

2025 Town Aquatic Invasive Species Partnership Report

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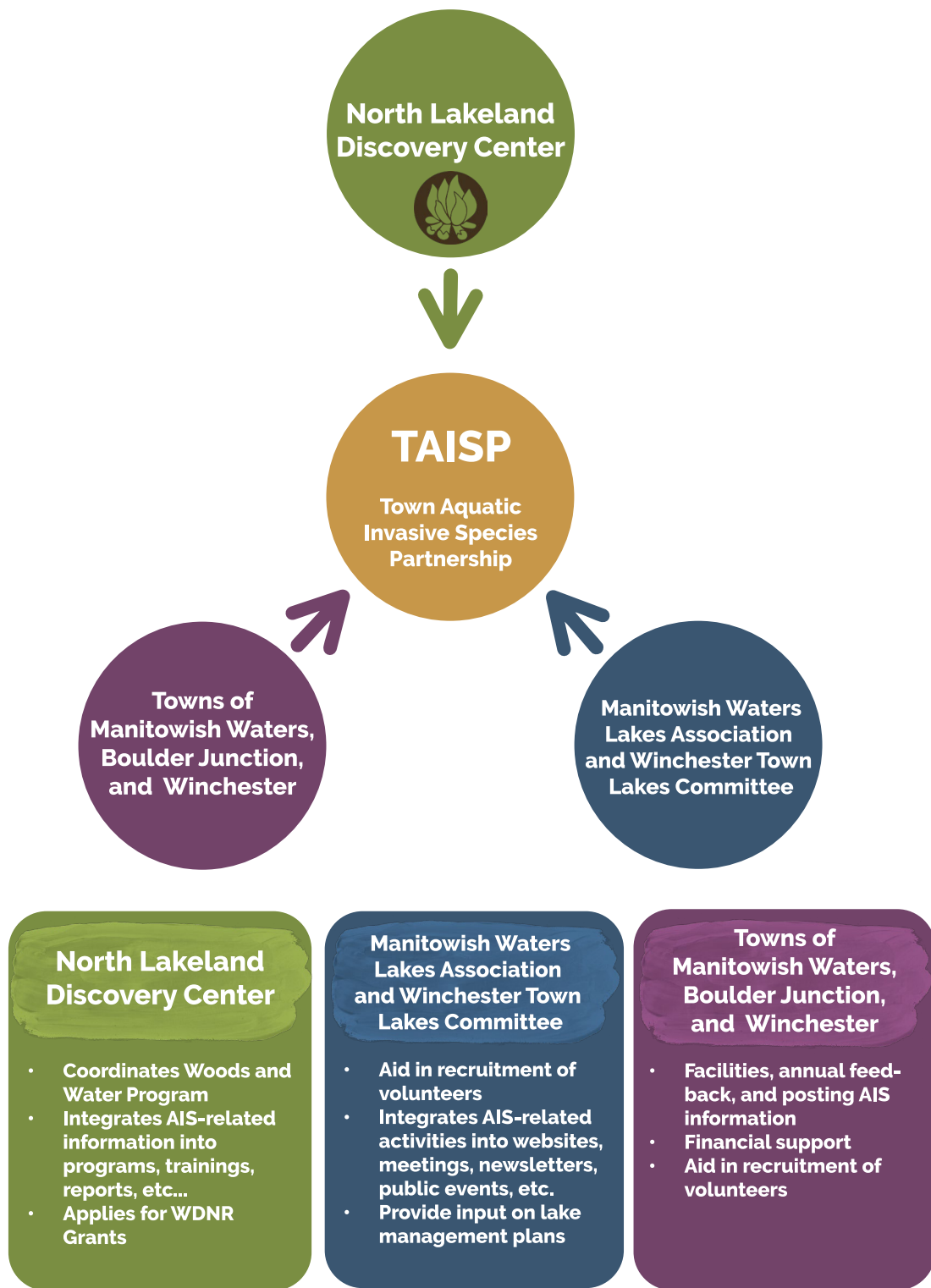


Figure 1. Model of the Town Aquatic Invasive Species Partnership (TAISP), consisting of the North Lakeland Discovery Center, Manitowish Waters Lakes Association, Winchester Town Lakes Committee, and the Towns of Manitowish Waters, Boulder Junction, and Winchester.

INTRODUCTION

The Town Aquatic Invasive Species Partnership (TAISP, Figure 1), consists 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. The TAISP undertook efforts in 2025 to prevent introduction, minimize spread, and manage existing populations of aquatic invasive species (AIS) in local waterbodies and wetlands. This was a year of learning as new staff joined North Lakeland Discovery Center, new projects were initiated, and innovative and adaptive management became even more essential to approach changing environments. It was a 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, and via other appropriate activities and venues. The Towns provided various forms of support such as facilities, feedback to partners regarding management plans, 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

As NLDC's Woods and Waters Program continues to grow, so does the Professional Development Program. In past years, staff positions have ranged from 3 to 5 seasonal staff and various full-time positions. In 2025, NLDC operated with 6 seasonal staff (two 6-month and four 3-month positions) and a full-time AIS Coordinator and Woods and Water Director.

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.

In 2025, NLDC welcomed the new Woods and Water Director, Abby Vogt, and AIS Coordinator, Lydia Dobberstein. Abby was a seasonal Lake Technician in 2022 and returned full-time in June. Lydia began full-time in August and helped complete the field season. Abby and Lydia focused on completing all field work, alongside the seasonal staff members, began compiling reports, and helped drive the continued growth and development of the Woods and Water Program.

The 2025 Ecological Restoration Technicians, Katie Wright and Sabrina Avila, led our NLDC campus gardens projects. They worked on weeding, replanting, and collecting seeds in our gardens while also assisting in native planting projects around the community. Janelle Lekies, Koen Schultz, Lily Grisbacher, and Luke Bolander filled our four Conservation Technician positions. These staff completed lake surveys 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: Koen Schultz, Luke Bolander, Janelle Lekies, Lily Grisbacher, Kara Gordon (Nature Center Assistant), Liz McCloskey (Seasonal Naturalist), and Katie Wright.

Woods and Water Director, Jamie Van, departed NLDC in August and worked collaboratively with Abby, the new Woods and Water Director throughout the summer. They collaborated with partners to expand Woods and Water 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.

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, staff 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 2025.

WDNR SURFACE WATER GRANTS

Wisconsin Department of Natural Resources (WDNR) has provided invaluable partnership through resource and monetary support for the work completed through the TAISP. In 2025, WDNR provided funding for the collective TAISP through 3 existing grants and 7 new grants that started in 2025 (Figure 3). These grants support AIS management, early detection and rapid

response, lake planning, and Clean Boats Clean Waters. Comprehensive plans that exist for the towns are instrumental in guiding management decisions and providing analytical support for grant requests. These plans are the Town of Winchester Lakes Comprehensive Management Plan (TWLCMP) of October 2022 and the Manitowish Waters Chain of Lakes Comprehensive Management Plan (MWCLCMP) of December 2019.

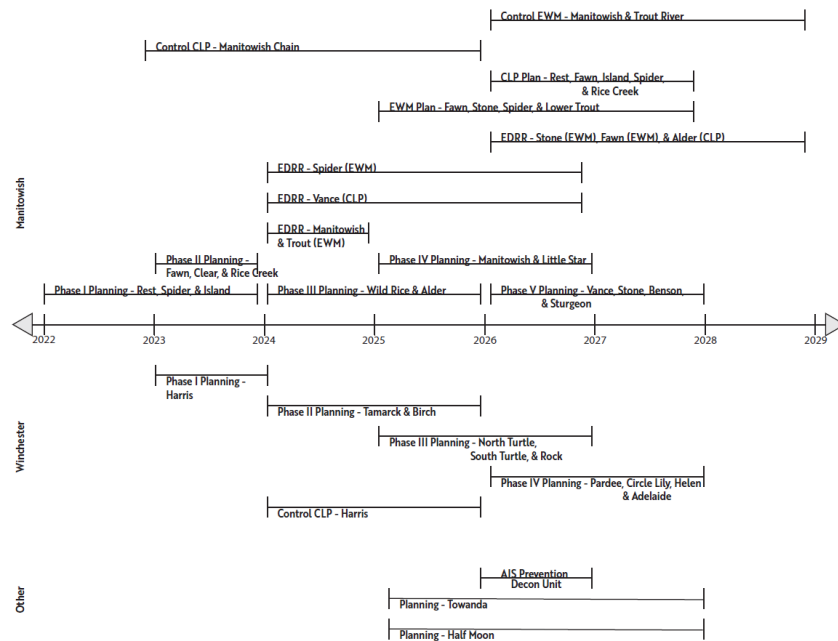


Figure 3. Timeline of Town Aquatic Invasive Species related Wisconsin Department of Resources surface water grants applied by North Lakeland Discovery Center from 2022 through projected 2028. Note: This includes grants applied for and awarded in 2026.

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, applied through the Manitowish Waters Lake Association (MWLA), provided funding to conduct periodic quantitative vegetation monitoring on Phase IV Lakes: Manitowish Lake¹ and Little Star Lake² in 2025. This vegetation monitoring includes a complete lake point-intercept survey, as well as floating-leaf and emergent community mapping survey on each lake. The final, Phase V, lakes will be started in 2026 with additional AIS planning grants being applied for and awarded for Vance, Stone, and Benson/Sturgeon to support surveying efforts.

Curly-leaf pondweed was first discovered below the dam in Vance Lake in 2023 and received funding in 2024 through 2026 for surveying and management under an Early Detection and

¹ WDNR Grant #AEPP83125

² WDNR Grant #AEPP86325

Rapid Response grant³. Activities under this grant are three years of early season and late season surveys of curly-leaf pondweed by North Lakeland Discovery Center and hand pulling by NLDC and Aquatic Plant Management Inc.

