2024 Town Aquatic Invasive Species Partnership Report

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TAISP

OBSERVE & PROTECT

NORTH LAKELAND DISCOVERY CENTER WOODS AND WATER

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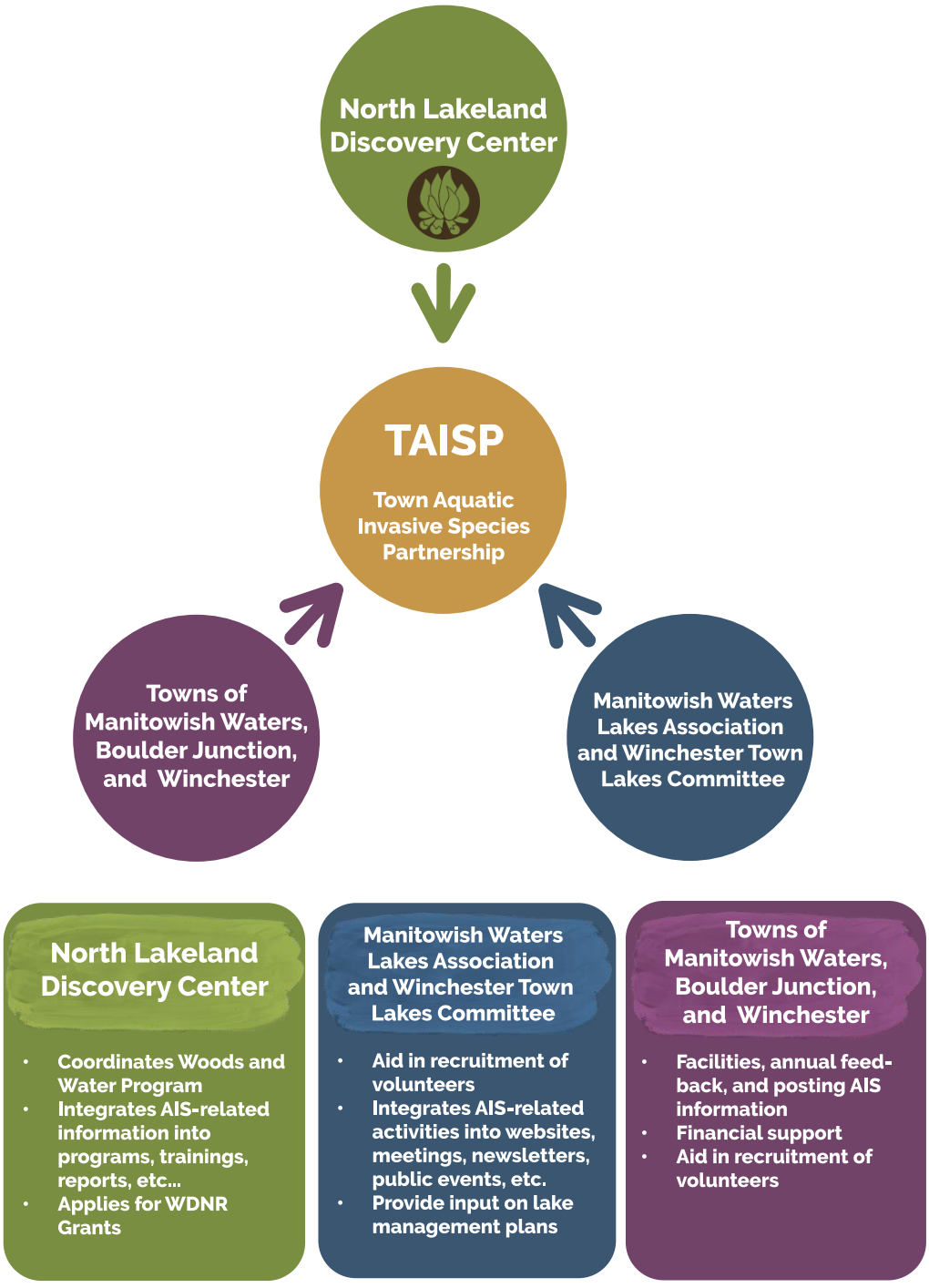

Figure 1. Model of the Town Aquatic Invasive Species Partnership (TAISP), consisting of the North Lakeland Discovery Center, Manitowish Waters Lakes Association, Winchester Town Lakes Committee, and the Towns of Manitowish Waters, Boulder Junction, and Winchester.

INTRODUCTION

The Town Aquatic Invasive Species Partnership (TAISP, Figure 1), consisting of the North Lakeland Discovery Center (NLDC), the Manitowish Waters Lakes Association (MWLA), the Winchester Town Lakes Committee (WTLC), and the Towns of Manitowish Waters, Boulder Junction, and Winchester, undertook efforts in 2024 to prevent introduction, minimize spread, and manage existing populations of aquatic invasive species (AIS) in local waterbodies and wetlands. This was a highly successful year, with all the goals and objectives of Town Agreements and grants being met or exceeded.

NLDC integrated AIS related activities into programming, website content, social media, press releases, and via other appropriate activities and venues. The Towns aided in the recruitment of volunteers, and provided various forms of support such as facilities, feedback to partners regarding management plans, posting AIS information on bulletin boards, boat landings, and other Town-owned facilities, and disseminated information at appropriate venues. MWLA and WTLC (and associated lake associations) aided in the recruitment of volunteers and integrated AIS-related activities into their newsletters, websites, meetings, and public announcements.

WOODS AND WATER PROGRAM STAFF

In previous years, NLDC hosted 3 to 5 seasonal staff positions to assist with AIS surveys, removal work, and education. In 2024, additional funding allowed for seasonal staff, Richard Dollhopf and Aidan Witthoff, to be hired full-time, along with five seasonal technicians as a part of our Professional Development Program. This increase in staff allowed additional crew to assist with conducting fieldwork.

The Professional Development Program offers a well-rounded experience, equipping seasonal staff with essential skills in plant identification, conservation practices, and effective communication. Technicians engage with diverse individuals across various educational backgrounds, ages, and interests, participating in both formal and informal educational gatherings. Their hands-on experiences range from operating and trailering watercrafts to understanding fundraising strategies and the inner workings of an environmental nonprofit—all while managing a dynamic field season. These positions serve as a valuable foundation for those preparing to launch careers in ecology, conservation, or environmental science.

The year kicked off with the exciting addition of Richard Dollhopf as Lead Conservation Specialist and Aidan Witthoff as Conservation Specialist and Naturalist—both former seasonal team members who have now joined the NLDC full-time. During the winter months, Richie and Aidan focus on processing collected data, compiling reports, and helping drive the continued growth and development of the Woods and Water Program.

The 2024 Land Restoration Technician, Carly Guido, led our NLDC campus grounds restoration projects. She worked on planning, coordinating volunteers, seeding, planting, and weeding our new restoration gardens. She also led plant walks and improved our social media content.

Landon Books, Blake Olson, AJ Johnson, and Jullianna Duerst filled the four Woods and Water Technician positions. These staff completed lake conservation and restoration projects, native aquatic plant surveys, and AIS surveys, while representing NLDC's Professional Development Program through public education and outreach events.

Figure 2: Pictured from left to right: Julianna, Richie, Aidan, AJ, Carly, Landon, Blake

Woods and Water Director, Jamie Van, collaborated with partners to expand our program by adding additional AIS surveying, plant surveys, native plantings, and grant funding. In addition, the Woods and Water program offered more educational opportunities like teaching early detection rapid response survey techniques and shoreline buffer solutions. The growth of the Woods and Water program led to the opportunity to expand our full-time staff.

During the growing season, NLDC staff monitored aquatic plant growth and shorelines of the Manitowish Chain of Lakes and its associated inflowing and outflowing rivers. Similarly, we surveyed lakes in the Town of Winchester with the goal of mapping and managing current populations of priority AIS and identifying any new infestations. Curly-leaf pondweed *(Potamogeton crispus)*, Eurasian watermilfoil *(Myriophyllum spicatum)*, yellow iris (*Iris pseudacorus)*, and purple loosestrife *(Lythrum salicaria*), have been the main AIS of concern. NLDC staff also monitor other AIS including non-native phragmites (*Phragmites australis)*, Japanese knotweed (*Fallopia japonica*), spiny waterflea *(Bythotrephes longimanus)*, rusty crayfish *(Orconectes rusticus)*, and mystery snails (*Viviparidae* family). This report summarizes all TAISP field work, education, and outreach completed in 2024.

WDNR SURFACE WATER GRANTS

Wisconsin Department of Natural Resources (WDNR) has provided invaluable partnership through both resource support and monetary support for the work completed through the TAISP. In 2024, WDNR provided funding through existing grants and the award of eight new grants to support lake management planning, AIS management and control, Clean Boats Clean Waters, and healthy lakes and rivers. There are two comprehensive management plans in place for waterbodies within the TAISP region including the Town of Winchester Lakes Comprehensive Management Plan (TWLCMP) and the Manitowish Waters Chain of Lakes Comprehensive Management Plan (MWCLCMP). These comprehensive plans guide management decisions and provide analytical support for grant requests.

Manitowish Waters Chain of Lakes

Two planning grants were applied for and awarded following guidelines of the MWCLCMP Goals: Goal 3, expand awareness and education of lake management and stewardship matters; Goal 4, control existing and prevent further aquatic invasive species establishment within the Manitowish Waters Chain of Lakes; and Goal 6, continue to understand, protect, and enhance the ecology of the Manitowish Waters Chain of Lakes through stakeholder stewardship and science-based studies,. These grants provided funding to conduct periodic quantitative vegetation monitoring on Wild Rice Lake [1] and Alder Lake[2]. This vegetation monitoring includes a complete lake point-intercept survey, as well as floating-leaf and emergent community mapping survey on each lake. This is Phase III of the project and additional grants will be applied for in 2025 to continue surveying efforts.

Following the first detection of Eurasian watermilfoil in the Manitowish Chain of Lakes in 2023, an Early Detection and Rapid Response grant[3] was awarded in 2024 to conduct surveying, hand-pulling, and diver assisted suction harvest (DASH). Curly-leaf pondweed was first discovered below the dam in 2023 and received funding for surveying and management through an Early Detection and Rapid Response grant[4] in 2024.

In 2023, a small-scale curly-leaf pondweed control grant[5] was applied for and awarded to conduct monitoring and management for three years, thus continuing in 2024. This funding supports early-season AIS (ESAIS) surveys, hand-pulling, and DASH if necessary. The curly-lead pondweed control grant is supported in the MWCLCMP through management Goal 3, expand awareness and education of lake management and stewardship matters, and Goal 4, control existing and preventing further aquatic invasive species establishment within the Manitowish Waters Chain of Lakes.

In 2024, a Clean Boats Clean Waters grant[6] was also funded by WDNR to provide AIS inspection and outreach at both Rest and Clear Lake landings. In addition to these grants, in 2023, a

[1] WDNR Grant #AEPP77424
[2] WDNR Grant #AEPP77124
[3] WDNR Grant #AIRR29424
[4] WDNR Grant #AIRR29524
[5] WDNR Grant #AECI32723
[6] WDNR Grant #CBCW146524

Healthy Lakes and Rivers grant[7] was awarded to provide funding assistance for four practices including shoreline native plantings and rock diversions which were completed in both 2023 and 2024.

Town of Winchester

Following guidelines of the TWLCMP Goal 1, protect the current high quality ecological health of town of Winchester lakes, and specifically for Birch and Tamarack Lakes, Goal 4, prevent new aquatic invasive species introductions to Birch and Tamarack Lake, the WDNR approved lake planning grants for Birch Lake[8] and Tamarack Lake[9]. These grants provide funding to conduct periodic quantitative vegetation monitoring, which includes a complete lake point-intercept survey and floating-leaf and emergent community mapping survey on each lake. This is Phase II of the project and additional grants will be applied for in 2025 to continue surveying efforts.

