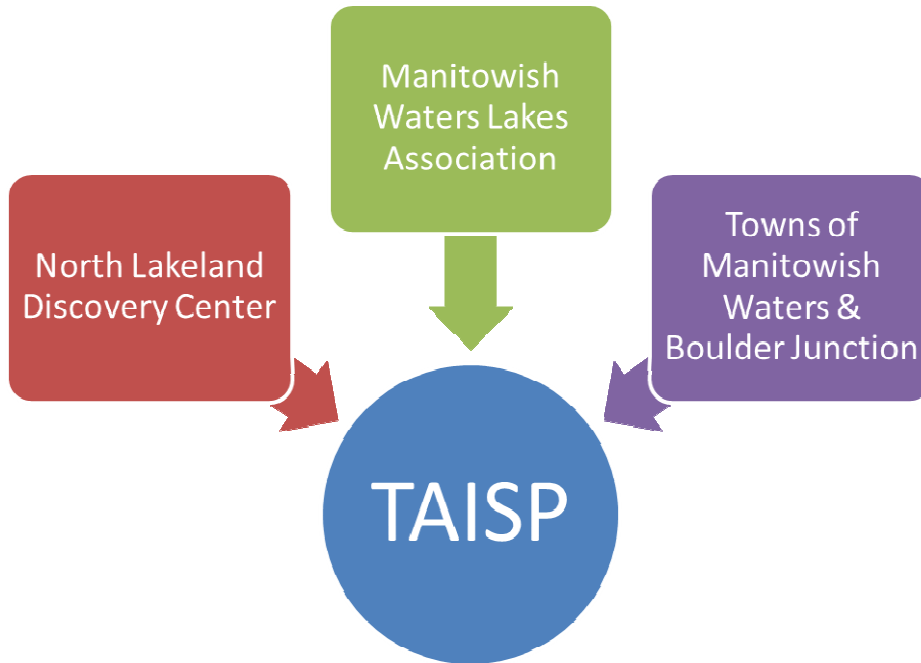


**North Lakeland Discovery Center, the Manitowish Waters Lakes Association, and the  
Towns of Manitowish Waters and Boulder Junction  
2013 Town Aquatic Invasive Species Partnership (TAISP) Program**



North Lakeland Discovery Center	Manitowish Waters Lakes Association	Towns of Manitowish Waters & Boulder Junction
<ul style="list-style-type: none"> <li>• Coordinate program</li> <li>• Integrate AIS-related activities into programs, website, social media, press releases, etc...</li> <li>• Coordinate WDNR grant</li> </ul>	<ul style="list-style-type: none"> <li>• Aid in recruitment of volunteers</li> <li>• Integrate AIS-related activities into newsletter, website, meetings, public announcements, etc...</li> </ul>	<ul style="list-style-type: none"> <li>• Aid in recruitment of volunteers</li> <li>• Facilities, annual feedback, posting AIS information, and other support</li> <li>• Funding</li> </ul>

Figure 1. Model of the town aquatic invasive species partnership (TAISP) program consisting of the North Lakeland Discovery Center, Manitowish waters Lakes Association, and the Towns of Manitowish Waters and Boulder Junction.

### **The TAISP Partnership**

The Town Aquatic Invasive Species Partnership (TAISP; Figure 1) consisting of the North Lakeland Discovery Center (NLDC), the Manitowish Waters Lakes Association (MWLA), and the Towns of Manitowish Waters (MW), and Boulder Junction (BJ) undertook efforts in 2013 to prevent the introduction of and minimize the spread of aquatic invasive species (AIS) in area waters and wetlands. TAISP had a very successful program in 2013 with all goals and objectives of the agreement met or exceeded (Appendix A).

The NLDC coordinated the Aquatic Invasive Species Program with staffing of Anne Kretschmann, Aquatic Invasive Species Coordinator and Water Specialist; Tim Dobbins, Water Education Intern; and Gretchen Peterson and Maria Kopecky, Clean Boats, Clean Waters Watercraft Inspectors; with funding provided by the Towns of MW and BJ and through grants received from the Wisconsin Department of Natural Resources (WDNR). All grants awarded in through WDNR grants require a match from TAISP in the form of either cash match or volunteer hours (e.g. Clean Boats Clean Waters, AIS monitoring, etc.) In 2013, NLDC staff and volunteers spent over 200 hours conducting watercraft inspections and educating boaters at boat landings on the MW Chain to fulfill grant requirements.

The NLDC integrated AIS-related activities into their programs, website, social media, press releases, and other appropriate activities and venues (see Appendix B). The Town of MW aided in the recruitment of volunteers, provided other support such as facilities, provided annual feedback to partners, posted AIS information on bulletin boards, boat landings, and other Town-owned facilities, and disseminated information at appropriate venues. The Manitowish Waters Lakes Association aided in the recruitment of volunteers and integrated AIS-related activities into their newsletter, website, meetings, public announcements, and other venues.

### **High Priority Items**

One item identified as a high priority at the beginning of the 2013 summer season was to monitor all MW lakes and waters/rivers connected to the Chain; quantifying and mapping all AIS infestations, thus providing baseline data to enable professionals to more effectively and efficiently manage AIS in the MW Chain of Lakes and surrounding area. We expanded the 'Lake Captain and Deckhand' Program, in which every lake in the chain has trained volunteer 'Captains' monitoring for AIS with assistance from 'Deckhands'. This program takes advantage of the expertise and knowledge of volunteers who live or fish on the lakes that they are monitoring. We plan to continue this program, as it has proven an effective way to gain public interest, awareness, and involvement in AIS issues in the area. For example, after the 2010 'Lake Captain' training session, a volunteer 'Captain' found curly leaf pondweed in the chain the following day.

