2022 Town Aquatic Invasive Species Partnership Report

Prepared by: Jamie Van, Water Program Director, North Lakeland Discovery Center

Enriching lives and inspiring an ethic of care for Wisconsin's Northwoods through the facilitation of connections among people, nature, and community.

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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 2022 to prevent introduction, minimize spread, and manage existing populations of aquatic invasive species (AIS) in area waters and wetlands. This was a very successful year, with all goals and objectives of Town Agreements and grants met or exceeded.

NLDC directed the Water Program with staffing of Jamie Van, Water Program Director, and five seasonal staff including Lake Technicians Rebecca Fagley and Abby Vogt, and Water Monitoring Interns Richard Dollhopf, Mary Langosch, and Michael Small. Funding was provided by the Towns of Manitowish Waters, Boulder Junction, and Winchester, the Manitowish Waters Lakes Association, and through grants received from the Wisconsin Department of Natural Resources (WDNR).

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, provided other support such as facilities, provided feedback to partners regarding management plans, posted AIS information on bulletin boards, boat landings, and other Town-owned facilities, and disseminated information at appropriate venues. The Manitowish Waters Lakes Association and Winchester Town Lakes Committee (and associated lake associations) aided in the recruitment of volunteers, and integrated AIS-related activities into their newsletters, websites, meetings, and public announcements. Each year NLDC monitors the Manitowish Chain of Lakes and associated inflowing/outflowing rivers, and all lakes located in the Town of Winchester, with the goal of mapping and managing current populations of priority AIS, and to look for any new infestations. Curly-leaf pondweed, yellow iris, and purple loosestrife have been the main AIS of concern and our work has included both monitoring, mapping, and managing populations, but NLDC also monitors other AIS including but not limited to non-native phragmites, Eurasian-water milfoil, knotweeds, spiny water flea, rusty crayfish, and mystery snails. This report summarizes all field work, education, and outreach completed in 2022.

