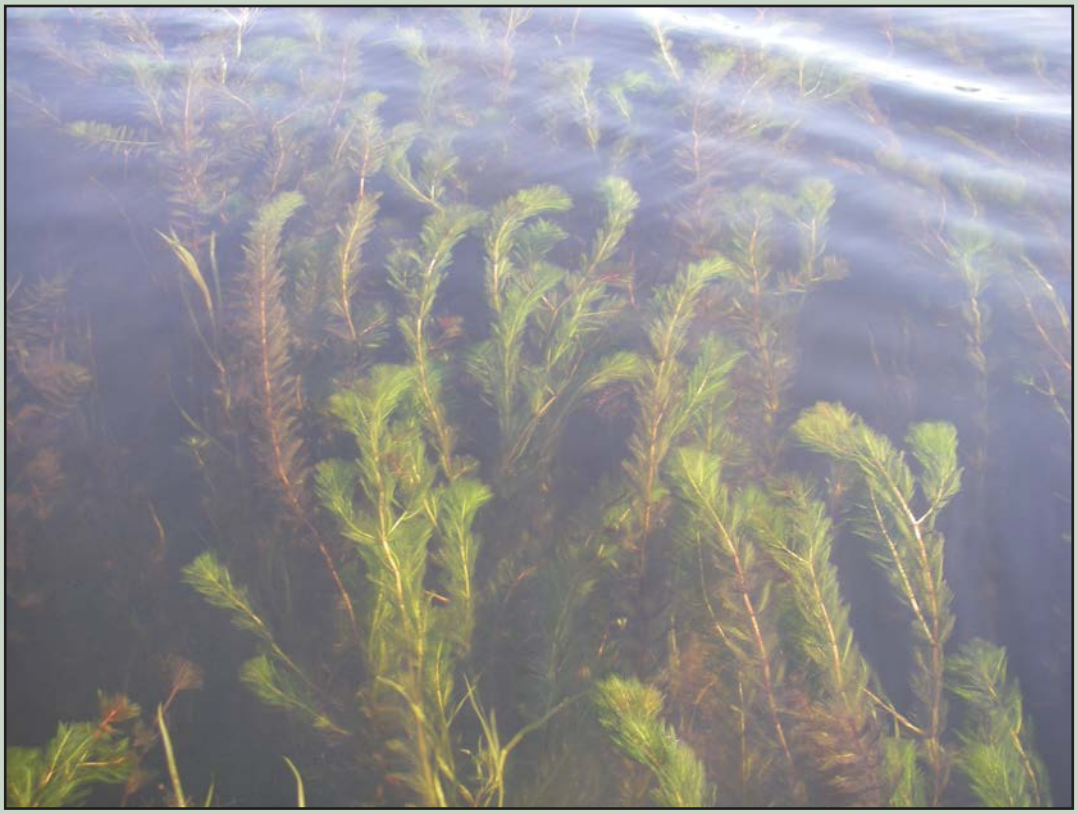
Edition 4 October 2014

WAIT !

Just when you thought it was safe…

Variable Leaf Milfoil was discovered in the Lake

Variable Leaf Milfoil



Eurasian Water Milfoil

Variable-Leaf Milfoil

Guy Middleton, Lake Manager

Variable-Leaf Milfoil, the second "invasive" to Upper Saranac Lake was found this summer. This unwelcome aquatic plant was discovered in areas in Fish Creek Pond, east of the Route 30 Bridge, and later in the main lake, in Fish Creek Bay. Variable-Leaf Milfoil was found in Lake Placid a couple of years ago, creating a big concern and now occurs as far north as Quebec. Variable-Leaf is harder to spot from the surface and harder to remove than Eurasian Water Milfoil that was found in Upper Saranac Lake in 1998 and has been a major focus of management by the Upper Saranac Foundation since 2004.

Since Variable-Leaf Milfoil is native to the southern U.S., from Florida to Texas, many experts refer to it as a "watched" or "exotic invasive" and do not refer to it as an invasive. Regardless, similar to aquatic invasive plants, Variable-Leaf Milfoil is an aggressive plant that can form dense mats, congesting waterways and crowding out native aquatic plants. Thick growth of this plant can impair recreational uses of waterways, including boating and swimming, while degrading the native habitat of fish and other wildlife. Since neither Eurasian nor Variable-Leaf is native to the Adirondacks, there are no predators to keep populations in check, thus they grow uncontrollably. Once established, invasive aquatic plants are extremely difficult to eradicate.