### **Curly-leaf Pondweed Update**

Curly leaf pondweed was first detected in the Manitowish Waters Chain of Lakes in 2010 (small patches in Island Lake and Rice Creek) (Figure 2). In 2011, two more additional areas were identified in the chain, at the mouth of the Manitowish River at Island Lake (a few plants), and in the Spider-Island Channel (widespread on the Spider Lake end of the channel). In 2011, NLDC assisted the Vilas County Invasive Species Coordinator in mapping the population in Rice Creek and it was determined to be approximately 22 acres. NLDC assisted the WI-DNR with a Point

Intercept Survey of Island Lake and Rice Creek in 2011, which surveyed the quantity and variety of all aquatic plants present. During surveys conducted by Onterra, LLC in 2012, additional areas were identified in Island Lake (scattered plants in the bay behind the island in the Southwestern corner) and in Spider Lake (total of 49.3 acres). On June 21, 2012, an additional area was identified by NLDC staff and volunteers in Stone Lake (a few plants), immediately reported to interested parties and hand pulled. In 2013, additional areas were found and subsequently hand-harvested in Stone Lake (west side), Spider Lake, and one location on Manitowish Lake. On June 20, 2013, a larger infestation was found in the Rest-Stone Channel by NLDC, volunteers, and Ted Ritter during an Aquatic Vegetation Workshop hosted by the NLDC. Subsequently, Onterra mapped the infestation which was determined to be approximately 3.9 acres. On June 16, 2013, Tom Joseph and Rest Lake Deckhands reported fragments of curly leaf pondweed floating in Papoose Bay, however no rooted plants were found during follow-up monitoring by the NLDC and volunteers.

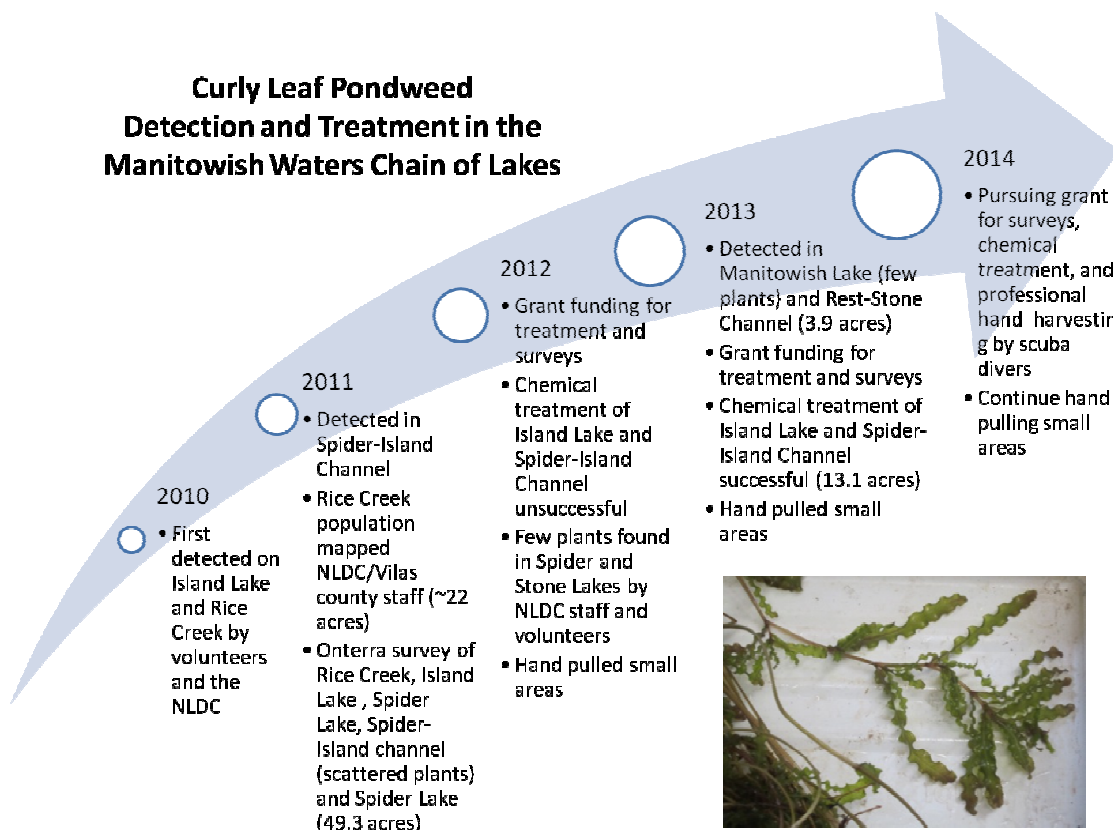


Figure 2. Timeline of significant curly leaf pondweed detection and treatment events in the Manitowish Waters Chain of Lakes.

A concerted effort was made in 2013 by NLDC staff and committed volunteers to survey the entire chain of lakes, associated river sections, river sections leading into/away from the chain, and selected unconnected lakes in the Manitowish Waters area for curly leaf pondweed. These surveys included the entire Manitowish Waters Chain of Lakes, Rice Creek from Big Lake to Island Lake; Manitowish River from County Highway H to Island Lake; Trout River from

County Highway H to Wild Rice Lake; Manitowish River from Rest Lake Dam downstream to the Hwy 47/182 bridge in the town of Manitowish including Benson, Vance, and Sturgeon Lakes; Circle Lily, Statehouse, and Stepping Stones Lakes (lakes unconnected to the MW chain of lakes). The NLDC anticipates conducting similar surveys yearly in waters not being surveyed by Onterra, LLC.