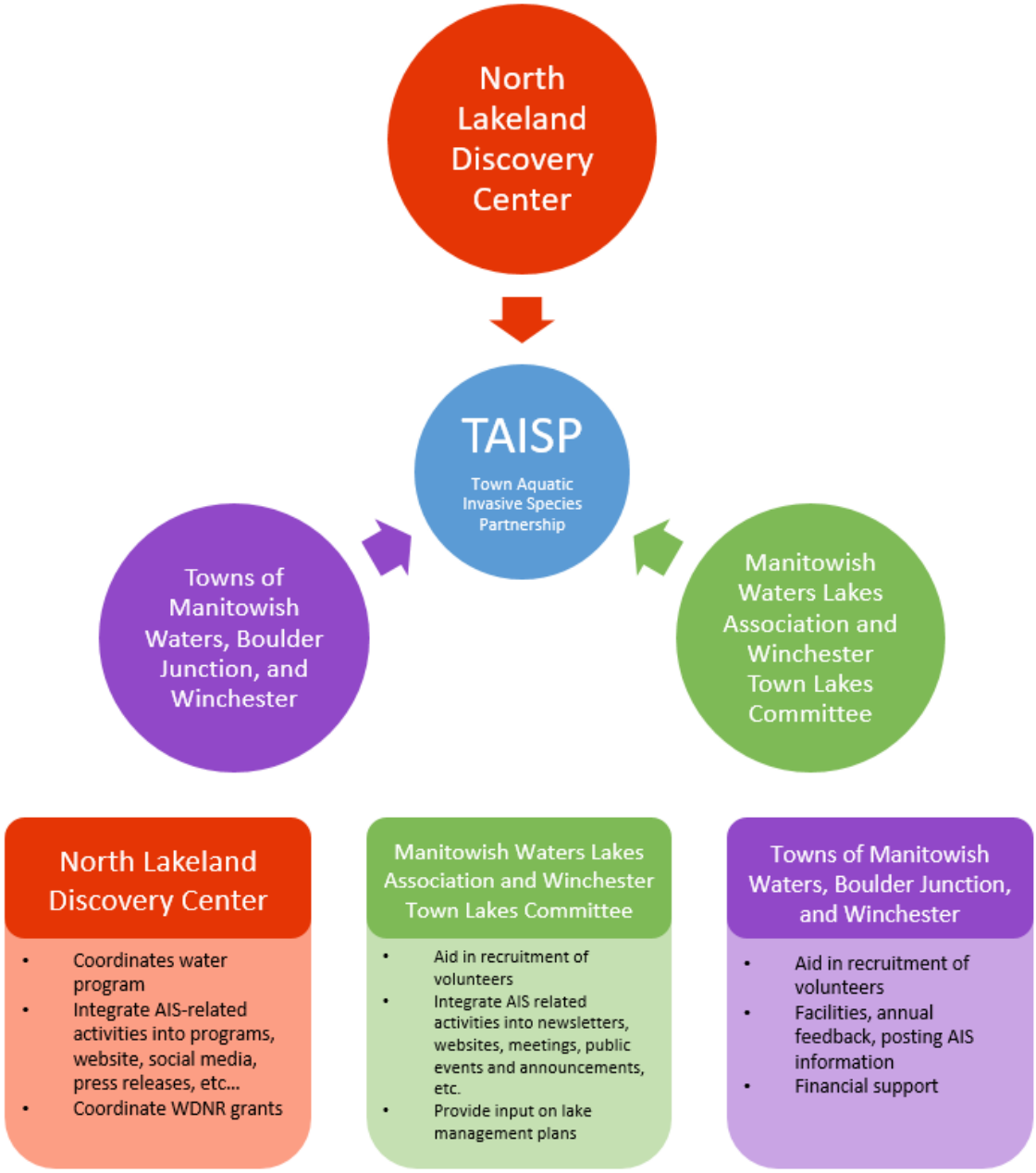

Figure 1. Model of the Town Aquatic Invasive Species Partnership (TAISP), consisting of the North Lakeland Discovery Center, Manitowish Waters Lakes Association, Winchester Town Lakes Committee, and the Towns of Manitowish Waters, Boulder Junction, and Winchester.

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WDNR SURFACE WATER GRANTS

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). Following guidelines of Management Goal 6 of the MWCLCMP, three planning grants were applied for and awarded to conduct period quantitative vegetation monitoring on Spider (AEPP68022), Island (AEPP67822), and Rest Lakes (AEPP67922). This vegetation monitoring includes a whole lake point-intercept survey and floating-leaf and emergent community mapping survey on each lake. This is a phased approach and additional grants will be applied for in 2023 to continue these surveys. Professional lakes consultant, Onterra, LLC, conducted the surveys.

In 2015 a control grant for curly-leaf pondweed was applied for and awarded for the Manitowish Waters Chain of Lakes (ACEI15815). In 2022, the remaining funds of this grant were used to fund AIS monitoring and hand-pulling efforts. Monitoring was completed by NLDC and volunteers. A whole-lake early-season AIS (ESAIS) survey was completed on each lake that has had curly-leaf pondweed reported by both Onterra, LLC and NLDC. Both NLDC and lake management professionals, Aquatic Plant Management, Inc, completed hand-pulling removal of curly-leaf pondweed. Another large scale control grant will be applied for in 2023 to continue this funding source. Funding for CBCW was awarded for Rest and Clear lake landings (CBCW106922) and 200 paid inspector hours were completed by the Water Program team at NLDC.

PRIORITY AIS: CURLY-LEAF PONDWEED, Manitowish Waters Chain of Lakes

Curly-leaf pondweed was first discovered by a volunteer and NLDC staff on the Manitowish Waters Chain of Lakes in 2010 in Island Lake and Rice Creek. Following the discovery, mapping was conducted by Onterra, LLC, with continued AIS monitoring by NLDC staff and volunteers. Mapping showed that curly-leaf pondweed had invaded Island, Spider, Rest, Stone, and Manitowish Lakes and Rice Creek by the end of 2013. At the same time, NLDC and the MWLA began extensive AIS outreach and education throughout the communities to bring awareness and teach best prevention methods to reduce spreading. NLDC took on the role of hand-pulling small, outlying populations while herbicide treatment was conducted on larger colonies. Some herbicide treatments were determined to be unsuccessful, particularly in channels where there was significant flow. In 2017 the decision was made to pause chemical treatment and focus on hand-pulling. Overall successful, this technique was used until 2021 when diver assisted suction harvest (DASH) was also utilized for a small colony on Fawn lake. In 2022, management continued as previous years with ESAIS surveys by Onterra and NLDC, and hand-pulling efforts by NLDC and Aquatic Plant Management, Inc.

