

Milfoil Case Statement-March 1, 2004

Background and History

Eurasian Water Milfoil (*Myriophyllum spicatum*) is native to Europe, Asia and Africa. It is believed that it was first brought to this country in the late 19th Century in ship ballast. It is transported from lake to lake on the bottoms of watercraft of all sizes and types. It is an invasive specie, growing in 5 to 20 feet of water, for which there is no current scientific solution or treatment. It cannot be completely eradicated. The only control that has been achieved by Upper Saranac and others, like Lake Colby and Lake George, is through the use of benthic matting and hand pulling by divers.

Upper Saranac Lake, like many other bodies of water throughout the U.S. has experienced the introduction and rapid reproduction of milfoil. Reports and mapping, commissioned by USLA, document the rapid spread of milfoil throughout the lake over the past three years. Efforts to eliminate or control Eurasian Milfoil vary in nature and expense depending upon the level of milfoil infestation. While there are claims of progress toward control and maintenance of once-clogged waters, there are no documented cases of milfoil eradication. Furthermore, in a thorough literature search, there is not an accepted expectation expressed of total removal or eradication.

There are widespread milfoil control efforts underway, across the country, in several categories; mechanical, chemical and biological. **Mechanical** is suitable only for heavily infested lakes, that would be non-navigable without cutting the vegetation. When mechanical harvesting begins, the battle to control milfoil has been lost. Essentially, the roots are left on the bottom of the lake to grow even thicker. Harvesting must take place each year, and often more than once a season. Parts of Lake Champlain and Lake George already are at this stage. Honeoye Lake near Rochester and the Rideau Canal in Ottawa are good examples of where we do not want to end up. **Chemical** treatment has been successful for invasive aquatic plants in some states. EPA and State regulations govern use and most often require licensed professional applicators. While there is clearly documented evidence of successful chemical treatment for milfoil and other invasives nationally, and even within NYS, it is highly unlikely the APA would grant a chemical permit for USL in the near term. This approach was tried and rejected by the APA last year for Lake George. Several of the major environmental advocacy groups, most notably the Adirondack Council and the Residents Committee to Protect the Adirondacks opposed the use of Sonar in Lake George.

There are other chemicals besides Sonar but all have the same regulatory restrictions and would not be acceptable in the short term. **Biological** milfoil feeders, such as Moths, Weevils and Grass Carp, have become a popular area of study recently. However, again, there are no documented long term success stories. In fact moth programs in the Adirondacks (Lincoln Pond) have failed. Fish predation is commonly identified as a reason for lack of effectiveness of moth and weevil programs. In addition, a solution based on biological introductions requires a long term view, and the consequences of potential imbalances have not yet been proven scientifically.

The experience in the northeast and central U.S. is that milfoil spreads at a rate of 5X to 10X per year without control efforts. Evidence exists, says Darrin Fresh Water Institute Research Scientist Dr. Larry Eicler, that growth rates up to a 100x and more are possible, and that growth

is often bounded finally by physical and natural barriers. (e.g. 100 square feet of dense plant growth could expand in one year to an area between 500 and 1000 square feet or more!)

Milfoil reproduces in three ways: root expansion, seed dispersal and fragmentation. Milfoil produces large quantities of seeds which are released about mid-August. Water currents and wind carry the seeds to new areas for seeding. Fragmentation is the most prolific reproduction method. In late summer and fall, the plants become brittle and naturally break apart. This is exacerbated by boats and other water use activities. These fragments, as small as 3 inches, float to other areas, sink and start new plants. Additionally, fragments have been known to move with the melting of ice in the spring. Seed dispersal and fragmentation make it impractical to consider controlling milfoil in only a portion of a body of water.

The USLA ([Upper Saranac Lake Association](#)), funded by the USLF ([Upper Saranac Lake Foundation](#)), has attempted to control the spread of milfoil through diver hand-harvesting for the past five years. However, because of limited funding and an early belief that wholesale harvesting was unnecessary, only four divers were used. During this period milfoil has continued to spread throughout the lake. In the 2003 harvesting season, an attempt was made to control only the privately owned portions of the lake, due to financial constraints. Consequently, milfoil was left unchecked along State owned shoreline, where it has continued to flourish. The only true measure of year over year growth will be observation and detailed, annual mapping.

The USL history necessitates rethinking the approach, and funding a comprehensive milfoil control program for Upper Saranac Lake. Observation of the approach taken by [Lake Colby](#), [Lake Dunmore](#) (VT) and [Lake George](#) provide practical, scalable models under similar environmental circumstances that can be successfully applied to Upper Saranac Lake.