In 2013, NLDC staff monitored the water quality with a Hach® meter in infested and non-infested baseline locations as the plant was senescing in mid-summer to ensure that dissolved oxygen issues were not occurring. The NLDC anticipates continuing this yearly monitoring.

TAISP is currently pursuing management options for control of curly leaf pondweed in the MW Chain of Lakes. The NLDC, Towns of MW and BJ, and representatives from the MWLA actively collaborated on planning efforts to address the issue of curly leaf pondweed in the MW Chain of Lakes (a portion of the infestation is within the jurisdictional limits of BJ.) We received a WI-DNR AIS Early Detection and Response Grant (EDR) for the 2013 treatment of smaller, non-established populations and are pursuing an EDR grant for 2014 chemical treatment and professional scuba hand-harvesters. In 2014, the TAISP will continue hand-pulling smaller infestations and areas detected after the optimal treatment period.

On June 4, 2013, Schmidt's Aquatic Plant Control treated approximately 13.1 acres of curly leaf pondweed in Island Lake and the Island-Spider Channel with Aquathol K® (United Phosphorus, Inc). This treatment was successful due to increased concentration and increased exposure time (ideal weather conditions with little wind.) NLDC staff and MWLA volunteers monitored the post-treatment herbicide concentration through participation in an Army Corps of Engineers program. Water samples, water quality, and weather data were taken at pre-specified points and depths and sent to a laboratory for testing. This program yields a better understanding of herbicide concentrations in the water column over time, which will help TAISP successfully plan treatments in the future. In addition to the herbicide treatment, NLDC staff, volunteers, and Onterra LLC hand-pulled all smaller infestations in Spider, Stone, and Manitowish Lakes in 2013.

### **Purple Loosestrife Update**

An intensive effort was made this year by NLDC to survey all shorelines on the entire chain of lakes, associated river sections, and river sections leading into/away from the chain for purple loosestrife. These surveys included the entire Manitowish Waters Chain of Lakes, Rice Creek from Big Lake to Island Lake; Manitowish River from County Highway H to Island Lake; Trout River from County Highway H to Wild Rice Lake; Manitowish River from Rest Lake Dam downstream to the Hwy 47/182 bridge in the town of Manitowish including Benson, Vance, and Sturgeon Lakes; Circle Lily, Statehouse, and Stepping Stones Lakes (lakes unconnected to the MW chain of lakes). As a result of this effort, uniform baseline data was garnered and numerous purple loosestrife populations were identified and mapped in 2013.

Purple loosestrife control methods were employed at both new and old sites. NLDC and dedicated volunteers raised and released bio-control beetles in larger, established infested areas. Purple loosestrife digging and potting occurred on May 17, 2013, with the assistance of the North Lakeland School 7<sup>th</sup> graders. On June 17, 2013, beetles were collected and placed on

potted plants at the NLDC and at the Rest Lake rearing cage. Bio-control beetles were released at purple loosestrife infestations on Rest Lake, Island Lake, Rice Creek, Wild Rice Lake, Stepping Stone Lakes, Highway W, Tenderfoot Nature Conservancy Preserve, Muskellunge Lake, and the Trout River. NLDC staff and dedicated volunteers pulled non-established, smaller populations and cut flower heads to slow the spread through seeds on all populations found during surveys on the MW Chain of Lakes as well as connected and unconnected waters.

### **Other Species**

An intensive effort was made this year by NLDC to survey all shorelines on the entire chain of lakes, associated river sections, and river sections leading into/away from the chain for phragmites and Japanese knotweed. These surveys included the entire Manitowish Waters Chain of Lakes, Rice Creek from Big Lake to Island Lake; Manitowish River from County Highway H to Island Lake; Trout River from County Highway H to Wild Rice Lake; Manitowish River from Rest Lake Dam downstream to the Hwy 47/182 bridge in the town of Manitowish including Benson, Vance, and Sturgeon Lakes; Circle Lily, Statehouse, and Stepping Stones Lakes (lakes unconnected to the MW chain of lakes). As a result of this effort, uniform baseline data was garnered with populations identified and mapped in 2013. The NLDC collaborated with Ted Ritter to send phragmites samples from Circle Lily Lake, Alder Lake, and the Trout River between Alder and Manitowish Lakes to Madison for identification confirmation and possible genetic testing. The sample from the Trout River was confirmed as the invasive species of phragmites, the other samples were native phragmites.

### **Education**

A comprehensive public education campaign was undertaken in 2013. In addition to programs offered through the NLDC (Appendix B), NLDC staff also gave presentations to chambers, libraries, lake associations, clubs, and schools. Education audiences included children and adults as well as formal and informal education methods. NLDC and MWLA educated the public about AIS through an educational booth at numerous local community events. NLDC provided regular AIS updates at MWLA board meetings and at the annual member meeting; and at town board meetings. A variety of media outlets were utilized to educate the public about AIS, such as newspapers, newsletters, radio, public announcements at local events, websites, blogs, and social media.

### **Acknowledgements**

The TAISP would like to thank the Towns of Manitowish Waters and Boulder Junction, the Manitowish Waters Lakes Association, and the North Lakeland Discovery Center for all of their efforts and support in 2013. We look forward to working with the partnership in the future as AIS is a long-term issue with long-term solutions.