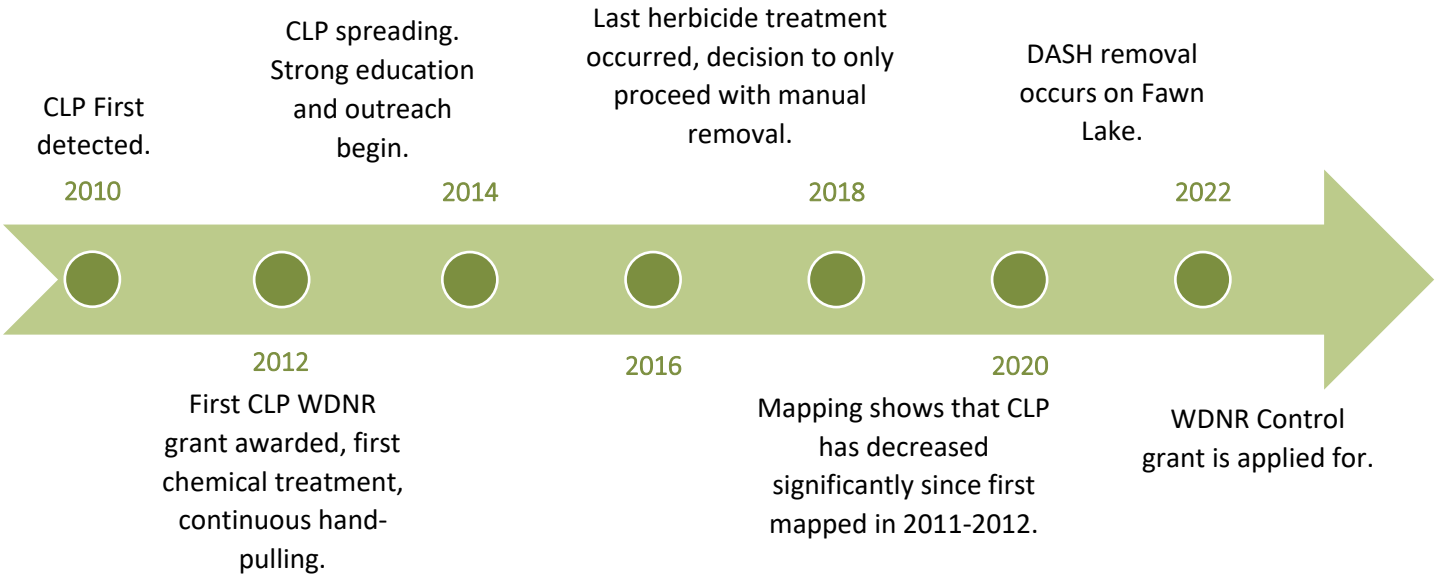

Figure 2. Timeline summarizing CLP events in the Manitowish Waters Chain of Lakes between 2010 and 2022.

Using data collected during ESAIS surveys by both NLDC and Onterra, NLDC and Aquatic Plant Management, Inc, hand-harvested curly-leaf pondweed on Fawn, Rest, and Island Lakes. Approximately 4 cubic yards total were removed. Curly-leaf pondweed was found in two new locations on Rest Lake including a single rooted plant located on the eastern side near Camp Jorn and about 5 rooted plants were located in front of a residence on the south west side of the lake. Curly-leaf pondweed was also located in areas that it had not been found for one or more years, including northern Rest Lake and the Rest-Stone Channel. Several smaller populations of CLP continue to exist in Rice Creek, feeding into Island Lake. The CLP in Rice Creek was mapped again this year, and does not appear to be moving from Rice Creek into Island Lake. We will continue to monitor this population for potential spread into Island Lake.

Table 1. Culy-leaf Pondweed manually removed in the Manitowish Chain of Lakes in 2022.

Waterbody	**Culy-leaf Pondweed Notes**
Island Lake	20+ plants, located in small clumps
Spider-Island Channel	10+ single, sparse plants
Fawn Lake	50+ scattered plants around DASH area and northern part of the lake
Stone Lake	A few scattered plants in the western portion
Rest-Stone Channel	Small clumps of plants
Rest Lake	20+ plants along north shore, 1 single plant near boat landing, 1 single plant near Camp Jorn, a small clump of plants at southwest end

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PRIORITY AIS: CURLY-LEAF PONDWEED, Harris Lake

Harris Lake is the only known lake in the Town of Winchester containing populations of curly-leaf pondweed. The Harris Lake Association (HLA) contracted with Onterra in the fall of 2008 to develop a strategy for curly-leaf pondweed management. After the monitoring and assessment surveys in 2009 and 2010, herbicide was applied on approximately 10.4 acres in the spring of 2011. Curly-leaf pondweed was treated again in 2012 (4.1 acres) and 2013 (2 acres). Smaller patches of curly-leaf pondweed not treated with herbicide were hand pulled by HLA volunteers. Curly-leaf pondweed was not found in 2014 during a whole-lake survey. In 2015, Harris Lake joined Onterra and NLDC in the first phase of developing the TWLCMP which included a whole lake vegetation survey, and no curly-leaf pondweed was found. Between 2016 and 2018, Harris Lake was surveyed by either Onterra or NLDC and only a few small plants were identified each year, and all plants were removed.

In 2019, a small, 10-ft by 10-ft infestation of curly-leaf pondweed was discovered in the northern bay and NLDC hand-pulled all plants in the population. In 2020 NLDC located curly-leaf pondweed in some of the same areas as previous years and hand-removed plants. During early season surveying, a single small floating fragment was found on the southern end of the lake, then a larger clump of floating plants was found in the same area late summer. The area was thoroughly snorkeled and searched, but no rooted curly-leaf pondweed was identified. It is possible the fragments came from the northern part of the lake or were moved to the area via watercraft.

Due to the increase in sightings of curly-leaf pondweed, Harris Lake was surveyed by both NLDC and Onterra crews during the early season in 2021. It became apparent that Harris Lake is difficult to survey for submerged aquatic plants because of wind and wave conditions, its 'bowl' shape, water clarity, and depth at which plants are growing. One large patch was found in the southwest bay of the arrowhead, another large patch was located off the northwest edge of the island, and a few smaller patches and a single plant were found on the very northern tip of the lake. NLDC crews spent three days hand-pulling these populations of curly-leaf pondweed on Harris. Harris Lake, similarly to the Manitowish Chain, was another example of finding curly-leaf pondweed growing in locations that we had not seen it growing since 2015.

