

Aquatic Invasive Species Management Report

Moody Pond
2024 Final Report

Prepared for
Friends of Moody Pond

Prepared By:

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



Upper Saranac Foundation
P.O. Box 564, Saranac Lake, NY 12983

www.usfoundation.net

Acknowledgements

The Upper Saranac Foundation thanks the Friends of Moody Pond for their commitment to preserve, protect, and rid Moody Pond of aquatic invasive species (AIS). Your effort exemplifies a grassroots collaborative effort that is successfully tackling an environmental challenge.

The Friends of Moody Pond contracted the Upper Saranac Foundation - Aquatic Invasive Divers (AID) to conduct field work that included aquatic invasive species harvesting, mapping, and data collection. This project is funded by the Friends of Moody Pond. Completion of this project would not have been possible without their role in protecting this important watershed.

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Executive Summary

- Moody Pond is a 24-acre pond located in Essex County, in the towns of Harrietstown and St. Armand. There is .9 miles of shoreline. The pond has a mean depth of 8-9 feet with a maximum depth of 17 feet. Most of the pond is privately owned with the exception of a small public access site across from the Baker Mountain trailhead (Stager, 2021). The pond has a rich historical background and is a community recreational attraction.
- Aquatic invasive species were first discovered in Moody Pond in 2018 by shore owners of the pond. Thereafter Friends of Moody Pond was organized to increase knowledge about invasive species spread prevention and to raise funds to implement a management response to the infestation (Stager, 2021).

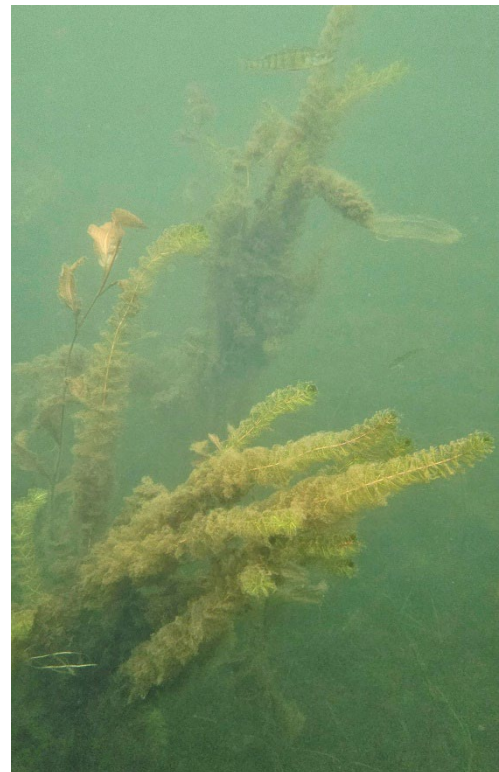
- In 2019, a preliminary survey was completed by the Adirondack Park Invasive Plant Program (APIPP) / Adirondack Research Early Detection Team. The survey estimated that Eurasian Watermilfoil (EWM) was established in approximately 3.91 acres or 15% of the pond (Appendix A). By 2020 observations made by Friends of Moody Pond members found additional concentrations of EWM growth and estimated that coverage was more extensive than the preliminary study indicated.
- A second AIS survey was completed by Adirondack Research in 2021 (Appendix B). This survey followed Invasive Solutions Dive Company's first week of harvesting. The survey indicated a significant reduction in EWM.
- A preliminary pre-management survey conducted by the USF- AID in 2022 estimating that approximately 4.45 acres or 17% of Moody Pond had moderate (20% -59% coverage) including limited pockets with density levels (> 60%), as well as sporadic plant growth throughout the pond.
- Eurasian watermilfoil was first managed in 2021 by Invasive Solutions Dive Company. The second, third and fourth year of management (2022-24) was conducted by USF - AID.
- In 2024 the Upper Saranac Foundation AID was contracted to conduct between 300 and 320 hours of AIS management. The amount of time used was determined based on invasive growth and harvesting needs. This was a reduction in time from 2023 when 360 hours was devoted to AIS management.
- The USF - AID crew found only one type of invasive; Eurasian watermilfoil. By 2024, mostly small milfoil plants were found with limited larger old growth. Areas of prominent reoccurrence of growth has remained consistent for the past two years (Figure 6).
- EWM removal was performed by hand harvesting the selected plants. A total of 308 hours in 2024 was devoted to AIS management. Management days were spread out beginning in June and concluding in September. With the modification to our management approach, we no longer spend a full week for each management session. The adaption of this flexible schedule proved to be more effective and provide a better outcome for less cost.

- In 2024 a total of 407 EWM plants were found and removed, accounting for 19.85 pounds. This is a dramatic reduction in both the number of plants and weight from previous years (Figures 2 and 4). Since harvesting began in 2021 a total of 1,106 pounds of EWM has been removed from Moody Pond.
- The Adirondack Park Invasive Plant Program (AIPP) Lake Manager Tracker provided independent monitoring and evaluation confirming the efficacy of USF-AID team control and removal efforts. Results from a 2021 survey, prior to USFs management, found that 23.7% of the 41 monitoring sites had Moderate to Dense abundancies of EWM. In both 2023 and 2024 there was no EWM found at any of the sampling sites (Appendix A).
- There is an abundance of Common Bladderwort (a milfoil lookalike, native plant) growing in shallow waters of the pond that we do not harvest. This is mentioned so there is no confusion that we are missing the retrieval of any invasive plants.

Introduction

New York State ranks Eurasian watermilfoil (*Myriophyllum spicatum*) as one of the top aquatic invasive species (AIS) in the State, based on their ecological impacts, biological characteristics, and distribution. Eurasian watermilfoil (EWM) is a submerged perennial that looks like many native aquatic plants, including native milfoil species. EWM usually has four feathery leaves whorled around the stem. Each leaf is finely divided, has greater than nine leaflets, and leaf tips are flat. The plant can reach lengths of 20 feet and branches near the surface. Tiny pink flowers may occur on an emergent spike during late summer.