Nearly all milfoil, native or invasive, share the same characteristics. They are rooted plants that can reach the water's surface and can grow in waters up to ten feet deep. Their leaves are finely divided like a feather. Milfoils are perennial, so they return each year from roots in the sediment. They also spread through fragmentation. Variable-Leaf Milfoil leaves are more densely packed together, so it appears bushier than Eurasian but similar to native milfoils.

The Upper Saranac Foundation has begun aggressively hand harvesting Variable-Leaf Milfoil at its known locations. Fortunately, we found this new invasive in its early introduction to the Lake, allowing the potential for eradication. We are continually on the lookout for new threats to the Lake. The Foundation will continue surveying for additional areas of Variable-Leaf Milfoil, while monitoring harvested areas for regrowth.

Why We Can't Stop

Fall always makes us reflect on the recent warm days of summer and the certainty of the coming winter. It was a beautiful summer on Upper Saranac Lake, with lots of sun in June and July, tempered by some cooler weather in August. Regardless, spending any time on our lovely Lake is always a special experience.

One key reason that we continue to enjoy such a clean and beautiful Lake is because of programs initiated by the Upper Saranac Foundation, and the generous support of its donors.

As we all know, the monitoring of Water Quality and the management of invasive species in our Lake are ongoing obligations. There is no scenario in which management of invasive species ceases, or in which we no longer have to monitor the Water Quality of Upper Saranac.

Thanks to the vigilance of our Lake Manager, Guy Middleton, we were able to identify that Variable Leaf Milfoil, a second invasive plant species, had entered the Upper Saranac watershed. Given that there will always be outside boat traffic on our Lake, it is no longer a matter of IF other invasive species will infest our Lake, it is a matter of WHEN.

So our Fall 2014 message is, quite simply, that we can't stop investing in the health and care of our Lake.
To reinforce the need for continued watchfulness, here are a series of pieces from experts on why we cannot stop or reduce Foundation projects.

Eurasian Milfoil; What Follows "Success"?

Otto Doering*

We have made tremendous progress controlling our milfoil problem on Upper Saranac. Milfoil removal has declined from 18 tons to under 800 pounds. However, remember the basic characteristics of an invasive. It out competes existing plants (or animals), it grows faster, may need less nutrients, adapts too many and difficult environments, and ultimately changes the landscape. The basic actions to fight invasives are: prevention, early detection and rapid response, control and management, and finally rehabilitation and restoration. Some invasions, like Eurasian milfoil often only get to the control and management step. It is almost impossible to completely eradicate it. This was the case with the Sea Lamprey in the Great Lakes which decimated the Whitefish population in the 1950s. It is now controlled at a 90% population reduction. If control does not continue, there will be heavy damage to the Great Lakes again (Google the Great Lakes Fishery Commission). Similarly with milfoil, our course now is long term control and management.

OTHER EXPERIENCES Other New York Lakes have milfoil experiences. Cazenovia is controlling their milfoil with herbicides. Skaneateles has used benthic mats and hand removal similar to our program. (Google the two lake associations to get more information.) The initial outbreak of milfoil in Cayuga has receded. We do not know why. Two candidates are competition from star grass and milfoil eating insects that were present. Experiments have shown that they do affect milfoil. Cayuga now has a real threat from Hydrilla and the lake community is engaged in a tremendous rapid response effort to eradicate it. This is only possible because of early detection.

SOLDIERING ON Control and management is nowhere near as satisfying as total victory, i.e. eradication. Unless we want to take the risk of returning to the milfoil choked shore we started with, we will have to continue our control and management regimen. Unless we have a better understanding of why milfoil receded without control in a few lakes we would be taking a great risk to cease our control efforts and just hope for the better.

IT COSTS It takes dollars to do what needs to be done. When the Foundation took over the Bartlett Carry Dam, It was rebuilt it with donations rather than through the alternative of a water district to finance lake-wide maintenance efforts. A water district would have assessed everyone to get the job done. Today, without significant state or local contributions, a couple dozen donors contribute most of the resources to control milfoil through the Foundation. The generosity and ability of this small number of individuals may not continue forever. At some point everyone will have to step up and contribute their share to the tasks that have to be done to maintain the whole lake.