As a response to an increase in curly-leaf pondweed found in Harris Lake, a small-scale curly-leaf pondweed control grant[10] was applied for and awarded to conduct monitoring and management for three years, beginning in 2024. This funding supports ESAIS surveys, hand-pulling, DASH, volunteer monitoring, and late-season AIS (LSAIS) surveys. The curly-leaf pondweed control grant is supported in the TWLCMP Goal 1, protect the current high quality ecological health of town of Winchester lakes, and specifically for Harris Lake in Goal 4, control existing aquatic invasive species and prevent new introductions to Harris Lake.

PRIORITY AIS: CURLY-LEAF PONDWEED

Curly-leaf pondweed *(Potamogeton crispus)* is an aquatic plant native to Eurasia, Africa, and Australia. It was introduced into North America and quickly established itself as a predominant plant in most aquatic environments. This plant can grow in the colder months, even under ice, allowing it to outcompete native plants. During the warmer months, curly-leaf pondweed goes through a mid-summer die-off where the parent plant can produce many small stem-like projections called turions. These turions are compact storages of energy, or vegetative buds that break off the parent plant and float away. Curly-leaf pondweed turions can be spread in a variety of ways, primarily through water-related equipment and disturbances. Turions will sink, embed into the sediment, and quickly take root. This plant is difficult to manage because of its ability to spread and reproduce through fragmentation.

Manitowish Waters Chain of Lakes

In 2024, curly-leaf pondweed populations experienced growth in previously mapped locations. Efforts remained focused on Stone and Fawn Lakes, where curly-leaf pondweed was observed growing in deeper areas of Fawn's northern half, and numerous turions were netted near the bridge to Clear Lake. On Clear Lake, a few floating curly-leaf pondweed fragments and turions were detected, along with a single rooted plant near the boat landing which marked the first confirmed instance of curly-leaf pondweed establishing itself in Clear Lake. In June, Onterra

[7] WDNR Grant #LPT77923
[8] WDNR Grant #AEPP77324
[9] WDNR Grant #AEPP77224
[10] WDNR Grant #ACEI34924

conducted surveys and mapping of Rest, Stone, Fawn, Manitowish, Spider, and Island Lakes, and Rice Creek (Map 1). Meanwhile, NLDC also surveyed all other lakes on the chain including those below the dam, of which Clear Lake was the only lake to record a new population.

NLDC also performed an ESAIS survey on Vance Lake, where curly-leaf pondweed was only found along the northeast shore, its previously documented location (Map 2). NLDC dedicated a full day to wading through the shallow infestation, manually removing all visible plants. Additionally, Aquatic Plant Management Inc. was contracted for a day of hand-pulling curly-leaf pondweed in Vance Lake.

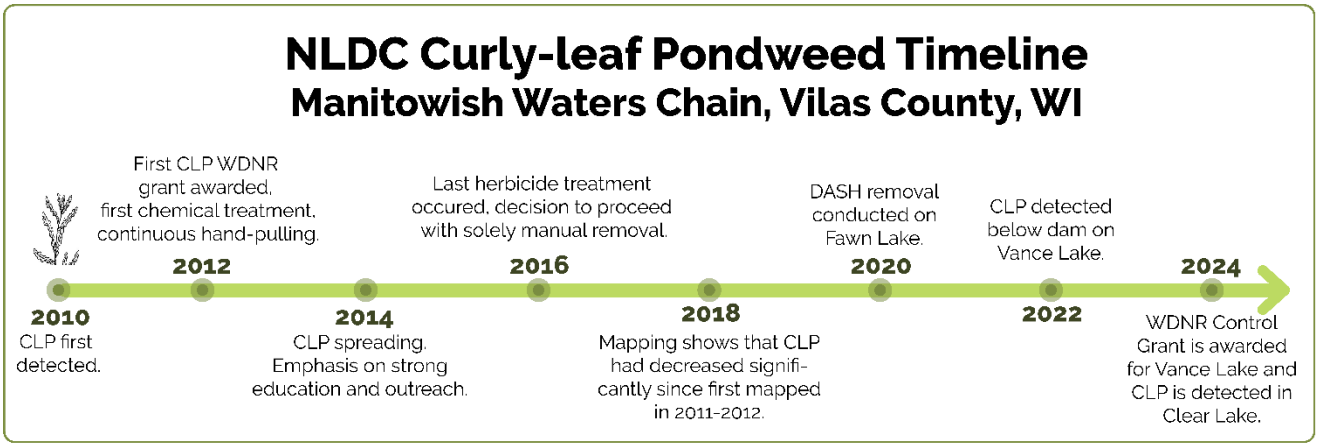

Figure 3: A timeline of significant curly-leaf pondweed (curly-leaf pondweed) detection and treatment events in the Manitowish Waters Chain of Lakes.

Town of Winchester, Harris Lake

Harris Lake remains the only known lake in the town of Winchester with established curly-leaf pondweed populations. The Harris Lake Association (HLA) first partnered with Onterra in 2008 to develop a management strategy for curly-leaf pondweed. In 2022, NLDC staff conducted an early-season curly-leaf pondweed survey, confirming several large populations in previously identified locations. In 2023, these sites were resurveyed, and any detected plants were removed using rakes and hand-pulling while snorkeling. While scattered plants were successfully removed, extensive, well-established colonies were also discovered, some growing at depths of 10 feet. Harris Lake's wind and wave conditions, bowl-shaped basin, water clarity, and deep-growing vegetation make submerged plant surveys particularly challenging. As a result, hand removal and snorkeling are no longer effective for managing the deep-water curly-leaf pondweed colonies. In total, curly-leaf pondweed-mapped areas on Harris Lake covered 1.73 acres in 2023.

In 2024, NLDC contracted Aquatic Plant Management Inc. to conduct DASH on the larger curly-leaf pondweed colonies, while NLDC focused on hand-pulling smaller infestations. During an ESAIS, it became evident that curly-leaf pondweed had expanded significantly compared to previous years. To address this, NLDC partnered with Harris Lake to educate lakefront property owners and users about AIS, with a specific focus on curly-leaf pondweed. A workshop trained

participants in curly-leaf pondweed identification, followed by a canoe paddle to known curly-leaf pondweed sites, where some volunteers even entered the water to experience snorkeling and plant removal firsthand. Volunteers also observed Aquatic Plant Management Inc. conducting DASH on a large curly-leaf pondweed population.

Despite these efforts, DASH and hand-pulling did not significantly reduce curly-leaf pondweed in Harris Lake. A LSAIS survey by Onterra revealed a substantial increase in curly-leaf pondweed, now present throughout the entire littoral zone (Map 3).

Figure 4: An underwater perspective of Curly-leaf pondweed found in Harris Lake.

PRIORITY AIS: PURPLE LOOSESTRIFE

Purple loosestrife *(Lythrum salicaria)* is a resilient and fast-spreading wetland invasive species that significantly reduces biodiversity and can disrupt water flow in rivers and waterways. A single purple loosestrife plant can produce up to 2.7 million tiny seeds, which are easily dispersed by wind, water, wildlife, and human activity. Our ongoing project focuses on combating purple loosestrife using natural biocontrol methods rather than non-selective herbicides, which could harm native plants and organisms. This approach involves the use of *Galerucella* sp. (Cella for short) beetles, which are reared at NLDC and released into purple loosestrife populations across our management areas (Map 4). Biocontrol is particularly effective in marshland environments where physical removal through cutting or digging is impractical.

Each spring, NLDC partners with North Lakeland School (NLS) to engage the 7th-grade class in jumpstarting our biocontrol beetle-rearing project. In 2024, students learned about invasive species, biocontrol techniques, and assisted in harvesting purple loosestrife plants. Previously, plant collection occurred in wetlands near Rest Lake, but this year, efforts shifted to a new purple loosestrife population at the north end of Big Lake.

Historically, *Galerucella* beetles were raised in small, individual netted purple loosestrife plants, limiting NLDC's capacity to approximately 30 purple loosestrife pots. However, in 2023, the

project expanded with the installation of a 12x12-foot screen cage, significantly increasing beetle production. In 2024, NLS students assisted in harvesting purple loosestrife from Big Lake and setting up the mass-rearing cage provided by the University of Wisconsin–Madison Division of Extension. With this new system in place, NLDC staff monitored and tended to over 100 purple loosestrife plants throughout the season, allowing for the successful rearing and release of thousands of *Galerucella* beetles into our management areas. See appendix 1, fig. 9-12 for visuals of the biocontrol process.

Towns of Manitowish Waters and Boulder Junction

Our extensive purple loosestrife surveys on the Manitowish Waters Chain of Lakes and its incoming/outflowing rivers and wetlands helped us to identify several known areas of concern. The island on Manitowish Lake, Rice Creek flowing into Island Lake, Wild Rice Lake, and the Manitowish River from the intersection of Highways H and K flowing into Island Lake are the most heavily infested locations. Each location required several days of flower head clipping and manual plant removal. Smaller populations and single plants were located on Vance Lake, a wetland on the western side of Rest Lake, Fawn Lake, Stone Lake, Sturgeon Lake, the channels above and below Alder Lake, and Stepping Stone Lake 1.

In 2022 and 2023, Lead Technician Richard oversaw monitoring for purple loosestrife and conducted extensive surveys all along the Manitowish Chain. In 2024, beetles were released at the same sites as previous seasons to ensure that beetle populations would be well established and sustained. *Galerucella* beetles were prioritized at sites that had little signs of beetle activity in hopes to bolster new populations. All purple loosestrife plants with flowerheads were marked with a GPS, densities and populations were noted, and flowerheads were clipped to mitigate any spread. During NLDC's point intercept survey on Rice Creek, some scattered populations of purple loosestrife were able to be marked, and many beetles were released there. Little Rice Lake in Boulder Junction was a new *Galerucella* release site in 2023 and was visited again in 2024 on Snapshot Day. See Map 4 at the end of the report for a visual of NLDC's *Galerucella* release sites in 2024.

Town of Winchester

Winchester Lakes Helen, Mary, Birch, Circle Lily, Hiawatha, Rainbow, Little Papoose, Noseeum, Papoose, Rock, North Turtle, South Turtle, and Harris were all extensively surveyed for purple loosestrife in 2023 with a collaborative effort from NLDC staff and lake resident volunteers. No new purple loosestrife populations were identified during these lake surveys. Adelaide Lake had 5 single plants that were removed in 2022, and in 2023 no purple loosestrife was observed. However, in 2024, purple loosestrife populations on Adelaide Lake increased, requiring about 1.5 hours of digging. A beetle release is recommended here for 2025. On Pardee Lake in 2022, a single plant was found growing upland in a lawn which was dug and removed. In 2023 and 2024, no signs of purple loosestrife were found on Pardee. A few purple loosestrife plants were located by NLDC at the end of W. Birch Lake Road in the wetland across from the boat launch and two plants were dug in 2024. No populations of purple loosestrife in Winchester are large enough to warrant a beetle release and NLDC will continue to monitor previously dug locations.

PRIORITY AIS: SPINY WATER FLEA

Spiny waterflea *(Bythotrephes longimanus)* has been recorded in 11 inland Wisconsin lakes, 6 of which are in Vilas County: Plum (2019), Trout (2014), Star (2013), Stormy (2007), Ike Walton (2015), and Butternut (2014). They are also in the nearby Gile Flowage (2003) in Iron County and the Madison Chain of Lakes in Dane County (2009). Spiny waterfleas prey on native zooplankton that graze on algae and can therefore shift food web dynamics in lakes. If the algae-eaters decline, algal populations increase. Lake Mendota in Madison has seen a loss of nearly 3 feet in water clarity that has been attributed to spiny waterflea. There is currently no known method to control spiny waterflea. Education is the key to prevention of this species in a waterbody.

Towns of Manitowish Waters and Boulder Junction

Vertical tows were conducted with a half-meter diameter 250-micron plankton net in lake deep-holes guided by WDNR protocol methods. In 2024, we sampled Alder, Circle Lily, Fawn, Rest, Stone, Vance, and Wild Rice Lakes. All samples were thoroughly inspected under a microscope, and no trace of spiny waterflea was found in any of them.