EWM spreads quickly via fragmentation and can easily displace beneficial native aquatic plants. Dense beds of EWM degrade water quality for numerous species of fish and wildlife. In large mats, dissolved oxygen levels can be reduced to zero, making the area completely uninhabitable to game fish. Thick growths of EWM can



Eurasian watermilfoil - Myriophyllum spicatum

impede fishing, swimming and boating, thus, indirectly impacting tourism and the economic activity of lake towns.

EWM is found in numerous water bodies across New York State and is widespread across the Adirondack Park. Knowing the consequence of unmanaged AIS and understanding the scope of this project, the Upper Saranac Foundation is confident that harvesting AIS from Moody Pond is not only practical, but an essential investment.

The Upper Saranac Foundation (USF) history of preventing the spread of AIS has proven to be effective in restoring the Upper Saranac Lake watershed, promoting healthy ecosystems, and allowing for continued recreational enjoyment. We are confident the Friends of Moody Pond's willingness to employ the Foundation's Aquatic Invasive Diver (AID) crew will result in a similar success.

While the ultimate outcome is to eradicate EWM from Moody Pond, the immediate objective of this project is to restore the 24-acre pond and prevent the spread of AIS while maintaining native species in their natural habitats. Effective management will preserve the recreational resource and enjoyment of the pond, and protect and maintain the economic value of the community derived from tourism and home worth. Success will be defined by immediate control and an ongoing year-to-year decline in total area and amount of plant material removed.

The project data-quality objective is to collect, provide, maintain, analyze, display, and document accurate AIS locational data for the entire pond, as well as provide historical statistical amounts of AIS removed.

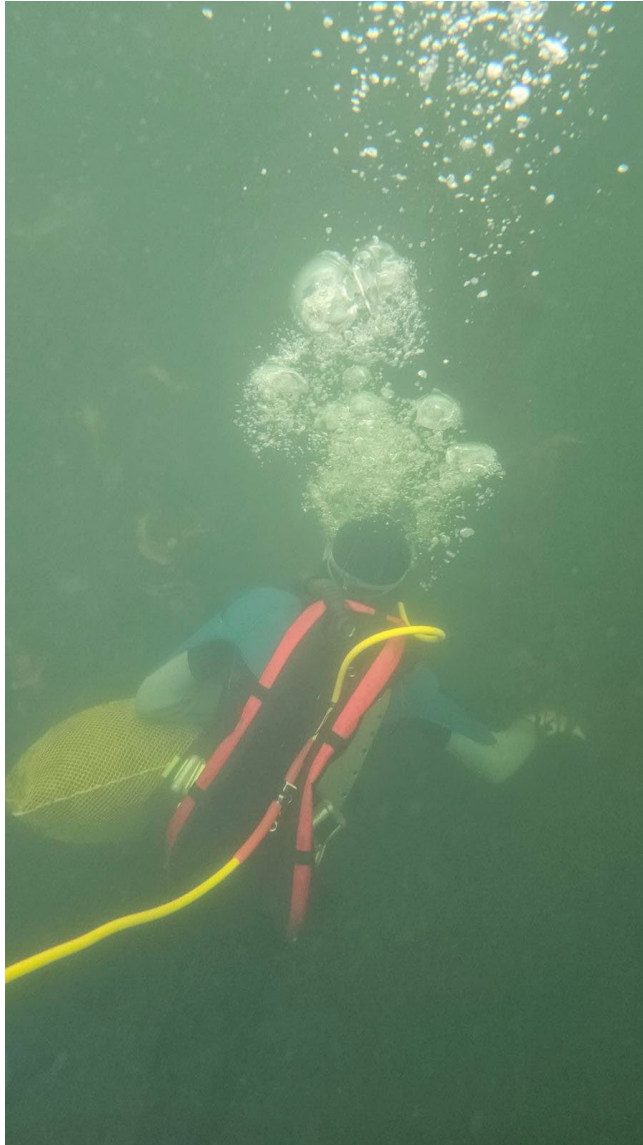
This report will establish and identify trends that will help guide future management practices for the Friends of Moody Pond. Submission of this Final Report by the Friends of Moody Pond to the Adirondack Park Agency will satisfy permit requirements as outlined in APA General Permit 2020-0249.



USF – Aquatic Invasive Divers, Spotting, marking and retrieving AIS from Moody Pond

Methodology

The successful harvesting of aquatic invasive species is ever-evolving and requires knowledge in many areas to include the waterbody's specific tendencies, especially in relation to bathymetry, substrates, seasonal changes, historical aquatic AIS data and patterns, and knowledge of Eurasian watermilfoils life cycles. Considering the many variables, the USF has developed a foundation for a management plan to lay the groundwork for the harvest season, while still allowing for minor changes in harvesting methods to ensure the best harvesting practices are always being employed.



USF – AID attached to a hookah air compressor while harvesting AIS

Data obtained from surveys and harvesting will be used to provide context and a qualitative baseline for developing a historic set of aquatic plant community records. This data assists in guiding management as well as monitoring to quantify progress and assess efficacy of our management techniques.

In addition to recording pounds of AIS harvested, the AID crew maintains data on the number of plants harvested and their locations. Harvesting amounts measured in the number of plants removed and pounds are collected and recorded daily. Plant locations are mapped using GPS to provide a detailed map of plant locations.

While harvesting, our AID crew continuously monitored the growth cycle of the AIS to ensure we are using the most effective timeline and harvesting techniques for best management practices. For each of the four harvesting months (June-September), the Upper Saranac Foundation produced a report to reflect our findings.

This not only keeps Friends of Moody Pond informed, but allows for a more responsive management approach.