In summary, although initial results were encouraging, it is now clear that our historic effort was insufficient. Without a major change in strategy and aggressiveness, we will lose the war.

What happens if we continue as usual?

Our current approach costs approximately \$60-75,000 per year, and only addresses milfoil infestations bordering private shoreline. This leaves the remaining 50% of the lake unprotected and unharvested. Milfoil infestation in these areas varies greatly from sparse and no growth, to heavy, dense infestation. Given the growth factors discussed above we would continue to lose ground. The current, limited number of divers would fall behind, even in the private shoreline areas. Harvested areas would be reinfested by continuous fragmentation, seeding and root crown expansion. Compare maps 1 & 2, which represent a single year of growth, from [2002](#) to [2003](#). [Map 3](#) illustrates potential Milfoil infestation if nothing is done.

Case for Solution

USL residents have a unique opportunity to take charge of their own destiny, protect their personal investments, improve water quality and reverse the negative impact of Eurasian Milfoil by seizing the opportunity at hand. This opportunity is to fund and implement a comprehensive three to four year plan that will reduce Milfoil to a yearly maintenance activity. Federal, state, and local governments are not willing, capable nor possess the resources necessary to attack this problem any time soon. Waiting for nature to self-correct, or additional, more sophisticated technology or technique, is neither practical nor immediately promising. We need to act now,

before it is too late! We must take a leadership role to affect the destiny of our Lake and provide a model program for others to follow.

Benthic Matting and Hand Harvesting are tried and true methods that require resources, skill and management expertise. Doing nothing or continuing our recent years' program are not viable options. An all out effort starting now is the only acceptable answer!

Solution Implementation

A plan has been developed, by the [Upper Saranac Lake Foundation](#) with input and assistance from [USLA](#), [Darrin Freshwater Institute](#) (RPI), [Adirondack Watershed Institute](#) at Paul Smith's College, Michael Martin, CLM, Lake Manager for Upper Saranac Lake and President of [Cedar Eden Environmental](#), The [Adirondack Park Agency](#), [NYS Department of Environmental Conservation](#) and others, that comprehends what it would take financially and physically to attack Milfoil infestation for all of Upper Saranac Lake. This plan can be implemented and managed over a three year time horizon, returning in the fourth and subsequent years to a maintenance level effort.

The plan consists of a multiphase approach to combat milfoil, with the intent of a mass matting and removal by divers, leading to a low infestation level, which is affordable to maintain on an ongoing basis in the fourth and subsequent years. The plan will harvest all 44.3 miles of shoreline, both lake and islands, regardless of ownership. In developing the detailed plan, we have:

1. Benchmarked successful removal programs from other Adirondack Lakes
2. Established scientific justification for all elements of the plan
3. Developed a working partnership with the [Watershed Institute](#) at Paul Smith's College and the [Darrin Fresh Water Institute](#)
4. Used the lead diver of the past three years – Tim LaDue, and [Cedar Eden Environmental](#) as consultants

Overall management and implementation will be under the direction of the Upper Saranac Lake Foundation Milfoil Committee, consisting of Curt Stiles, Chairman, Charlie Ritchie, Tom Chipperfield, Jim Crane and Peter Woll, with single person management accountability for day to day activity residing with the Dive Team Crew Chief.

Daily and monthly performance data will be maintained, analyzed and distributed by the Crew Chief:

1. Milfoil removal progress against plan
2. [Plant density](#) and coverage measures will be recorded
3. Progress against dive day plan
4. Track actual cost against budget weekly

Progress reports will be given at the July and August USLA Meetings and a new USLF website.

Detailed Plan

Upper Saranac Lake has 44.3 miles of shoreline. Currently, four divers are only able to hand harvest a small portion, less than 30%, of this total area. To successfully control the milfoil

problem in USL, the entire shoreline, including islands, must be harvested. The following discussion shows how the entire lake can be hand harvested in one year.

Crews and Equipment

A total of 20 divers and 6 top water people will be used. There will be 4 crews of 4 divers using Hookah Rigs (pumped air) to lay benthic mats and to hand harvest the areas with dense milfoil stands. Two additional crews, consisting of 2 divers each, will be used to swim the rest of the shoreline. These divers will be working with the aid of compressed air. One top water person per boat will also be needed.