In 2022 NLDC staff conducted ESAIS surveys for curly-leaf pondweed and noted several populations in locations that had been previously identified, as well as few plants in locations previously identified. Collaborating with Harris Lake residents, NLDC provided training on the water to teach curly-leaf pondweed identification and removal techniques. Two days were spent surveying and hand-pulling curly-leaf pondweed by both NLDC staff and Harris Lake resident volunteers. In late summer, there were numerous sightings of floating fragments of curly-leaf pondweed and additional areas of sparse rooted plants identified and mapped, indicating healthy late-season growth of curly-leaf pondweed.

Looking forward to 2023, a planning grant will be applied for to update the point-intercept survey and conduct ESAIS survey, both to be completed by Onterra. Following these surveys, additional time will be allocated for hand-pulling curly-leaf pondweed by both NLDC staff and Harris Lake resident volunteers.

PRIORITY AIS: PURPLE LOOSESTRIFE, Overview

Purple loosestrife is a hardy, rapidly spreading wetland invasive species that causes sharp declines in biodiversity and can dramatically disrupt water flow in rivers and waterways. One single purple loosestrife plant produces up to 2.7 million pinhead-sized seeds that are easily spread by wind, water, and human activity. Our goal for purple loosestrife control is to utilize best management practices including manual removal and biocontrol, rather than using non-selective herbicide treatments that could potentially harm other plants and organisms. Biocontrol is implemented using *Galerucella* beetles which are raised on NLDC campus then released at purple loosestrife populations throughout our management areas.

Each spring, NLDC collaborates with the North Lakeland School 7th graders to set up and stock our biocontrol beetle rearing project. In 2022 the students assisted by digging purple loosestrife plants from a wetland at Rest Lake and repotting them at NLDC in controlled pools. Beetles were then collected by NLDC staff and placed on plants in the pools with netting to contain them. Once the beetles reproduce, the population are collected and ready to be released for biocontrol. With the help of the students, over 60 plants were removed from the wetland to begin the biocontrol project.

PRIORITY AIS: PURPLE LOOSESTRIFE, Towns of Manitowish Waters and Boulder Junction

Extensive purple loosestrife surveys on the Manitowish Waters Chain of Lakes and incoming/outflowing rivers and wetlands identified several known areas of concern. 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 by NLDC staff. Purple loosestrife was also located on Vance Lake, a wetland on the western side of Rest Lake, Stone Lake, Stepping Stone Lake number 1, the Spider-Manitowish channel, Wild Rice Lake, Fawn Lake, and Manitowish Lake (on the island).

During the statewide Snapshot Day survey event, purple loosestrife was located on Little Rice Lake in Boulder Junction. A moderately sparse population of plants was observed from the boat landing that is spreading throughout the wetland and cattails. This lake will require a full PL survey in 2023 to assess populations and create a management plan for removal/treatment.

PRIORITY AIS: PURPLE LOOSESTRIFE, Town of Winchester

Historically, there was a small patch of purple loosestrife located near South Turtle Lake, but volunteers removed it in 2016. Volunteers had not observed any purple loosestrife near South Turtle Lake since then until 2020. NLDC staff removed 5 mature plants, indicating the plants were likely growing small in this location in prior years but not flowering. A volunteer monitored this site in 2022 and has not observed any plants.

There is a very small population of purple loosestrife near the Birch Lake boat landing in a wetland across the street. A volunteer clipped flowers from the small plants in 2017, and the population has been monitored since with a few plants being dug each year.

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Helen, Mary, Birch, Circle Lily, Hiawatha, Rainbow, Little Pappoose, Noseeum, Pappoose, Rock, North Turtle, South Turtle, and Harris lakes were all surveyed for purple loosestrife in 2022 with a collaborative effort from NLDC staff and lake resident volunteers and no purple loosestrife was identified during surveys. Adelaide lake had 5 single plants found that were dug and removed, and Pardee Lake had one single plant found growing upland in a lawn which was also dug and removed.

No populations of loosestrife in Winchester are large enough to warrant a beetle release, and NLDC will continue to monitor.

PRIORITY AIS: SPINY WATERFLEA

Spiny waterflea is an invasive zooplankton that reproduces asexually, so only one individual is needed to start a new population. They lay eggs in the fall, which are contained in lake sediment and easily transported in mud from anchors and equipment while moving from lake to lake, and adults are easily transported in ballast and bait water. Because they are so small, they are not noticeable to the naked eye and require plankton sampling to detect which may cause a lag time between when spiny waterflea establishes until it is detected.