***Otto Doering serves on the US Department of Interior's Invasive Species Advisory Committee and spends what time he can at Camp Panther Cove on Upper Saranac.**

Hilary Smith

Invasive Species Coordinator, United States Department of Interior
Former Director, Adirondack Park Invasive Plant Program

Upper Saranac Lake shoreowners are to be commended for their exceptional vision, generosity and commitment to control Eurasian watermilfoil. Right now, the milfoil management story is a success story; but, to keep it that way, prevention and control efforts must be sustained. We know all too well that if you give invasive species an inch, they will take a mile. Invasive species are one of the toughest environmental challenges of our time; it is also an economic challenge. The investments made to keep milfoil and other aquatic invasive species at bay in Upper Saranac Lake will continue to pay dividends, but only if those investments continue. It will take both public and private partnerships to get the job done.

Dan Kelting

Executive Director, Adirondack Watershed Institute, Paul Smiths College

The Paul Smith's College Adirondack Watershed Institute (PSCAWI) started working with the Upper Saranac Lake community on Eurasian water milfoil (milfoil) control using diver hand harvesting in 1999. Control activities were limited to specific areas in the lake. Annual plant surveys revealed that milfoil continued to expand throughout the lake as most of the littoral zone was not being controlled in those early years. Thus, the unprecedented whole-lake control effort was initiated in 2004 to reverse the spread of milfoil and to bring the population under control. This effort has been carefully monitored by PSCAWI using permanent underwater transects and the results have been published in a peer-reviewed scientific journal: the monitoring program is also unprecedented. The monitoring results support the operational data and clearly show that the original goal of the effort, reverse spread and bring under control, has been achieved (Figure 1). Our past control experience and supporting monitoring data also both clearly show that the milfoil population will readily return and expand if the control effort is reduced or stopped all together. Looking back at 1999 to 2003, when about $60,000 per year was invested in control, the milfoil population continued to expand and thus was not under control at that level of investment. At our uncontrolled monitoring sites in Fish Creek Ponds which serve as a local reference for milfoil growth without control, we have observed a 7 fold increase in milfoil density over the last 8 years with an exponential growth pattern emerging consistent with the behavior of invasive species once they are well established (Figure 2). With an exponential growth function applied to the Fish Creek Pond data, I estimate it would take 9 years (by 2023) for the milfoil population in Upper Saranac Lake to return to 2004 levels. With exponential growth that population would double by 2026, which would likely put whole-lake control out of reach financially as a management option. Clearly, a continued sustained effort in milfoil control is the right choice for Upper Saranac Lake; else the large financial investment and gains achieved over the last ten years will be for naught.

Another benefit of sustaining the control effort is the surveillance function performed by the control team, Lake Manager, and PSCAWI monitoring team. Upper Saranac Lake is fortunate to have what is likely the most sophisticated and comprehensive Aquatic Invasive Species (AIS) monitoring program in the Adirondack region. This is truly an "all-hands-on-deck" monitoring program that includes monthly measurements at fixed sites throughout the lake by AWI scientists and continuous lake-wide surveillance by shore owners and Aquatic Invasives Management (AIM) under the coordination of professional lake manager, Guy Middleton. This coordinated approach to monitoring increases the likelihood that new AIS will be detected early enough to be eradicated before they have a chance to become established. As the "eyes in the water" the control team plays a central role in this critical piece of invasive species management.
In addition to working on AIS monitoring, PSCAWI has been monitoring water quality in the Upper Saranac Lake watershed since 1989. The purposes of this program are to (1) assess the health of the lake with respect to its designated uses, (2) identify likely sources of impairments to these uses if any are identified, and (3) provide reliable information to support lake management. Like the AIS program, this water quality monitoring program is also unprecedented for our region, only Lake George has a program of longer duration. With this program we were able to identify the Fish Hatchery as the source of phosphorus pollution degrading water quality in the 1990s and have been tracking lake recovery from this pollution with changing practices at the Fish Hatchery. Water quality and AIS are linked concerns, as water quality can determine habitat suitability for different species of AIS. Thus monitoring water quality not only helps to identify trends of concern related to say, water clarity, it also provides an early warning capability for what new AIS may become established in the lake.