## **Appendix A. Fulfillment of Agreement Goals and Objectives:**

### **Prevent AIS Infestations: Through Education (see Appendix A for all activities and trainings)**

- Provided a multitude of opportunities for AIS education to all members of the public.
- Delivered youth AIS education as a part of the Discovery Center's *Eco-discoverers (Ages 4-7)*, *Eco-explorers (Ages 7-10)*, and *Eco-adventurers (Ages 11-14)* programs.
- Conducted a workshop to train volunteers on how to identify aquatic vegetation species and what fish and wildlife species each plant species benefits.
- Hosted Purple Loosestrife (PL) Program, trained and actively engaged volunteers in PL identification and control.
- Trained volunteers in Rusty Crayfish trapping methods and loaned volunteers crayfish traps.
- Trained AIS monitoring "Captains and Deckhands" for 2013 monitoring efforts through numerous hands-on pontoon trainings on the MW chain.
- Conducted spontaneous AIS trainings of walk-in visitors to the NLDC.
- Identified aquatic plants for walk-in visitors and 'Captain and Deckhand' volunteers who brought plant samples to the NLDC.
- Improved and maintained NLDC Nature Nook public AIS displays and activities through a Touch Tank, fish tank, interpretive signs, and additional informational displays.
- Educational outreach oral presentations at the Northwoods Seniors, Girl Scouts.
- Educational outreach booths at the community events such as MWLA Annual Meeting, Vilas County Lakes and Rivers Association Annual Meeting, 4<sup>th</sup> of July (MW), Musky Jamboree (BJ), and Colorama (MW) stressing AIS species found in area waters.
- Provided educational AIS booths and materials for inclusion in packets at fishing tournaments such as the Musky Classic in September and Winter Rendezvous Ice Fishing Tournament in February.
- Attended the Wisconsin Lakes Convention, April 8-11, 2013.

### **Prevent and Manage AIS Infestations: Through Lake Monitoring, Reporting, and Mapping**

- Promoted volunteer monitoring in workshop trainings and through various communications (including website, blog, social media, NLDC newsletter, MWLA newsletter/ website, newspaper, flyers, and other), Wisconsin Invasive Species Council Calendar (ISAM), and the WDNR Citizen Lake Monitoring Network.
- Evaluated and expanded Lake "Captain and Deckhand" monitoring program.
- Provided training and monitoring materials to Lake 'Captains and Deckhands' including monitoring handbooks, waterproof field notebooks, crayfish traps, aquatic plant rakes, aquatic plant identification books ([Aquatic Plants You Should Know](#); [Through the Looking Glass](#); [Aquatic Plants of the Upper Midwest](#)).
- NLDC and volunteers identified and mapped AIS infestations.
- Surveyed all shorelines, littoral zone, and wetlands; targeting areas considered suitable for AIS (thus a higher likelihood of infestation/ establishment) on the entire MW chain of lakes, associated river sections, and river sections leading into/away from the chain for curly leaf pondweed, Eurasian water milfoil, purple loosestrife, Japanese knotweed, and phragmites by pontoon, fishing boat, canoe, and kayak. These surveys included the entire Manitowish Waters Chain of Lakes, Rice Creek from Big Lake to Island Lake; Manitowish River from

County Highway H to Island Lake; Trout River from County Highway H to Wild Rice Lake; Manitowish River from Rest Lake Dam downstream to the Hwy 47/182 bridge in the town of Manitowish including Benson, Vance, and Sturgeon Lakes; Circle Lily, Statehouse, and Stepping Stones Lakes (lakes unconnected to the MW chain of lakes). As a result of this intensive effort, uniform baseline data was garnered and numerous populations were identified in the chain in 2013. Anticipate conducting similar survey yearly in waters not being surveyed by Onterra, LLC.

- Identify previously undetected infestations of curly leaf pondweed in Stone and Manitowish Lakes and the Rest-Stone Channel with the assistance of volunteers; immediately report to interested parties.
- Monitor water quality with Hach® meter in infested and non-infested baseline locations as curly leaf pondweed was senescing in mid-summer to ensure that dissolved oxygen issues were not occurring.
- Collaborated with Ted Ritter to send phragmites samples from Circle Lily Lake, Alder Lake, and the Trout River between Alder and Manitowish Lakes to Madison for identification confirmation and possible genetic testing (October 2, 2013). The sample from the Trout River was as the invasive species of phragmites, the other samples were native phragmites.
- Collaborated with WDNR statewide Surface Water Integrated Monitoring System (SWIMS) database managers in Madison to update data entry screens.
- Entered AIS volunteer and NLDC staff data into the WDNR statewide SWIMS database.
- Provided assistance and guidance to TAISP and volunteers based on Onterra LLC and the WDNR determinations as they relate to MW Chain of Lakes curly leaf pondweed infestation.

#### **Prevent AIS Infestations: Through Boat Landing Inspections**

- Inspected boat landings on high-traffic weekends and tournaments (Musky Classic) through the Clean Boats, Clean Waters (CBCW) program.
- Provided training, guidance and materials for volunteers performing boat landing inspections.
- In 2013, NLDC staff and volunteers spent 200 hours conducting watercraft inspections and educating boaters at boat landings on the MW Chain per grant requirements/ statutes.
- Input all volunteer and staff boat landing inspection data into WDNR's statewide Surface Water Integrated Monitoring System (SWIMS).
- Evaluated the CBCW program for TAISP.

#### **Prevent AIS Infestations: Through Communication and Public Relations**

- Kept TAISP members informed of the materials and opportunities available through the NLDC public programs, website, AIS displays, and library.
- Provided for and collaborated on AIS-related educational report and activities at the MWLA board meetings and at the annual member meeting; and at town board meetings.
- The MWLA sponsored AIS half-time announcements at bi-weekly Skiing Skeeters water skiing shows on Rest Lake in Manitowish Waters.
- Supplied and updated AIS printed materials to both the MW and BJ Chambers of Commerce and Libraries throughout the season for distribution to visitors to the area.
- Designed and produced AIS materials such as pamphlets, flyers, posters, and backboard displays to supplement WDNR materials.