Town of Winchester

In 2024 we collected samples from Rock, North Turtle, and South Turtle Lakes. All samples were thoroughly inspected under a microscope, and no trace of spiny waterflea was found in any sample.

EARLY DETECTION AND RAPID RESPONSE SURVEYS

AIS Early Detection surveys are designed to increase the likelihood of finding any aquatic invasive species if present on a waterbody. Standardized WDNR protocol instructs the surveyors to choose five relevant locations on the waterbody that seem likely for invasives, as well as to search likely areas such as boat launches, public piers, and inlets/outlets. Timed snorkel and shoreline surveys are then conducted, and the presence of any exotic species found is recorded. In 2024, AIS early detection surveys were conducted on Alder, Fawn, Rest, Stone, Wild Rice, and Vance Lakes in Manitowish Waters, additionally on North Turtle, Rock, and Circle Lily Lakes in Winchester.

Table 1: Spiny waterflea and AIS Early Detection surveying timeline for Manitowish Waters and Winchester Lakes

	Spiny Waterflea Survey				AIS Early Detection Survey			
Lake	2022	2023	2024	2025	2022	2023	2024	2025
Alder			X		X		X	
Benson				X				X
Birch		X		X	X			X
Circle Lily	X		X			X	X	
Clear	X			X		X		X
Fawn			X		X		X	
Harris		X		X	X			X
Island		X		X				X
Little Star	X			X		X		X
Manitowish	X			X		X		X
N Turtle			X			X	X	
Rest		X	X				X	
Rock	X		X				X	
S Turtle		X		X	X			X
Spider		X		X				X
Stone			X		X		X	
Sturgeon				X				X
Vance			X				X	
Wild Rice	X	X	X		X		X	

PRIORITY AIS: YELLOW IRIS

Yellow Iris *(Iris pseudacorus)* is an exotic plant once popularly sold as an ornamental plant for gardens. This plant is now an established invasive species in Wisconsin. Commonly found on lake shores, this plant can grow unrestricted and has the potential to crowd out shoreline and riparian edges, creating a strongly rooted monoculture. This plant spreads through extensive underground tubers that are firmly rooted yet can break apart easily.

Town of Winchester

Yellow iris has been a persistent invasive species along the shorelines of the Turtle Chain (South Turtle, North Turtle, and Rock Lake), prompting long-term management efforts led by NLDC in partnership with the Turtle Lakes Chain Association (TLCA). Since its initial mapping by Onterra in 2017, yellow iris populations have been continuously monitored with outreach efforts expanding to involve local property owners.

By 2019, NLDC had mapped 35 populations, serving as baseline data for removal efforts. With increased landowner engagement, this number grew to 133 mapped populations by 2021, with infestations recorded on 45 different properties. Management efforts continued, with NLDC

and property owners manually digging out and removing plants. In 2022, 43 small to medium-density populations were targeted, resulting in the removal of approximately 1,680 pounds of plant material.

In 2023, follow-up surveys confirmed reduced regrowth at previously treated sites, while work shifted to high-density areas on the northern half of Rock Lake. That season, an estimated 1,500 pounds of yellow iris were removed. Additionally, a shoreline restoration project, funded by a WDNR Healthy Lakes & Rivers Grant, successfully transformed a heavily infested private property into a native, biodiverse shoreline.

By 2024, a full resurvey of the Turtle Chain recorded 100 remaining yellow iris populations, with 70 concentrated on Rock Lake (Maps 5-7). Over 47.5 hours of manual removal efforts were conducted at 40 locations across the Turtle Chain, removing approximately 1,780 pounds of invasive plant material. The restored shoreline site was revisited and found to be largely free of yellow iris, with native vegetation beginning to establish successfully.

This project highlights the effectiveness of long-term invasive species management through community collaboration, manual removal, and habitat restoration. Ongoing efforts will be crucial in preventing the re-establishment of yellow iris and ensuring the continued health of the Turtle Chain's pristine waters.

While yellow iris has been present in Pardee Lake for some time, it was first formally mapped by NLDC in 2024 (Map 8). A total of 28 locations were documented and assessed for density, ranging from sparse to dense infestations. Following the survey, NLDC dedicated three days and thirty-seven hours to manually removing yellow iris, ensuring that root rhizomes were fully extracted to prevent regrowth. These efforts mark an important first step in managing the spread of this invasive species in Pardee Lake.

Table 2: Timeline of yellow iris management by NLDC on the Turtle Chain

Year	Activity
2020	TLCA mailed letters to each shoreline property owner with yellow iris outlining why it is a nuisance species. These letters included a post card for property owners to indicate whether they would like to remove their own, or if they wanted assistance from NLDC with removal. The response rate was over 80%, with 19 property owners asking for removal assistance.
2021	Turtle Chain was resurveyed to track progress on yellow iris removal and there continued to be a large amount of yellow iris on the Turtle Chain, especially on Rock Lake. NLDC staff removed yellow iris from the sites owned by WDNR.
2022	NLDC prioritized removal of yellow iris waypoints containing sparse or few plants and removed another 43 populations, or approximately 1,680 pounds of yellow iris.
2023	NLDC revisited sites that plants were removed from in 2022 to ensure that no plants were resprouting. Only a few young plants were removed from these sites. Later in the field season, efforts were focused on high density areas on the northern half of Rock Lake, where an estimated 1,500 pounds of yellow iris was removed. A shoreline restoration project was completed on private property on Rock Lake funded by a WDNR Healthy Lakes & Rivers Grant. This particular property was very dense with yellow iris and required a few hours of digging before planting native plugs.
2024	The entire Turtle Chain shoreline was resurveyed for yellow iris. Population densities and notes were taken at each yellow iris waypoint. Only 4 populations were marked on North Turtle, while 26 were marked on South Turtle. Rock Lake had 70 populations marked, three of these being large colonies that would require further restoration planning. Later in the field season, efforts again were focused on high density areas on the northern half of Rock Lake.

PRIORITY AIS: Eurasian watermilfoil

Eurasian watermilfoil *(Myriophyllum spicatum),* is an aquatic plant that is native to Europe and western Asia. Since its initial introduction to North America, it has become the single most common aquatic plant across the entire continental United States. Eurasian watermilfoil is most common in the southern half of Wisconsin on more trafficked and developed lakes but has slowly been spreading northward due to lake development and increased traffic on previously remote and secluded lakes.

Manitowish Waters Chain of Lakes

In July 2023, Eurasian watermilfoil was reported and suspected in Alder Lake, marking the first known presence in the Manitowish Chain of Lakes. While WDNR surveys on Wild Rice and Alder Lake did not confirm its presence, NLDC surveys in the Lower Trout River between Manitowish Lake and Alder Lake identified established colonies and numerous single rooted plants. Further surveys in Manitowish Lake found sparse populations of but no dense colonies.

A WDNR Early Detection and Response Grant was awarded to support Eurasian watermilfoil surveying, mitigation, hand removal, and DASH efforts for the 2024 field season. The extent and rapid expansion of Eurasian watermilfoil exceeded expectations, likely influenced by a mild winter, low snowfall, and early ice-off conditions. NLDC conducted extensive meander surveys across all lakes in the chain, manually removing smaller Eurasian watermilfoil populations while

mapping larger infestations. By season's end, new Eurasian watermilfoil detections were confirmed in Little Star, Stone, Fawn, and Spider Lakes, as well as a floating fragment near the channel on Rest Lake. Manitowish Lake, Spider Lake, and the Lower Trout River showed significant increases in Eurasian watermilfoil, leading to an expanded DASH removal effort.

Aquatic Plant Management Inc. (APM) was initially contracted for 8 dive days on the Lower Trout River, but as the season progressed, an additional 10 days were added to include Manitowish and Spider Lakes. Between June and August 2024 APM completed 18 days of DASH and 9 days of hand harvesting, removing a total of 1,224 cubic feet of Eurasian watermilfoil, with 1,200 cubic feet coming from the Lower Trout River alone. NLDC continued to survey yellow iris and perform manual removal throughout the season, targeting outlier populations and smaller patches. NLDC completed meander surveys on Fawn, Stone, Spider, Little Star Lakes, and the Upper Trout River (Maps 9-12). All known Eurasian Watermilfoil in Fawn, Stone, Spider, and Little Star Lakes—as well as in the Upper Trout River—was hand-pulled and removed, except for three plant locations near the inlet to Manitowish Lake. In contrast, larger infestations in Manitowish Lake and the Lower Trout River were managed with hand-pulling and DASH that focused on reducing the overall population.

Late-season AIS surveys for Eurasian watermilfoil conducted by Onterra mapped population densities in Manitowish Lake and the Trout River which equated to over 14 acres (Map 13). Additional surveys conducted by the Woods and Water team in Rest, Island, Alder, Wild Rice, Clear, Vance, Benson, and Sturgeon Lakes found no presence of Eurasian watermilfoil.

In the fall of 2024, two WDNR planning grants were submitted to support the development of a Eurasian Watermilfoil Aquatic Plant Management Plan for the Manitowish Chain of Lakes during 2025. Since awarded, these grants will help fund full surveys of all known Eurasian watermilfoil affected lakes, allowing for a more accurate assessment of population densities and distribution. Additionally, a stakeholder public survey will be conducted to gather input from lake users, property owners, and community members. The planning process will include educational and informational meetings with the planning team and professional lake consultants from Onterra to ensure a well-informed approach to Eurasian watermilfoil control.

The grants will also support the development of specific control strategies and activities aimed at mitigating the spread of Eurasian watermilfoil, culminating in a written aquatic plant management plan to serve as a long-term framework for invasive species management. Furthermore, an online Eurasian watermilfoil integrated mapping tool will be created to track active management efforts and document the extent of the invasion across the Manitowish Chain. These planning efforts aim to enhance coordinated response strategies, improve community engagement, and ensure sustainable management of Eurasian watermilfoil in the region.

In October of 2024, a stakeholder meeting at NLDC brought together all TAISP partners, Onterra, and APM to review the timeline of Eurasian Watermilfoil detection and management strategies. During the discussion, the need for sustained funding to support ongoing efforts became evident. In response, the "Save the Chain" initiative was launched as a joint fundraising

effort led by the Manitowish Waters Lakes Association, Manitowish Waters Alliance, and the Manitowish Waters Lions Club, with technical assistance from NLDC. This initiative is designed to raise awareness and secure long-term funding to ensure continued Eurasian watermilfoil management on the Manitowish Chain, helping to protect the health and integrity of these lakes for future generations.

Figure 5. Logo for the Save the Chain campaign.

NORTHWOODS BUSINESSES FOR CLEAN WATERS

After hearing concerns from community members about the spread of AIS via lake business owners, NLDC has partnered with Vilas County, Vilas County Lakes and Rivers Association, the Lac du Flambeau Tribe, Oneida County, and Oneida County Lakes and Rivers Association on a business outreach initiative. Each AIS Coordinator (from NLDC, Vilas County, Oneida County, and Lac du Flambeau) will work with up to three businesses each year. Eligible businesses are those that utilize lakes and rivers, including but not limited to bait shops, fishing guides, rental companies, dock installers/removers, boat dealers, etc. Partners will work with each business to teach them best practices to avoid spreading AIS, specific to their business. In 2023, NLDC worked with River's Edge Outfitters to create a kiosk at their establishment that will serve to inform their clientele on invasive species to be aware of while spending time out on the water. We also partnered with a private shoreland property owner who owns lakefront rentals on Rock Lake to install native plants following yellow iris removal.

In 2024, a private cabin rental business owner began working with NLDC to establish a new conservation plan for a 6-lot cabin rental on South Turtle Lake. The planning process is set to continue in 2025, with the possibility of applying for a Healthy Lakes grant to support the development of the project.