Thinking more broadly, the control methods and AIS and water quality monitoring systems used in Upper Saranac Lake are models for the Adirondacks. What has been learned over the years from these programs has been shared with other lake groups facing similar challenges with invasive species and water quality. Thus, the investments made by the Upper Saranac Lake community have had farther reaching benefits to the greater Adirondack region.

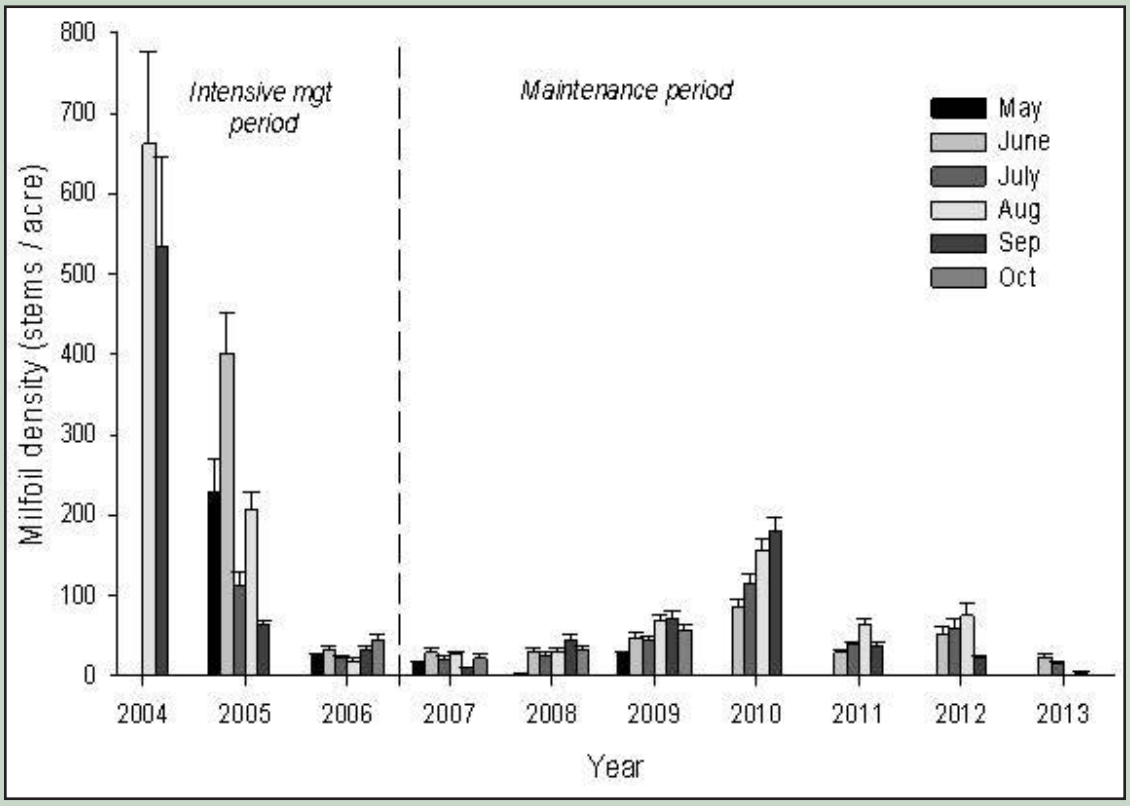


Figure 1. Average milfoil density by month and year for 15 monitoring sites located in Upper Saranac Lake, New York

