2017 Fish Creek Aquatic Invasive Species Management Project Report

Upper Saranac Foundation
It still is, and always will be, about Water Quality

AIM Divers on Upper Fish Creek Pond -2017

Contact Information:
Guy Middleton
Upper Saranc Foundation
P.O. Box 564
Saranac Lake, NY 12983
lakemanager@usfoundation.net

Acknowledgements

This project is made possible through funding from the Upper Saranac Foundation with the assistance of the Upper Saranc Lake Association and through a grant from the NYSDEC Adirondack Aquatic Invasive Species Spread Prevention Program. The narrative and results presented in this report were produced by Guy Middleton, Upper Saranac Foundation Lake Manager and Paul Smith's College Adirondack Watershed Institute. Maps and underwater harvesting was completed by Aquatic Invasive Management, LLC.

Table 1: Abbreviations List.

Abbreviation	Complete Text
AIM	Aquatic Invasive Management
AIS	Aquatic Invasive Species
APIPP	Adirondack Park Invasive Plant Program
AWI	Paul Smith's College Adirondack Watershed Institute
EWM	Eurasian watermilfoil
FCAISMP	Fish Creek Aquatic Invasive Species Management Project
VLM	Variable-leaf watermilfoil
NYSDEC	New York State Department of Environmental Conservation
Steward	Adirondack Watershed Institute Steward
USLA	Upper Saranac Lake Association
USF	Upper Saranac Foundation

Executive Summary

Aquatic invasive species (AIS) pose a significant threat to the Adirondack environment and economy. For more than a decade, the Upper Saranac Foundation (USF) has worked to address invasive species on Upper Saranac Lake (USL) through coordination, prevention, education, detection, and management initiatives. The USF has had unprecedented success in managing AIS and could arguably be considered the leader in AIS management techniques.

The Fish Creek Aquatic Invasive Species Management Project (FCAISMP) is part of a larger watershed protection program, recently developed by the USF, that uses a combination of AIS prevention, monitoring, control activities and education to inhibit AIS spread. The USF is committed to the long-term success of maintaining the water quality of the Watershed.

The intent of this program is to combat invasive species to improve water quality and maintain native species in their natural habitats, ensuring the sustainability of our natural public resources for future generations. The program protects economic value through recreation, tourism, sportsmanship and second home ownership by providing clear waterways. Removal and control of AIS in the USL watershed at Fish Creek protects downstream waters from infestation and help prevent the export of AIS to non-infested waters. This report can be summarized in the following key points:

1. Two AIS found and targeted for removal in the waterbodies of the NYSDEC Fish Creek Campground is Eurasian watermilfoil (Myriophyllum spicatum) and Variable-leaf milfoil (Myriophyllum heterophyllum). New York State ranks Eurasian watermilfoil and Variable-leaf milfoil as the top AIS in the State based on their ecological impacts, biological characteristics, and distribution.

2. The USF activities for AIS control and eradication is monitored by the Adirondack Watershed Institute (AWI) at Paul Smith's College. Through hand harvesting management methods, Eurasian Watermilfoil density levels have been on the decline on USL while unmanaged Fish Creek Campground has have risen.

3. Two separate surveys inventorying native and invasive plants provided the data for a report that outlined the extent of the invasive infestation, and a cost estimate for harvesting. The report estimated it would take 18 weeks of hand harvesting by divers, over a three-year period, to bring the campground to a sustainable and maintainable level similar to the success the USF had on Upper Saranac Lake.

4. The USF developed a plan to manage AIS in Fish Creek Campground and seek funding to cover the estimated cost. The goal was to restore the 108 acres of littoral campground waterfront, in addition to preventing AIS from infesting downstream and regional waters, and to prevent new AIS from establishing in the waters in the project area.

5. The USF initiated a four-week pilot program to determine practicality and feasibility of the FCAISMP. The intent was to demonstrate the degree of the infestation and the viability of management to support prospective funding. The total four-week operation yielded just under 9.5 tons (18937.5 lbs.) from 6.13 acres of littoral zone. The Pilot Program substantiated prior surveys, estimating a total cost of $159,000 for the first three years of the intensive management period.

6. To implement the FCAISMP, a fundraising campaign initiated by the USF raised over $60,000 in donations and additional funding was awarded to the USF in the amount of $100,000 from the NYSDEC Invasive Species Rapid Response and Control Grant.

7. The USF contracted AWI to provide independent monitoring, evaluation and reporting of AIS control efforts in Fish Creek Campground through the establishment of 33 underwater monitoring sites. The transect sites will be surveyed by AWI divers one time per year each August. The first data collection was performed in August 2017.