CLEAN BOATS CLEAN WATERS

NLDC applied for and obtained funding through the WDNR Clean Boats Clean Waters (CBCW) Program for Rest and Clear Lakes in Manitowish Waters and contracted with additional lake associations for CBCW inspections. Below is a summary of CBCW with 550 hours completed by

NLDC in 2024. During the 2024 season, a boater with a jet ski was stopped by one of the NLDC CBCW inspectors while attempting to enter South Turtle Lake. The inspector discovered that the jet ski and trailer were carrying Eurasian watermilfoil, which the boater had picked up from a lake in southern Wisconsin. This incident highlights the critical importance of CBCW inspectors in preventing the spread of invasive species. It is a perfect example of how their work is invaluable in protecting local water bodies from AIS.

Table 3: Data from CBCW inspection hours completed by NLDC staff in 2024

LAKE	INSPECTION HOURS	BOATS INSPECTED	PEOPLE CONTACTED	% OF BOATS PRESENT ON ANOTHER WATERBODY IN PAST 5 DAYS
Rest	104	276	586	25%
Clear	96	170	288	38%
Big	150	251	425	78%
Presque Isle	50	31	63	35%
South Turtle	150	144	294	42%

LAKE LEVEL MONITORING PROGRAM

In partnership with volunteer concerned citizens and other area scientists, NLDC formed a 28-lake level monitoring network in 2008 designed to monitor lake levels via citizen science. Now, over a decade later, the network has provided standardized data collection that is vital for understanding the effects of climate change on lakes in the Northern Highland Lake District region. Lake level monitoring projects are therefore listed on the Wisconsin Citizen-based Monitoring Priority Programs List.

This long-term monitoring project partners with several groups, including the Lac du Flambeau Tribal Natural Resources Department (assists in lake gauge installation and monitoring), and UW-Madison Trout Lake Research Station (provides technical guidance and data analysis). The project also works with Vilas County Lakes and Rivers Association, individual lake associations, and many dedicated volunteers. The partnership formed after concerns for record low lake levels spurred local citizens to form the citizen scientist lake level monitoring network, spearheaded by NLDC. This monitoring network was the first of its kind in Wisconsin, addressing a lack of long-term lake level data. NLDC has since managed a data-rich program that gathers empirical data and compares how different lake types respond to precipitation events, both spatially and temporally. An established and highly standardized monitoring network committed to consistent monitoring and statistically sound data collection allows scientists to develop and test lake level models. Additionally, it allows scientists to examine the differences between lake types over time. Consistent and continual monitoring will lead to a valuable data set that could be used to inform adaptive management decisions influencing water resources into the future. In spring of 2019, the WDNR tied all the benchmarks on

current lake level monitoring lakes to sea level to ensure they can be compared to lakes around the world.

In 2024, NLDC installed 24 lake gauges that were monitored by lake resident volunteers throughout the Northwoods. In fall, the lake gauges were removed before ice formed and data was collected from volunteers. Data was then entered into the long-term database, displayed as graphs, and shared to Trout Lake Station.

CONCLUSION

The 2024 field season marked a year of impactful progress for the Town Aquatic Invasive Species Partnership. Through collaborative stewardship, expanded staff capacity, and strong community engagement, our team successfully managed priority aquatic invasive species, strengthened early detection efforts, and delivered innovative education and outreach across the region. From hand-pulling Eurasian watermilfoil to pioneering biocontrol for purple loosestrife, every effort contributed to the protection and resilience of our Northwoods lakes and wetlands. As we look ahead to 2025, we remain committed to science-based management, long-term monitoring, and empowering local stakeholders in the fight against aquatic invasives. Together, we are protecting clean waters for generations to come.

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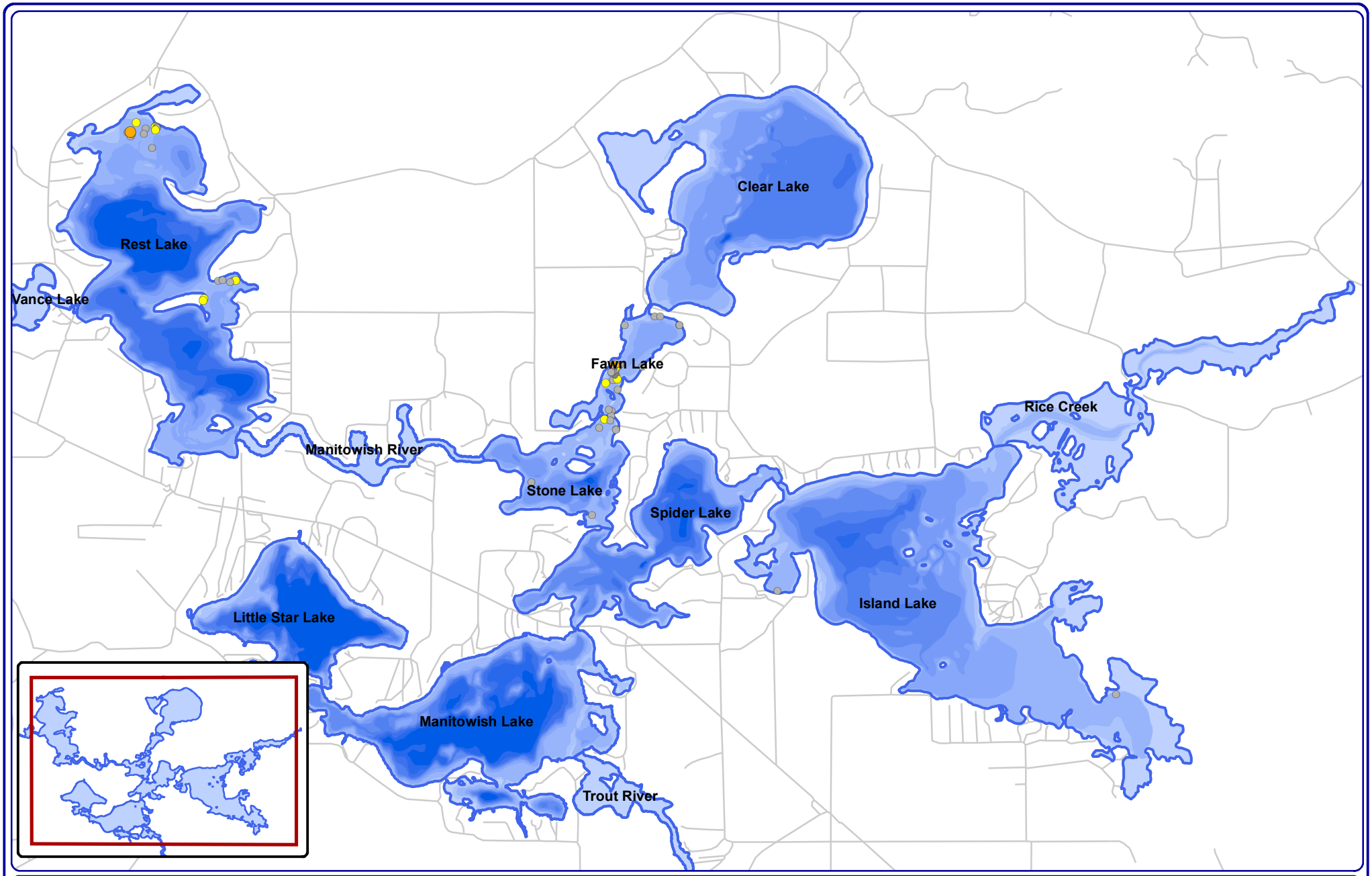

N
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500
Feet

Onterra LLC
Lake Management Planning
815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads and Hydro: WDNR
Bathymetry: WDNR - digitized by Onterra
Aquatic Plants: Onterra, 2024
Map Date: June 21, 2024 RMF

Project Location in Wisconsin

Legend

- Highly Scattered *(none)*
- Scattered *(none)*
- Dominant *(none)*
- Highly Dominant *(none)*
- Surface Matting *(none)*
- Single or Few Plants
- Clump of Plants
- Small Plant Colony *(none)*

Manitowish Chain

Vilas County, Wisconsin

June 2024 CLP Survey Results

Vance Lake
Early Season AIS
Survey Results
Curly-Leaf Pondweed

Town of Manitowish Waters
Vilas County, Wisconsin
May 9th, 2024

Miles
0 0.05 0.1 0.2

Legend

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

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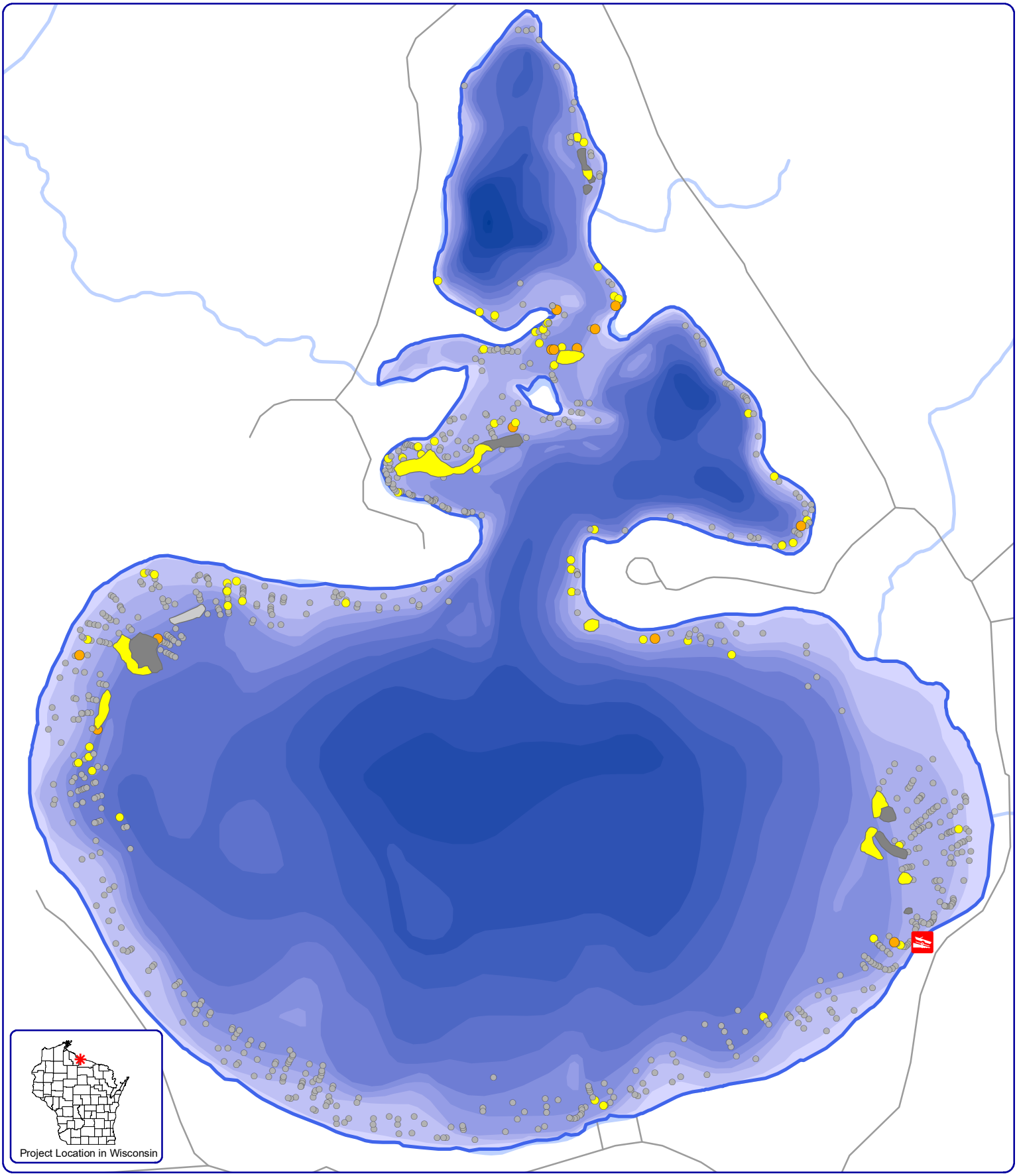