In 2023, a large-scale curly-leaf pondweed control grant⁴ was applied for and awarded to conduct monitoring and management for three years, completed in 2025. This funding supported early-season AIS (ESAIS) surveys, hand-pulling, and DASH on Rest, Fawn, Stone, Spider, Island and Rice Creek. The curly-leaf 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 2025, two planning grants were awarded to update the Manitowish Waters Aquatic Plant Management plan focused on Eurasian watermilfoil. These grant^{5,6} acts as an amendment to the comprehensive management plan as Eurasian watermilfoil was not detected when the 2019 plan was created. Therefore, this plan guides well-informed, species-specific management. This grant will close at the end of 2027 with the deliverables completed and distributed.

In 2025, a Clean Boats Clean Waters grant⁷ was also funded by WDNR to provide AIS inspection and outreach at both Rest and Clear Lake landings, completing 120 hours of staff time at boat landings. The 2026 CBCW grant⁸ has also already been awarded for Rest and Clear.

Unfortunately, North Lakeland Discovery Center did not sponsor or conduct any work related to Healthy Lakes and Rivers grants. These grants assist funding on various restoration projects such as rain gardens, fish sticks, native plantings, and diversions. These are critical natural resource management practices that help the health of our waters.

Town of Winchester

Three planning grants were applied for and awarded following guidelines of the TWLCMP goals: Goal 1; protect the current high quality ecological health of town of Winchester lakes, and Goal 4; prevent new aquatic invasive species introductions. These grants, applied by North Lakeland Discovery Center, provided funding to conduct periodic quantitative vegetation monitoring on Phase III Lakes: North Turtle⁹, South Turtle¹⁰, and Rock¹¹ lakes in 2025. This vegetation monitoring includes a complete lake point-intercept survey, as well as floating-leaf and emergent community mapping survey on each lake. The final Phase IV lakes will be started in

³ WDNR Grant #AIRR29524

⁴ WDNR Grant #AECI32723

⁵ WDNR Grant # AEPP85425

⁶ WDNR Grant # AEPP86425

⁷ CBCW Grant # 164825

⁸ CBCW Grant # 169026

⁹ WDNR Grant # AEPP83525

¹⁰ WDNR Grant #AEPP87725

¹¹ WDNR Grant #AEPP85525

2026 with additional lake planning grants being applied for and awarded for Pardee, Circle Lily, and Helen/Adelaide Lakes to support surveying efforts.

As a response to an increase in curly-leaf pondweed found in Harris Lake, a small-scale curly-leaf pondweed control grant¹² was applied for and awarded to conduct monitoring and management for three years, beginning in 2024 through 2026. 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.

North Lakeland Discovery Center also aided in activities of the Turtle Lakes Chain Association Clean Boats Clean Waters grant in 2025 and will continue these efforts in 2026.

PRIORITY AIS: CURLY-LEAF PONDWEED (CLP)

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, reproduce through fragmentation, and indefinite dormancy period of the turions in the sediment.

Manitowish Waters Chain of Lakes

Since curly-leaf pondweeds first detection in the Manitowish Lakes Chain in 2010, various surveys, treatments, management efforts, and related grants have occurred (Figure 4). In 2025, Onterra conducted CLP surveys on Rest, Fawn, Island, Stone, Spider, and Rice Creek (Map 1). NLDC conducted surveys additionally on Vance, Manitowish River, Alder, Clear, Wild Rice Lake, and Manitowish Lake. CLP was not redetected on Clear Lake after first being found in 2024. A new population of about 15 individuals were detected on Alder Lake (Map 2). Vance lake and Manitowish River between Rest and Stone also had some CLP population (Map 3). No CLP was found on Wild Rice or Manitowish Lakes. Removal efforts were executed on Alder, Fawn, Island, Rest, Spider, Stone and Vance Lakes. APM was contracted on Fawn (DASH 227 cubic feet) and Vance (hand harvest 9.5 cubic feet) Lakes. NLDC conducted hand pulling removal throughout the Manitowish Chain for 10 days.

¹²WDNR Grant #ACEI34924

NLDC Curly-leaf Pondweed Timeline Manitowish Waters Chain, Vilas County, WI



Figure 4. A timeline of significant curly-leaf pondweed detection and treatment events in the Manitowish Waters Chain of Lakes.

Town of Winchester

In June 2025, North Lakeland Discovery Center conducted early-season AIS surveys focused on detecting curly-leaf pondweed in Birch, Harris, North Turtle, Rock, and South Turtle Lakes. Curly-leaf pondweed was found only in Harris Lake, where it had been previously documented.

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 detected plants were removed with rakes and snorkel hand pulling. This area covered 1.73 acres. Upon working that year, it was concluded that due to Harris Lake’s wind and wave conditions, bowl-shaped basin, water clarity, and deep-growing vegetation, surveys and removal of CLP are particularly challenging. Therefore, in 2024, a small-scale control grant was awarded to remove populations of CLP on Harris Lake. Aquatic Plant Management was contracted to DASH larger colonies while NLDC focused on hand pulling smaller populations. Several educational events occurred in 2024 as a supplement to the significantly expanded CLP population. Despite the efforts, DASH and hand pulling did not significantly reduce curly-leaf pondweed in Harris Lake in 2024.

In 2025, curly-leaf pondweed populations decreased to previously observed levels before 2024. (Map 4) NLDC continued removal efforts focused in the northern, smaller ‘arrowhead’ section of the lake, spending 3 days of hand pulling removal.



Figure 5. An underwater perspective of Curly-leaf pondweed found in Harris Lake.

PRIORITY AIS: EURASIAN WATERMILFOIL (EWM)

Eurasian watermilfoil (*Myriophyllum spicatum*) is an aquatic plant that is native to Europe and western Asia. 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 Northern lakes.

Manitowish Waters Chain of Lakes

In July 2023, Eurasian watermilfoil was reported and suspected of being on 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 but no dense colonies.

During the 2024 season, a WDNR Early Detection and Response Grant supported extensive surveying and management of Eurasian watermilfoil (EWM) across the Manitowish Chain, where increased expansion, likely driven by mild winter conditions and early ice-off, exceeded expectations. New detections occurred in Little Star, Stone, Fawn, and Spider Lakes, with significant population increases in Manitowish Lake, Spider Lake, and the Lower Trout River, prompting expanded DASH and hand-removal efforts. Aquatic Plant Management Inc. completed 18 days of DASH and 9 days of hand harvesting between June and August, removing 1,224 cubic feet of EWM, primarily from the Lower Trout River, while NLDC conducted surveys and manual removal in smaller or outlying populations. Late-season surveys mapped over 14 acres of EWM in Manitowish Lake and the Trout River, while additional lakes showed no presence. In response to the scale of spread, stakeholder meeting took place to highlight the need for sustained funding, leading to the launch of the “Save the Chain” initiative to support ongoing EWM management and protect the region’s lakes.

In 2025, work began under two WDNR planning grants to develop a Eurasian Watermilfoil (EWM) Aquatic Plant Management Plan, which includes full-lake surveys, public engagement and education, development of long-term control strategies, and creation of an integrated mapping tool; this plan is necessary as the previous comprehensive plan was made before EWM was reported in the Chain. During the 2025 field season, early-season EWM surveys were

completed by NLDC and Onterra on Alder, Little Star, Manitowish, Spider, Stone, and Wild Rice Lakes, with no EWM detected in Little Star, Alder, or Wild Rice Lakes. Removal efforts occurred on Fawn, Spider, Stone, Manitowish, and the Trout River, followed by late-season surveys conducted by Onterra on those same waterbodies (Maps 5-9). During an Early Detection and Rapid Response survey on Sturgeon Lake, EWM was detected on the southwest shoreline and immediately removed by NLDC. Aquatic Plant Management Inc. conducted hand harvesting on Stone Lake, removing 1.1 cubic feet of EWM in approximately three hours; DASH operations on Spider Lake removed 19.6 cubic feet over nearly 14 hours; and intensive efforts on Manitowish Lake and the Lower Trout River removed 136 cubic feet over 50.3 hours and 2,396.3 cubic feet over 212.4 hours, respectively. Additionally, NLDC spent 12 field days hand-pulling EWM across the Upper Trout River, channel between Rest and Stone, Spider, Stone, Manitowish, and Fawn Lakes, removing over 23 cubic feet, and a potential hybrid EWM plant was documented on Spider Lake.

Active management efforts and collaborative discussions are ongoing to identify effective paths forward for Eurasian watermilfoil management across the Manitowish Chain. An integrated pest management (IPM) approach remains central to these efforts, recognizing that no single strategy will provide a universal solution. Management of Eurasian watermilfoil is an iterative process rooted in continued learning, research, and adaptive decision-making, as eradication of established invasive species is not feasible. Instead, sustained monitoring, targeted control, and informed collaboration will guide long-term, realistic management goals

Winchester Lakes

Through the various surveys like Early Detection Rapid Response, NLDC meander surveys, and targeted EWM AIS surveys, no populations of Eurasian watermilfoil were found in Winchester lakes. EWM AIS surveys were completed on Birch, Harris, North Turtle, Rock, and South Turtle.

PRIORITY AIS: PURPLE LOOSESTRIFE

Purple loosestrife (*Lythrum salicaria*) is a resilient and fast-spreading wetland invasive species native to Europe and Asia. This species 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. North Lakeland Discovery Center's 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. Biocontrol is particularly effective in marshland environments where physical removal through cutting or digging is impractical.

Each spring, NLDC partners with the 7th grade class from North Lakeland School (NLS) to help jumpstart the biocontrol beetle-rearing project. In 2025, students learned about invasive species, biocontrol techniques, and assisted in harvesting purple loosestrife plants. In the previous year, plant collection occurred in wetlands at the north end of Big Lake, but this year, students returned to collect purple loosestrife at a property on Rest Lake. NLDC looks to return to Big Lake in the upcoming year to collect these plants.