8. Under the direction of the USF's Lake Manager, in the fall of 2017divers from AIM began the first formal year of hand harvesting for the FCAISMP. Divers hand harvested both VLM and EWM. A total of 15,050lbs or 7.5 tons of AIS were removed from an area of approximately 60 acres in Upper Fish Creek Pond.

9. With still two years remaining in the initial Project, a total of 17 tons of Milfoil has been removed in 12 weeks of work. The entire 60-acre littoral zone of Upper Fish Creek has been harvested with an estimated average efficiency rate of 80%.

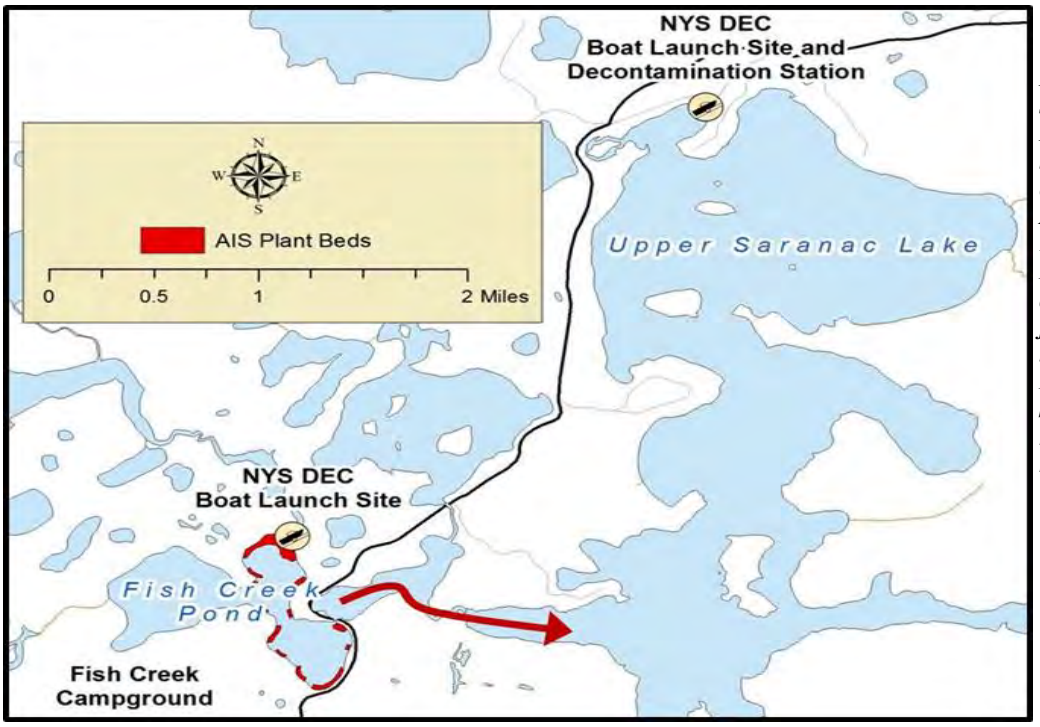
10. There is already an indication that management efforts are effective; through camper's comments relative to the reduction of nuisance aquatic vegetation, and with the reduction of material found and removed in 2017 by divers.

Introduction:

The Upper Saranac Foundation's mission is to preserve, enhance and protect the natural beauties, environmental quality and recreational enjoyment of the USL watershed. This goal is consistent with tasks delineated in the proposed Fish Creek Aquatic Invasive Species Management Project (FCAISMP). The FCAISMP will address the threat of AIS and protects citizens' investment in public owned lands by expanding USF's successful AIS hand harvesting program for the Saranac watershed into the NYSDEC campground at Fish Creek.

Project Location

The NYSDEC Campground at Fish Creek is a significant source for spreading AIS throughout the region. The Campground, with 355 campsites is the most used public campground in the State, averaging 120,000 annual visitors. The water bodies, Fish Creek and Square Ponds are located in the headwaters region of the Saranac River watershed in the Adirondack Park of northern New York. The Saranac River is one of six major drainage basins in this region and is located within the greater Lake Champlain basin. With all campsites having direct water access, campers enjoy the opportunity for water based recreation. Return visitation is predicated on weed-free thoroughfares. Fish Creek Pond Campground offers a natural pristine, sandy shoreline accessible to both motorized and non-motorized boats. From Square Pond and Fish Creek Pond, recreational users have direct access to miles of open water on Upper Saranac Lake. A trailered boat launch with a parking area is located within the Campground. Non-motorized boating opportunities are also accessible directly from the Campground.