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Feet

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815 Prosper Rd
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources
Roads and Hydro: WDNR
Bathymetry: Digitized by Onterra
Aquatic Plants: Onterra, 2024

Map Date: 7-30-2024 TWH
Filename: *Harris_CLP_July24.mxd*

Legend

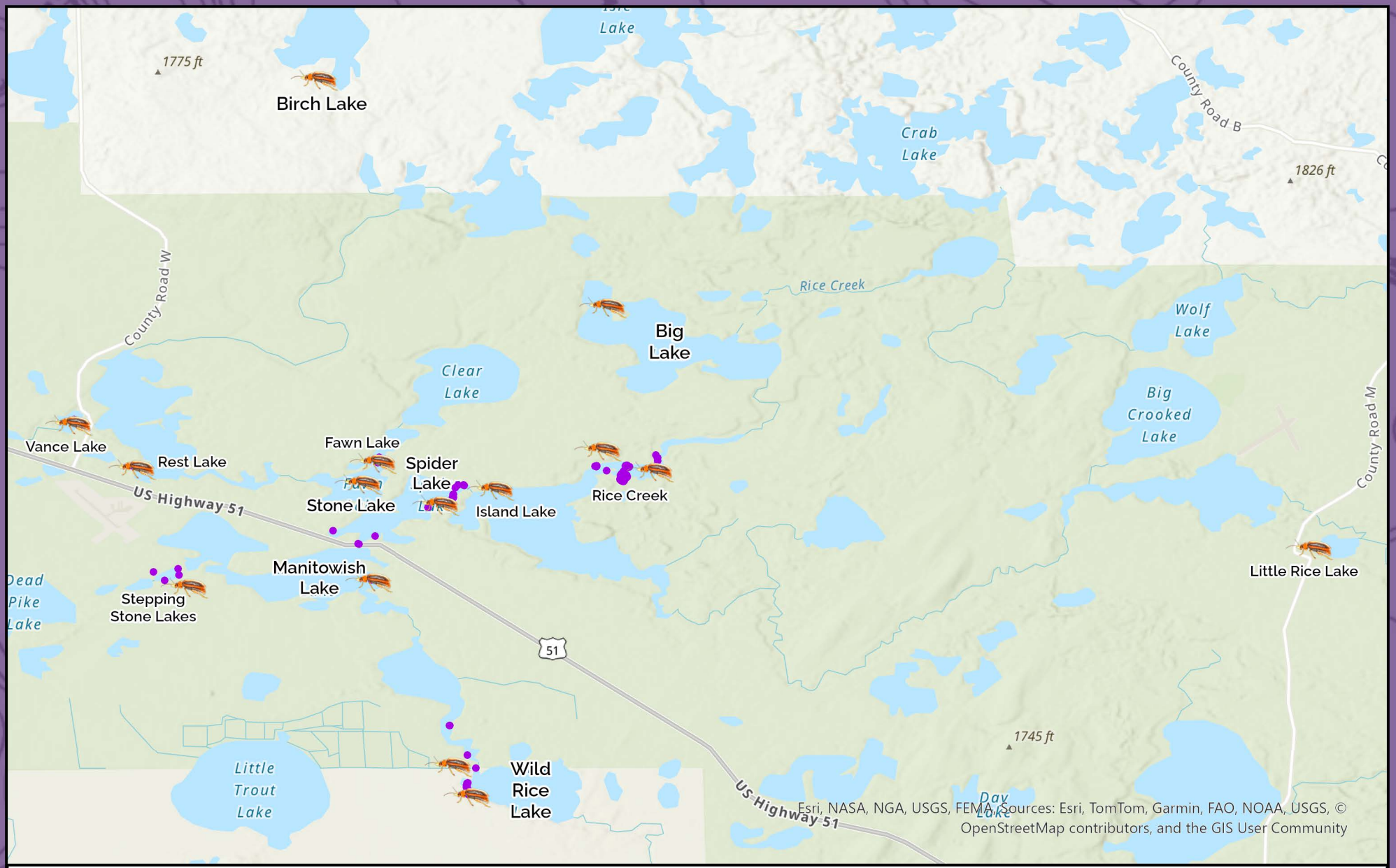
CLP Survey: 7-23 & 25, 2024)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant *(None)*
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- Public Boat Landing

Harris Lake

Vilas County, Wisconsin

2024 Curly-leaf Pondweed Survey Results



Cella Beetle Releases 2024

Purple Loosestrife Biocontrol

Town of Manitowish Waters
Vilas County, Wisconsin

Legend

- Cella Beetle Release Site
- Managed Purple Loosestrife Site

0 0.75 1.5 3 4.5 Miles

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Rock Lake Yellow Iris Survey Results

Town of Winchester
Vilas County, Wisconsin

June 20th, 2024

0 500 1,000 2,000 Feet

Legend

- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

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North Turtle Lake Yellow Iris Survey Results

Town of Winchester
Vilas County, Wisconsin

June 20th, 2024

0 500 1,000 2,000 Feet

Legend

- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

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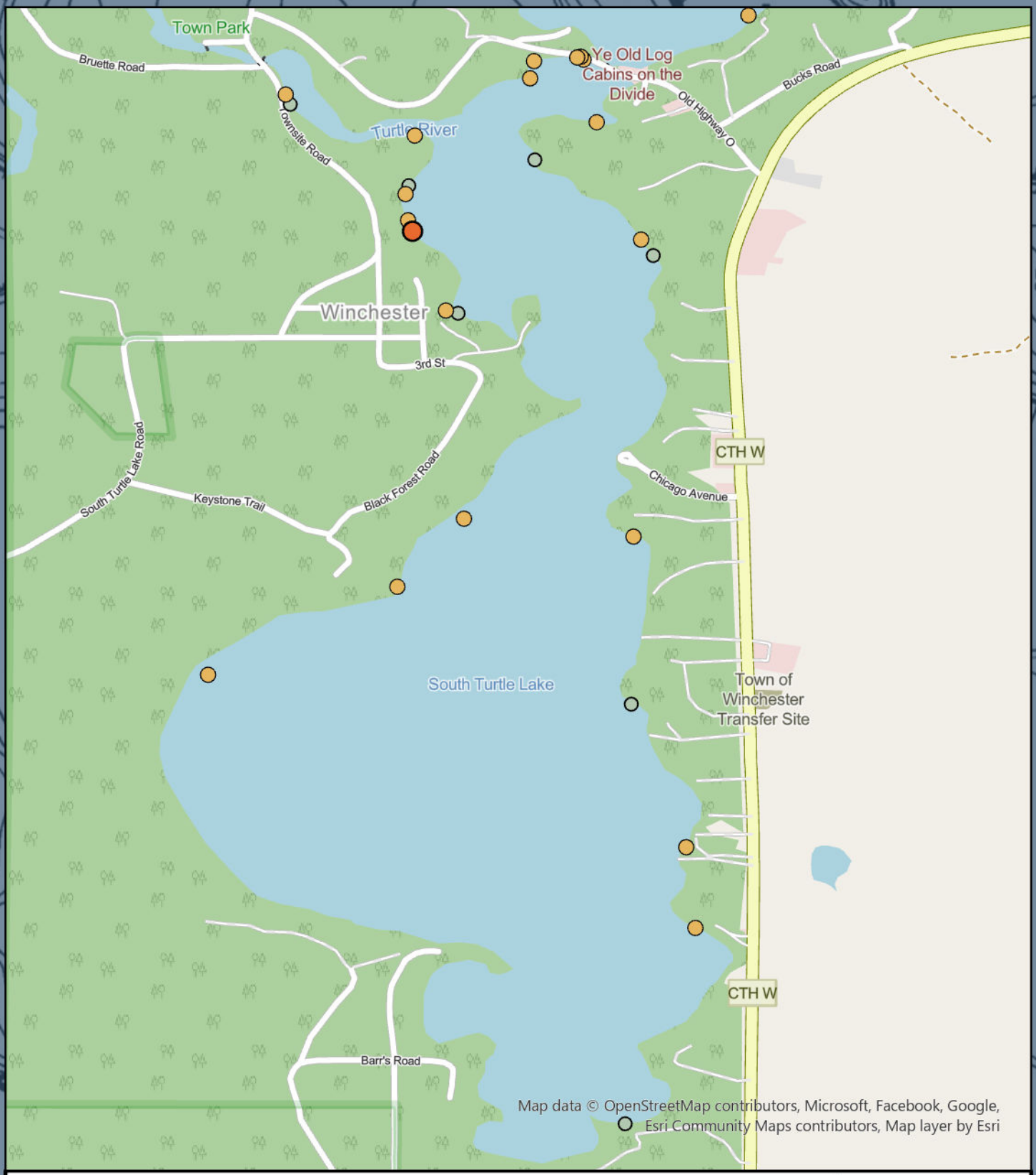

South Turtle Lake Yellow Iris Survey Results

Town of Winchester
Vilas County, Wisconsin

June 20th, 2024

Feet
0 500 1,000 2,000

Legend

- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

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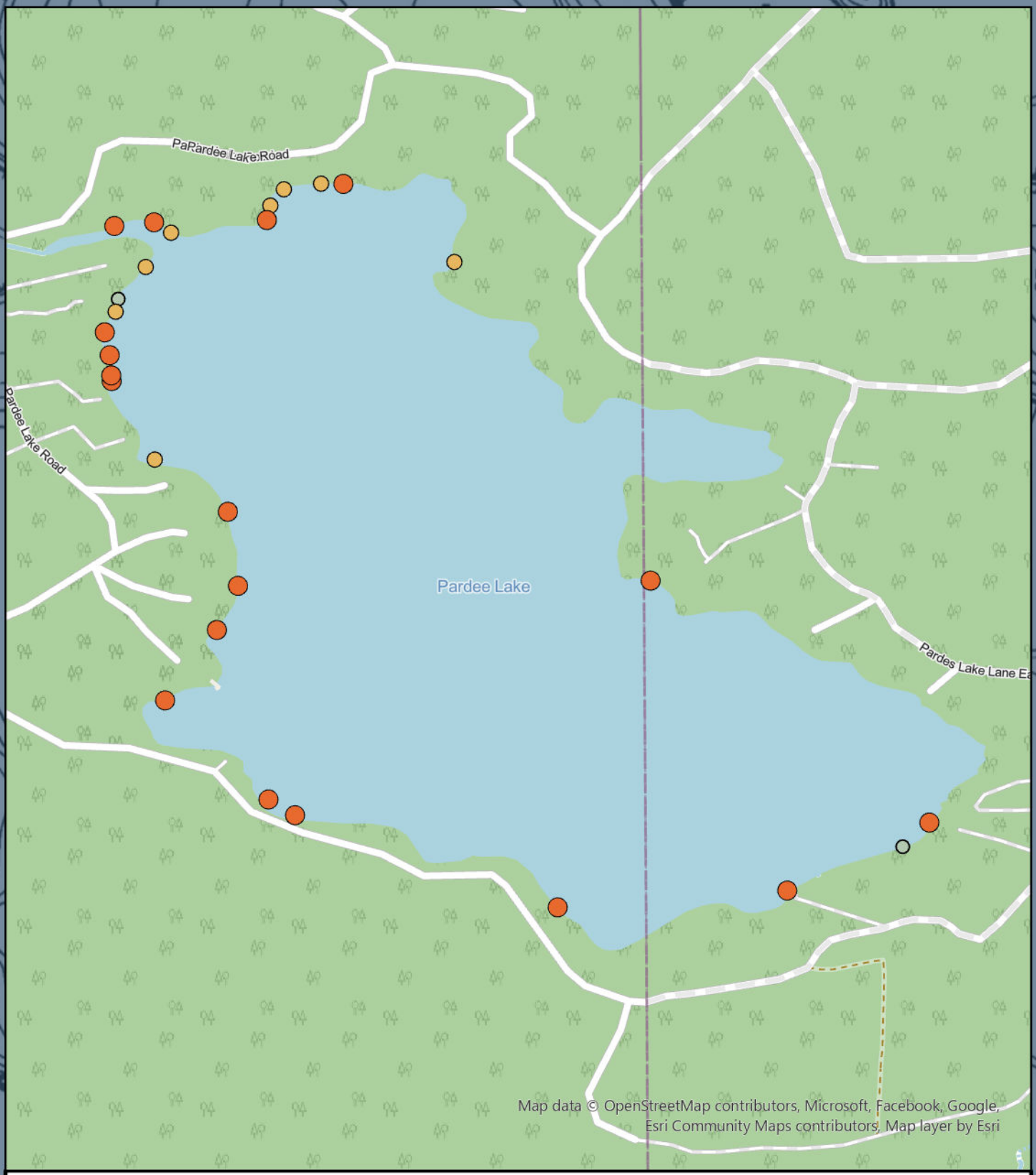