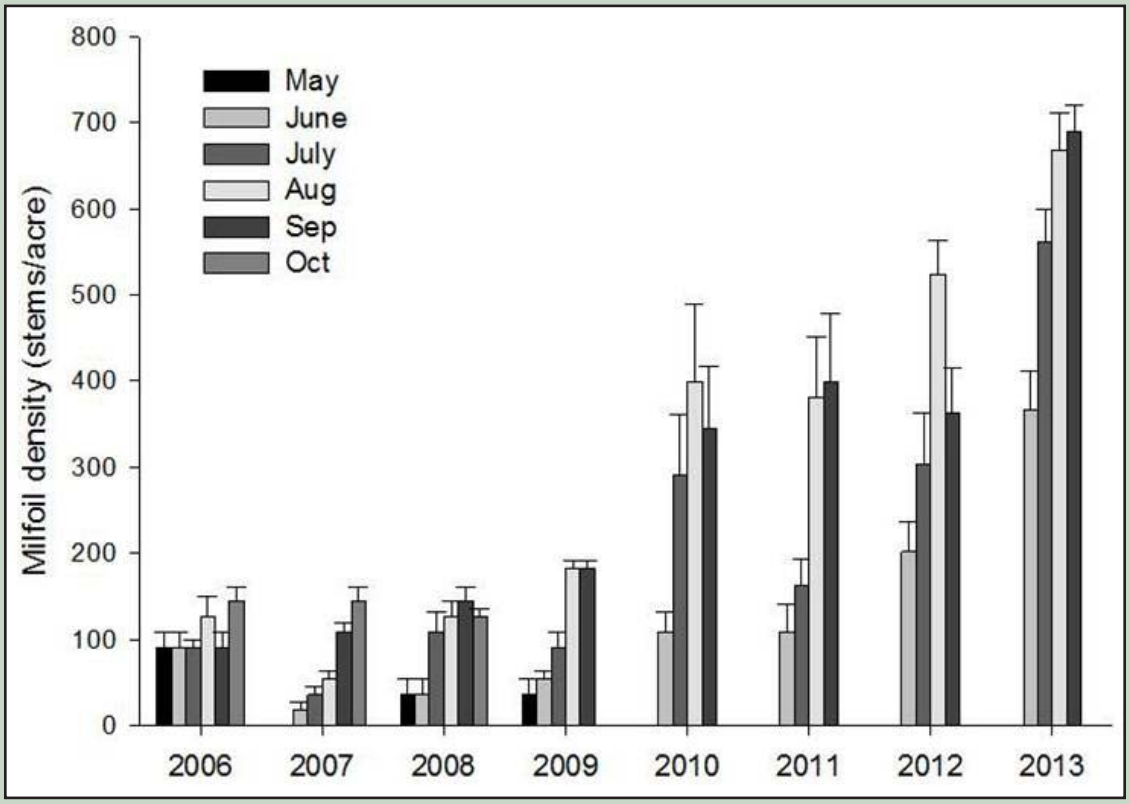


Figure 2. Milfoil density by month and year at the non-managed monitoring site located in Fish Creek Ponds, New York.

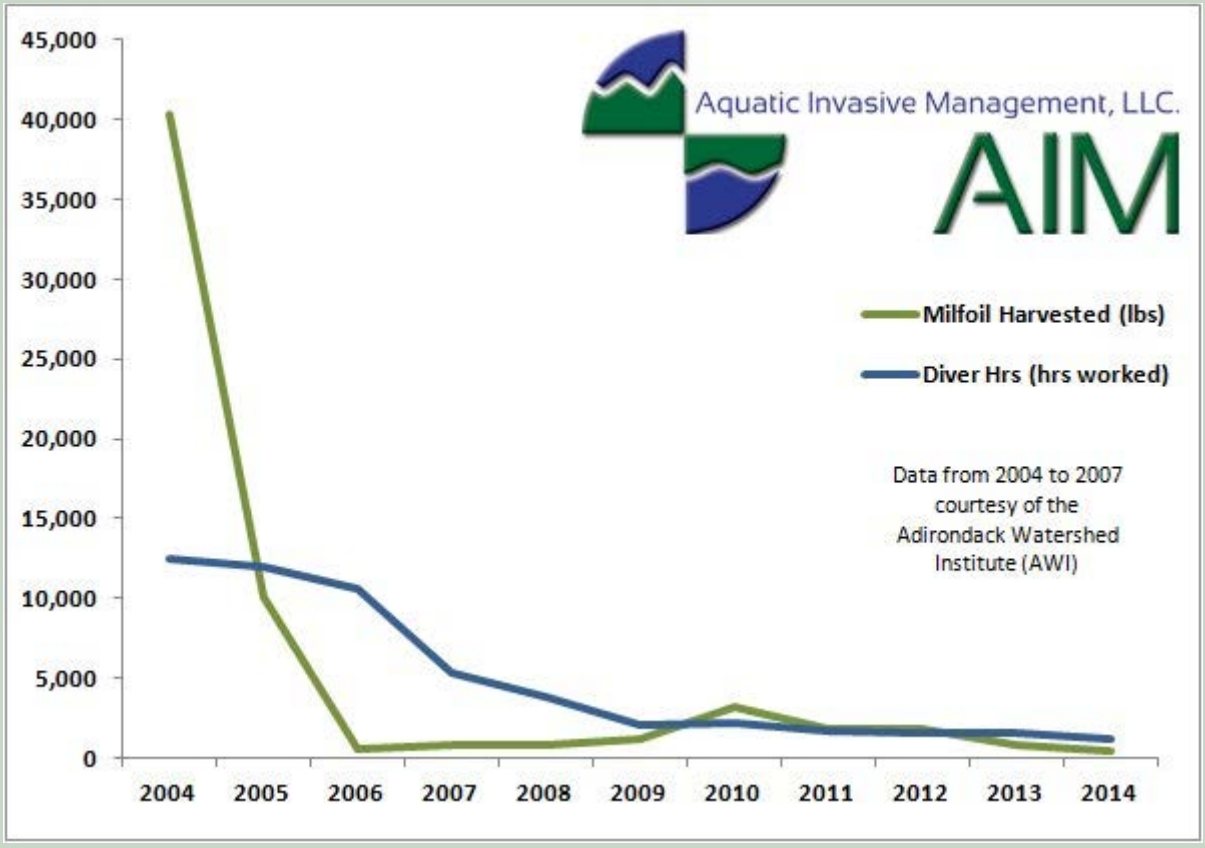
So, why don't we stop?
Why can't we slow down.
Let's look at some current examples.