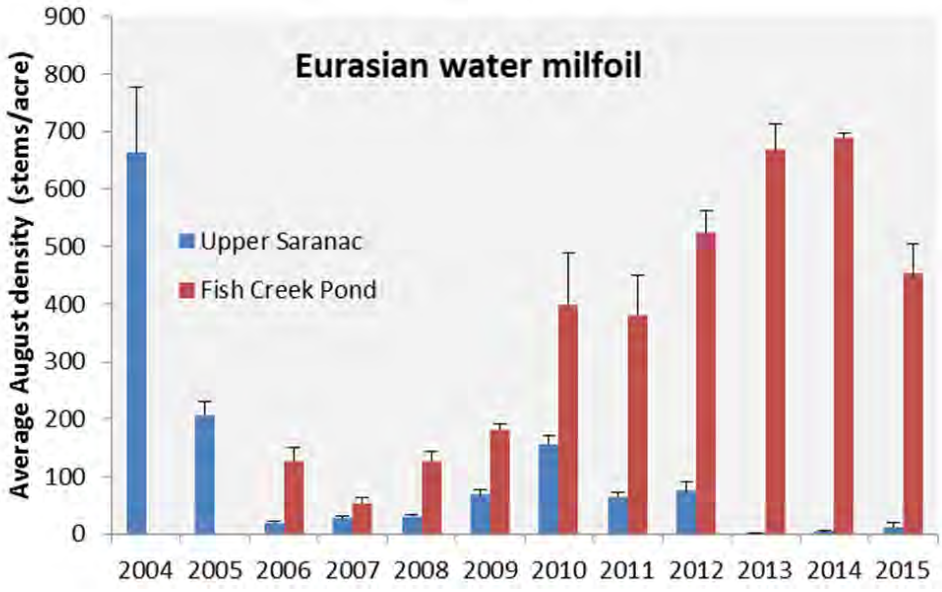


Map of project area showing location of NYS DEC boat launch sites, campground, and AIS plant beds in Fish Creek Pond. Red arrow shows direction of water flow. Channel between Fish Creek Pond and Upper Saranac Lake is navigable with large motorboats.

The USF has been working cooperatively on AIS management projects in the watershed since 2004 and has established a clear track record of sustaining this type of project. The USF has reduced a one-time prevailing AIS problem to infrequent occurrences on USL. With over 47 miles of shoreline and 1,200 acres of littoral zone, the USF in 2004 removed 18 tons of milfoil at a cost of $450/littoral acre on USL. This is a dramatic contrast from 2015, when only 307 pounds were found, and the cost was reduced to $91/littoral acre.

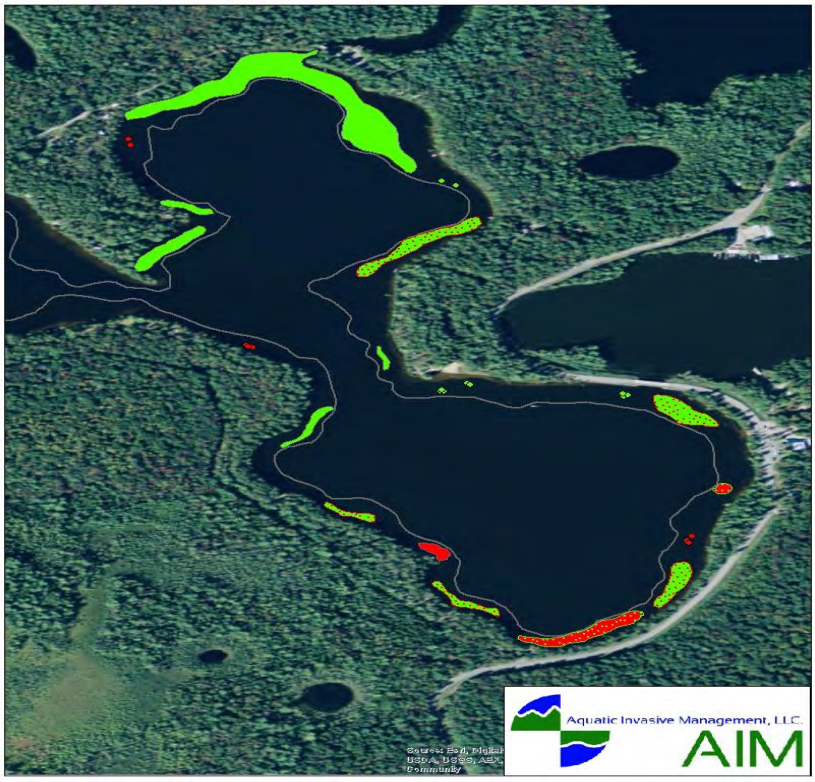
A plant monitoring program overseen by the Adirondack Watershed Institute was initiated in 2004. This program was implemented to provide data on the efficacy of the Eurasian water milfoil management strategy being employed on Upper Saranac Lake. AWI established 588 underwater monitoring segments sites across USL in 2004, and 36 in Fish Creek Pond in 2006 to measure milfoil densities. At each site a transect line method was used to analyze current and historical native and invasive species plant growth. The unmanaged Fish Creek locations acted as a comparison to USL that is being managed for AIS's.