Our trained, certified divers utilized a variety of techniques to locate and hand harvest AIS, including surface spotting from paddle boards and line or grid search swims. Surface spotting surveys were completed during calm and optimal viewing times to locate and mark invasive plants. During harvesting operations, divers utilize a Hookah surface air compressor Dive System for best efficiency in deep water, and mask and snorkel in shallow water.

Between two and five divers harvested AIS plants simultaneously while an additional crew member remained on the surface in a non-motorized watercraft to retrieve plant fragments, and guide the underwater divers. The top water tender utilized a hand-held GPS unit. Data is used to develop a map tracking and indicating the area the divers searched, and to mark harvested plants. In addition, the tender collected data on the number of plants removed.

Invasive plants were removed from the sediment by hand, including the root system and then bagged underwater in a mesh bag (5mm lobster mesh bag). Upon the bag becoming full, the galvanized/ stainless steel wire handles on the bag were sealed and delivered to the surface tender, swapping out for an empty mesh bag.

Plants weights are determined by the percent of filled bags. Each filled bag weighs 25 lbs. This weighing system is consistent in past practices and with most other AIS harvesting companies throughout the region. Disposal of removed invasive species material is composted and used by local gardeners.

All equipment for both surveying and harvesting, was cleaned and decontaminated prior to use in Moody Pond and at the conclusion of each work session, and prior to use in other waterbodies. Decontamination was accomplished by utilizing the Upper Saranac Foundation's hot water (140F), high pressure decontamination unit located at the Upper Saranac Lake, Back Bay Boat Launch.



Operations

For the management of Moody Pond, we prioritize site management based upon historical AIS locations and preferred habitats, The USF-AID crew worked out of the private beach residence of the Dumas family on Moody Pond. This location provided convenience to known AIS infestation locations. The divers, trained in AIS identification, found only one type of invasive; Eurasian watermilfoil.

Work Hours / AIS Removed: A total of eleven days of management accounted for 308 diver hours in 2024. This was a decrease from 2023 (360 hrs.) but more hours than both 2022 (250 hrs.) and 2021(240 hrs.). Management days were spread out beginning in June and concluding in September. The spacing of management periods allows for AIS plant regrowth to emerge, but prior to allowing plants to mature enough to fragment and start additional new growth.

Date	Hrs.	Plants removed
3-Jun	33	40
4-Jun	30	14
18-Jun	25.5	47
2-Jul	30	55
10-Jul	1	0
22-Jul	30	64
8-Aug	41	74
28/29 Aug	51.5	67
11-Sep	40	39
19-Sep	26	7
Total	308	407

Each year has found a substantial reduction in the pounds of AIS harvested, dropping from 921 pounds removed in 2021 to 19.80 pounds in 2024. Since harvesting began in 2021 a total of 1,158 diver hours was invested to remove 1,106 pounds of Eurasian watermilfoil (Figure 2).

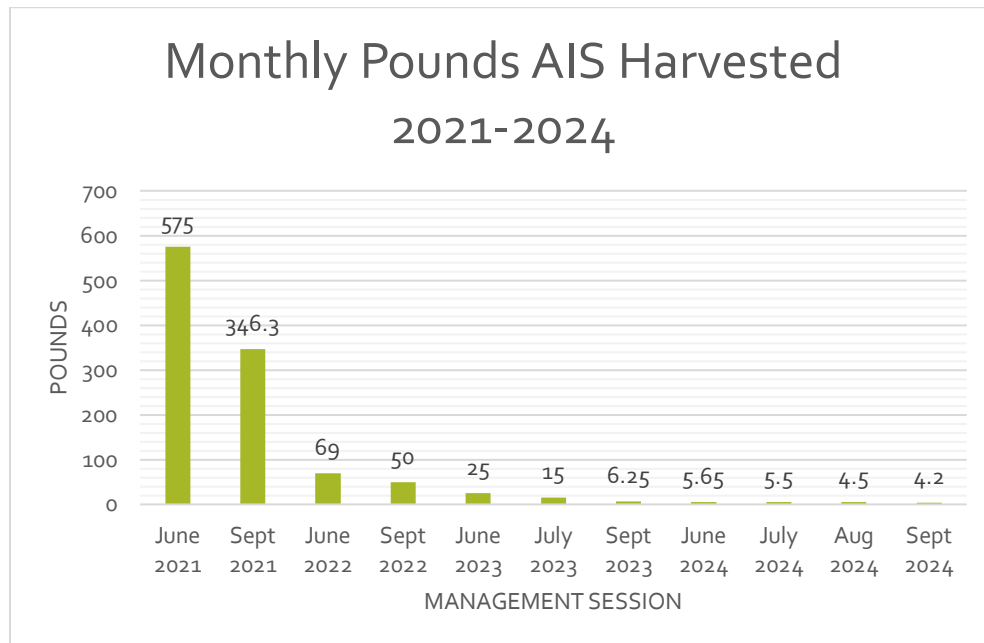


Figure 1. Pounds of Eurasian watermilfoil harvested for each month (2021 data retrieved from Invasive Solutions Dive Company)

With the early ice out and warmer water temps we scheduled an earlier start than past years (June 3 and 4) to assure plants didn't have time to mature enough to fragment. The initial harvesting sessions focused on hand-pulling any mature, old-growth plants to reduce the risk of fragmentation and reproduction. Throughout the season, the team was pleased to find mostly small plants and minimal larger, old-growth milfoil. With fewer large, mature plants, the chances for further propagation were significantly reduced.

As the season progressed our divers periodically checked known areas of AIS growth while continuing to survey for AIS plants in deeper waters and outside of traditional areas of growth. Larger crew sizes were used to preform grid-type searches, utilizing both snorkeling and our hookah air compressor.