- In 2011, worked with the Town, MWLA, NHAL, and Vilas County Invasive Species Coordinator to ensure that WDNR-adopted signs were placed at appropriate boat landings and old signage was removed. In 2012, placed River Alliance AIS landing signs at all river put-in locations in area. In 2013, made sure all signage was in place, replacing as necessary.
- Designed and placed signs at MW chain public boat landings informing the public of the presence of curly leaf pondweed and importance of cleaning boats and equipment.
- Participate in WDNR Bait Shop Program and Ice Your Catch Initiative. Educated ice and bait vendors in the MW and BJ area, placing 'Ice Your Catch' posters at each vendor.
- Maintained and improved AIS outreach through the including website, press releases, public announcements, newspapers, radio, and photo database.
- Issued AIS features in MWLA and NLDC newsletters and websites.
- Issued an 'AIS of the Month' for each summer month, publicized through MWLA, NLDC, and Lake 'Captain and Deckhand' communications.
- Placed AIS banner on pontoon boat for visual education of MW boaters while monitoring and conducting AIS training.
- Improved NLDC public AIS displays, Nature Nook displays/activities, and on-site library.
- Designed and placed interpretive signs regarding AIS species at NLDC.
- Hosted volunteer appreciation reception dinner: rusty crayfish boil at NLDC.
- Serve on board of directors of the Vilas County Lakes and Rivers Association (VCLRA). NLDC assisted with judging of the VCLRA Blue Heron Lake Shoreline Stewardship Awards which recognize lake property owners who are conscientious in the development and use of their waterfront property to minimize environmental impacts. NLDC also submitted articles to the VCLRA newsletter.

### **Manage AIS Infestations: Through an Action Plan for Containing Purple Loosestrife Infestation**

- Supported the Town and the MWLA in implementation of an action plan for containing purple loosestrife infestations.
- Hosted purple loosestrife workshops, educating and training the public and volunteers about identification, issues, and efforts they can employ to control purple loosestrife.
- Surveyed all shorelines on the entire MW chain of lakes, associated river sections, and river sections leading into/away from the chain for purple loosestrife (July 25, August 7, 9, 12, 13, 15, 16, 23, 27, 28, 29, 31.) These surveys included the entire Manitowish Waters Chain of Lakes, Rice Creek from Big Lake to Island Lake; Manitowish River from County Highway H to Island Lake; Trout River from County Highway H to Wild Rice Lake; Manitowish River from Rest Lake Dam downstream to the Hwy 47/182 bridge in the town of Manitowish including Benson, Vance, and Sturgeon Lakes; Circle Lily, Statehouse, and Stepping Stones Lakes (lakes unconnected to the MW chain of lakes). As a result of this intensive effort, uniform baseline data was garnered and numerous populations were identified.
- Updated statewide GPS inventory of purple loosestrife infestation sites in MW and surrounding area.
- Coordinated and deployed purple loosestrife control methods at new and old infestations.
- The NLDC and dedicated volunteers raised and released bio-control beetles in larger, established infested areas. Purple loosestrife digging and potting (~75 pots) occurred on May 17 with the help of the North Lakeland School 7<sup>th</sup> graders. On June 17, beetles were



collected and placed on potted plants at the NLDC and at the Rest Lake rearing cage. Bio-control beetles were released at purple loosestrife infestations on Rest Lake, Island Lake, Rice Creek, Wild Rice Lake, Stepping Stone Lakes, Highway W, Tenderfoot Nature Conservancy Preserve, Muskellunge Lake, and the Trout River (July 8, 9, 10, 12, 17, 24, 30, August 2, 10, 2013.)

- The NLDC and dedicated volunteers pulled non-established, smaller populations and cut flower heads on all populations found during surveys on the MW Chain of Lakes as well as connected and unconnected waters in order to prevent the potential spread through seeds (July 25, August 7, 9, 12, 13, 15, 16, 23, 27, 28, 29, 31.)

### **Manage AIS Infestations: Through a Plan and Options for Addressing Curly Leaf Pondweed Infestation in Manitowish Waters Chain**

- Assisted the Towns of MW/ BJ, and MWLA as a technical advisor in lake management planning for AIS species with an emphasis on curly leaf pondweed. Obtain WDNR AEPP and EDR grants, assisting in grant writing, project planning, tracking, and reporting.
- Actively engaged partners to encourage collaboration on the issue of curly leaf pondweed.
- Identified, monitored, and mapped locations of curly leaf pondweed in the chain stressing early detection (by volunteers and NLDC) of AIS for the most effective, efficient, and cost-effective control.
- Surveyed the entire chain of lakes, associated river sections, river sections leading into/away from the chain, and selected unconnected lakes in the Manitowish Waters area for curly leaf pondweed (June 7, 12, 18, 24, July 24, 25, 2013). These surveys included the entire Manitowish Waters Chain of Lakes, Rice Creek from Big Lake to Island Lake; Manitowish River from County Highway H to Island Lake; Trout River from County Highway H to Wild Rice Lake; Manitowish River from Rest Lake Dam downstream to the Hwy 47/182 bridge in the town of Manitowish including Benson, Vance, and Sturgeon Lakes; Circle Lily, Statehouse, and Stepping Stones Lakes (lakes unconnected to the MW chain of lakes). Additional areas of infestation were found in Stone, Spider, and Manitowish Lakes and the Rest-Stone Channel. We anticipate conducting a similar survey yearly in waters not being surveyed by Onterra, LLC.
- NLDC staff monitored the water quality in infested locations and non-infested baseline locations as the plant was senescing in mid-summer to ensure that dissolved oxygen issues were not occurring (July 20, 24, 31, August 16, 2013.)
- Communicated with WDNR recreational officers, MW safety patrol officers, Vilas County water sheriffs, WDNR water LEOs regarding curly leaf pondweed infestation in relation to boaters cleaning their boats and equipment.
- On June 4, 2013, Schmidt's Aquatic Plant Control treated approximately 13.1 acres of curly leaf pondweed in Island Lake and the Island-Spider Channel with Aquathol K® (United Phosphorus, Inc). This treatment was successful due to increased concentration and increased exposure time (ideal weather conditions with little wind.)
- NLDC staff and MWLA volunteers monitored the post-treatment herbicide concentration through participation in an Army Corps of Engineers program. Water samples, water quality, and weather data were taken at pre-specified points and depths and sent to a laboratory for testing (June 4-12, 2013.) This program yields a better understanding of herbicide concentrations in the water column over time, which will help TAISP successfully plan treatments in the future.