Since 2006 Eurasian watermilfoil in the Fish Creek has had a significant increase in density in contrast to adjacent USL where hand harvesting AIS management methods were being deployed. In 2015 the average milfoil density across all locations on Upper Saranac Lake was 10.2 stems/acre, substantially lower than the 600 stems per acre that existed in 2004, the first year of the intensive USL management effort. In 2016 just prior to the initiation of management efforts in Fish Creek Camp Ground, the average Eurasian water-milfoil density was 517 stems/ acre. Variable-leaf milfoil was first detected at the Fish Creek Pond transect locations in 2009, and since that time has exhibited a significant increase in its frequency of occurrence by approximately 4% per year (Laxson, 2016).



Density of EWM Comparison Between USL and Fish Creek USL Milfoil Monitoring Program: Project Update, Year 2015 Report, 4-15-2016, Corey L. Laxson and Daniel L. Kelting, Paul Smith's College Adirondack Watershed Institute:

In 2015, two surveys inventorying native and invasive plants were completed within the Campground, one by APIPP's Adirondack Aquatic Regional Response Team. The other by AIM and the USF's Lake Manager. These surveys provided the data for a report that outlined the extent of the invasive infestation, and a cost estimate for harvesting. The reports determined there were a total of 108 littoral acres within the campground. Of this, 24 acres had substantial AIS growth, EWM and VLM of varying densities (7 acres in Square Pond and 17 acres in Upper Fish Creek Pond). The report also estimated it would take 18 weeks of hand harvesting by divers, over a three-year period, to bring the campground to a sustainable and maintainable level similar to the success the USF had on Upper Saranac Lake (Middleton, Lewis, 2015).



Littoral zone and the surveyed invasive plant growth areas in Upper Fish Creek Pond. Green areas indicate VLM and red indicate EWM. Several areas are a mixture of both plant types and are therefore both green and red with the predominant color indicating which plant is more frequent.

Aquatic Invasive Management, LLC: Fish Creek Pond West and Square Pond Survey: Andrew Lewis and Guy Middleton

Consequently, the USF developed a plan for managing AIS in Fish Creek Campground. The intent was to mimic the Foundation's accomplishments on USL and seek funding to cover the estimated cost for 18 weeks of divers to hand harvest for an initial three-year intensive start-up. The USF, who is committed to the long-term sustainability of this project, would support AIS management efforts beyond the initial startup period, ensuring prolonged results. Continued maintenance efforts would be funded through the USFs annual budget.

The long-term outcome for the FCAISMP is to restore the 108 acres of littoral campground waterfront, in addition to preventing AIS from infesting downstream and regional waters, and to prevent new AIS from establishing in the waters in the project area. These outcomes will be achieved through project activities such as removal of AIS, inspection and decontamination of boats, and public education leading to reduced spread of new AIS from boats. Acres harvested and pounds of AIS material removed will be tracked. Success in the project period will be defined by year-to-year decline in total acres and amount of plant material removed. Longer-term success will be defined as sustained low density and low harvest removals during the maintenance period. An annual report will be produced reporting plant density.

Pilot Program:

In early 2016, in preparation for implementation of the FCAISMP, permits were obtained from the NYSDEC and the Adirondack Park Agency to preform underwater hand harvesting of AIS. Later that fall, working in collaboration with AIM and the AWI, the USF initiated a four-week pilot program to determine practicality and feasibility of the FCAISMP. The intent was to demonstrate the degree of the infestation and the viability of management to support prospective funding. Funding for this Pilot Program was provided through the USF, USLA, APIPP and a Crowdfunding campaign sponsored by the Adirondack Foundation.