There is currently no known method to control spiny waterflea. Prevention and education are key. Per Wisconsin law, boaters are required to inspect boats and equipment for plants and animals, remove what they find, drain all water, and never move live fish. While not required by state law, letting your boat dry for at least 6 hours will effectively kill adults and resting egg.

Beginning in 2018, all lakes above the dam on the Manitowish Waters Chain were sampled with a dredge to collect sediment and samples were sent off for processing. Following the first year of sampling, lakes were sampled on a 3-year rotating basis except for Wild Rice which is sampled each year, because it is connected by the Trout River to Trout Lake which is infested with spiny waterflea. In 2022, vertical tow samples were collected on Manitowish, Clear, Little Star, and Wild Rice lakes for adult spiny waterflea plankton and processed by NLDC staff. No spiny waterflea have been detected in any samples collected on the Manitowish Chain of Lakes to date.

Similar to the methods used on the Manitowish Waters Chain, the larger lakes in the Town of Winchester were first sampled in 2018 and are done so on a 3-year rotating basis. In 2022, Rock and Circle Lily lakes were sampled and no spiny waterflea were detected.

Table 2. Wisconsin lakes with spiny waterflea and the year spiny waterflea was detected.

Waterbody	Status	Waterbody ID Code (WBIC)	Year First Detected
Calumet County (1)			
Lake Winnebago	Verified	131100	2022
Dane County (4)			
Lake Kegonsa	Verified	802600	2009
Lake Mendota	Verified	805400	2009
Lake Monona	Verified	804600	2009
Lake Waubesa	Verified	803700	2009
Door County (4)			
Little Sturgeon Bay	Verified	92	
Rowleys Bay	Verified	20	
Sturgeon Bay	Verified	88	
Sturgeon Bay Canal	Verified	96700	
Douglas County (1)			
Whitefish Lake	No Longer Observed	2694000	2006
Fond du Lac County (1)			
Lake Winnebago	Verified	131100	2022
Forest County (1)			
Butternut Lake	Verified	692400	2014
Iron County (2)			
Gile Flowage	Verified	2942300	2003
West Branch Montreal River	Verified	2942100	2018
Outagamie County (2)			
Fox River (Riverside Park)	Verified	117900	2016
Fox River at Sunset Point Park	Verified	117900	2017
Vilas County (5)			
Ike Walton Lake	Verified	2321800	2015
Plum lake	Verified	1592400	2019
Star Lake	Verified	1593100	2013
Stormy Lake	Verified	1020300	2007
Trout Lake	Verified	2331600	2014
Winnebago County (1)			
Lake Winnebago	Verified	131100	2022
County Not Specified (3)			
Green Bay	Verified		
Lake Michigan	Verified	20	1986
Lake Superior	Verified	2751220	1987

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PRIORITY AIS: YELLOW IRIS, Town of Winchester

The waters of Winchester are some of the most pristine in the state of Wisconsin. While Winchester is predominantly free of AIS, an exception to this is the presence of yellow iris, an aquatic invasive species, on the Turtle Chain (South Turtle, North Turtle, and Rock Lakes). Yellow iris is a garden escapee that was once sold in nurseries and is now widespread in Wisconsin. Yellow iris can spread rapidly and grow in dense mats. It can grow so densely that wildlife cannot access the shoreline from the water. Large mats of yellow iris compact soil and alter the surrounding hydrology. It can dry out the surrounding habitat and inhibit water flow. All parts of the plant are poisonous and therefore the plant does not act as a host/habitat for other wildlife. Yellow iris spreads through seeds and rhizomes. As a part of the management planning process on the Turtle Chain, locations of yellow iris were mapped, resulting in about 60 locations with yellow iris – many locations have multiple plants. Yellow iris is especially widespread on Rock Lake. The Turtle Lakes Chain Association (TLCA) partnered with NLDC to develop and implement a removal plan for yellow iris. In 2020, the TLCA mailed letters to each property owner with yellow iris outlining why yellow iris is a problem, and included with it 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 asking for removal assistance. In 2020, the first year of management, NLDC removed thousands of pounds of yellow iris from the Turtle Chain.

In 2021, the Turtle Chain was resurveyed to track progress on yellow iris removal and there continues 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 DNR in 2021. In 2022, NLDC prioritized removal of populations that were sparse or few plants and removed another 43 populations, or approximately 1,680 pounds of yellow iris. In 2023, priority will again be given to the populations with sparse or few plants, then moving to moderate size populations.

INTERNSHIP PROGRAM

In most years, the NLDC hosts 3 water monitoring interns each summer to assist with monitoring surveys, removal work, and education. This internship opportunity is extremely well rounded, as interns are exposed to identification and treatment of multiple types of invasive species; talking with people of different educational backgrounds, ages, and interests; formal and informal educational events; use and towing of boats; fundraising; and the inner workings of an environmental non-profit.

Figure 3. NLDC Interns. Top Row Left to Right- Richard Dollhopf, Joe Kamstra, Michael Small. Bottom Row Left to Right- Mary Langosch, Abby Vogt, Rebecca Fagley.

