2014
Invasive Species Report
For The
Rhinelander Hydroelectric Project
Oneida County, Wisconsin
FERC project No. 2161

Prepared for:

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1.0 SUMMARY

Aquatic Invasive Species (AIS) monitoring and watercraft inspections began on June 2, 2014 and were completed on August 29, 2014. Curly-leaf pondweed, Yellow Iris, Chinese mystery snail, Rusty Crayfish, and Purple Loosestrife were observed in 2014.

Curly-leaf pondweed was documented in one location in 2014. Curly-leaf pondweed populations decreased in 2014. One area that was previously recorded to have Curly-leaf pondweed contained a scattered number of plants, with no heavy concentration of previous years.

During meandering surveys a decrease in the amount of purple loosestrife was noted in 2014. In 2014, 9 plants were located in the same region that in 2013, 16 plants were present. The population was located along Manor Rd on Boom Lake. The nine plants that were present were pulled from the site and properly disposed of.

Yellow iris was present throughout the project boundaries. A noticeable increase of Yellow Iris was present and locations recorded. Yellow Iris removal along Hodag Park shoreline was completed.

Chinese mystery snails have been previously noted and in 2014 were located within the entire project boundaries. The largest populations were noted in the upper river portions.

Rusty crayfish were also found throughout the project boundaries and have been previously noted to be in the system.

Eurasian water-milfoil was not observed during any surveys and it has not been previously reported.

Watercraft inspections were conducted with 163 total hours logged, 147 hours were spent at Hodag Park and 16 hours off of Apperson Drive. There were 1044 people contacted and 421 watercrafts inspected.

2.0 Introduction

The Rhinelander Flowage is comprised of Boom Lake, Bass Lake, Thunder Lake and Lake Creek and extends through Tomahawk, Newbold, Pine Lake, and Pelican townships in Oneida County. The Rhinelander Flowage was formed when a mud and timber dam was constructed on

the Wisconsin River in 1882. In 1903, the present dam was constructed for the purpose of generating power for the new paper mill (IMFWisconsin, 2013). Aquatic invasive species (AIS) were first documented in the Rhinelander Flowage in 2006 with the discovery of rusty crayfish and purple loosestrife. It is possible that both species were present prior to that and just not reported.

AIS are of concern because they can threaten the balance and diversity of a water body. AIS tend to be aggressive, altering habitat in which they invade and can out-compete native species for food and shelter. They can create recreational issues that become a nuisance to the public. AIS can also have economic impacts, as much money and labor can be spent monitoring and mitigating their impacts (McFarlane 2012).

The Federal Energy Regulatory Commission license for the operation of the Rhinelander Flowage dam pertaining to article 406 requires the licensee to file an invasive species management plan to monitor species such as, purple loosestrife, Eurasian water-milfoil and other possible invasive species (Appendix 1). The invasive species management plan requires the licensee to conduct annual surveys for AIS and file annual reports with the Federal Energy Regulatory Commission.

Activities to meet requirements as listed in the plan could include:

- Watercraft inspections
- AIS monitoring
- Public education and involvement
- Updating signage as needed
- Aquatic plant surveys
- AIS mapping
- AIS removal
- Other AIS related activities

A Memorandum of Understanding between Wausau Paper and Wisconsin Department of Natural Resources (WDNR) was signed in 2013, where Expera Specialty Solutions (formerly Wausau

Papers) agrees to reimburse WDNR for annual expenditures on agreed upon AIS activities (Appendix 2).

The activities agreed upon for 2013 included the following:

1) Monitor existing AIS populations, which include curly-leaf pondweed, purple loosestrife, rusty crayfish, and Chinese mystery snails.

2) Search for new AIS, to include Eurasian water-milfoil, zebra mussel and spiny waterflea

3) Perform watercraft inspections

4) Control existing AIS populations as appropriate

3.0 Project area

The Rhinelander Flowage is a soft water drainage system having slightly alkaline, clear water of low transparency. Sand is the predominant littoral material (75 percent) with muck (23 percent) and very limited area of gravel. The shoreline is predominantly upland with wetland of shrub type adjoining portions of the flowage; a good development of wild rice exists in the upper end (Andrews, 1966).