Historically, *Galerucella* beetles were raised in small, individual netted purple loosestrife plants, limiting NLDC's capacity to approximately 30 purple loosestrife pots. However, starting in 2023, the project expanded with the installation of a 12x12-foot screen cage, significantly increasing beetle production. The mass beetle rearing cage was provided by the University of Wisconsin–Madison Division of Extension. With this larger system in place, NLDC staff monitored and tended to purple loosestrife plants throughout the season, allowing for the successful rearing and release of thousands of *Galerucella* beetles into our management areas.

Towns of Manitowish Waters and Boulder Junction

In 2025, North Lakeland Discovery Center continued its extensive purple loosestrife surveys on the Manitowish Waters Chain of Lakes. While focusing on incoming/outflowing rivers and wetlands, we continued to monitor and manage previously known areas of concern and identified some new areas. Starting in July, purple loosestrife populations were identified and marked on GPS with density code and seed heads were clipped to mitigate spread. In addition to seed head clipping, *Galurecella* beetles were released in select locations determined by density of purple loosestrife, beetle establishment and impact, and projected success of beetle population (Map 10). In the locations beetles were released this year, NLDC will return next year to assess the success of establishment of the beetle population.

Rice Creek flowing into Island Lake was also a previously known area of concern, however, to not disturb wild rice populations, extensive surveys were not conducted in this area but some beetles were released.

Town of Winchester

Winchester Lakes: Adelaide, Birch, Circle Lily, Harris, Hellen, Hiawatha, Little Papoose, Mary, North Turtles, Noseeum, Pardee, Papoose, Rainbow, Rock, South Turtle, Tamarack, and Yolanda were all surveyed for purple loosestrife in 2025 with collaborative effort from NLDC staff and lake resident volunteers. A population was found on the east shore of Pardee Lake with a small clump of plants that may have returned from 2022. No other purple loosestrife was observed nor were any beetles released as the populations of purple loosestrife in Winchester are not large enough to warrant a beetle release. NLDC will continue to survey the lakes in 2026 and monitor previously managed locations.

PRIORITY AIS: YELLOW IRIS

Yellow Iris (*Iris pseudacorus*) is a nonnative species established in Wisconsin but native to Europe, western Asia, and North Africa. It was once popularly sold as an ornamental plant for gardens. 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

Turtle Chain

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) (Table 1).

In 2025, NLDC continued efforts based on the 2021 survey and landowner approvals to remove yellow iris late into the summer and early fall (Map 11). 44 populations of yellow iris that had landowner approval were removed over 4 days, totaling an estimated 1,015 pounds of plant material removed and disposed of. However, some populations could not be removed due to concern with resulting erosion issues, if no further restoration projects were implemented. NLDC looks to attain landowner approvals from the 2024 survey to guide updated removal efforts in 2026. (A full report of the work will be provided to Turtle Lakes Chain Association).

Pardee Lake

After resurveying Pardee Lake in late June 2025, the Woods and Water team returned to Pardee lake to remove 21 of the 25 populations of yellow iris, around 75 pounds of plant material (Map 12). (A full report of this work will be provided to Pardee Lake Association).

These yellow iris projects highlight the effectiveness of long-term invasive species management through community collaboration, manual removal, and native community restoration. Ongoing efforts will be crucial in preventing the re-establishment of yellow iris and ensuring the continued health of Winchester's pristine waters. Landowner approval and/or participation is critical in this management effort to ensure thorough and up to date field work removal efforts.

Table 1. Timeline of yellow iris management by NLDC on the Turtle Chain

Year	Activity
2015	Yellow iris first officially documented on Turtle Lakes Chain
2017-2018	First mapping by Onterra on PI survey, some monitor and management with outreach to landowners
2019	NLDC mapped 35 individuals for removal
2020	TLCA mailed letters to shoreline property owners that had yellow iris, including a post card to indicate removal plans whether on their own or assistance from NLDC. The response rate was over 80%, with 19 property owners asking for removal assistance.
2021	Turtle Chain was resurveyed to track progress on removal. There continued to be a large amount of YI throughout the Chain, especially on Rock Lake. 133 total populations across 45 properties. 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 conducted follow up survey and observed reduced regrowth was observed at the 2022 managed sites. Removal efforts targeted northern half of Rock Lake, an estimated 1,500 pounds removed.

	A shoreline restoration project was completed on private property on Rock Lake to remove a dense population of yellow iris and restore it to a native, biodiverse, and stable shoreline, funded by a WDNR Healthy Lakes & Rivers Grant.
2024	Turtle Chain shoreline was resurveyed with an update to population density. 100 remaining yellow iris populations, with 70 concentrated on Rock Lake were identified. Removal efforts again were focused on high density areas on the northern half of Rock Lake, removing around 1,780 pounds of yellow iris. A follow up to the restoration project was found to be largely free of yellow iris, with native vegetation beginning to establish successfully.

PRIORITY AIS: SPINY WATER FLEA

Spiny waterflea (*Bythotrephes longimanus*) has been recorded in 26 Wisconsin waters, 6 of which are in Vilas County: Plum (2019), Trout (2014), Star (2013), Stormy (2007), Ike Walton (2015). The newest addition to this total is Spider Lake found in 2025 by seasonal staff members. 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. As part of WDNR Early Detection survey, North Lakeland Discovery Center conducts plankton net tows that consist of a vertical tow of a half-meter diameter 250-micron plankton net in lake deep-holes. Samples are then processed into ethanol and under a microscope to search for spiny waterflea.

Towns of Manitowish Waters and Boulder Junction

In 2025, NLDC sampled Manitowish, Clear, Little Star, Island, Spider, Sturgeon, and Benson Lakes. Upon sampling Spider Lake, SWF we identified in the jar in field. However, a follow-up nighttime survey on Spider Lake did not uncover more of the zooplankton. All other samples were thoroughly inspected under a microscope, and no trace of spiny waterflea was found in the rest of the lakes. NLDC will monitor the next round of lakes in 2026 as well as adding Spider Lake (Table 2).

Town of Winchester

In 2026 NLDC collected samples from Harris, South Turtle, and Birch 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, especially when no extensive or multiple targeted surveys are occurring that year on the lake. 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 2025, AIS early detection surveys were conducted on Manitowish, Clear, Little Star, Island, Spider, Sturgeon, and Benson Lakes in Manitowish Waters. During this survey, one individual of Eurasian watermilfoil was found on Sturgeon Lake. Within Winchester, Harris, South Turtle, and Birch Lakes were surveyed. The following year will be repeated with the biannual survey cycle (Table 2).

Table 2. Spiny waterflea and AIS Early Detection surveying timeline for Manitowish Waters and Winchester Lakes

Lake	Spiny Waterflea Survey				AIS Early Detection Survey			
	2023	2024	2025	2026	2023	2024	2025	2026
Manitowish			X		X		X	
Clear			X		X		X	
Rest	X	X		X		X		X
Fawn		X		X		X		X
Little Star			X		X		X	
Stone		X		X		X		X
Island	X		X				X	
Spider	X		X	X			X	
Wild Rice	X	X		X		X		X
Alder		X		X		X		X
Vance		X		X		X		X
Sturgeon			X				X	
Benson			X				X	
Harris	X		X				X	
North Turtle		X		X	X	X		X
South Turtle	X		X				X	
Rock		X		X		X		X
Circle Lily		X		X		X		X
Birch	X		X				X	

AIS MEANDER SURVEYS

AIS Meander surveys are a protocol developed by NLDC that does not target a specific aquatic invasive species and is done mid-summer in hopes to identify any new aquatic invasive species. This survey was completed on Benson, Little Star, and Sturgeon Lakes within the Manitowish Chain. Within Winchester, this survey was done on Circle Lily and Papoose. No new invasive species were found in 2025 through these surveys.

POINT INTERCEPT SURVEYS

Five Point intercept surveys were conducted this year amongst the three towns. Onterra surveyed three. NLDC surveyed two. Conclusions of these surveys will be in separate reports later when data is processed.

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 2026, with the possibility of applying for a Healthy Lakes grant to support the development of the project.

EDUCATION and VOLUNTEERING

NLDC participated in a variety of town-wide and regional events during the 2025 field season to promote aquatic invasive species (AIS) education, environmental stewardship, and community engagement. Outreach included booths at Wings, Wheels and Watercraft Show, the Manitowish Waters Harvest Fest, Lac du Flambeau Lake Fest, and the Boulder Junction Musky Jamboree, as well as participation in the Manitowish Waters Fourth of July Parade. Educational and hands-on programming was provided through the Camp Jorn, Lighted Schoolhouse for North Lakeland Elementary students, an Environmental Education field day, purple loosestrife digging with North Lakeland 7th graders, Garden Club programs hosted at NLDC, and the NLDC Summer Family Play Day featuring fishing and an underwater ROV. NLDC also supported field-based learning through Natural Resource Foundation mussel surveys, snorkel and paddle trips, attended the Trout Lake Station open house, participated in the Manitowish Waters Night Market, and remained engaged through regional town and lake association meetings, as well as the Eurasian watermilfoil benefit concert at Koller Park.

Towns of Manitowish Waters and Boulder Junction

Volunteer engagement remained a key part of project success in 2025, with 133.8 volunteer hours contributed overall. Volunteer efforts focused on aquatic invasive species surveying, including the new zebra and quagga mussel bricks.

Town of Winchester

Likewise, 159 volunteer hours were reported from the Turtle Chain with over 100 hours dedicated to North Turtles Clean Boats Clean Waters initiative. NLDC hosted a CBCW training on June 19 at South Turtle Boat Landing, five participants were in attendance.