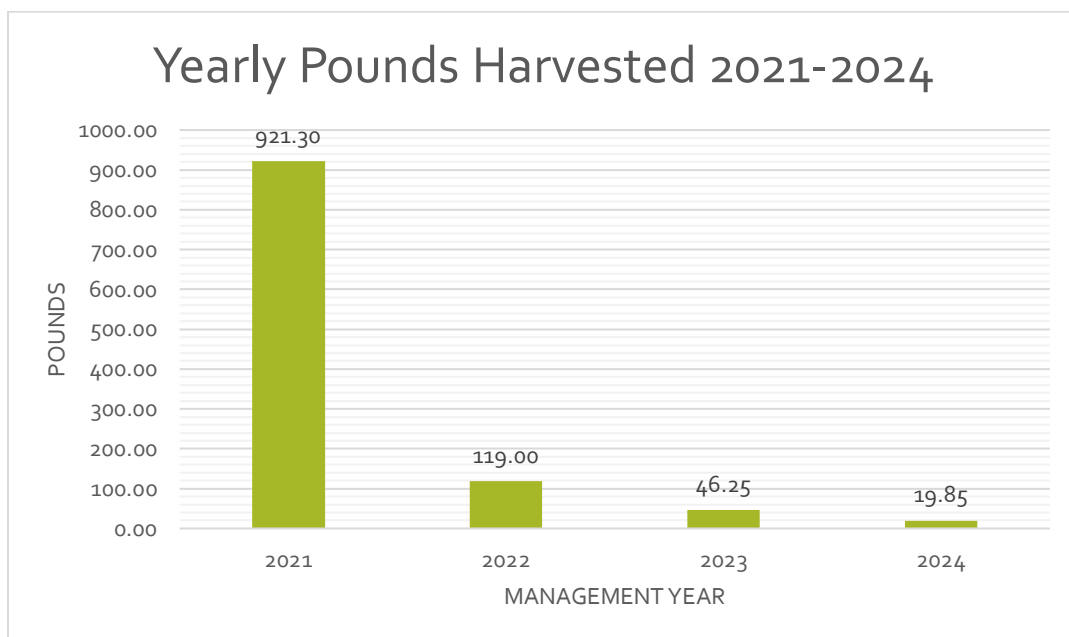


Figure 2. Pounds of Eurasian watermilfoil harvested for each management year (2021 data retrieved from Invasive Solutions Dive Company)

Plants Harvested: With low accumulating densities of AIS, our divers are not only weighing daily harvest totals but also count the number of plants harvested. This plant count began when USF- AID divers took over harvesting management on the pond in 2022. This method has been used on Upper Saranac Lake since 2015 and is a more accurate way of quantifying and assessing the efficacy overtime of our management techniques.

In a similar manor as the reduction of pounds of milfoil found and removed, the total number of plants found and removed has also significantly decreased over time (Figure 3).

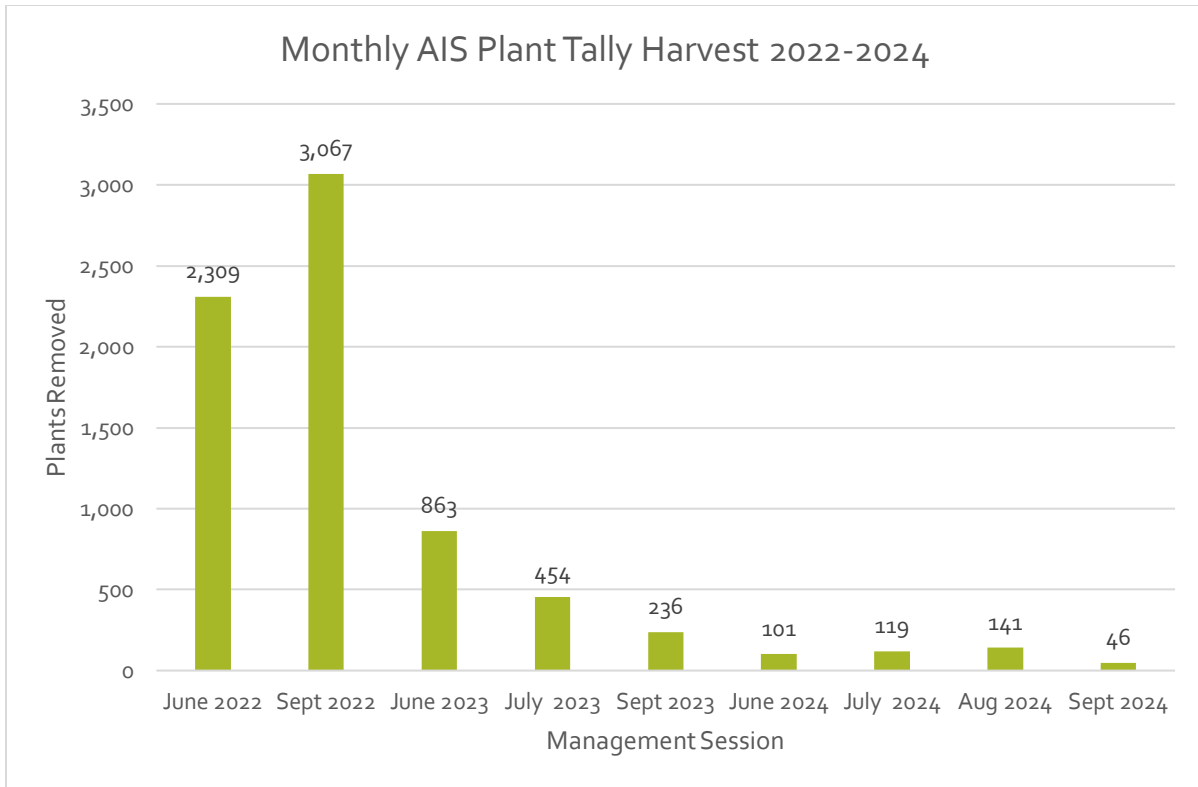


Figure 3. Number of Eurasian watermilfoil plants harvested for each management session