- In addition to the herbicide treatment, NLDC staff and volunteers hand-pulled all smaller infestations in Spider, Stone, and Manitowish Lakes and the Rest-Stone Channel (June 24, 25, 26, 27, July 3, 5, 2013) which were detected after the optimal treatment time. In 2014, the TAISP will continue hand-pulling smaller infestations and areas detected after the optimal treatment period.
- The TAISP is pursuing the use of professional scuba hand-harvesters in 2014 to assist in hand-pulling smaller infestations and areas detected after the optimal treatment period.
- Water Education Intern conducted school project for UW-Stevens Point credit on curly leaf pondweed impacts on aquatic vegetation species in Rice Creek (July 16-20, 24-26, 30-31, August 1-2, 6, 12, 14, 20, 28, 30, 2013.) A. Kretschmann and professor meet to discuss project on August 19, 2013.

**Administer Efficiently and Effectively: Through Strategic Planning and Grant Administration**

- Continued working with the TAISP on management recommendations for the MW Chain of Lakes planning documents through strategic planning meetings.
- Administer grants and track volunteer hours.

**Appendix B. Aquatic Invasive Species (AIS) Educational Outreach through the North Lakeland Discovery Center Programs: Hosted or AIS Incorporated, by date, 2013.**

January 10, August 15, 2013

Trivia Night Nibbles n' Knowledge Program- Test your knowledge on topics related to nature, the Northwoods, and the Discovery Center. Prizes awarded to individuals and teams in a variety of categories. An evening of delicious nibbles and expanding your knowledge. (\*including lakes and invasive species.)

February 12, 2013

Film Showing and Discussion: Lords of Nature- Delve into this complex issue by showing the film "Lords of Nature" which highlights the drastic effects species can have on an entire ecosystem. Facilitated discussion.

February 16, 2013

Winter Rendezvous Ice Fishing Tournament, Manitowish Waters Chain of Lakes. AIS educational booth and AIS materials stuffed in tournament packets.

February 19, 2013

Film Showing and Discussion: Silent Spring- Celebrate great environmental films. This fascinating documentary highlights Rachel Carson's poetic and seminal work "Silent Spring." The book was widely credited with spurring the movement questioning pesticides in our environment, and Carson's personal story is equally poignant. Facilitated discussion follows.

February 26, 2013

Film Showing and Discussion: An Inconvenient Truth- "With the fate of our planet arguably hanging in the balance, 'An Inconvenient Truth' may prove to be one of the most important and prescient documentaries of all time." Facilitated discussion follows.

February 26, 2013

Vilas County WHIP meeting participant, Eagle River, WI.

March 5, 12, 19, 2013

Leopold's Legacy; Part 1: Greenfire Film Showing and Discussion; Part 2: The Land Ethic; Part 3: Ethics in Action- Aldo Leopold's legacy continues through his articulation of a "land ethic," or the ideas that as humans we have a moral responsibility to the natural world.

March 11, 2013

WDNR AIS Research and Treatment regional meeting participant, Rhinelander, WI.

April 8, June 14, July 23, October 8, 2013

Vilas County Lakes and Rivers Association Board Meetings participant.

April 8-11, 2013

Wisconsin Lakes Convention, Green Bay, WI.

April 16, 17, 18, 2013

Land Management Workshop; Part 1: Wildlife; Part 2: Woods; Part 3: Water- Responsible land management is a concern of many land owners. In this three part series we discuss the balance of ecological and human needs on your property and how some simple management strategies will help you achieve short- and long-term goals for your property.

May 1, 15, 2013

Weeds and wildflowers walk- Head out on the trails and see what's blooming! We will identify the common weeds and wildflowers we see along the way.

May 14, 20, June 17, July 8, August 12, September 16, 2013

MWLA Board Meetings, TAISP/ AIS update presentation.

May 17, 2013

Purple loosestrife digging, potting, and netting of plants with students from North Lakeland School for bio-control beetle project.

May 29, 2013

NLDC staff and volunteers attend Clean Boats Clean Waters training in Eagle River, WI.

June 4, 2013

Herbicide treatment of Island Lake and Spider-Island Channel.

June 4-12, 2013

Herbicide concentration monitoring of treatment areas in Island Lake and Spider-Island Channel.

June 7, 2013

Transplant purple loosestrife and put net on beetle rearing cage at Rest Lake infestation site.

June 7, 12, 18, 24, July 24, 25, 2013

Curly leaf pondweed monitoring.

June 8, 2013

Aquatic invasive species (AIS) are among the greatest threats to the health of our northern lakes. After completing this 'Lake Captain' training, you will be able to identify the common culprits and conduct monitoring surveys to protect your local lake. Good for first time volunteers or as a refresher for our seasoned veterans! We will travel by boat to local infestations, dress appropriately. An array of tools and resources are available for free or loan to interested volunteers. Meet at Koller Park.

June 11, 2013

Center for Conservation Leadership, IL- canoe Manitowish River from Rest Lake Dam to wayside on Hwy 51 learning about river ecology, native and non-native species.