LAND PROJECTS

In 2025, North Lakeland Discovery Center was involved in three land restoration projects within the three towns. These projects ranged from native garden plantings at the Junction Library, private property shoreline restorations, and terrestrial invasive species removal like day lilies and wild parsnip. Follow up to two of these properties will occur in 2026. Three site visits occurred to assess future restoration work under the Healthy Lakes and Rivers program. Lastly, NLDC is working with several other landowners to develop conservation plans or other restoration projects in 2026.

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. In 2025, NLDC contributed 539 hours to the CBCW program throughout five lakes (Table 3).

Table 3. Data from CBCW inspection hours completed by NLDC staff in 2025

LAKE	NLDC INSPECTION HOURS	Volunteer/ Other Hours	BOATS INSPECTED	PEOPLE CONTACTED	% OF BOATS PRESENT ON ANOTHER WATERBODY IN PAST 5 DAYS
Rest	114.25	8	222	432	19%
Clear	117	8	117	214	36%
Big	128	21	147	269	72%
Presque Isle	59.5	0	47	84	41%
South Turtle	120.75	59	165	333	45%

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 UW-Madison Trout Lake Research Station to provide technical guidance and data analysis support. 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. 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. Additionally, it allows scientists to

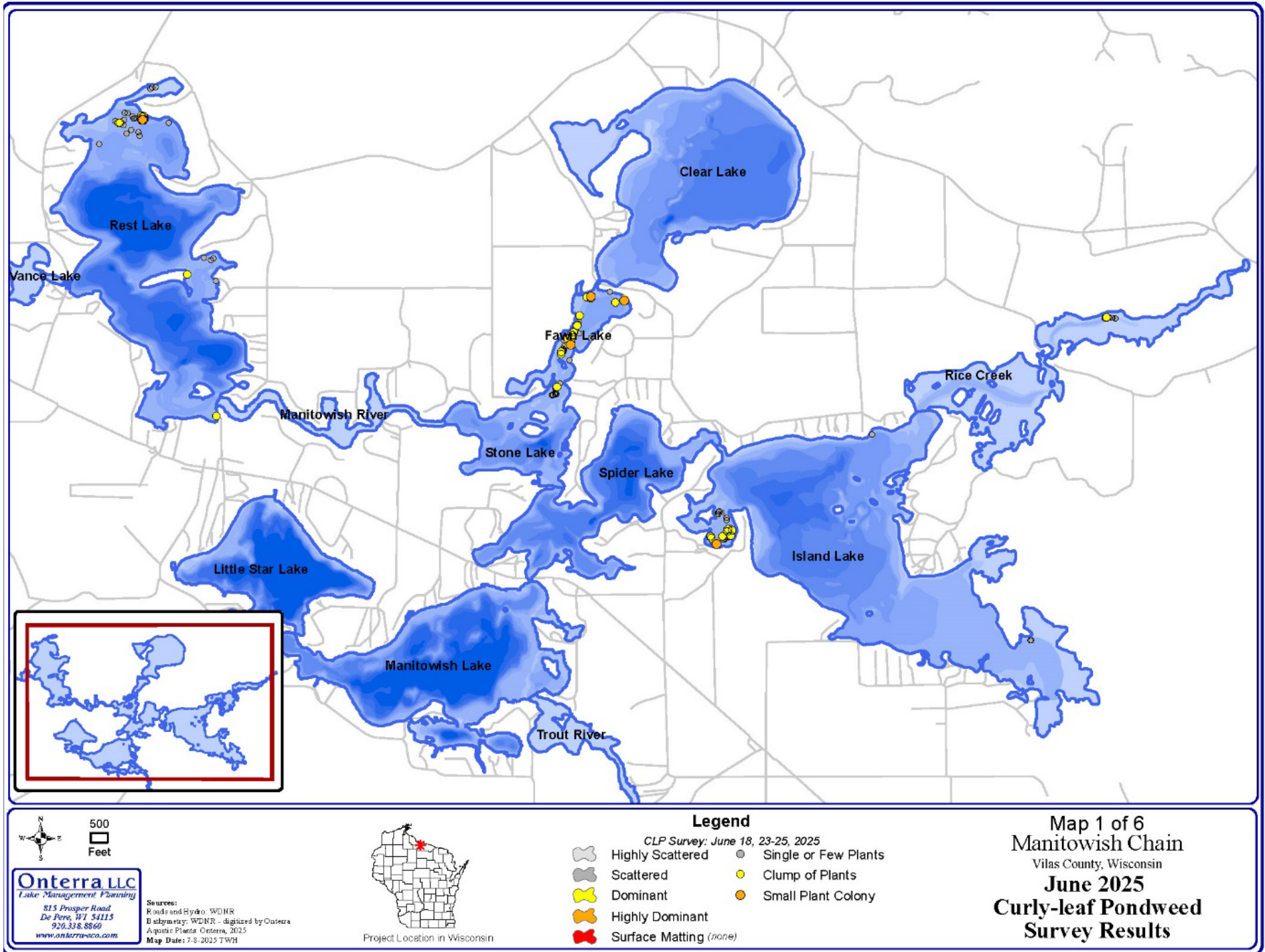
examine the differences between lake types over time. Consistent and continual monitoring will lead to a valuable data set that could be used to inform adaptive management decisions influencing water resources into the future. In spring of 2019, the WDNR tied all the benchmarks on current lake level monitoring lakes to sea level to ensure they can be compared to lakes around the world.

In 2025, NLDC installed or calibrated 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 2025 field season marked a year of impactful progress and learning for the Town Aquatic Invasive Species Partnership. Through collaborative stewardship, welcoming new staff, 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 2026, we remain committed to science-based management, long-term monitoring, and empowering local stakeholders to engage as stewards of the land and water. Together, we are protecting clean waters for generations to come.

Map 1. Manitowish Chain curly-leaf pondweed survey results by Onterra



Map 2. Alder Lake curly-leaf pondweed survey results by North Lakeland Discovery Center

Alder Lake Curly Leaf Pondweed



0 0.1 0.2 0.4 Miles

Legend

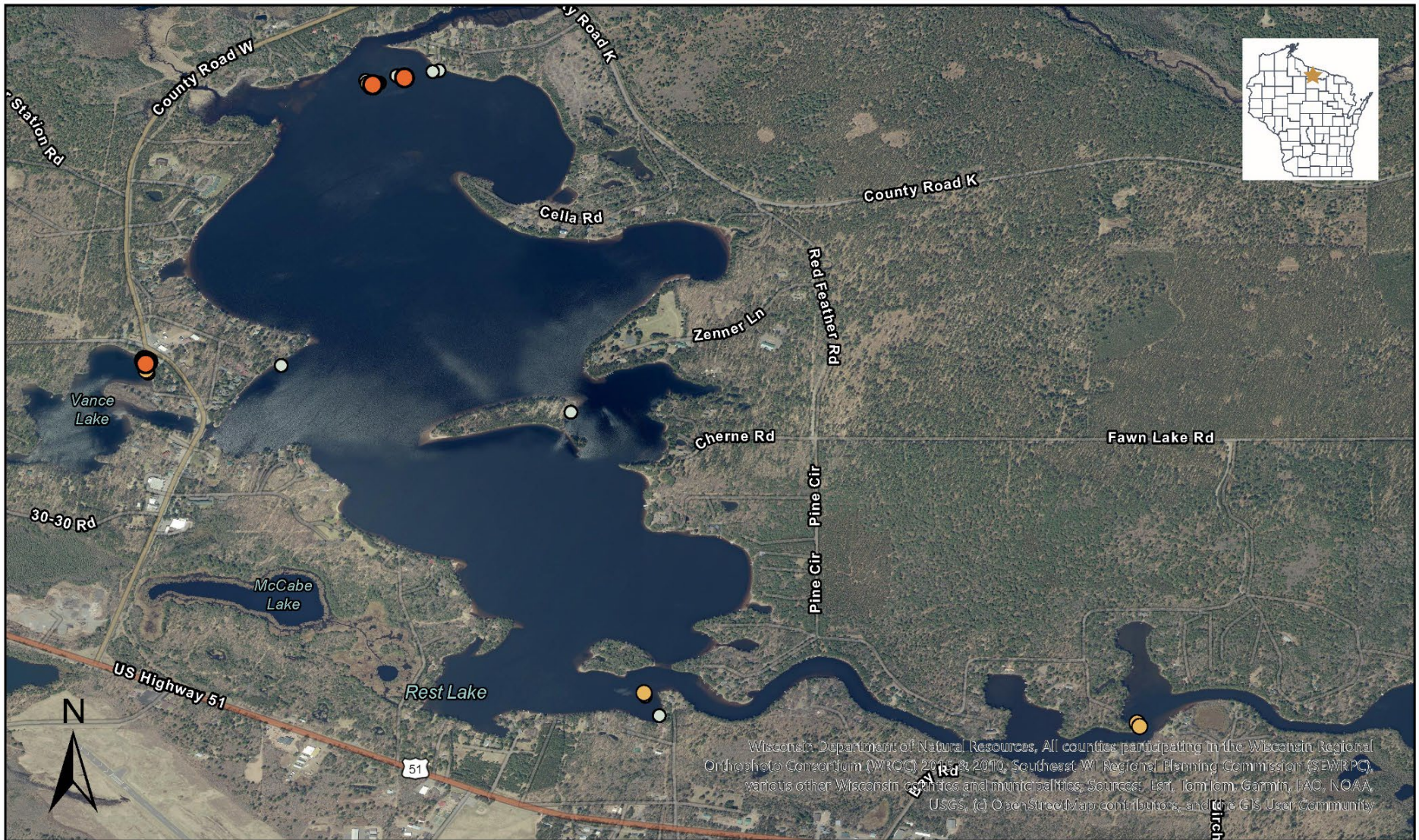
Highly Scattered	Single or Few Plants
Scattered	Clumps of Plants
Dominant	Small Plant Colony
Highly Dominant	
Surface Matting	