Prioritization of management areas for the Pilot Program focused on dense infestations and high traffic areas to reduce the likelihood that boaters would fragment and transport invasive material to non-invaded sections of the lake or surrounding waters. The management operation occurred mid-week, Monday – Thursday, with the majority after the busy summer season, post Labor Day. The total four-week operation yielded just under 9.5 tons (18937.5 lbs.) from 6.13 acres of littoral zone.

To quantify the feasibility of the FCAISMP, data from the 2016 Pilot Program and the 2015 Fish Creek Pond West and Square Pond Survey were compared in relation to the overall estimated cost of harvesting, relative to time and acreage. The results were within a small margin of error. The expected cost for diver harvesting expenses for the Fish Creek Campground project (Square Pond and Upper Fish Creek Pond) was estimated to be $132,000 for 18 weeks of operation. Additional expenses including a thorough plant inventory and monitoring program, administration, equipment and operating expenses, bring a total anticipated cost for the initial three years to be $159,000.

Knowing the potential outcome with unmanaged AIS, its economic and environmental impact and the potential to spread, as well as understanding the scope of the project, the USF is confident that harvesting AIS from Fish Creek Campground is not only practical but a necessary investment. Furthermore, the USF is confident that once the initial three year harvesting project is complete upkeep will be sustainable through the USF's yearly maintenance program.

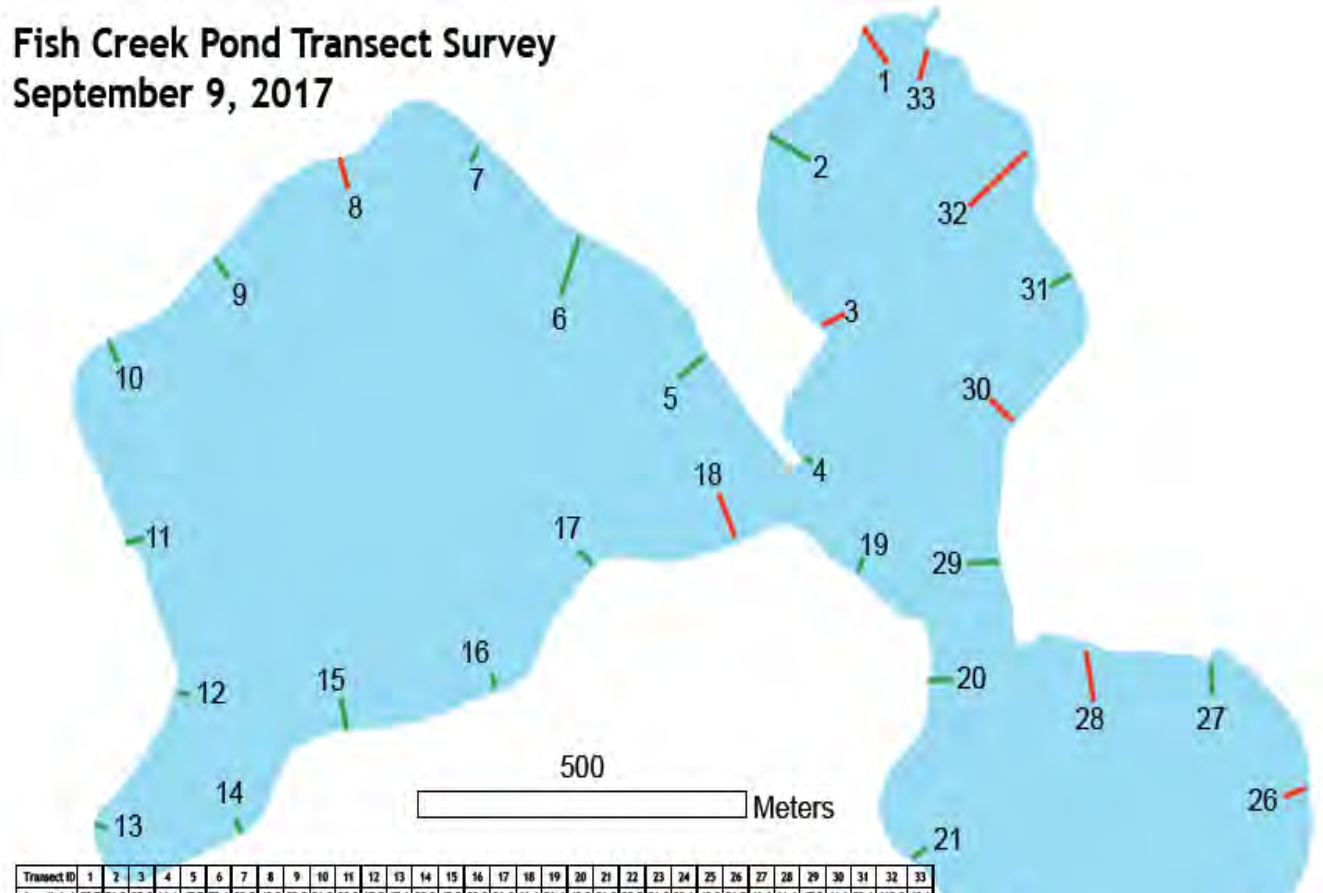
Implementation:

As a requirement to match grant funds, a fundraising campaign was initiated by the USF. Through support of the USLA and the Upper Saranac Lake Community, the USF raised over $60,000 in donations. Subsequently, funding was awarded to the USF in the amount of $100,000 from the NYSDEC Invasive Species Rapid Response and Control Grants. This grant was made possible through donations that required the Foundation to match 50% of the award.

As part of APIPP's commitment to preventing the spread of AIS, the Adirondack Aquatic Invasive Response Team was deployed for the second year to an area near the Fish Creek Boat Launch. The Fish Creek Campground launch is a known vector for transporting AIS from boats being launched and retrieved. In 2017 stewards intercepted 60 boats/trailers with known AIS being retrieved at this site. The intent of the Response Team is to reduce the densities of AIS in and around the launch, thus reduce the number of AIS being transported to other waterbodies. The team spent one day in July using snorkeling methods to hand harvest both VLM and EWM. Twenty bags of invasive milfoil were removed.

In the fall of 2017 the USF contracted AWI to provide independent monitoring, evaluation and reporting of AIS control efforts in Fish Creek Campground. In doing so the AWI established 33 underwater monitoring sites delineated by Global Positioning Systems. At each of the 33 sites a combination of the line intercept method and fixed plot method are used to monitor the presence and abundance of aquatic plants, native and invasive. Both of these methods have been used for over 100 years in forest ecosystem studies, and have since been adopted as standard methods in aquatic ecosystem studies. The transect sites will be surveyed by AWI divers one time per year each August. This method of monitoring will continue each of the first three years of the intensive portion, and into the maintenance period of the program. The first data collection was performed in August 2017. Data collected measured the abundance of aquatic vegetation and is used to assess and measure the effectiveness of control and eradication efforts for AIS, as well as monitoring restoration of native aquatic habitat.

Shortly after the AWI Transect survey in the Fall of 2017, divers from AIM began the first formal year of the FCAISMP hand harvesting portion of the project. Under the direction of the USF's Lake Manager, efforts focused on revisiting known AIS sites that were harvested in 2016 Pilot Program and expand harvesting to cover the entirety 60-acre littoral zone of Upper Fish Creek Pond. Divers hand harvested both VLM and EWM. This program would mimic the success of the USL effort from a decade prior where a "front-load" method was utilized. Meaning, the majority of funding and effort are to be used in the first couple years in order to suppress large, dense milfoil beds and bring them into management phase. The results would be a reduction in expenses over time, bringing the treatment area into a more easily manageable task.



Transect ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
Length (m)	58.7	71.2	35.8	14.4	47.7	78.1	22.5	42.3	33.5	31.8	30.3	17.5	17.6	20.8	43.2	20.0	26.0	61.1	21.4	40.0	26.0	38.5	26.8	29.1	42.0	36.5	41.6	66.1	47.2	44.1	33.1	110.8	40.6
MYSP stems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	27	5	0	0	0	0	0	0	0
MYHE stems	0	0	2	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	4	0	0	20	0	3	0	0	5
MYSP cover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
MYHE cover	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
ELCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
ELNU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
ELSP	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1
ERSP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
ISSP	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
JUPE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
MYTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NASP	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	1	1	0	0	1
NISP	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	1	1	1	0	0
HUVA	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0
POAM	1	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	1	0	0	0	1	0
POEP	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0
POGR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
POPE	0	1	0	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	1	1	0	0	1	0
POPU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
PORI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
PORO	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	1	0	0	1	0
POSP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
POZO	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0	1	0
RASP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
SACR	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SPSP	1	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	1	1	0	1	1	0	0
UTIH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
UTPU	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	1	0	1
UTRE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UTVU	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
VAAM	1	1	0	0	1	1	0	1	1	1	1	1	1	1	0	1	1	0	1	1	0	0	0	1	0	1	0	1	1	0	1	1	1

Fish Creek Pond Transect Survey: Each site specifies the number of plants inventoried, red indicating AIS and green, native plants.