Pardee Lake Yellow Iris Survey Results

Town of Winchester
Vilas County, Wisconsin

June 19th, 2024

Miles
0 0.07 0.14 0.29

Legend

- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

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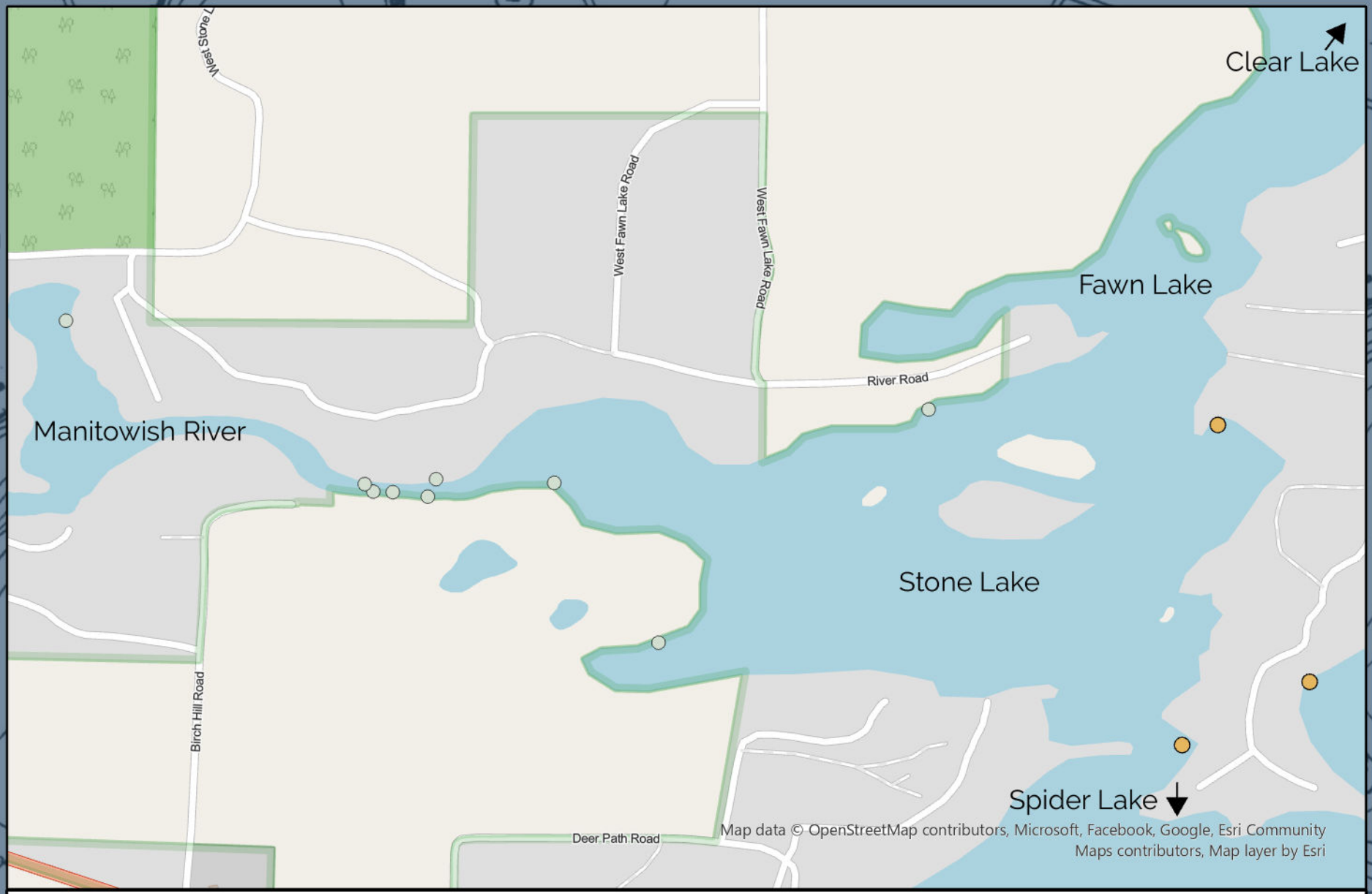

Stone Lake, Fawn Lake, and Manitowish River Eurasian Watermilfoil Survey Results

Town of Manitowish Waters
Vilas County, Wisconsin
September 2024

Legend

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

0 450 900 1,800 Feet

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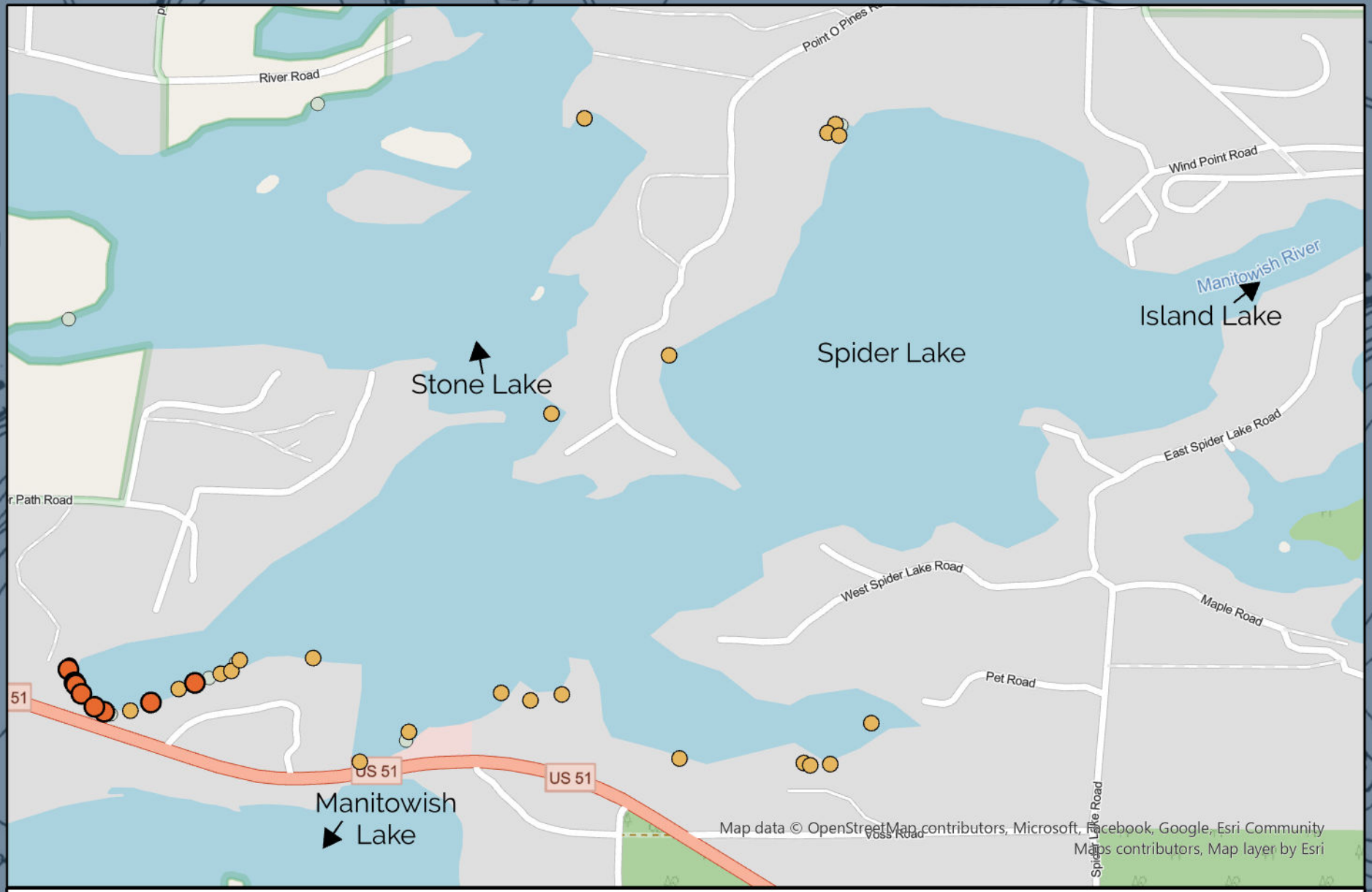

Spider Lake
Eurasian Watermilfoil
Survey Results

Town of Manitowish Waters
Vilas County, Wisconsin
September 2024

Legend

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

0 460 920 1,840 Feet

N W E S

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Little Star Lake Eurasian Watermilfoil Survey Results

Town of Manitowish Waters
Vilas County, Wisconsin
September 2024

Legend

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

0 387.5 775 1,550 Feet

N W E S

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Upper Trout River Eurasian Watermilfoil Survey Results

Town of Manitowish Waters
Vilas County, Wisconsin

September 2024

Feet
0 440 880 1,760

Legend

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

N W E S

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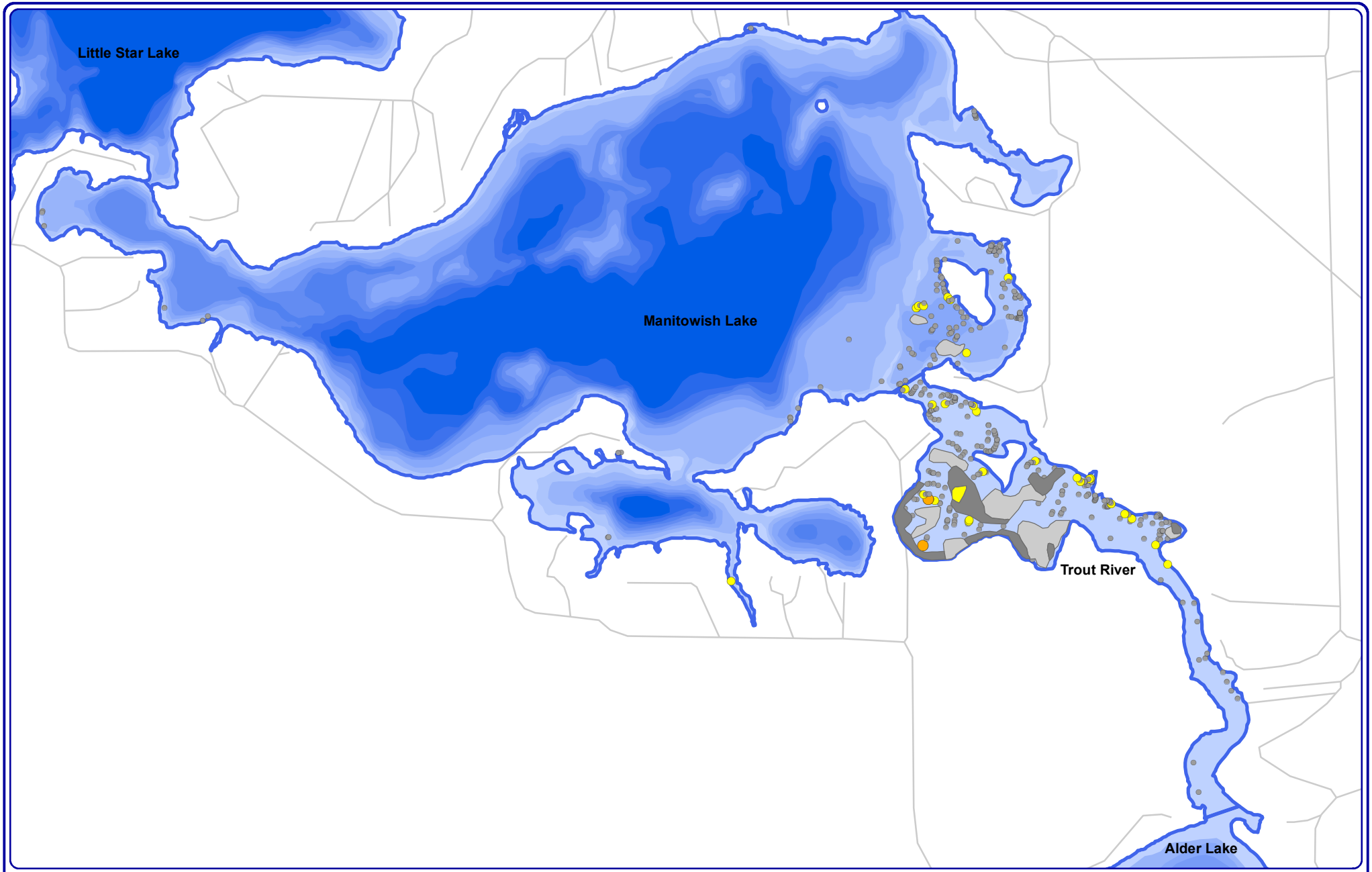