June 11, 2013

Invader Crusader Award Ceremony, Madison, WI.

June 12, 2013

Benson Lake 'Captain' Training and Monitoring.

June 13, 2013

Center for Conservation Leadership, IL- Lessons on water quality, lake level, shoreline buffers, aquatic invasive species, macroinvertebrates, and loon ecology.

June 14, 2013

Vilas County Lakes and Rivers Association- Annual Meeting, Land o Lakes, WI. Aquatic Invasive Species and Lake Level Monitoring educational booth.

June 15-16, 2013

Clean Boats, Clean Waters: Landing Blitz- Icepack Giveaway.

June 15, 22, July 6, 13, 20, 27, August 3, 10, 16, 23, 30, September 6, 13, 20, 27

Guided Interpretive Hike- Discover the sights and sounds of the great outdoors with a guided hike on our interpretive trails. The trail winds among pines, hardwoods, a bog and even up a tree fort! Learn about our local plant and wildlife communities while you enjoy the beauty of the Northwoods. (\*including invasive species.)

June 17, 2013

Transplant purple loosestrife in pots at NLDC and in Rest Lake beetle rearing cage.

June 17, 2013

Purple Loosestrife Beetle Collection at Big Muskellunge Lake.

June 18; July 16; and August 13, 2013

Third-Tuesday Tours 'Deckhand' Aquatic Invasive Species Training- Citizen Science Training- For those who want to help with aquatic invasive species (AIS) monitoring but can't make a big time commitment, becoming a 'Deckhand' is just for you! Meet at Koller Park in Manitowish Waters and travel by pontoon through the chain searching for native and invasive aquatic plant species. An array of tools and resources are available for free or loan to interested volunteers.

June 19, 2013

Invasive Species Education Summit, Eagle River, WI.

June 20, 2013

Aquatic Vegetation Workshop- Join us to explore the underwater plant world of the Northwoods! Bring in samples and learn to identify common aquatic plants and find out what fish and wildlife species they benefit through a workshop followed by an optional scenic afternoon pontoon ride! Collaborating presenter: Ted Ritter, Vilas County Invasive Species Coordinator. Sponsored by the Winchester Town Lakes Committee, complimentary picnic lunch provided.

June 24, 25, 26, 27, July 3, 5, 2013

Hand-pull curly leaf pondweed in Spider, Stone, and Manitowish Lakes and Rest-Stone Channel.

July 8, 9, 10, 12, 17, 24, 30, August 2, 10, 2013  
Release purple loosestrife bio-control beetles.

July 25, August 7, 9, 12, 13, 15, 16, 23, 27, 28, 29, 31  
Purple loosestrife, Japanese knotweed, phragmites, and Eurasian water milfoil monitoring. Clip purple loosestrife flowerheads.

June 26, 2013  
Purple Loosestrife Workshop- Pretty purple flower or ecologically and economically threatening invasive species? Learn about the unique life-cycle and the process involved with raising your own 'Cella Chow' bio-control beetles.

July 1, 2013  
Member Appreciation Dinner- Join us for an evening just for Discovery Center members! Enjoy complimentary food and beverages, as well as pontoon and canoe rides, kids crafts, games and more. This is a great time to share your ideas and feedback and to learn of past accomplishments and future plans, including the E-Pod Experience, Master Plan and more!

July 4, 2013  
Manitowish Waters Community Celebration- 4th of July Aquatic Invasive Species educational booth.

July 12, 2013  
Rest Lake Kayak Drop-in Paddle- The Discovery Center will be offering weekly drop-in silent sport activities Fridays throughout the summer and fall seasons. This week's activity will be a lake and back-bay exploration paddle on Rest Lake in Manitowish Waters, departing from Rest Lake Park. All ages and ability levels welcome. (\*including aquatic vegetation.)

July 16, 30; August 13, 27, September 10, 2013  
Rest Lake Discovery Pontoon Tours- The Manitowish Chain of Ten Lakes is legendary for its unique historical and ecological stories. Join your guide for a tour of the biggest lake in the chain and learn about the common plant and wildlife species. Sightings of loons and eagles are common. Meet at Kohler Park. (\*including changes in ecology from invasive species).

July 16-20, 24-26, 30-31, August 1-2, 6, 12, 14, 20, 28, 30, 2013  
Water Education Intern conducted school project for UW-Stevens Point credit on curly leaf pondweed impacts on aquatic vegetation species in Rice Creek. A. Kretschmann and professor meet to discuss project on August 19, 2013.

July 20, 24, 31, August 16, 2013  
Curly leaf pondweed senescing monitoring and water quality data monitoring in Island Lake, Rice Creek, and Rest-Stone Channel.

July 23, 2013  
Tuesday Discovery Programs: Fishy Business!- A variety of topics throughout the summer on favorite Northwoods topics. Great for all ages! Have you always wondered about that fish

swimming under your dock or why it keeps hanging around? Learn how to identify common fish and their habitat preferences. (\* includes lake habitat, ecology, and invasive species impacts.)

July 25, 2013

Traveling Naturalist: Medicinal Wild Edibles- Hear about 'herbal lore' and natural botanical medicines. Learn how to identify, collect, prepare, and use common traditional healing plants found in the Northwoods. (\*including Purple Loosestrife.)

July 26, August 2, 23, September 28

Manitowish River Canoe Trips- Travel down the historic Manitowish River by canoe. We'll begin in the classroom with a brief river ecology program before heading out on the water. The paddle will be approximately 3 miles.

July 27, 2013

Manitowish Waters Lake Association Annual Meeting- Aquatic Invasive Species educational booth and Dan Cibulka (Onterra, LLC) guest speaker.