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Map 3. Vance Lake and Manitowish River curly-leaf pondweed survey results by North Lakeland Discovery Center

Manitowish River and Vance Curly Leaf Pondweed



0 0.26 0.51 1.02 Miles

Legend

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

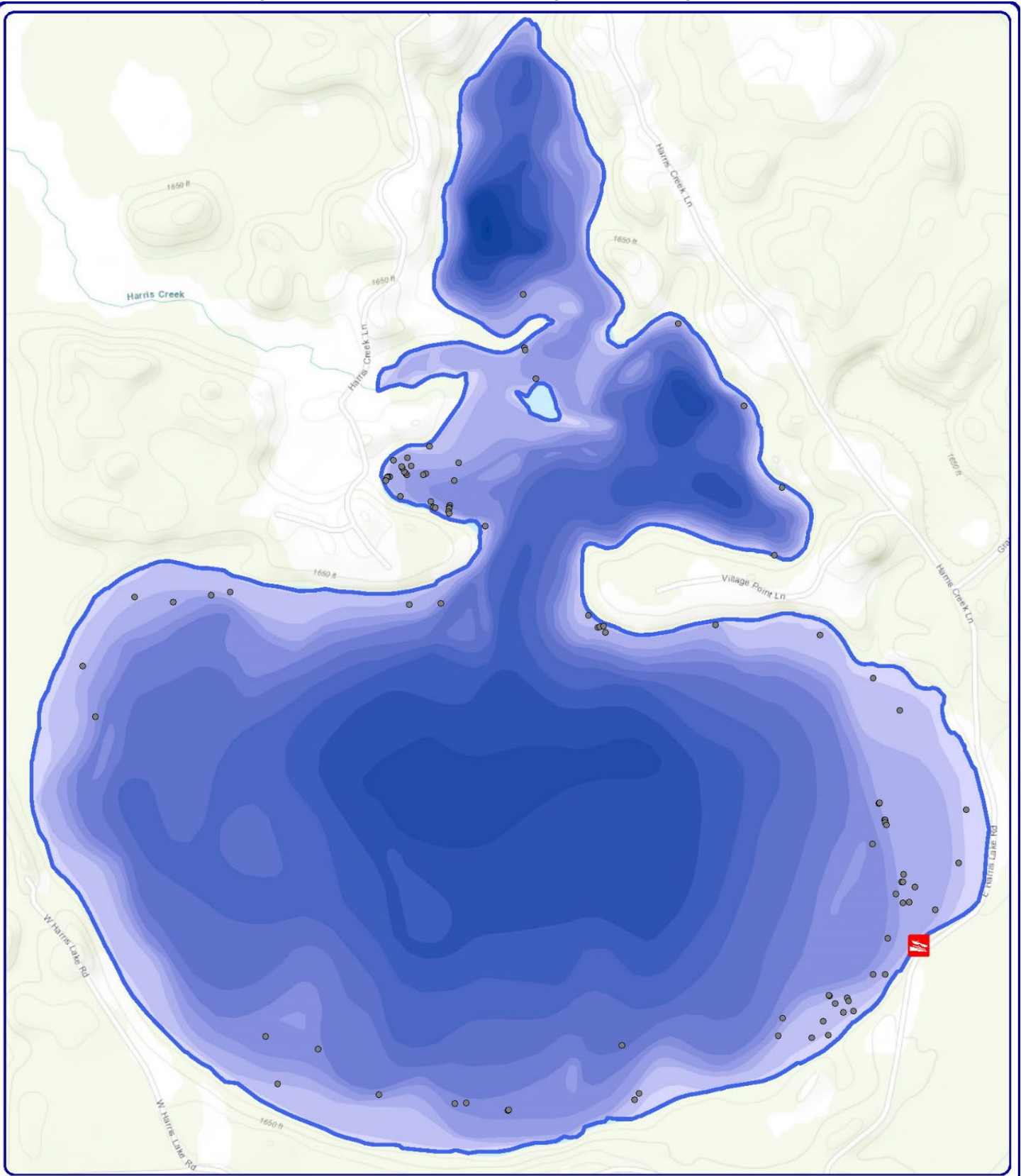




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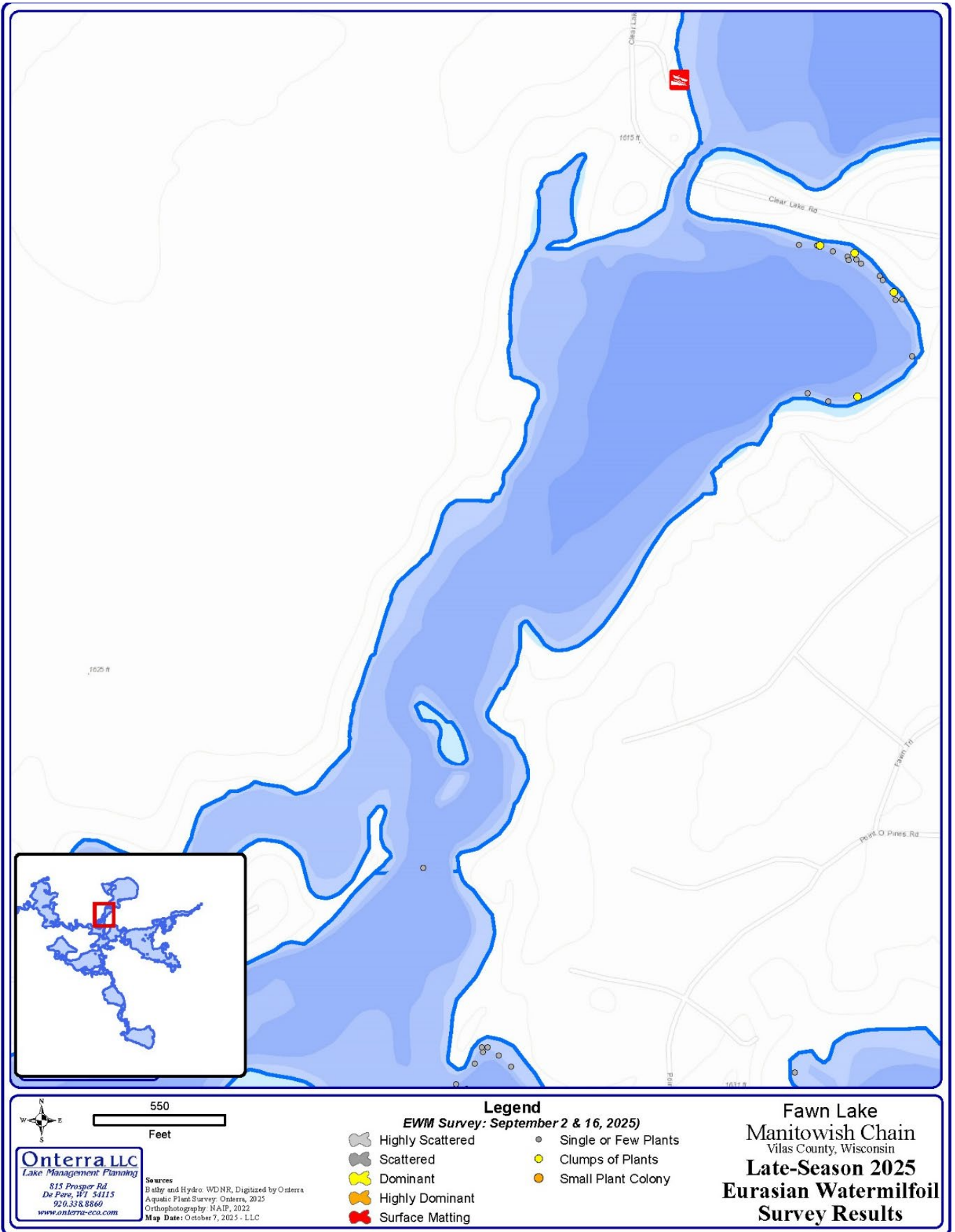
Town of Manitowish Waters
Vilas County, Wisconsin
2025