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1,200
Feet

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De Pere, WI 54115
920.338.8860
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Sources:
Roads and Hydro: WDNR
Bathymetry: digitized by Onterra
Aquatic Plants: Onterra, 2024
Map Date: 8-19-24 TWH


Project Location in Wisconsin

Legend

EWM Survey: August 14, 2024

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant *(None)*
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

Manitowish Chain Lakes

Vilas County, Wisconsin

2024 Late-Season Eurasian Watermilfoil Survey Results

APPENDIX 1 - Photos from TAISP monitoring, educational, and outreach activities completed in 2024.

Figure 1 (Left): Aquatic Plant Identification Training at Kemp Station with the Woods and Water team.

Figure 2 (Right): Exploring the depths of Statehouse Lake with North Lakeland Elementary School students via ROV, remote operated vehicle.

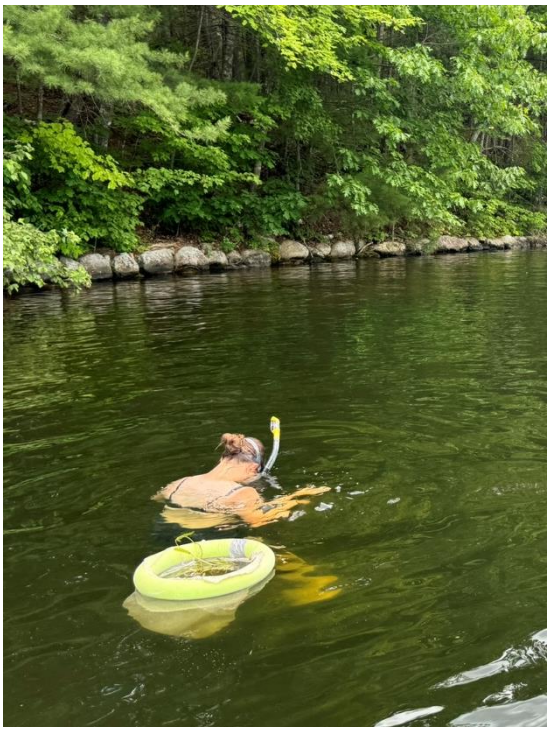

Figure 5 (Left): Richie and Landon diligently surveying for EWM on Little Star Lake.
Figure 6 (Right): Julianna carefully scoping out an EWM plant on Star Lake prior to diving to remove it.

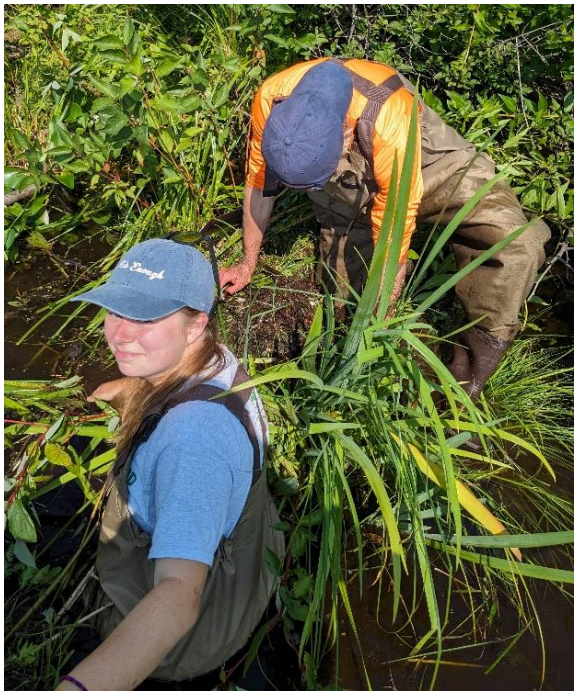

Figure 7 (Left): Woods and Water team member AJ conducting a point-intercept survey on Wild Rice Lake.
Figure 8 (Right): Julianna and Blake removing Yellow Iris from a tough, mucky location on Rock Lake.

Figure 9 (Left): Flagging, identifying, and digging Purple Loosestrife with the North Lakeland School 7th grade class.

Figure 10 (Below Right): The results of a PL flowerhead clipping throughout Rice Creek.

Figure 11 (Above Left): Blake clipping flowerheads near Little Rice Lake in Boulder Junction.
Figure 12 (Below): Richie and Landon navigating through Rice Creek clipping Purple Loosestrife flowerheads.

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Figure 13 (Above): Woods and Water team along with great volunteer help, pull EWM via snorkeling from the Trout River on the Manitowish Chain.
Figure 14 (Right): The Invader Crusaders first pontoon parade for the Winchester Fourth of July celebration.
Figure 15 (Below): Julianna peers through the dumpy level reading the gauge that Richie is holding to calibrate the lake level gauge.
Figure 16 (Lower Right): Landon tosses a throw rake into Big Lake on Snapshot Day, an early detection initiative for aquatic invasive species.

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APPENDIX 2 - All TAISP monitoring, educational, and outreach activities completed in 2024.

Date	Event	Description
1/3/2024	Impacts and Solutions for Shoreline Development	Presentation at NLDC offered to the community, 9 attendees
2/7/2024	Preserving Northwoods Lakes: 20 Years of Progress	Presentation at NLDC offered to the community, 15 attendees
3/12/2024	Purple Loosestrife Beetle Refresher Meeting	Virtual meeting
3/13/2024	Northland College Career Fair	Attended to promote and recruit Woods and Water staff
3/22/2024	Native Mussel Display	Create native mussel display for nature center
4/6/2024	Boulder Junction Earth Day	Promote native habitats at Earth Day festival
4/10/2024	2024 Lakes and Rivers Convention	Centered around the theme "50-Years Partnering for our Waters", NLDC participated in networking, educational panels, and collaboration with state partners
4/11/2024	2024 Lakes and Rivers Convention	Centered around the theme "50-Years Partnering for our Waters", NLDC participated in networking, educational panels, and collaboration with state partners; Presented 'Secret Lives of Salamanders'
4/12/2024	2024 Lakes and Rivers Convention	Centered around the theme "50-Years Partnering for our Waters", NLDC participated in networking, educational panels, and collaboration with state partners; Presented 'Preserving Northwoods Lakes: 20 Years of Progress'
4/18/2024	Lake Level Monitoring Spring Installations	Citizen Science Lake Level Monitoring Program, where NLDC Staff Install Lake Level Gauges
4/23/2024	Lake Level Monitoring Spring Installations	Citizen Science Lake Level Monitoring Program, where NLDC Staff Install Lake Level Gauges
4/29/2024	Spring WI AIS Partnership Meeting	Spring meeting for all LMPN coordinators throughout Wisconsin held at the Lions Camp
4/30/2024	Spring WI AIS Partnership Meeting	Spring meeting for all LMPN coordinators throughout Wisconsin held at the Lions Camp
5/2/2024	Snapshot Day Site Leader Training	Virtual training
5/3/2024	North Lakeland Woods and Water Conference	A conference to share conservation and ecological knowledge to the Northwoods
5/9/2024	Vance Lake CLP	ESAIS Survey on Vance Lake
5/11/2024	Bird and Wildlife Festival	Presented on planting and preserving native plants for bird and wildlife habitat, 12 attendees
5/14/2024	Harris Lake CLP	Site visit on Harris Lake to check for CLP growth
5/15/2024	NLS 7th Grade Purple Loosestrife Dig Day	Host 7th grade class from North Lakeland School to learn about invasive species and help setup purple loosestrife biocontrol rearing tent
5/23/2024	ESAIS Harris Lake	Early-season AIS Survey for CLP
5/24/2024	ROV Workshop with North Lakeland School	Workshop provided to NLS students teaching them about underwater remote operated vehicles and how they are used in science and nature - students build their own ROVs

APPENDIX 2 - All TAISP monitoring, educational, and outreach activities completed in 2024.

Date	Event	Description
5/25/2024	Wheels Wings and Water Craft show	AIS booth setup at the show talking to people about AIS
5/28/2024	Seasonal Staff training and orientation	Seasonal staff are introduced to NLDC and the Woods and Waters program
5/28/2024	Healthy Lakes Project at Statehouse Lake	Install native plants along shoreline native planting area
5/31/2024	ROV Workshop with Northland Pines	Workshop provided students teaching them about underwater remote operated vehicles and how they are used in science and nature - students build their own ROVs
5/31/2024	CBCW Training at Birch Lake	Train potential volunteers for CBCW and AIS identification; 6 attendees
6/5/2024	Boat and Trailer School	Boat trailering and boat operation training for all woods and water staff
6/8/2024	Lakeside Guardians: Aquatic Life and Battling Invasives	Train Harris Lake volunteers in AIS knowledge and identification, paddle Harris Lake to monitor for CLP; 7 attendees
6/11/2024	Harris Lake CLP	Harris Lake CLP Mapping
6/11/2024	Turtle Chain of Lakes	ESAIS for AIS on Turtle Chain
6/12/2024	Wilderness Water Safety	Water safety training for program team
6/13/2024	Wilderness Water Safety	Water safety training for program team
6/15/2024	AIS Training for Manitowish Waters	Training hosted at the Community Center to the public and potential volunteers on AIS identification and awareness; Paddle Vance Lake to identify CLP
6/18/2024	Sea Grant AIS Workshop	Attended a workshop hosted by Sea Grant to learn new educational opportunities and techniques for teaching about AIS to students and volunteers
6/19/2024	Sea Grant AIS Workshop	Attended a workshop hosted by Sea Grant to learn new educational opportunities and techniques for teaching about AIS to students and volunteers
6/19/2024	Pardee Lake Yellow Iris	YI survey at Pardee Lake
6/20/2024	Spider Lake Monitoring	ESAIS survey for CLP on Spider Lake
6/20/2024	Turtle Chain of Lakes Yellow Iris	YI survey at Rock, North Turtle, and South Turtle Lakes
6/25/2024	AIS Training for Manitowish Waters	Training to the public hosted at Wild Rice Landing
6/25/2024	Alder and Wild Rice Lake Monitoring	ESAIS survey for CLP and EWM on Alder and Wild Rice Lakes
6/26/2024	Aquatic Plant ID Course at Kemp Station	NLDC Staff attended an aquatic plant ID workshop at Kemp Station in Woodruff
6/28/2024	CBCW Landing Blitz	Participated in CBCW Landing Blitz campaign with extra presence at boat landings and communication focused on the campaign
7/2/2024	Purple Loosestrife Biocontrol	Collect beetles, dig PL for beetle food

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APPENDIX 2 - All TAISP monitoring, educational, and outreach activities completed in 2024.