There are eight boat landings throughout the Rhinelander Flowage. Five landings are located along the upper portion. The Town of Pike has three landings: two off of River Rd and one along Journeys End Rd. The Town of Newbold has two: one off of Surf Rd and the other off of Apperson Dr. There is another public boat landing on Boom Lake in Hodag Park. Lake Creek has a landing off of River Rd and Bass Lake has one access point off of Moon Lite Bay Rd (Appendix 3).

The upstream and downstream survey limits for the Rhinelander Hydroelectric Project were defined as follows;

- The water and shoreline of the Rhinelander Flowage from N45˚ 44’ 10.1”, W89˚ 31’ 08.4” WGS84 to approximately 0.5 miles upstream from the McNaughton Road Bridge to the dam at the Rhinelander Hydroelectric Project.

- The waters and shoreline of the power canal bypass reach, and tailrace from the dam at the Rhinelander Hydroelectric Project downstream to N45° 38' 12.4", W 89° 25' 0.00" WGS84 approximately 400' downstream of the Davenport Street Bridge.
- Waters and shoreline of Boom Lake, Bass Lake, Thunder Lake and of Lake Creek; up to the confluence with the stream from South Pine Lake at 45° 40' 24.5" W 89° 24' 57.5" WGS84 (Appendix 3).

4.0 Methods

4.1 Meandering survey

A meandering survey consists of driving a boat slowly along the shoreline of a lake between shallow water and maximum rooting depth of aquatic plants or 100 feet from shore, whichever comes first. Rake throws; D-nets, snorkeling, aqua scopes, and underwater cameras can be used as necessary to aid in searching for AIS during a meandering survey.

4.2 Early detection survey

This is a baseline lake-wide AIS monitoring survey with standard operating procedures - see Appendix 4.

4.3 Spiny waterflea survey

See Appendix 4, waterflea tows, page 35

4.4 Zebra mussel survey

See Appendix 4, veliger tows, page 36

4.5 Watercraft inspections

Watercraft inspections are performed by a trained individual at a boat landing. See Appendix 5 for specific inspection methodology. All data is collected on Form 3200-120 (Appendix 6) and then entered into the WDNR SWIMS database.

4.6 Vouchering

All newly discovered AIS have specimens collected and sent to an appropriate laboratory for verification. Vouchering protocols can be found in Appendix 4, voucher collection protocol, page 34.

5.0 Results

Curly-leaf pondweed, purple loosestrife, aquatic forget-me-not, yellow iris, Chinese mystery snail, rusty crayfish and Eurasian water-milfoil were monitored using meandering and early detection survey methods. The meandering survey was completed by Wisconsin DNR employees from June 2nd, through August 29, 2014.