In 2022, three Water Monitoring Interns were hired. Mary Langosch, a student at Michigan Technological University in Michigan pursuing a bachelor's degree in Biochemistry, Richie Dollhopf, a student at Loyola University Chicago with a Bachelor of Science in Restoration Ecology and pursuing a masters in GIS, and Michael Small, a student pursuing a degree in Science, Technology, and Society at Farmingdale State College in New York.

Two Lake Technicians were also hired to primarily conduct point-intercept surveys in the Town of Plum Lakes but often assisted with our AIS management and outreach projects associated with the TAISP. Rebecca Fagley, a recent graduate of Clarion University of Pennsylvania with a bachelor's degree in Environmental Biology, and Abby Vogt, a recent graduate from University of Montana with a bachelor's degree in Environmental Studies and Sustainability Science and Practice.

NORTHWOODS BUISNESSES FOR CLEAN WATERS

After hearing many 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 be choosing three businesses to work with in 2021. These businesses are any business that utilizes lakes and rivers: bait shops, fishing guides, rental companies, dock installers/removers, boat dealers, etc. We will work with each business to teach them best practices to avoid spreading AIS, specific to their business. In 2021 we worked with River's Edge Outfitters, and Ryan Wahlgren, who is a fishing guide and dock installer.

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 hours completed in 2022.

Table 3. Data from CBCW inspection hours completed by NLDC staff in 2022.

LAKE	INSPECTION HOURS	BOATS INSPECTED	PEOPLE CONTACTED	% OF BOATS PRESENT ON ANOTHER WATERBODY IN PAST 5 DAYS
Rest	104	191	421	25%
Clear	104	177	387	36%
Big	200	277	561	79%
Presque Isle	50	18	32	34%
Van Vliet	50	29	54	66%

LAKE LEVEL MONITORING PROGRAM

Together NLDC in partnership with volunteer concerned citizens and other area scientists, formed a 38-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 WI-CBM 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 (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 the 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, highly standardized monitoring network committed to consistent monitoring and statistically sound data collection allows scientists to develop and test lake level models, and 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 DNR 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 2022, NLDC installed 24 lake gauges that were monitored by lake resident volunteers throughout the Northwoods. In fall, the lake gauges were removed and data collected from volunteers to be entered into the long-term database and shared to Trout Lake Station.

APPENDIX 1 - Photos from 2022 TAISP AIS management and educational outreach.

Figure 1 (Left): NLDC staff digging yellow iris on Rock Lake.
Figure 2 (Right): NLDC staff releasing cella beetles at the Manitowish Chain of Lakes for purple loosestrife biocontrol.

Figure 3 (Left): NLDC Staff teaching an aquatic plant identification workshop at Van Vliet Lake.
Figure 4 (Right): NLDC Staff teaching the Conservation Center for Leadership residential group about aquatic invertebrates, water chemistry, and AIS.

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Figure 5 (Top Left): NLDC Staff hosting an educational AIS booth at the Boulder Junction Musky Days.
Figure 6 (Top Right): NLDC Staff leading a canoe trip teaching about mussels, AIS, and other aquatic plants.
Figure 7 (Bottom Left): NLDC Staff preserving aquatic plants collected during vegetation surveys.
Figure 8 (Bottom Right): NLDC assisting with the trout pond, while hosting an AIS booth at the Manitowish Waters 4th of July celebration.

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Figure 9 (Top): NLDC Staff installing lake level gauges as a part of our long-term lake level monitoring project.
Figure 10 (Bottom): NLDC Staff attending an aquatic plant identification workshop at Kemp Station.

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APPENDIX 2 - Record of events for all TAISP related activities.

Date	Event	Description
3/1/2022	Monthly Lakes and Rivers Partnership Meeting	Discussion with a focus on Healthy Lakes & Rivers
3/21/2022	Webinar: Purple Loosestrife Beetle Training	Attended webinar
3/22/2022	Webinar: Purple Loosestrife Beetle Q&A Session	Attended webinar
3/23/2022	Northwoods Businesses for Clean Waters Meeting	Attended webinar
3/28/2022	SWIMS Basics for AIS/LMPN Coordinators Session 1	Attended webinar
3/31/2022	MWLA Meeting	Attended MWLA meeting in Discovery Center Lodge
4/6/2022	WI Lakes Conference Stevens Point	Attended by Jamie
4/7/2022	WI Lakes Conference Stevens Point	Attended by Jamie
4/8/2022	WI Lakes Conference Stevens Point	Attended by Jamie
4/12/2022	Stop Spiny! Virtual Presentation (Iron County)	Attended webinar
4/13/2022	Clean Boats Clean Waters Training	Attended webinar
4/18/2022	SWIMS Basics for AIS/LMPN Coordinators Session 1, Part 2	Attended webinar
4/19/2022	VCLRA Board Meeting	Attended Meeting
4/20/2022	SWIMS Coffee Break	Attended webinar
4/21/2022	Rice Creek Watershed Project Meeting	Attended in NLDC Lodge
4/25/2022	AIS Partnership Meeting Day 1	Attended Meeting
4/26/2022	AIS Partnership Meeting Day 2	Attended Meeting
4/26/2022	Lake Conservation Webinar Series	Attended webinar about maximum wave height, total wave energy, and maximum wave power
4/27/2022	WHIP INN Workshop	Attended an invasive species workshop held by Wisconsin Headwaters Invasives Partnership
4/27/2022	SWIMS Coffee Break	Attended webinar
4/27/2022	DNR visit NLDC	Provided Kevin Gauthier a tour, and talk about lakes, grants, and future work
4/28/2022	Training: DNR & WI State Lab of Hygiene	Mussel veliger and waterflea collection, lab slips, analysis
5/2/2022	Training: Protocols for AIS Monitoring on Lakes, Streams and Wetlands	Attended webinar
5/3/2022	2022 Monthly Lakes & Rivers Partnership Zoom In	Attended webinar
5/3/2022	AIS Verifier Test	Completed test