Map 4. Harris Lake curly-leaf pondweed survey results by Onterra

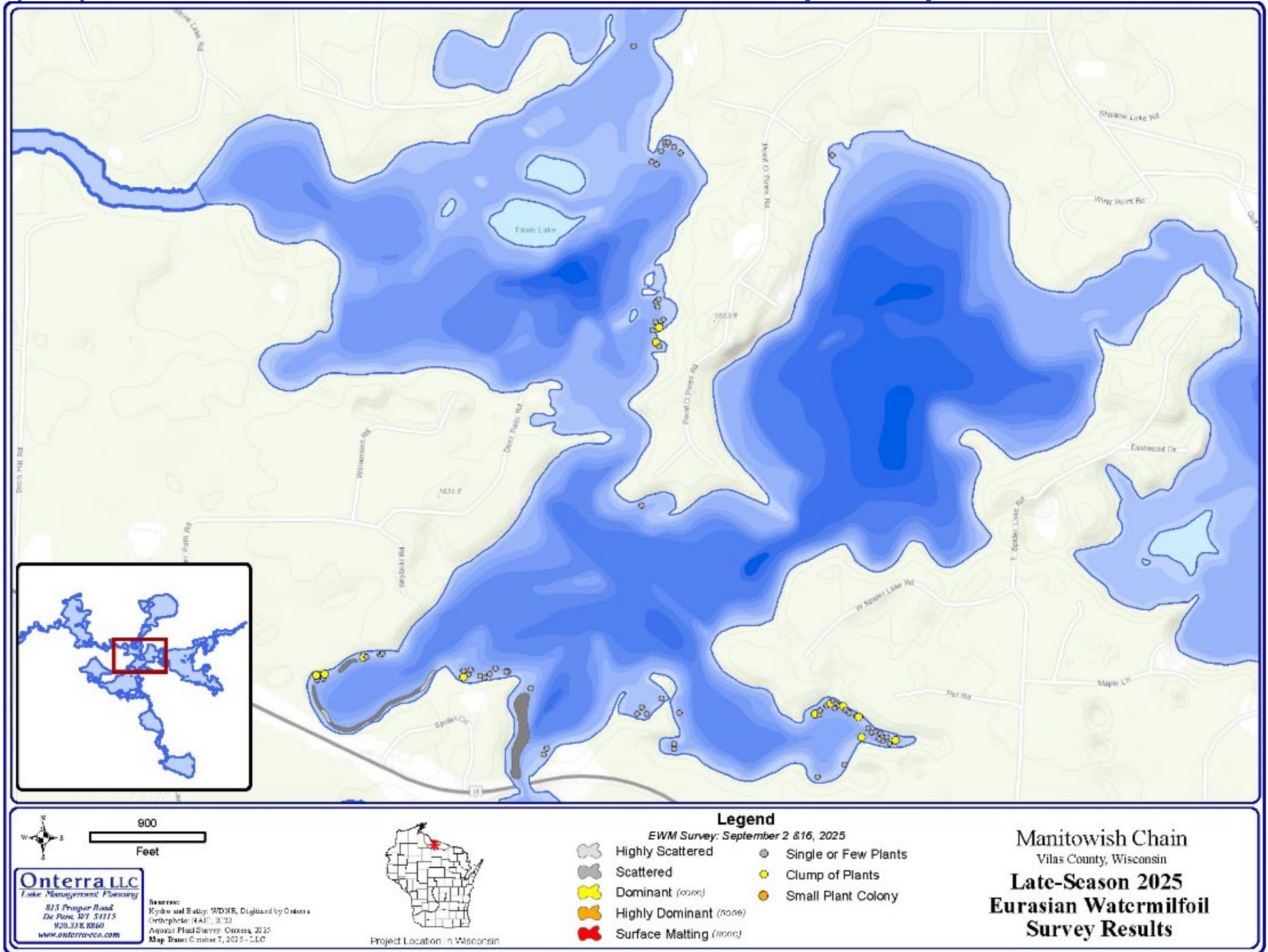


 <p>Onterra LLC Lake Management Planning 815 Prosper Rd De Pere, WI 54115 920.338.8860 www.onterra-eco.com</p>	<p>Sources Roads and Hydro: WDNR Bathymetry: Digitized by Onterra Aquatic Plants: Onterra, 2025 Map Date: 8-5-2025 TWH</p>	 <p>Project Location in Wisconsin</p>	<p>Legend <i>CLP Survey: 7-29-2025</i></p> <ul style="list-style-type: none"> ● Single or Few Plants ● Clumps of Plants (<i>None</i>) ● Small Plant Colony (<i>None</i>) ■ Public Boat Landing 	<p>Harris Lake Vilas County, Wisconsin 2025 Curly-leaf Pondweed Survey Results</p>
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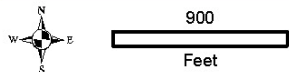
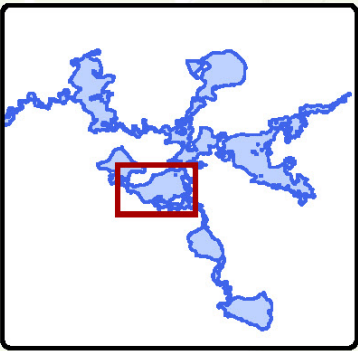
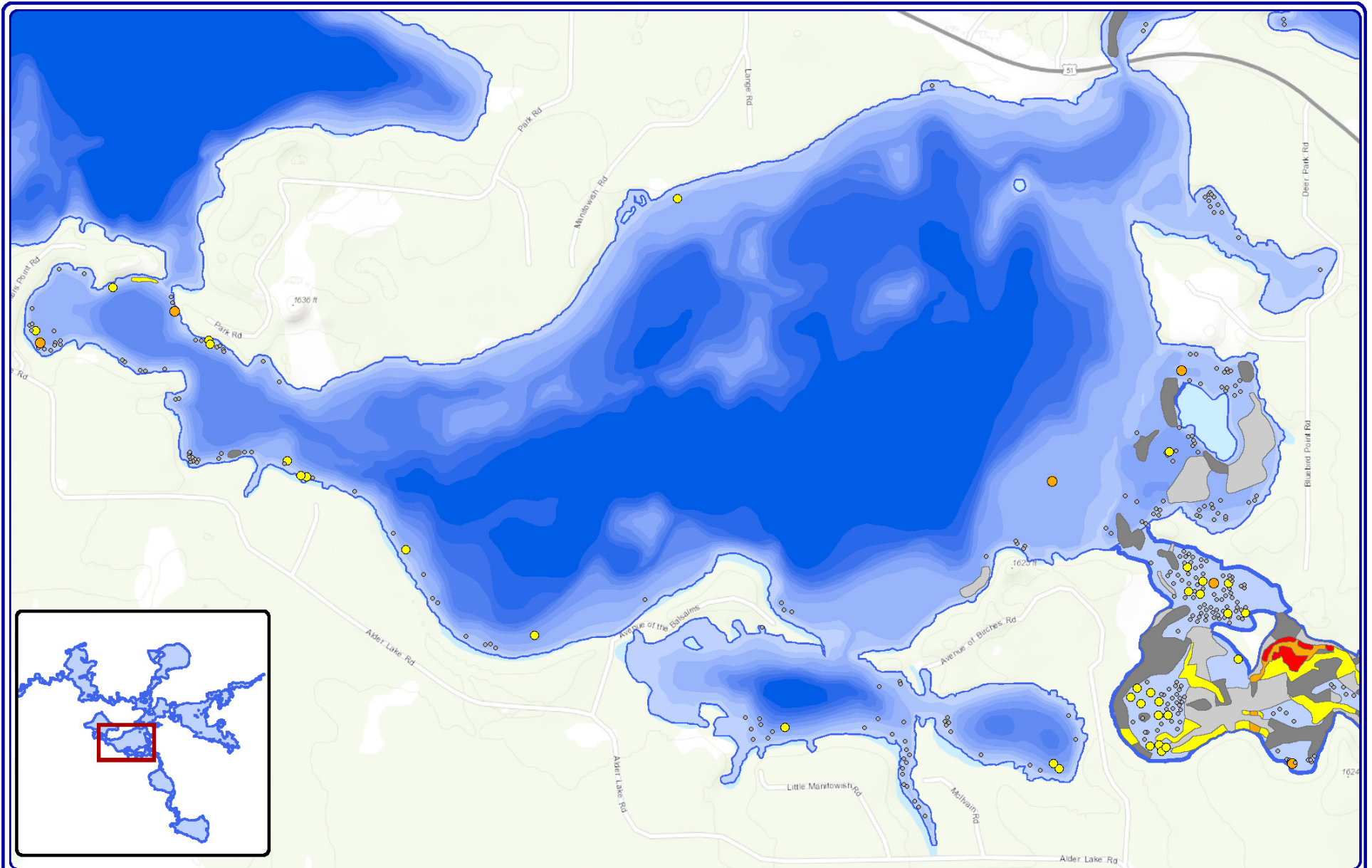
Map 5. Fawn Lake late season Eurasian watermilfoil survey results by Onterra



Map 6. Spider and Stone Lakes late season Eurasian watermilfoil survey results by Onterra



Map 7. Manitowish Lake late season Eurasian watermilfoil survey results by Onterra



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 www.onterra-eco.com

Sources:
 Hydro and Bathy: WDNR, Digitized by Onterra
 Orthophoto: N AIP, 2022
 Aquatic Plant Survey: Onterra, 2025
 Map Date: October 7, 2025 - LLC