Methodology:

The project, similar to USL's, utilized a Hooka Dive System. Each Hooka air compressor system allowed three to four divers to hand harvest simultaneously. At times there were three Hooka compressors working simultaneous allowing for up to 7 underwater divers. The invasive plants, both EWM and VLM were removed from the sediment by hand, including the root system and then bagged. An additional team member remained on the surface to retrieve plant fragments, notify boaters that divers were down and collect filled bags. Traditional "diver down" flags were deployed as well as additional safety navigation buoys which were strategically placed. A sediment curtain was utilized to assist in preventing fragments from floating outside the management area. Harvest periods are scheduled around the busy tourist season, traditionally following Labor Day which reduce dangerous operating conditions due to high boater traffic. To reduce any user conflict issues with campers, the dive operation and use of the Hooka air compressor is focused in areas where campsites are unoccupied in the early morning hours.

Outcome:

The Adirondack Aquatic Invasive Response Team spent one day, July 27th harvested AIS from an area adjacent to the boat launch at the Fish Creek Pond Campground. Three divers invested a total of 24 hours of dive time and removed twenty bags of invasive milfoil or approximately 500 lbs. from an area of less than one acre.

Divers from AIM began their harvesting efforts September 11 and concluded October 13. A total of 960 hours of dive time was invested over a five-week period by AIM. At times there were as many 7 divers in the water with two top water personnel. The total investment for AIM divers in 2017 was $48,020. A total of 15,050lbs or 7.5 tons of EWM and VLM were removed from an approximate area of 60 acres in Upper Fish Creek Pond.

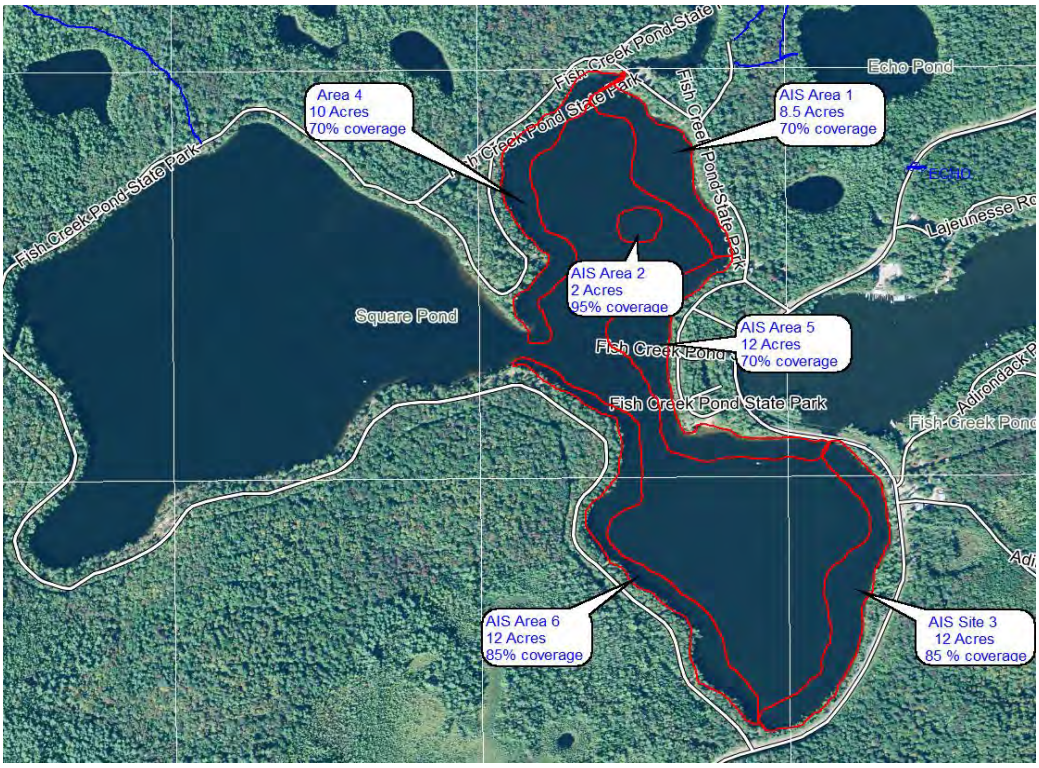
	Fish Creek Harvesting Totals 2017		
Date	Dive Hrs	Bags	Lbs @ 25 bs/bag
27-Jul	24	20	500
Sept 11-14	120	109	2725
Sept 18-21	120	67	1675
Sept 25-28	120	103	2575
Oct 2-5	240	171.5	4287.5
Oct 9-13	360	131.5	3287.5
Total	984	602	15050