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Date	Event	Description
5/3/2022	Training: Boat, Gear, and Equipment Decon and Disinfection Manual Code	Attended webinar
5/3/2022	Lake Level Monitoring	Met with volunteers to plan lake gauge installations
5/4/2022	SWIMS Coffee Break	Attended webinar
5/4/2022	Snapshot Day Site Leader Training 2022	Attended training
5/4/2022	Van Vliet Lakes Association Meeting	Attended meeting
5/7/2022	NLS 7th Graders PL Dig	Dig up PL plants on Rest Lake Rd with NLS 7th Grader's
5/9/2022	Rice Creek Watershed Survey	Volunteered with surveys led by Vilas County Land and Water
5/9/2022	YI on Turtle Chain	Discussion on YI status with Gary Engstrom
5/11/2022	SWIMS Coffee Break	Attended webinar
5/16/2022	Woods and Water team staff first day	Orientation, AIS training, etc.
5/16/2022	Town of Winchester Annual Meeting	Attended meeting Winchester Town Hall
5/18/2022	SWIMS Coffee Break	Attended webinar
5/18/2022	Introduction to PL Cella Beetle Rearing	Technicians learn about PL ID and biocontrol process
5/18/2022	MWLA Meeting	Technician introduction to Manitowish Waters Lake Association Meeting
5/19/2022	CBCW Training for Woods and Water staff	Introduction to CBCW program and watercraft inspections
5/19/2022	Walleyes for Tomorrow Introduction	Release Walleye from Blue Bayou on Alder Lake
5/19/2022	Check on PL plants	Adjust PL nets for fullest growth potential
5/19/2022	Webinar: Purple Loosestrife Beetle Q&A Session	Attended webinar
5/19/2022	First Aid and CPR Training	Technicians Attended in NLDC Lodge
5/20/2022	Northwoods Businesses for Clean Water Meeting	Discussion of new business outreach opportunities
5/24/2022	Check on PL plants	Pull other plant species from PL pots, add mulch, patch nets
5/25/2022	Lake Level Monitoring	Statehouse Gauge Installation
5/25/2022	Town of Winchester Lakes Association Meeting	at Winchester Library
5/26/2022	Lake Level Monitoring	Final gauge installation of 2022
5/26/2022	Tour of Turtle Chain Yellow Iris	Pontoon tour with Gary Engstrom - safe boating on the Turtle Chain
5/26/2022	Made PL Cella Beetle Traps	Made bottle traps for collecting beetles to rear in PL nets
5/26/2022	Manitowish Waters Car and Boat Show	Prepare poster and educational materials to present at Little Bohemia
5/28/2022	Manitowish Waters Car and Boat Show	Booth at Little Bo poster and educational materials
5/31/2022	Woods and Water team staff first day	Orientation, AIS training, etc.
6/1/2022	Canoe Safety Training on Statehouse Lake	Technician canoe safety training with