Project Location in Wisconsin

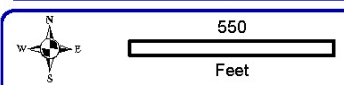
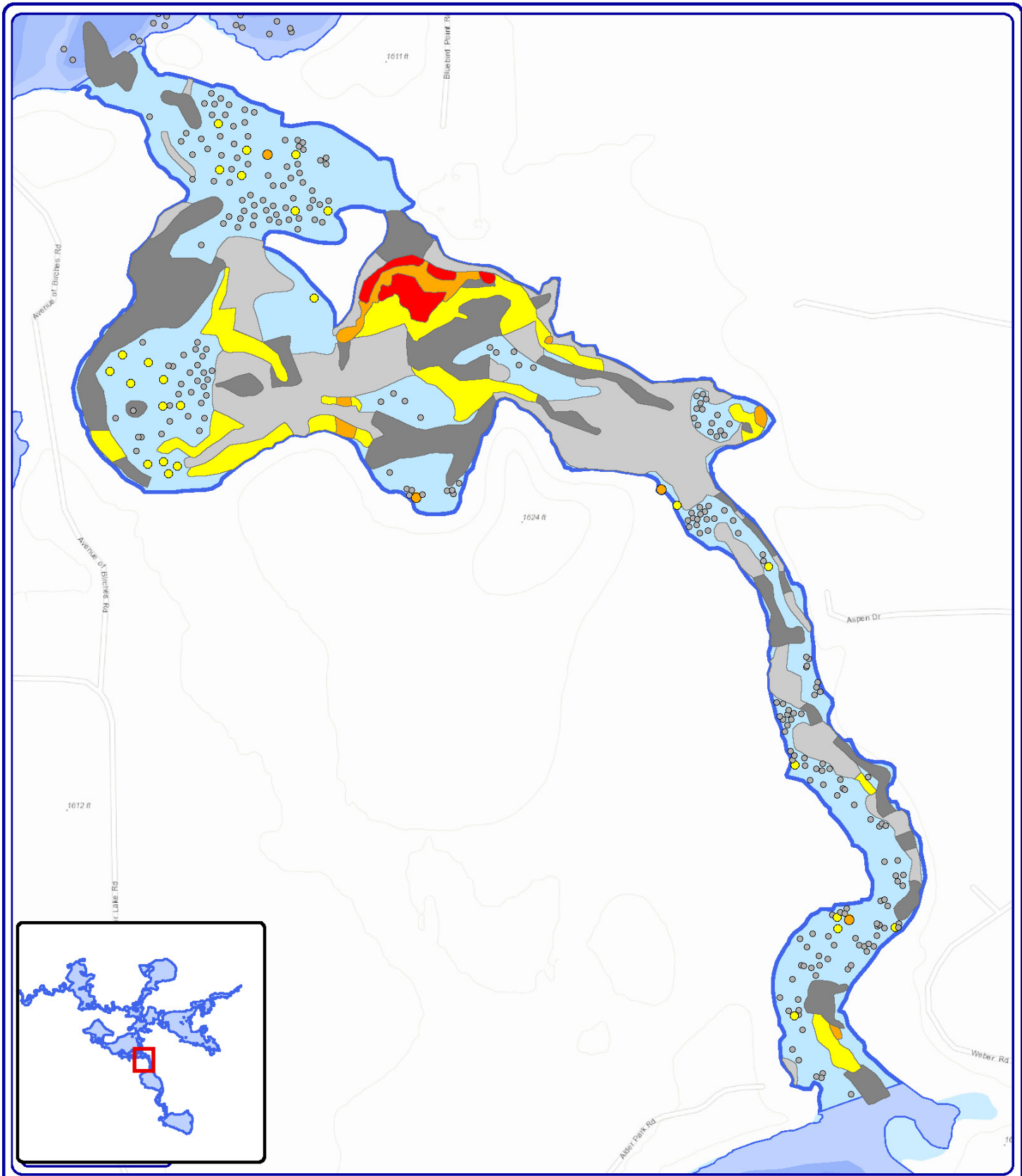
Legend

EWM Survey: September 2 & 16, 2025

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

Manitowish Lake
Manitowish Chain
 Vilas County, Wisconsin
Late-Season 2025
Eurasian Watermilfoil
Survey Results

Map 8. Lower Trout River late season Eurasian watermilfoil survey results by Onterra



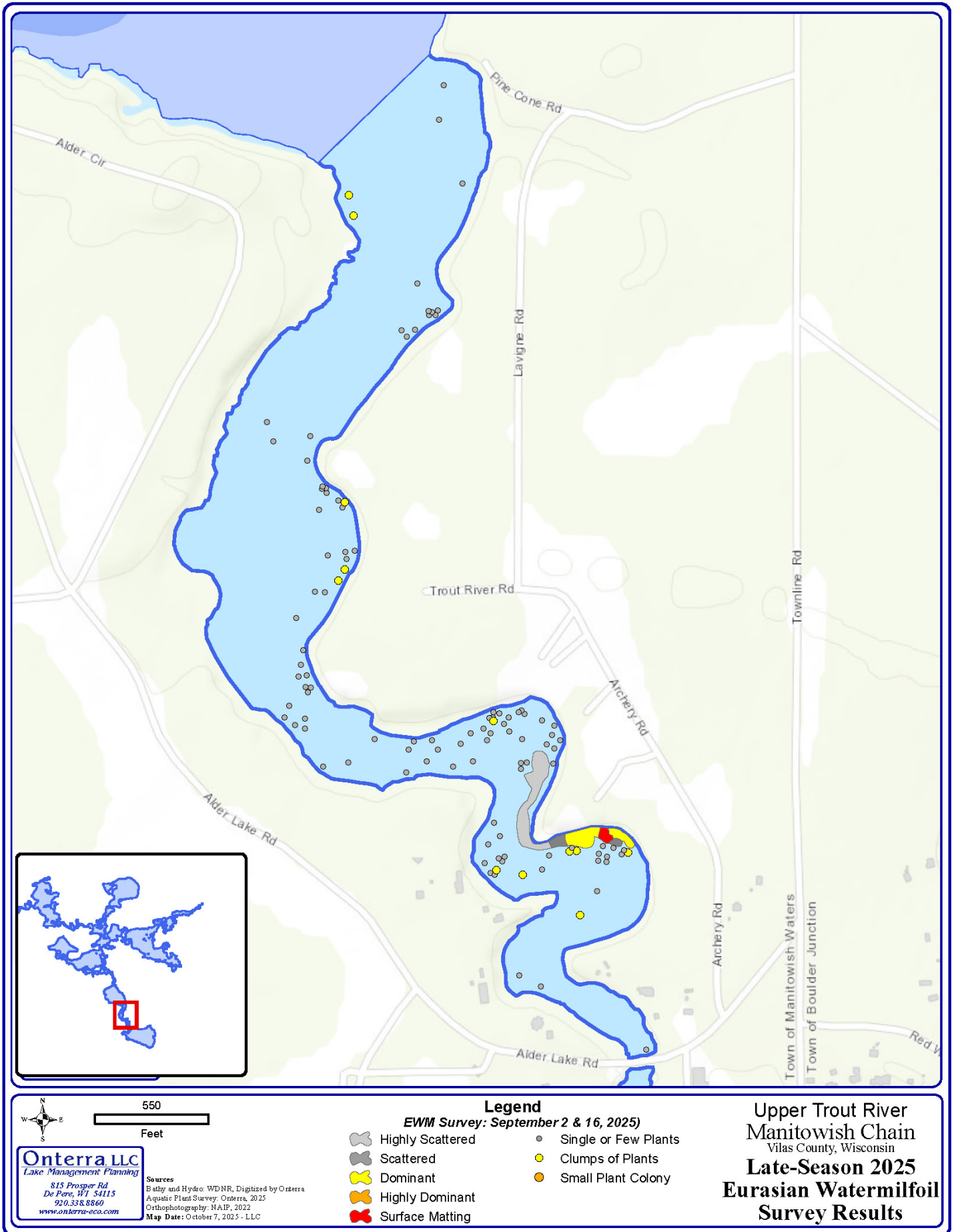
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 Lake Management Planning
 815 Prosper Rd
 De Pere, WI 54115
 920.338.8860
 www.onterra-eco.com

Sources
 Bathy and Hydro: WDNR, Digitized by Onterra
 Aquatic Plant Survey: Onterra, 2025
 Orthophotography: NAIP, 2022
 Map Date: October 7, 2025 - LLC

- Legend**
EWM Survey: September 2 & 16, 2025)
- Highly Scattered
 - Scattered
 - Dominant
 - Highly Dominant
 - Surface Matting
 - Single or Few Plants
 - Clumps of Plants
 - Small Plant Colony

Lower Trout River
 Manitowish Chain
 Vilas County, Wisconsin
Late-Season 2025
Eurasian Watermilfoil
Survey Results

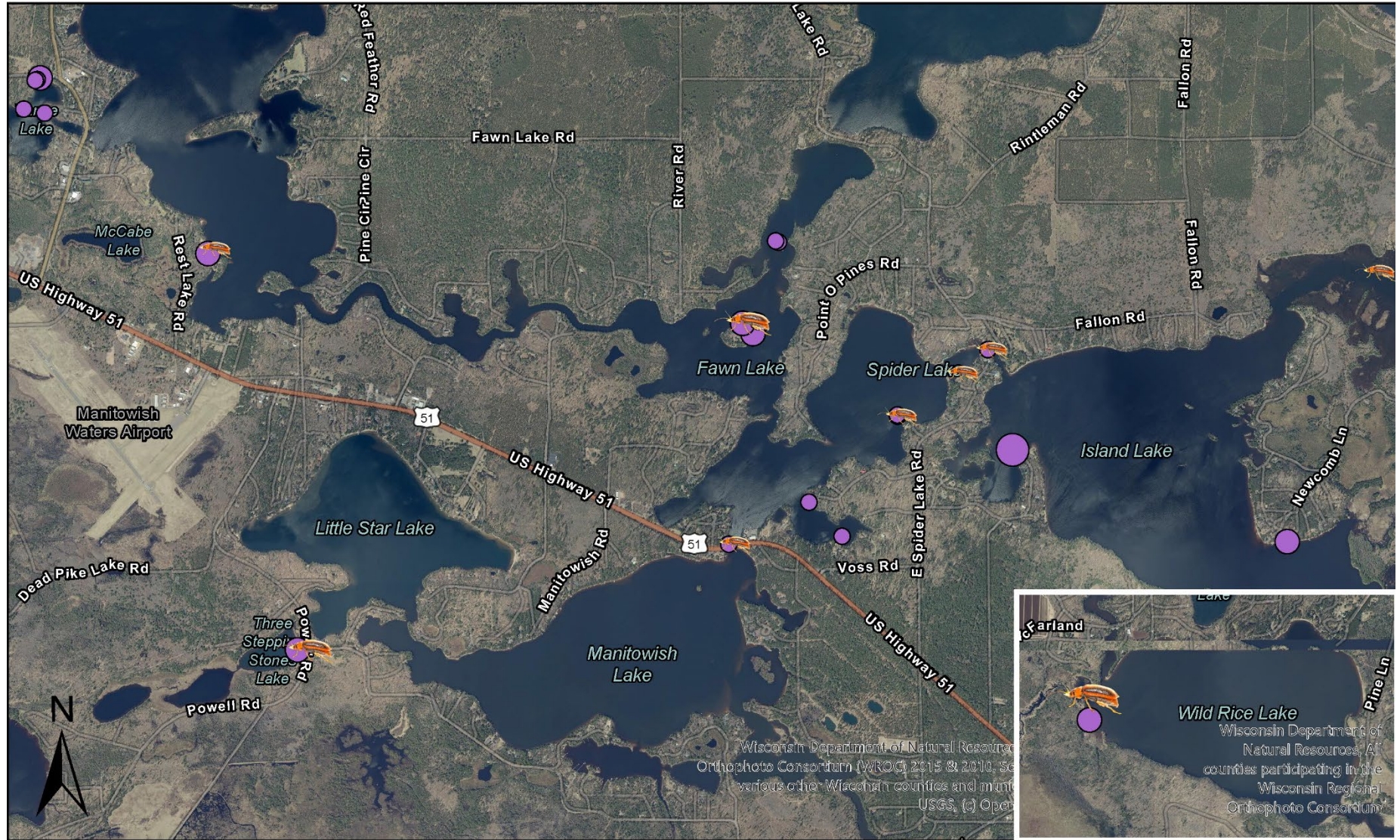
Map 9. Upper Trout River late season Eurasian watermilfoil survey results by Onterra