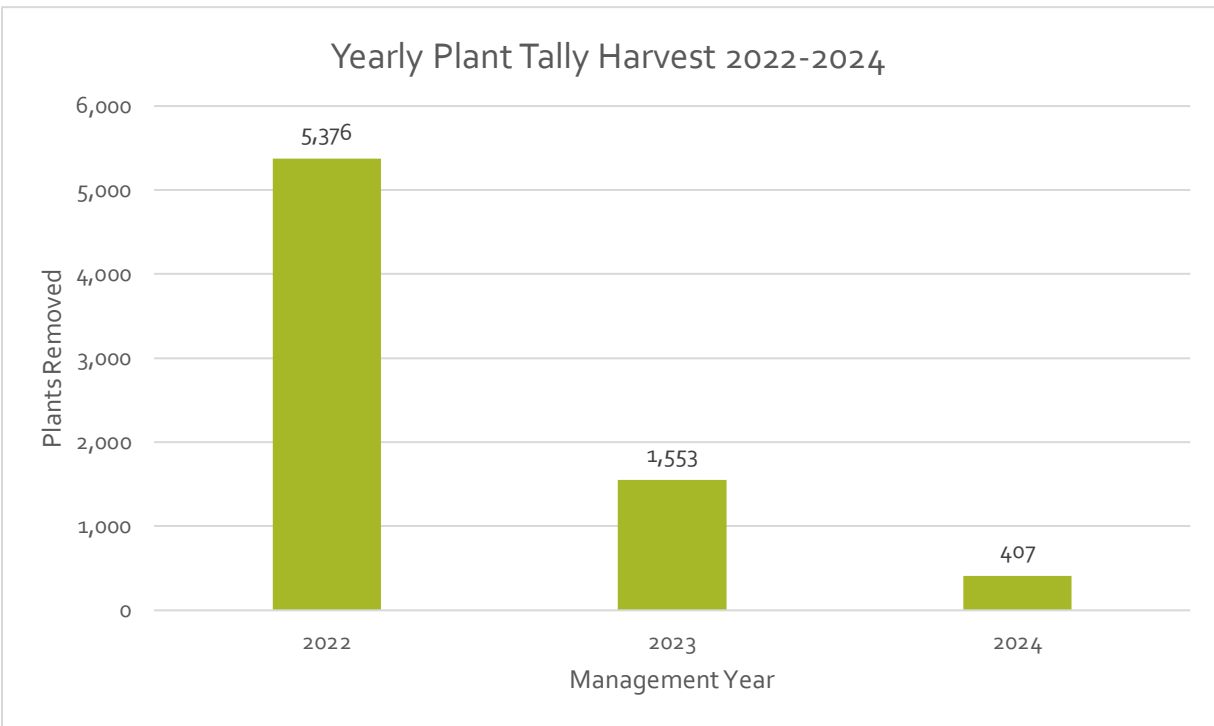


Figure 4. Number of Eurasian watermilfoil plants harvested for each management year

Since the initiation of management in 2021 there has been a 68% average yearly decrease in pounds of EWM harvested. Since 2022, when we began counting plants removed, there has been a 73% average yearly reduction in the number of plants harvested. This data provides an insight as to what we might expect for harvesting totals in the future with similar ongoing management. It is possible that in 2025 we could anticipate removing 13 pounds, and as little as 297 EWM plants.

EWM Percentage Decrease Harvested		
	Pounds Removed	Plants Removed
Year	% Decrease	% Decrease
2021 to 2022	87%	N/A
2022 to 2023	61%	71%
2023 to 2024	57%	74%
Average	68%	73%

Plant Harvest Locations Comparisons (2022-2024)