4 Diving Platforms

2 Runabouts with Divers + Crew Chief Boat

4 Divers 1 Topside	4 Divers 1 Topside	4 Divers 1 Topside	4 Divers 1 Topside
Dive Platform Hookah Rig Kayak Aluminum Boat	Dive Platform Hookah Rig Kayak Aluminum Boat	Dive Platform Hookah Rig Kayak Aluminum Boat	Dive Platform Hookah Rig Kayak Aluminum Boat

2 Divers 1 Topside Steward's Boat Kayak Aluminum Boat	2 Divers 1 Topside Steward's Boat Kayak Aluminum Boat	Crew Chief Uses USLA Patrol Boat	Weed Removal Boat Jon Boat
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Dive time table

Phase I

Diving will start on May 19. A total of 6 divers are needed for this first stage. 2 crews of 3 divers and a minimum of 2 top water people. These crews will utilize compressed air. Their mission is to lay the benthic barriers over the largest, densest stands of milfoil. There are approximately 50 mats, sized 14' by 100' owned by USLF. Each crew can lay 5 mats per day for a total of 5 days.

Mat placement is prioritized as follows:

- 15 mats placed in Bottle Bay
- 20 mats placed in the back of Square Bay
- 20 mats will be placed in Saginaw Bay

Depending on the actual number of mats, plans will be adjusted accordingly. The positioning of the mats will be determined the day before by a single experienced milfoil diver. This diver will

deploy buoys outlining the area to be covered. The following day two crews, preferably in different bays, will lay the mats in the sectioned off areas.

Water temps during late May and early June will be very cold. The boats and divers will need additional equipment during this period. Each boat will need equipment to provide the divers with warm water to pour into their suits before each dive, or we will fund additional dry suits for the smaller group of divers.

Phase II

The next phase of diving will start May 31. All dive crews will be deployed, and work until August 15th. All the divers will now be used for hand harvesting.

Mass removal of dense Milfoil stands will utilize 4 crews each consisting of 4 Hookah Rig Divers (HRD), and will work in 4 different areas concurrently. Benthic mats will be repositioned as necessary and appropriate. Two crews will swim the entire shoreline with dive tanks focusing on the sparsely populated areas and searching for new growth. Since all divers must be 'dive certified', rotation of crews will insure productivity and variety in the daily dive activity.

The overall target is to complete the project in 55 hand-harvesting dive days. However, taking into account weather, diver attrition, unmapped milfoil stands and equipment delays, this plan is still both reasonable and flexible enough to meet all objectives.

Solution Costs

Total Human Resources

1 Crew Chief – Tim LaDue
6 Dive Crew Leaders
14 Divers
7 Topside people

Total Direct Labor Cost per hour at max, \$700. Tim LaDue our former lead diver has accepted the position of Crew Chief.

Current Resources: Resource Requirements:

1 Dive Platform	4 Dive Platforms
1 Runabout	2 Runabouts
2 Aluminum Boats	7 Aluminum Boats
2 Kayaks	4 Kayaks
	1 Crew Chief Boat

Additional Dive related Equipment will be required such as: Hookah Rigs, radios, GPS devices, additional milfoil bags, parts, rebuild kits, air tanks etc.

Removal Resources to dispose of Harvested Milfoil: At a minimum, one additional aluminum boat and a tandem axle dump trailer will be required. We are estimating the use of volunteers to assist in transportation. A free dump site has been established; several lake access points need to be negotiated.

Process would work as follows: divers bring bags of milfoil to the surface, topside person hands them a new bag and puts the full bag in the aluminum boat. An additional boat tows an empty aluminum boat and replaces full boats on a rotational basis, emptying the full boats into the waiting dump trailer. Bags are then recycled, and the trailer taken to the dump site once per day. If volunteers can not be used here, an additional topsider person should be added to the equation.

Summary Costs:	Year One	Year Two	Year Three
Dive Time with Crew Chief	\$ 416,024	\$ 376,688	\$ 322,875
PSC Management Overhead	43,828	43,828	43,828
Purchase of Used Equipment	60,000		
Dive related Equipment	57,380	17,500	17,500
Contingency	50,000	30,000	20,000
Total Cost	\$ 627,232	\$ 468,016	\$ 404,203

Time Line

December 15, 2003	Develop preliminary management plan and project scope
December 17, 2003	Review with Foundation Board of Directors
	Develop financial feasibility plan
December/January	Engage USLA for additional input
	Determine preliminary support from board plus leadership gifts
	Give go ahead to PSC to begin sourcing dive teams and begin detailed planning
January/February/March 2004	Continue probing for financial support
January 2004	Put finishing touches on Plan and begin communication process
	Secure Adirondack Park Agency and Department of Environmental
January, 2004	Communications Permits
February, 2004	Begin sourcing equipment
February - April 2004	Communicate plan and move fundraising forward aggressively
May, 2004	Pre-dive resource alignment

May 19, 2004	Limited diving begins
May 31, 2003	Full crews begin diving
August 15, 2004	Diving ends