AIS yield by date, dive hours and poundage removed

The project area within Upper Fish Creek Pond was divided into six zones. The percentage of coverage within each zone was estimated to project the actual amount of acreage that was harvested. This helps determine the amount completed and remaining efforts needed for complete coverage. In 2017 it is estimated that 44.25 acres of the nearly 60 acres of littoral zone has been cleared of AIS.

Site	Acreage	% Cleared	Acres Cleared
1	8.5	70%	5.95
2	2	95%	1.9
3	12	85%	10.2
4	10	70%	7
5	12	75%	9
6	12	85%	10.2
Total	56.5	80%	44.25

AIS yield by acres per zone location and percentage of area cleared



Upper Fish Creek Pond Harvest Zone Locations, acreages and percentage of coverage

Dots on the map indicate points crews extensively harvested. Green dots = VLM and red dots = EWM. Map provided by AIM.

Conclusion:

The FCAISMP uses a combination of AIS prevention, monitoring, and control activities to inhibit further AIS from establishing and spreading in the Watershed. This conclusion summarizes the monitoring and control methods of managing AIS through hand harvesting within the Fish Creek Campground. A report detailing AIS spread prevention measures, ***2017 Upper Saranac Lake Watershed Stewardship Program Report*** can be found separately on the Upper Saranac Foundation's web page at: www.usfoundation.net

After a successful four-week (480 dive hours) Pilot Program in 2016, where 9.5 tons of Milfoil was harvested from Fish Creek Campground, in 2017 the full implementation of the FCAISMP was put into motion. An additional eight weeks of AIS harvesting (984 dive hours) was added with another 7.5 tons of Milfoil being removed from 60 acres. With still two years remaining in the initial Project, we have removed 17 tons of Milfoil to date from the Campground in 12 weeks of work.

Yearly Harvesting Totals				
Year	Dive Hours	Acres Cleared	Pounds	tons
2016	480	6.13	18937	9.47
2017	984	44.25	15050	7.53
Total	1464	50.38	33987	17

The entire 60-acre littoral zone of Upper Fish Creek has been harvested with an estimated average efficiency rate of 80%. Meaning an estimated 80% of the AIS growth in this pond has been removed.

There is already an indication that management efforts are effective. First, by comments made from campers relative to the reduction of nuisance aquatic vegetation and recreation value. Secondly, by the decrease in material removed, 9.7 tons in 2016, to 7.5 tons in 2017. Even with over twice the amount of dive hours invested in 2017 there was a reduction of 1.9 tons of material found and removed. This follows a similar trend that occurred on USL during the initial intensive harvesting period.

It is estimated there is approximately an additional seven acres of substantial AIS infestation within the 48 acres of littoral zone in Square Pond that has yet to be harvested. The intent in 2018 is to continue with the second year of the intensive harvesting effort with another seven weeks or 840 dive hours. The focus will be to continue "clean up" by harvesting the estimated remaining 20% of Upper Fish Creek Pond and control any regrowth within the 60 acres of littoral zone. The operation will then move to Square Pond with a focus on the heaviest AIS infested areas. The third and final year will have a reduced harvesting period of three to five weeks and will focus on clean up efforts of both ponds within the Campground.

Transect monitoring by AWI, in collaboration with the USF's Lake Manager surface spotting inventory, will dictate the requirements for location and harvesting need. The USF will continue to monitor the results of the Project, documenting and tracking yearly declines of invasive plant growth.

After the initial intensive harvesting project is completed, bringing the Campground to a manageable level, the USF, who is committed to the long-term sustainability of this Project, will support AIS management efforts, ensuring prolonged results. Continued maintenance efforts will be funded through the USF's annual budget. The long-term outcome for the FCAISMP will improve water quality and maintain native species in their natural habitats, ensuring the sustainability of our natural public resources for future generations.

Literature Cited:

Laxson, C.L., Yerger, E.C., Regalado, S.A., and D.L. Kelting. 2017. Upper Saranac Lake: 2016 Watershed Report #: PSCAWI 2017-06.

Middleton, G, Lewis, A, 2015 Fish Creek Pond West and Square Pond Survey