moody pond , plant locations 2024

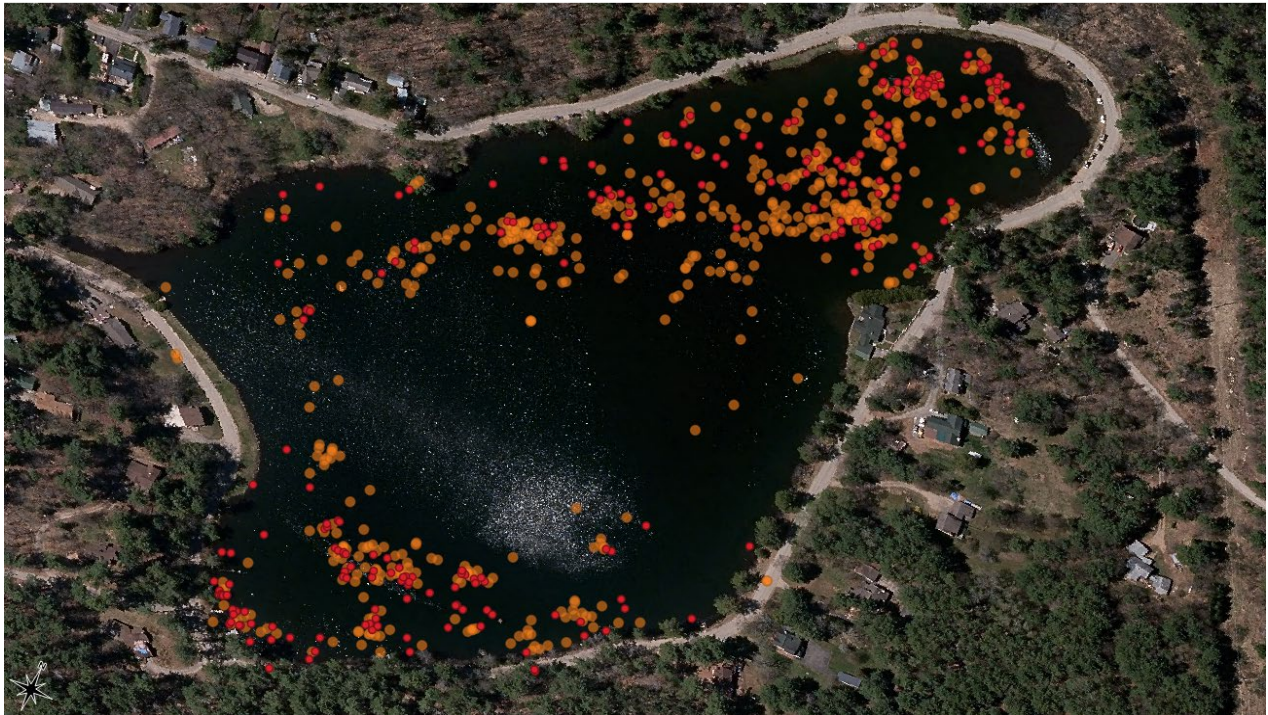


2024 EWM harvest locations

To show transitional and yearly productivity, below are heat maps depicting harvest plant locations over the past two and three years.

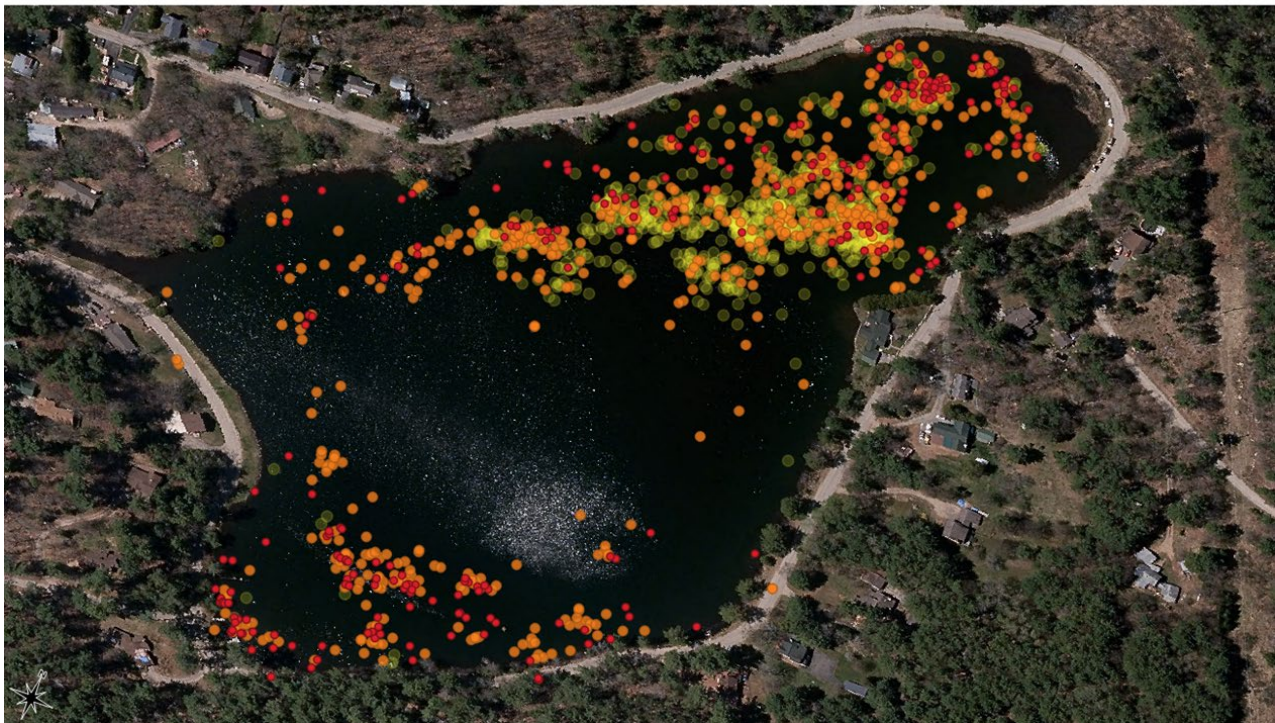
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moody pond, plant location comparison, 2023 (orange) 2024 (red)



*AIS – EWM Harvest Heat Map Comparing the 2023 and 2024 seasons
(2024- red, 2023- orange)*

moody pond, plant location comparison, 2022 (yellow) 2023 (orange) 2024 (red)



*AIS – VLM Harvest Heat Map Comparing the 2022, 2023 and 2024 seasons
(2024- red, 2023- orange, 2022 yellow)*

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For management purposes we have divided Moody Pond into three sections, North, West and East (figure 5).



Figure 5. Moody sections North, West, East

Locations of where most plants were found has had little fluctuation for the past two years. The majority of EWM harvested in 2024 was from the eastern portion of the pond (figure 6).

Tracking trends over time helps guide future management. It should be noted that the earliest survey in 2019 didn't find any AIS plants in the eastern section of the pond.