The graph below shows the relationship between the number of hours the divers have worked, and the amount of Milfoil they removed from Upper Saranac Lake. The graph begins in 2004, when we had a team of 20 people. After three years of intensive harvesting, we began an annual maintenance program. Since the Foundation was the first in the Park to initiate such an extensive hand harvesting program, we needed to search for the most effective and economic plan.

We learned each year as we experimented, as can be seen in the slow growth through 2010. In 2011, the Lake Manager initiated his program of surface searching for, and buoy marking, Milfoil locations, allowing the divers to harvest rather than spending time searching.

Efficiency continued to improve. This year, Guy created his grid search of the Lake bottom. Using a depth finder and GPS, he has been able to locate many unknown, shallow areas, that are additional outside the littoral zones, where Milfoil can, and is growing.

Upper Saranac Lake



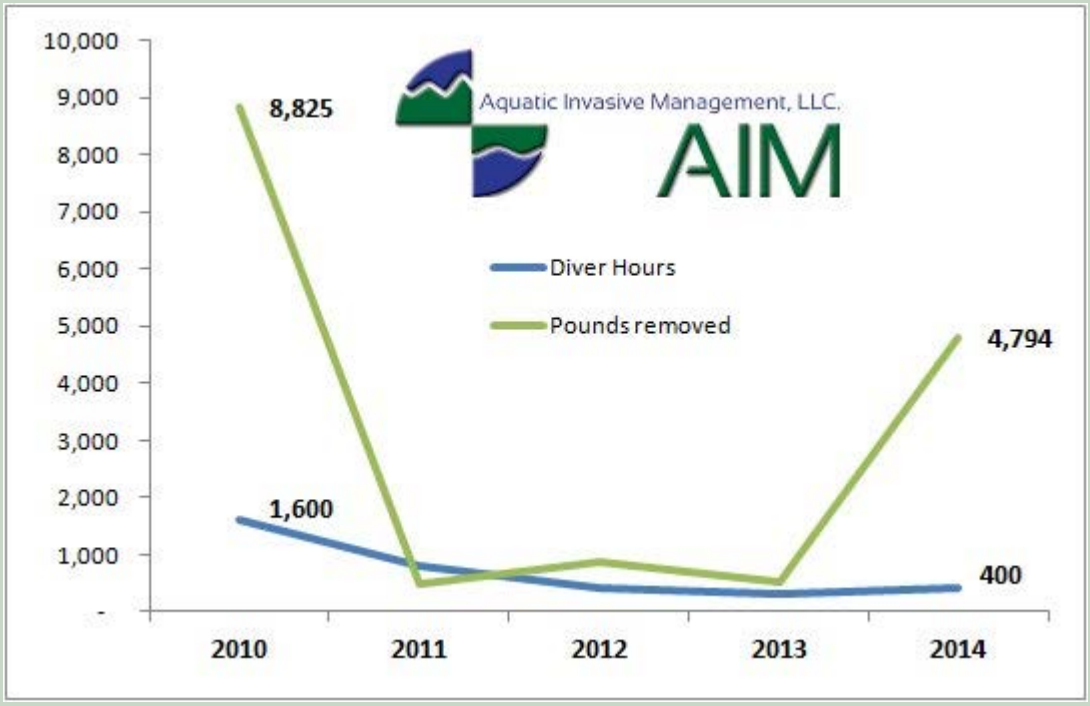
As the graph shows, we continue to have better control over regrowth, and have been able to refine and improve the entire program.