July 30, 2013

Tuesday Discovery Programs: Northwoods Lakes- A variety of topics throughout the summer on favorite Northwoods topics. Great for all ages! There are more than 7000 lakes in the Lakeland area. Learn why they are different, what threats they face and how we can be good stewards for them. Tim Kratz, UW Trout Lake Limnologist.

August 2, 2013

NLDC water staff attends Trout Lake Research Station Open House to learn about new/ongoing water-related and AIS research/findings.

August 2, 2013

Rusty crayfish trapping training.

#### WATER WEEK

August 6, 2013

Eco-discoverers (Ages 4-7): Alien Invaders- Explore and learn about aliens in our lakes! See animals and explore non-native plant species. We'll read 'Up North at the Cabin' and pair our learning with activities, hikes, and crafts. Cost partially underwritten by Presque Isle Lakes Committee.

August 6, 2013

Tuesday Discovery Programs: Fish Sticks Woody Habitat Restoration- A variety of topics throughout the summer on favorite Northwoods topics. Great for all ages! The Fish Sticks Habitat Project is helping to place wood on the shores of willing landowners. Learn how this technique is done and get the latest updates on the project. Scott Toshner, Water Resource Specialist & Fisheries Biologist, WDNR.

August 7, 2013

Eco-Explorers (Ages 7-10)- Eco-Series for youth goes beyond outdoor playtime and builds a framework of appreciation and stewardship based on Aldo Leopold's land ethic. Each week's theme is based on a chapter out of Leopold's writings and we use age-appropriate activities explore our connections to nature and the land around us. Theme Chapter: The Alder Fork- Learn the importance of one of our natural resources, water. We will learn about the battle against AIS. Older groups will go fishing. Visit the bog, other types of wetlands.

August 8, 2013

Eco-Adventurers (Age 11-14)- Eco-Series for youth goes beyond outdoor playtime and builds a framework of appreciation and stewardship based on Aldo Leopold's land ethic. Each week's theme is based on a chapter out of Leopold's writings and we use age-appropriate activities explore our connections to nature and the land around us. Theme Chapter: The Alder Fork- Learn the importance of one of our natural resources, water. We will learn about the battle against AIS. Older groups will go fishing. Visit the bog, other types of wetlands. (\*includes paddle for invasive species.)

August 8, 2013

Beware Invaders in our Waters!- Learn about aquatic invasive species of the Northwoods: identification, control, and their ecological and economic impacts. Hear about the latest findings from researchers and what YOU can do! An array of tools and resources are available for free or loan to interested volunteers.

August 8, 2013

Lake Expert Pontoon Tour- Join Carolyn Scholl, Vilas County Conservationist, on a pontoon tour of the Chain of Lakes. Carolyn will talk about all the puzzle pieces that make up a healthy lake ecosystem, including how shoreline buffers can benefit lake water quality! Meet at Koller Park in Manitowish Waters.

August 8, 2013

Northwoods Seniors- Aquatic Invasive Species of the Northwoods presentation.

August 11, 2013

Boulder Junction Musky Day Jamboree- Aquatic Invasive Species educational booth.

August 14, 2014

Eco-Explorers (Ages 7-10)- Eco-Series for youth goes beyond outdoor playtime and builds a framework of appreciation and stewardship based on Aldo Leopold's land ethic. Each week's theme is based on a chapter out of Leopold's writings and we use age-appropriate activities explore our connections to nature and the land around us. Theme Chapter: Great Possessions. Become a nature scientist for a day by observing, conducting research and collecting data. (\*includes collecting lake and water quality data.)

August 15, 2013

Intern Presentations at NLDC Board Meeting.



August 21-22, 2013

Crayfish trapping survey and collection.

August 22, 2013

If You Can't Beat 'em, Eat 'em!: Volunteer and Supporter Appreciation Dinner Rusty Crayfish Boil- Volunteers and supporters are vital to the success of our mission. We want to thank you for giving of your time and talents! Join us for a feast of alien proportions when we harvest the invasive species, rusty crayfish, from area lakes.

September 6-8, 2013

Musky Classic AIS Informational Booth- Provide tournament fishermen with AIS information/ educational materials.

September 6, 2013

Circle Lily Lake: Hike and Paddle Drop-In- 3 mile hike on Discovery Center trails to Circle Lily Lake for a relaxing paddle.

September 16, 2013

Open House 'Discovery Event'- Discover NLDC programs and their impacts on the community and the natural world. (\*includes AIS program.)

September 16, 2013

Vilas County Lakes and Rivers Association Blue Heron Shoreline Stewardship Awards assist with property assessments.

September 18, 2013

Vilas County Lakes and Rivers Association Homebuyers Initiative Meeting participant.

September 20, October 11, 2013

Gresham Creek and Lakes Drop-In Paddle- Paddle on Gresham Creek and Lakes in Boulder Junction, WI.

September 21, 2013

Manitowish Waters' Cranberry Colorama- Aquatic Invasive Species educational booth.

September 27, 2013

Fall Social- Connect with fellow members, staff and the broader community. Join us to explore the Discovery Center's master plan "Beyond Boundaries: Creating a Natural Destination for Discovery." Learn about ways the plan is being brought to life through the development of the "E-Pod Experience," and provide input on plans for the future. (\* E-pods include focus on water/ lakes/ invasive species.)

October 2, 2013

Phragmites sampling/ survey with Ted Ritter, Vilas County AIS Coordinator.

October 14, 2013

WDNR Northern Region AIS Fall Wrap-up Meeting, Rhinelander, WI.

October 21, 2013

Lake Management Planning Meeting with Onterra and stakeholders.

November 8, 2013

Girl Scouts of America- AIS presentation.

November 19, 2013

EPA- Water Resources: Re-engaging your volunteer monitoring organization webinar participant.