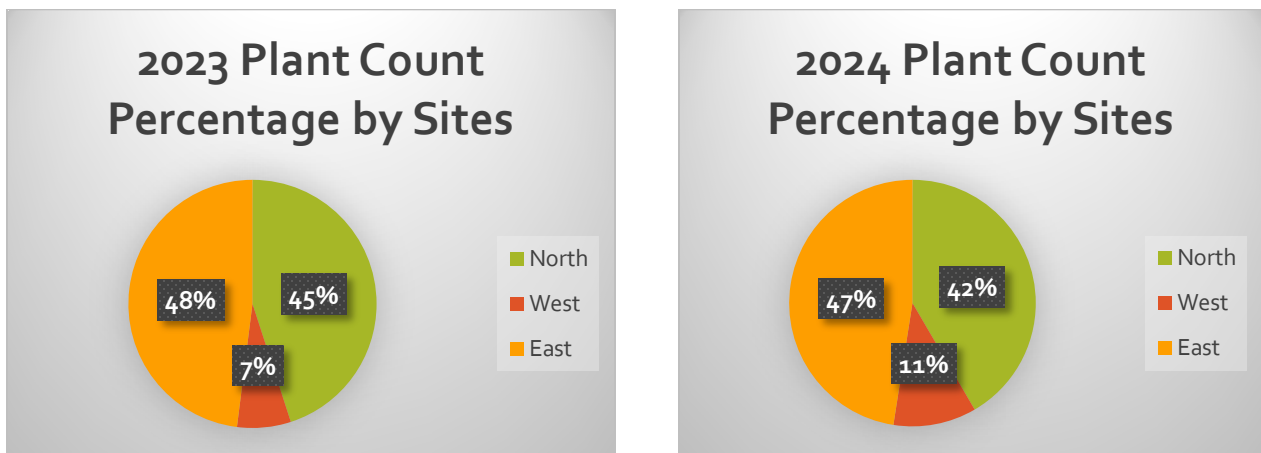


Figure 6. Plant Count by Site

Independent Monitoring: The Adirondack Park Invasive Plant Program, Lake Manager Tracker (LMT) program collects data to guide management efforts and track the progress and effectiveness of invasive species management on Moody Pond over time. Volunteers from Friends of Moody Pond monitor 41 consistent locations each year using a combination of visual, aquascope and rake tosses. Observations, prior to the USFs management in September of 2021, indicated 23.7% of the 41 survey sights had Moderate to Dense EWM abundance. Following one year of USF management, concluding in 2022, there were no areas found to have Moderate to Dense abundancies and only 4.9% of the locations had a Trace or Sparse amount observed. By 2023 there was no EWM found at any of the 41 monitoring locations. Of the 41 survey site locations, 30 were monitored by the Friends of Moody Pond in 2024. Again, no EWM was found at any of the monitoring locations (Figure 7).

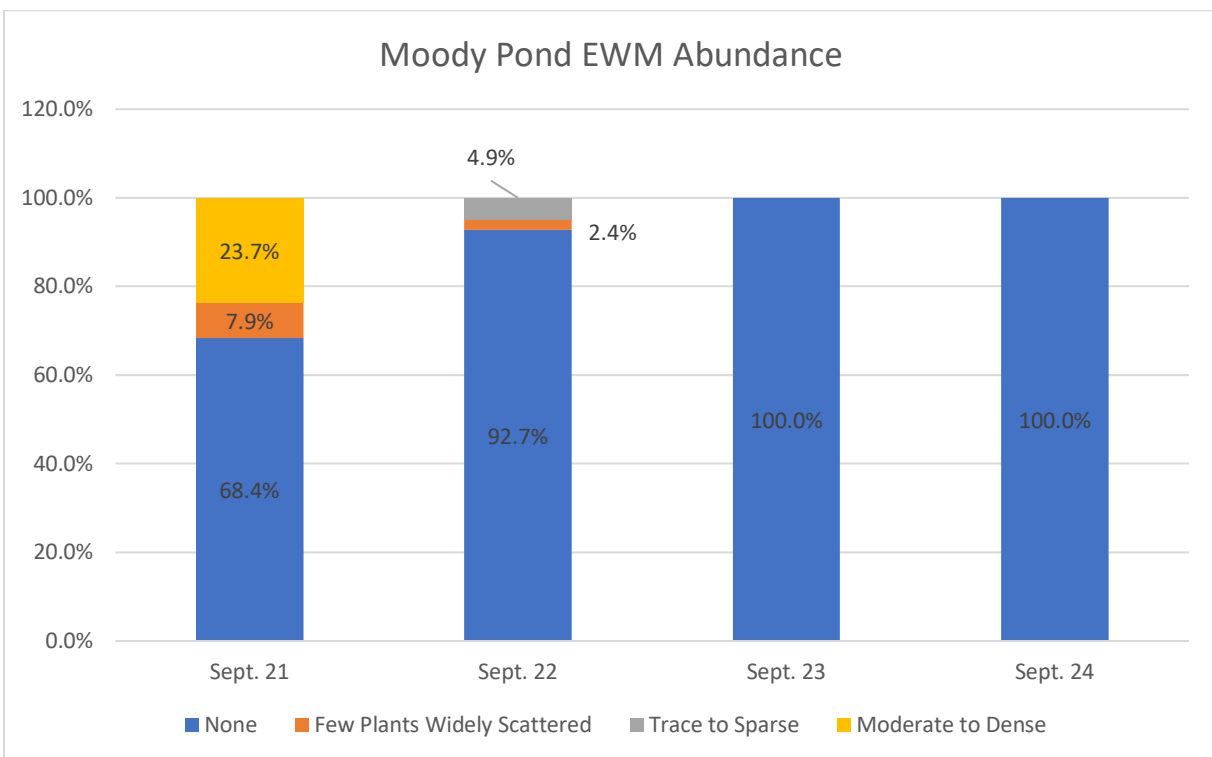


Figure 7. 2021-2024 Moody Pond EWM Abundance (courtesy of APIPP)

Conclusion

The Upper Saranac Foundation (USF) – Aquatic Invasive Divers (AID) completed our third-year of harvesting. We have met the objective of reducing the aquatic invasive species (AIS) infestation of Eurasian watermilfoil (EWM) through hand harvesting methods. Data collected by our AID crew and presented in this report contributes valuable historical information for

assessing invasive species and to better prioritize and allocate future resources for AIS management.