The Foundation carefully monitors and manages the harvesting program as the season progresses. We build in flexibility. There are times when we have been able to cut diver hours. There have also been times when we have had to double the size of the diver team.

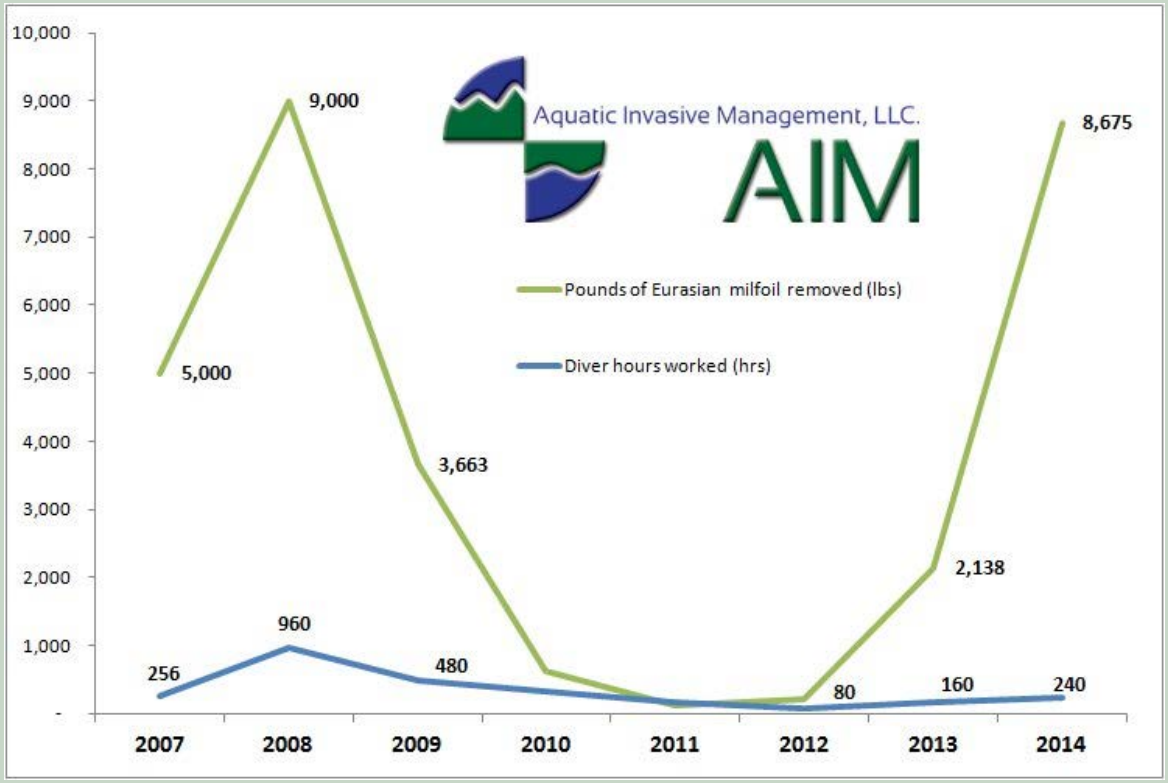
Milfoil Management on other Lakes in the Adirondacks