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Date	Event	Description
6/1/2022	CLP Survey	Initial CLP search and identification on Manitowish Chain
6/1/2022	SWIMS Chat	Attended meeting with Alex Selle
6/1/2022	Check on PL plants	Check on PL plants
6/2/2022	PL Cella Beetle Search	Found about 20 beetles to rear at Rest Lake Rd
6/2/2022	Surface Water Supplemental Grants Training	Attended webinar
6/3/2022	AIS Training at Rest Lake Pavilion	Teach locals about aquatic invasive species identification and recruit volunteers
6/4/2022	Rainbow Lakes Association meeting	Attended meeting
6/4/2022	TLCA CBCW Kickoff	Attended picnic at North Turtle/Rock Creek Boat Landing
6/7/2022	Manitowish Chain AIS Meander Survey	AIS Meander Survey on Rest, Stone, and Fawn
6/8/2022	CLP on Rest Lake	Mark waypoints and pull CLP
6/8/2022	Check on PL plants	Clipped PL plants in nets and fixed netting
6/11/2022	CLP at Harris Lake	Educate Harris Lake residents on CLP ID and pulling
6/13/2022	VCLRA Meeting at Trout Lake Station	Attended meeting
6/14/2022	AIS Training at Pipke Park	Teach locals about aquatic invasive species identification
6/14/2022	CLP at Harris Lake	Harris Lake CLP pull behind island
6/16/2022	CLP at Rice Lake	CLP Pulling at Rice Lake
6/16/2022	PL Cella Beetle Delivery	Received 200 Cella beetles from Dara and Jeanne at UW-Wisconsin
6/17/2022	CLP at Rice Lake	CLP Pulling at Rice Lake
6/18/2022	PL in Manitowish Waters	PL harvest at Rest Lake Road
6/21/2022	Turtle Chain Yellow Iris	Surveyed and pulled Yellow Iris
6/22/2022	Turtle Chain Yellow Iris	Surveyed and pulled Yellow Iris
6/23/2022	AIS Training at Boulder Junction Community Center	Teach locals about aquatic invasive species identification and recruit volunteers
6/23/2022	Turtle Chain Yellow Iris	Surveyed and pulled Yellow Iris
6/23/2022	PL in Manitowish Waters	PL harvest at Rest Lake Rd
6/24/2022	Manitowish Lake AIS Meander Survey	Surveyed for AIS
6/28/2022	Rest Lake Restoration	Lily of the valley removal at Rest Lake restoration site
6/28/2022	Shoreline Buffer Management workshop	Co-led workshop with Vilas County Land and Water
6/29/2022	Winchester Lakes Meeting	NLDC provided an update
6/29/2022	Kemp Station Plant ID Course	Studied aquatic plants and AIS

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Date	Event	Description
6/30/2022	SWIMS Data Entry	Update SWIMS with Harris and Manitowish Lakes CLP data/Turtle Chain Yellow Iris data
6/30/2022	Attend Last Wilderness Alliance Wakes/Lakes	Technicians are introduced to the AIS problems surrounding wake boats
7/1/2022	CLP at Rice Lake	Collect Rice Lake CLP samples for AIS training
7/2/2022	Harris Lake Association Meeting	Attended meeting
7/4/2022	Manitowish Waters Fourth of July Celebration	Set-up AIS Booth, helped with Trout Pond
7/5/2022	MW Chain CLP Pulling	Surveyed and pulled CLP
7/5/2022	Monthly Lakes & Rivers Partnership Zoom	Attended meeting
7/6/2022	Meander Wild Rice and Alder Lake	Survey for CLP and PL
7/7/2022	Turtle Chain Yellow Iris	Rock Lake remove YI
7/12/2022	AIS Training at Rest Lake Pavilion	Teach locals about aquatic invasive species identification and recruit volunteers
7/12/2022	PL Beetle Release	at Vance Lake and Wild Rice Lake
7/13/2022	PL Beetle Release	at Rice Creek and Rest Lake Rd
7/15/2022	2022 Northwoods Six-County Lakes & Rivers Conference	Attended at Nicolet College
7/16/2022	Van Vliet Lake Association Annual Meeting	Attended by technician
7/16/2022	NRF Mussel Trip	NRF guided freshwater mussel trip on Manitowish River (13 species found)
7/18/2022	MWLA Meeting	Attended meeting and provided AIS updates
7/19/2022	Turtle Chain Yellow Iris	South Turtle Lake pulled YI
7/20/2022	Rest Lake Restoration	Erosion control and seeding at Rest Lake restoration site
7/21/2022	2022 Surface Water Grant Webinar	Attended webinar
7/22/2022	PL Survey on Manitowish Chain	Vance and Sturgeon survey/clipping
7/26/2022	PL Survey on Manitowish Chain	Manitowish Lake Island clipping flower heads, Rest and Little Star survey
7/27/2022	PL Survey on Manitowish Chain	Rice Creek/Wild Rice Lake PL flower clipping
7/27/2022	Winchester Lakes Meeting	Provided AIS updates
7/28/2022	PL Survey on Manitowish Chain	Wild Rice Lake/Rest Lake Road PL flower clipping
7/29/2022	Trout Lake Station - Open House	AIS booth education and outreach
8/2/2022	Early Detection Survey	Alder and Wild Rice Lakes
8/3/2022	Early Detection Survey	Fawn and Stone lakes, new PL population found

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Date	Event	Description
9/26/2022	MWLA article update	Wrote articles providing AIS updates for newsletter
9/27/2022	Stevens Point Herbarium	Received voucher varifications
9/28/2022	Winchester Lakes Meeting	Attended meeting
10/3/2022	VCLRA @ Trout lake	Attended meeting
10/4/2022	2022 Monthly Lakes & Rivers Partnership Zoom In	Attended webinar
10/28/2022	Vilas County Lakes partnership meeting	Attended meeting

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