This project aligns with the Friends of Moody Ponds, Management Plan for Moody Pond, which emphasize the “*long-term commitment to localized hand-harvesting*” to curb the growth of Eurasian milfoil and maintaining “*long term monitoring*”. Our efforts have leveraged the Lake Management Plan’s and the objectives of the Friends of Moody Pond; to protect the quality of the water of Moody Pond, support environmental awareness, and preserve the ponds natural resources for future generations.

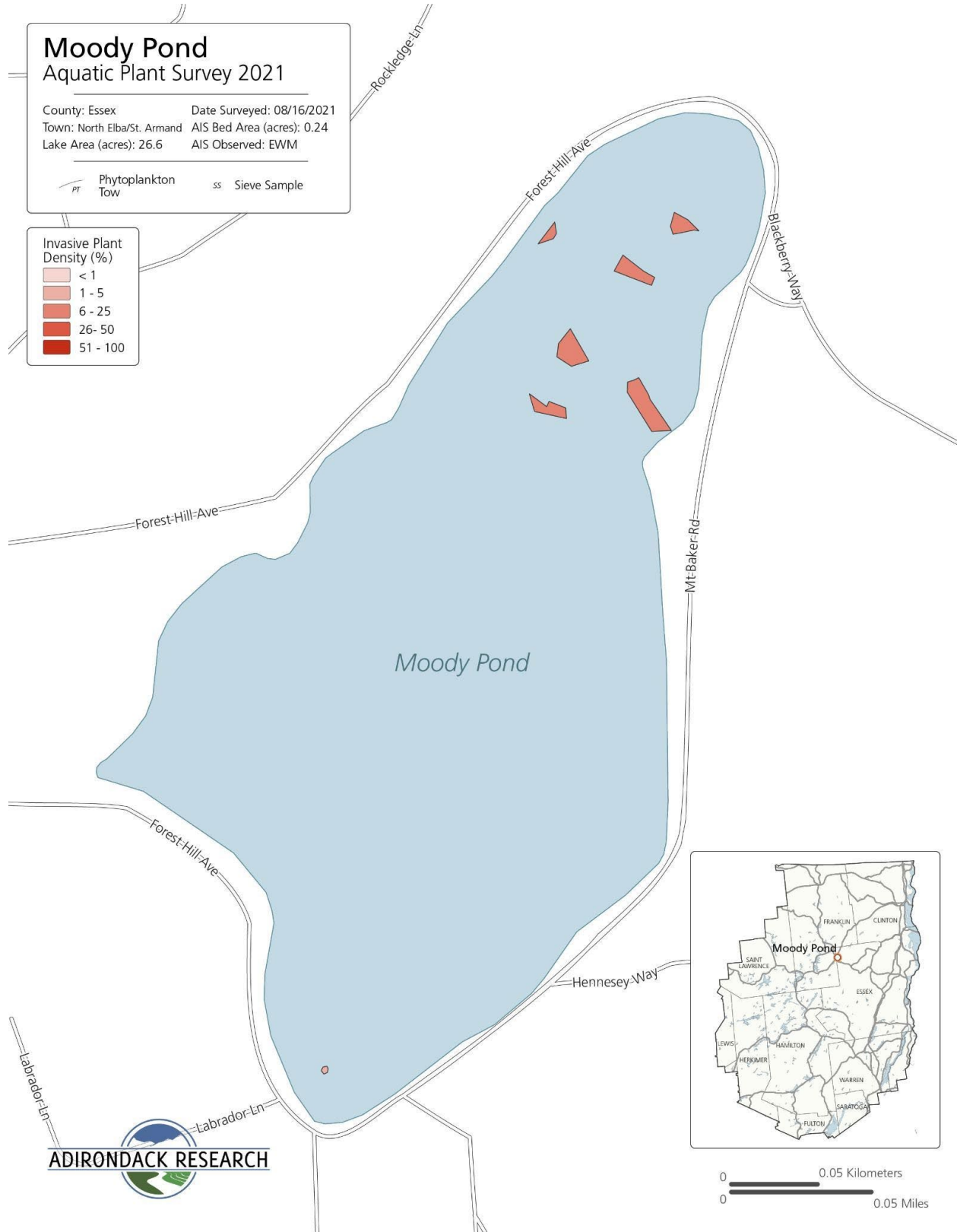
Plant growth that was found and now removed, in all but the very center of the pond indicates that left unmanaged, EWM would have totally engulfed the entire shoreline of Moody Pond. Each successive year of management has yielded less AIS plant growth. Immediate success of this project is documented with the direct control and decline in total area and amount of plant material removed.

Our team was pleased to find minimal large, old-growth milfoil, significantly reducing the potential for propagation. The significant reduction in the number of, and growth area of plants with each management year is a promising trend, indicating that our management approach has been highly effective. This being said, regular management sessions throughout future summer seasons remain essential to prevent any new or re-growing plants from maturing enough to fragment, reproduce, and potentially reverse recent gains.

This project is on track and is consistent with the Management Plans mission; preserving and protecting Moody Pond. While the ultimate objective of the USF- AID team is to eradicate the EWM, this is a long-term goal. We are confident that maintaining long-term, sustainable management—while gradually reducing management time—will prevent a resurgence of AIS, support continued success, and bring us closer to the ultimate goal of eradicating Eurasian water milfoil from Moody Pond.

The Upper Saranac Foundation thanks the commitment of the Friends of Moody Pond, its members, donors, and all those involved in the management efforts of the pond. It is the efforts from the community which has allowed us to successfully implement the recovery of the pond. The Upper Saranac Foundation looks forward to continuing these efforts on Moody Pond in the coming years for joint, and continued successes.

APPENDIX B



Photos



A typical 2024 daily EWM harvest from USF divers



Surface spotting techniques utilized by the divers

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P.O. Box 564, Saranac Lake, NY 12983
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