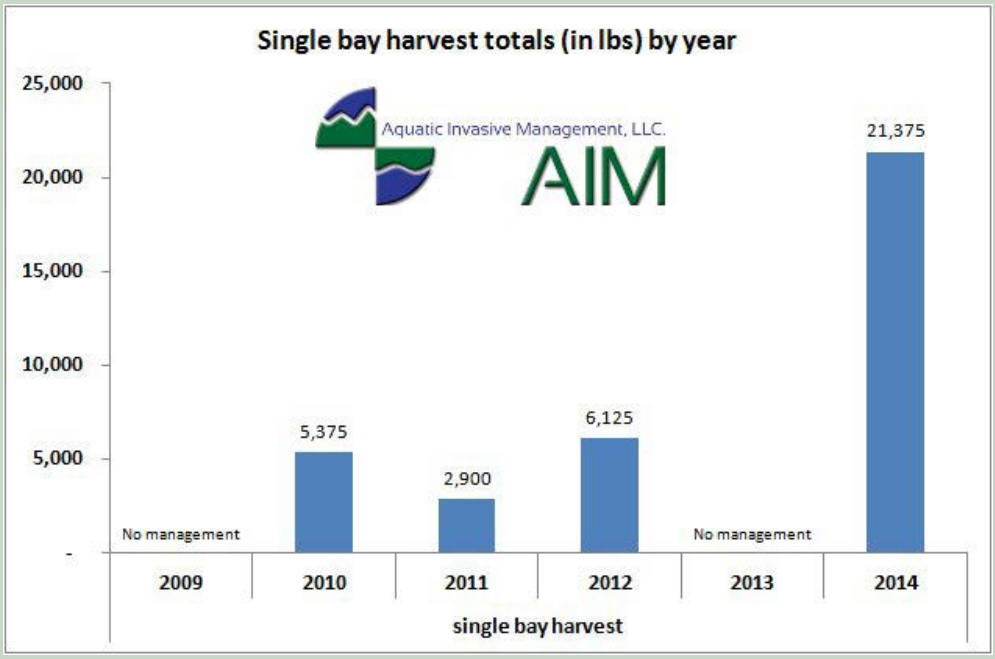
Below are graphs of diver hours and Milfoil removed for two other lakes in the Adirondacks.

In this lake, diver hours were reduced into 2013. In one year, Milfoil removal amounted to more than 50% of where it began 4 years earlier. Diver hours were 25% higher. The question is, how much would have been harvested with the same number hours as 2010? It appears that control was lost.



In this Lake, the picture is even worse. Diver hours had been reduced 92% over 4 years. Milfoil regrowth was so rampant that a tripling of hours (still 75% lower than 2008) removed almost the same amount as the maximum in 2008. The infestation was at least as bad as it had been 6 years earlier.





This lake stopped all harvesting in one bay, for one year. In that period, Milfoil infestation grew by nearly 75%

"Why We Can't Stop"

All of us want the Upper Saranac Lake to remain clear and clean.

None of us wants to go back to times on the Lake when Milfoil formed dense mats in our bays. We know that if we stopped annually harvesting Milfoil, that infestations would return to 2004 levels in a short period of time. We know that we will be blind to other unseen water quality problems, if we do not monitor. We know that we are under a constant threat of a new invasive species.

The Upper Saranac Foundation Board has no choice but to continue to find ways to fund Lake Management, Water Quality monitoring and the Research Programs that ensure our Lake will remain clean now and in the future. And, we have not mentioned that our Programs include Dam maintenance, plus monitoring Development, Shoreline protection and Septic. Simply put, we cannot stop.

The Lake Manager and Divers are our Insurance Policy. They are the ones who find the threats to our Lake's Water Quality. Our water sampling and analysis are another "early warning" protection.

We cannot stop, or even slow down, our vigilance. We need to control the invasives we already have.

We have just experienced our "next" invasive. We need to be prepared for what will surely follow.

We have a Plan for today, tomorrow and the Future - for our next generations.

Stay tuned for our Spring Newsletter .

Thank you in advance for your continued support

Photo Credits
Boys Jumping from the Swim Platform - Tom Swayne
Eurasin Water Milfoi - Guy Middleton
Variable Leaf Milfoil - Guy Middleton
Cooper, Papa & Captain - Sally Ebersbach

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