Date	Event	Description
7/3/2024	Family Play Day	Free family event at NLDC; assist with families at the lake encouraging canoeing and fishing
7/4/2024	Fourth of July AIS Booth	AIS booth at the 4th of July Celebration in Manitowish Waters
7/6/2024	Winchester Pontoon Parade	Invader Crusaders pontoon float in the Winchester town pontoon parade
7/6/2024	Turtle Lakes Chain Association - Yellow Iris Presentation	Presented on the on-going yellow iris removal project with an emphasis on native restoration following removal
7/9/2024	Wild Rice Point Intercept Survey	GPS Map based survey to quantify all the aquatic vegetation species found on a waterbody
7/12/2024	Nicolet College 6-County Lakes Meeting	6 Counties lake meeting where a variety of different topics related to lake health and current research were presented
7/16/2024	Turtle Flambeau Flowage EWM	Sub-plot point intercept surveys on the Turtle Flambeau Flowage in a project partnership with the Burke Center of Northland College
7/16/2024	Tamarack Lake Point Intercept Survey	GPS Map based survey to quantify all the aquatic vegetation species found on a waterbody
7/17/2024	Turtle Flambeau Flowage EWM	Sub-plot point intercept surveys on the Turtle Flambeau Flowage in a project partnership with the Burke Center of Northland College
7/17/2024	Tamarack Lake Point Intercept Survey	GPS Map based survey to quantify all the aquatic vegetation species found on a waterbody
7/18/2024	Rainbow Lake Point Intercept Survey	GPS Map based survey to quantify all the aquatic vegetation species found on a waterbody
7/18/2024	AIS Training for Manitowish Waters	Training to the public hosted at Clear Lake Landing
7/24/2024	Turtle Flambeau Flowage EWM	Sub-plot point intercept surveys on the Turtle Flambeau Flowage in a project partnership with the Burke Center of Northland College
7/24/2024	Rainbow Lake Point Intercept Survey	Rainbow Lake PI
7/26/2024	Rainbow Lake Point Intercept Survey	GPS Map based survey to quantify all the aquatic vegetation species found on a waterbody
7/27/2024	Manitowish Waters Lakes Association Annual Meeting and Presentation	MWLA annual member meeting, presented on EWM
7/28/2024	Rainbow Lake Point Intercept Survey	GPS Map based survey to quantify all the aquatic vegetation species found on a waterbody
7/29/2024	Boulder Junction's Woods and Water Series	Evening program hosted at the Community Center sharing about the importance of protecting woods and water; 28 attendees
8/2/2024	Interpretive Pontoon Cruise on Rest Lake	Join NLDC Naturalists on Rest Lake pontoon tour sharing ecology and knowledge of Rest Lake; 8 attendees

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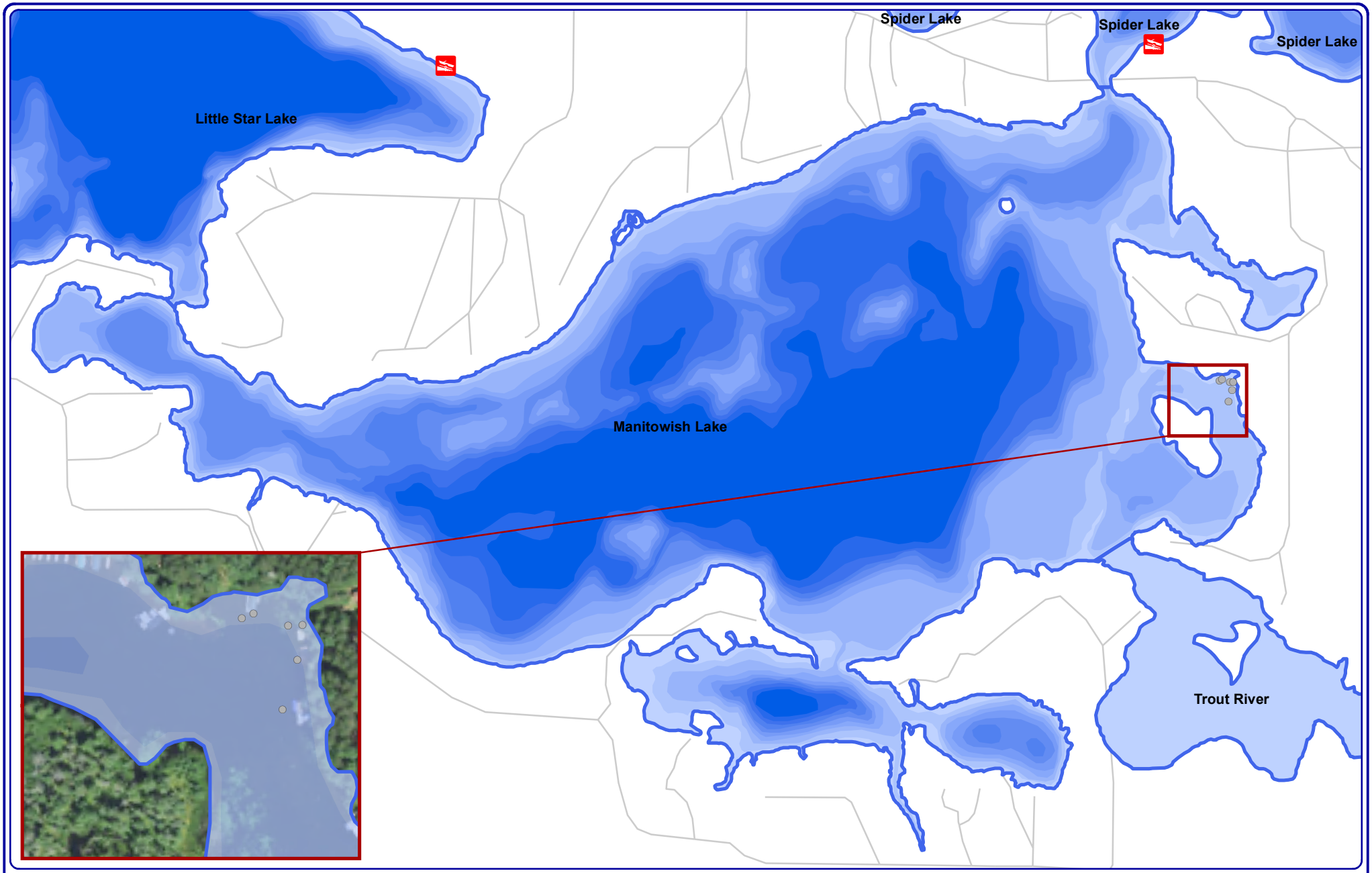
APPENDIX 2 - All TAISP monitoring, educational, and outreach activities completed in 2024.

Date	Event	Description
8/7/2024	Turtle Chain of Lakes Monitoring	North Turtle and Rock AIS Early Detection, SWF, and Purple Loosestrife survey
8/7/2024	AIS Early Detection Workshop on Rest Lake	Hosted public workshop for education on how to perform an AIS survey and learn AIS identification; 3 attendees
8/8/2024	Winchester Purple Loosestrife Monitoring	Monitor and remove purple loosestrife along Birch Lake Road
8/9/2024	Winchester Purple Loosestrife Monitoring	Monitor for purple loosestrife at Adalaide, Hiawatha, Yolanda, Mary, Hellen; removal at Adalaide Lake
8/10/2024	AIS Snapshot Day	Participate in AIS Snapshot Day and monitor lakes for AIS; Release beetles on Purple Loosestrife at Little Rice Lake
8/13/2024	Boulder Junction's Woods and Water Series	Canoe trip with the public to explore the Manitowish River in Boulder Junction; 14 attendees
8/15/2024	Volunteer and PDP Appreciation Dinner	Woods and Water seasonal staff present to audience on their experience and personal projects
8/16/2024	Purple Loosestrife Biocontrol	Released beetles and dug purple loosestrife at Vance and Surgeon Lakes
8/17/2024	Purple Loosestrife Biocontrol	Island Lake and Rice Creek purple loosestrife survey, beetle release and clipping
8/18/2024	Vance Lake CLP	LSAIS survey for CLP on Vance Lake
8/23/2024	AIS Early Detection Survey on Star Lake	A survey following WDNR protocol to look for AIS on lakes
8/24/2024	Healthy Lakes Project at Statehouse Lake	Install rock diversion along the trail that leads to the lake to divert water and reduce erosion
8/29/2024	AIS Early Detection Surveys on the Manitowish Chain of Lakes	A survey following WDNR protocol to look for AIS on lakes
9/3/2024	Pardee Lake Yellow Iris	Hand dig and remove yellow iris on Pardee Lake
9/5/2024	Aquatic Plant Extravaganza	Public program engaging participants in the biodiversity of aquatic plants across multiple lakes in the Northwoods
9/11/2024	Manitowish Chain EWM	Freediving and snorkeling to hand pull EWM on Fawn and Stone Lakes
9/12/2024	Manitowish Chain EWM	Freediving and snorkeling to hand pull EWM on the Manitowish River between Rest and Stone lakes
9/13/2024	AIS Early Detection Survey on Wild Rice Lake	A survey following WDNR protocol to look for AIS on lakes
9/13/2024	Plum Lake Hybrid-EWM	Collect samples of hybrid EWM on Plum Lake
9/18/2024	Turtle Chain of Lakes Yellow Iris	Hand dig and remove yellow iris
9/24/2024	Turtle Flambeau Flowage EWM	Sub-plot point intercept surveys on the Turtle Flambeau Flowage in a project partnership with the Burke Center of Northland College
9/25/2024	Turtle Flambeau Flowage EWM	Sub-plot point intercept surveys on the Turtle Flambeau Flowage in a project partnership with the Burke Center of Northland College

APPENDIX 2 - All TAISP monitoring, educational, and outreach activities completed in 2024.

Date	Event	Description
9/30/2024	Turtle Flambeau Flowage EWM	Sub-plot point intercept surveys on the Turtle Flambeau Flowage in a project partnership with the Burke Center of Northland College
10/1/2024	Turtle Flambeau Flowage EWM	Sub-plot point intercept surveys on the Turtle Flambeau Flowage in a project partnership with the Burke Center of Northland College
10/10/2024	Turtle Chain of Lakes Yellow Iris	Hand dig and remove yellow iris
10/24/2024	Fish and Fyke Nets Lighted Schoolhouse	Afterschool program held with North Lakeland School students teaching about freshwater fish and fyke netting, students got to help measure and mark fish; 9 attendees
11/6/2024	Turtle Chain of Lakes Yellow Iris	Hand dig and remove yellow iris
11/7/2024	Pardee Lake Yellow Iris	Hand dig and remove yellow iris on Pardee Lake
11/12/2024	Lake Level Monitoring	Lake level gauge removals
11/13/2024	Lake Level Monitoring	Lake level gauge removals
11/14/2024	Pardee Lake Yellow Iris	Hand dig and remove yellow iris on Pardee Lake
11/21/2024	Lake Level Monitoring	Lake level gauge removals

14006 Discovery Lane
Manitowish Waters, Wisconsin
Ph. 715-543-2085
www.discoverycenter.net



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Feet

Onterra LLC
Lake Management Planning
815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads and Hydro: WDNR
Bathymetry: digitized by Onterra
Aquatic Plants: Onterra, 2024
Map Date: June 21, 2024 - RMF

Project Location in Wisconsin

Legend

Eurasian watermilfoil (June 19, 2024)

- Highly Scattered *(None)*
- Scattered *(None)*
- Dominant *(None)*
- Highly Dominant *(None)*
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants *(None)*
- Small Plant Colony *(None)*
- Public Boat Landing

Manitowish Lake

Vilas County, Wisconsin

June 2024 EWM Survey Results