Map 10. Manitowish Chain purple loosestrife management by North Lakeland Discovery Center

* please note that Stone Lake is incorrectly labeled as Fawn Lake within the mapping database

Manitowish Chain Purple Loosestrife Monitor and Management



0 0.5 1 Miles

Town of Manitowish Waters
Vilas County, Wisconsin
2025

Legend

- Purple Loosestrife Managed
- Beetle Release

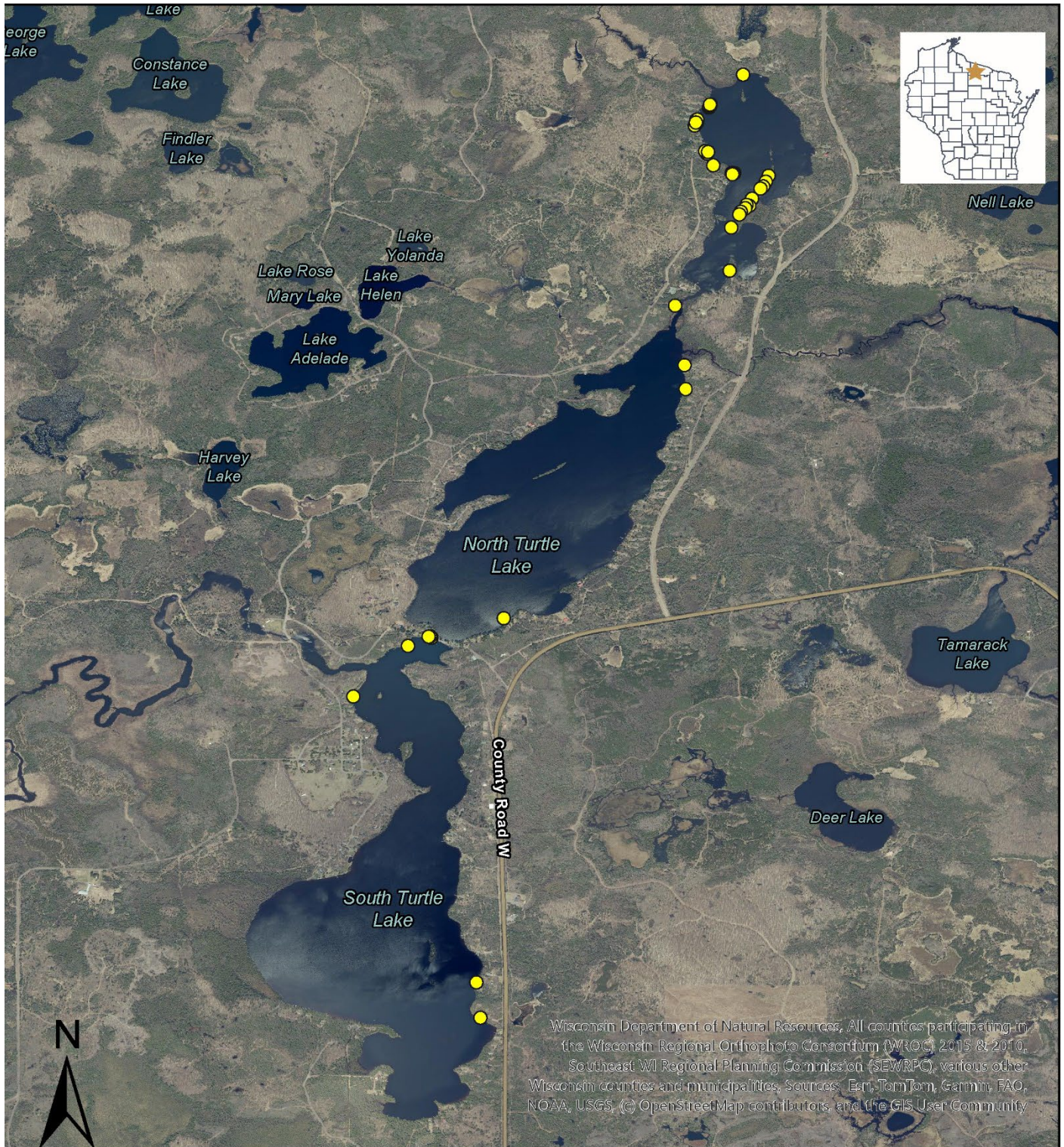


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Map 11. Turtle Lakes Chain yellow iris management by North Lakeland Discovery Center

Turtle Lakes Chain Yellow Iris Monitor and Management



0 0.26 0.52 1.04 Miles

Town of Winchester
Vilas County, Wisconsin
2025



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Legend

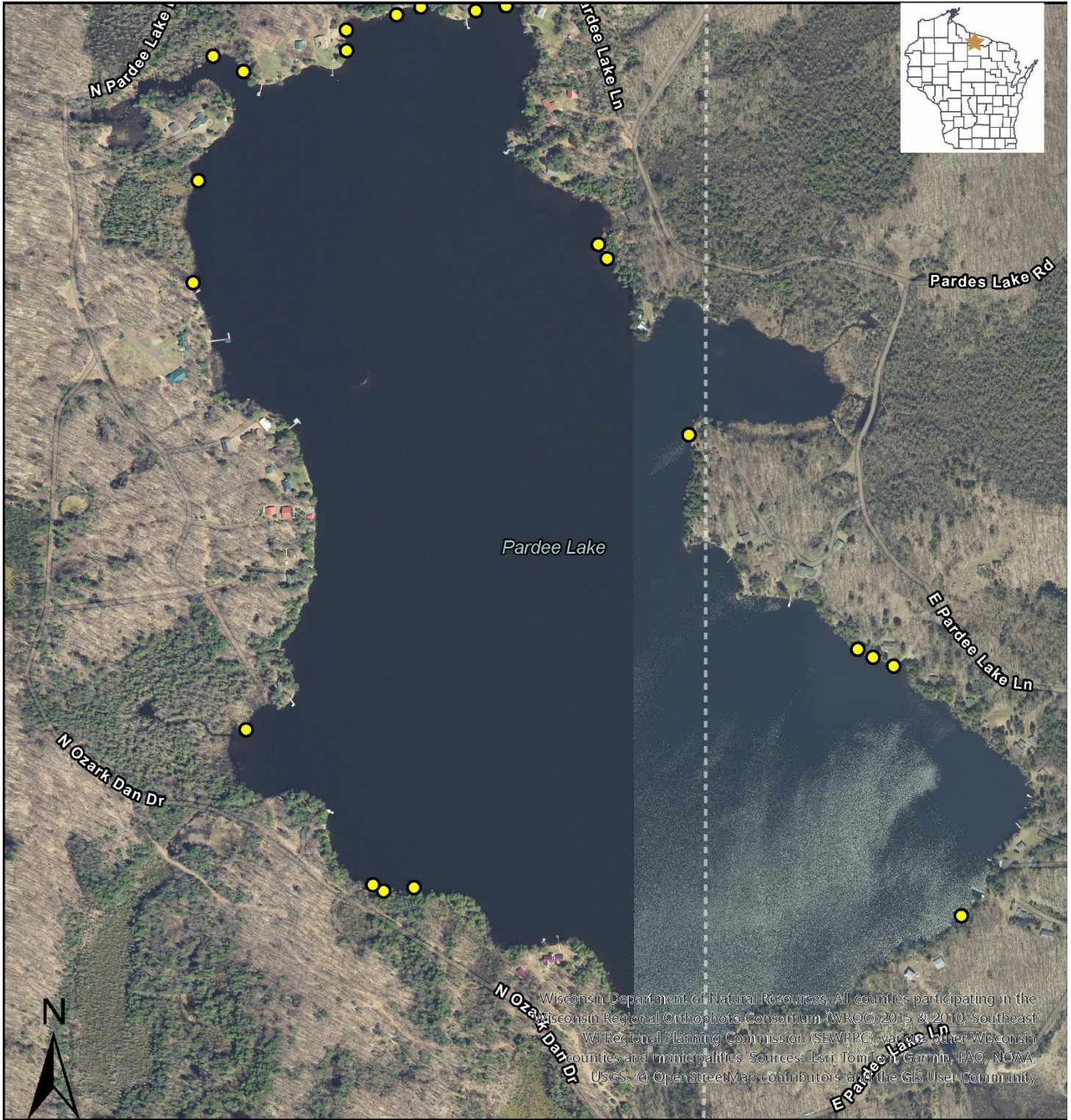
● Yellow Iris Populations Removed

* Removed point locations were given landowner permission, accessible, and would not lead to erosion issues.

Map 12. Pardee Lake yellow iris management by North Lakeland Discovery Center

Pardee Lake

Yellow Iris Monitor and Management



0 0.07 0.15 0.3 Miles

Town of Winchester
 Vilas County, Wisconsin
 2025

Legend

31 ● Yellow Iris Populations Removed

* Removed point locations were given landowner permission, accessible, and would not lead to erosion issues.



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