5.1 Curly-leaf pondweed

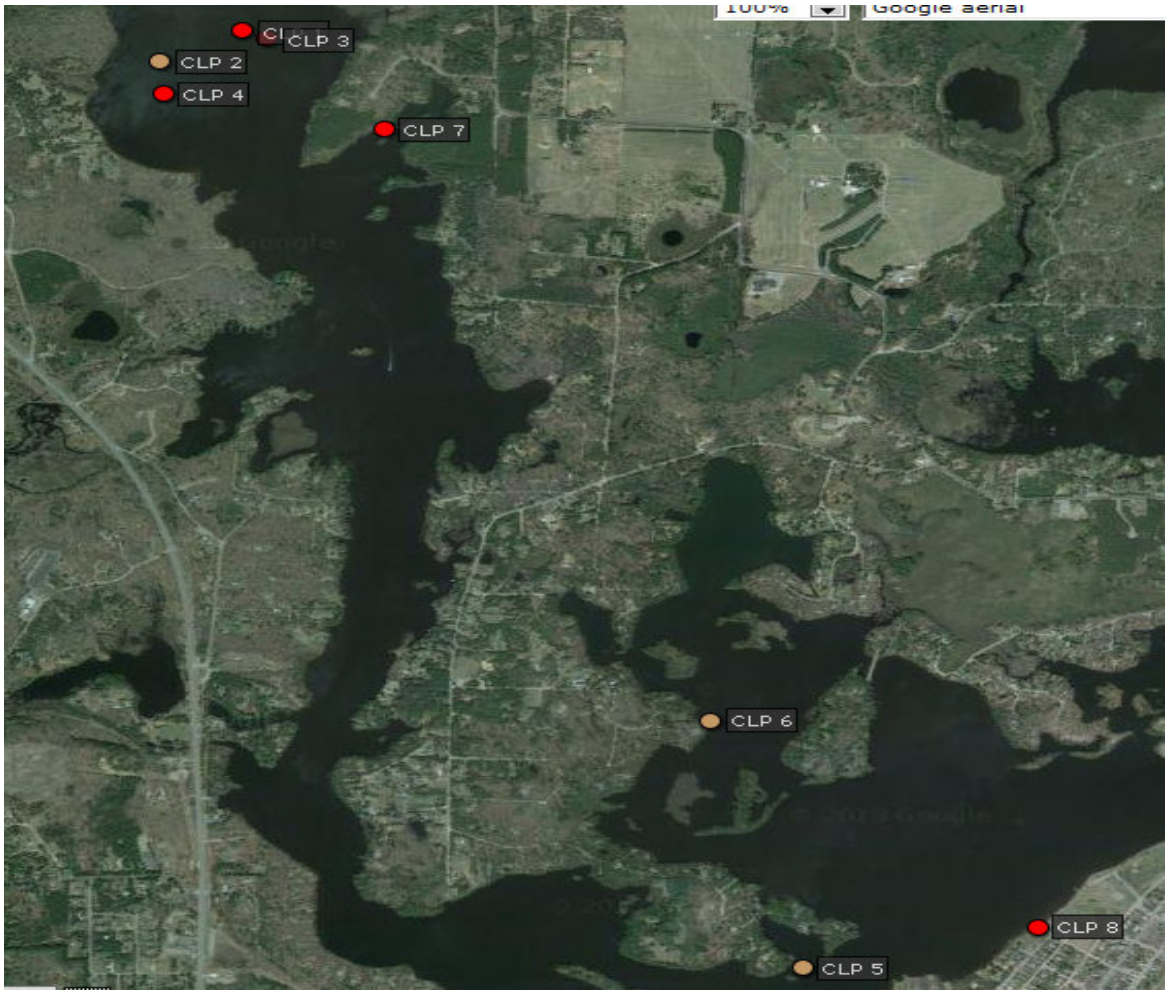
Curly-leaf pondweed was detected at one location in 2014. The population has shown a decrease from previous years. No colonies were present but a scattering of single plants within the native plant populations. There was no distinct grouping of the CLP in 2014 rather a low density of plants located around sites CLP 1 and CLP 3. There was no area of dense population, but a region that contained scattered plants. These areas were previously known to contain dense colonies of Curly-leaf pondweed.

Table 1: Rhinelander Flowage curly-leaf pondweed (CLP) data

Site	Latitude	Longitude	2014 Status	Comments
CLP 1	45.68529116	-89.44893605	Scattered plants	Area has scattered plants present
CLP 2	45.68414	-89.45236	Not Present	No rooted CLP observed

CLP 3	45.68498841	-89.44790868	Scattered plants	Area has scattered plants present
CLP 4	45.68285	-89.45226	Not present	No rooted CLP observed
CLP 5	45.64882519	-89.42564551	Not Present	No rooted CLP observed
CLP 6	45.65847	-89.42947	Not Present	No rooted CLP observed
CLP 7	45.68147	-89.44308	Not Present	No rooted CLP observed
CLP 8	45.65043	-89.41584	Not Present	No rooted CLP observed

Figure 1: Rhinelander Flowage curly-leaf pondweed (CLP) locations



**Circles: Curly-leaf pondweed observed prior to but not in 2014

5.2 Purple loosestrife

One location of purple loosestrife was observed in 2014, nine plants were removed from a previously recorded location. The location had sixteen actively growing plants in 2013 and nine in 2014. *PL100* is located along Manor Road on Boom Lake. The location was documented with a GPS and all plants observed were pulled. Care was taken to remove the root system and all plants were properly disposed of. Table 2 lists all current and previous locations and population status. Figures 2 and 3 display all locations of purple loosestrife documented during 2014 and previous years.

Table 2: Rhinelander Flowage purple loosestrife (PL) data

SITE #	Latitude	Longitude	# OF PLANTS	PRESENT LAST YEAR?	PULLED THIS YEAR?	PULLED LAST YEAR?	BEETLE DAMAGE?	YEAR FIRST OBSERVED	COMMENTS 2014
PL001	45.66255558	-89.43352777	2	YES	NO	YES	NO	2006	NOT PRESENT
PL010	45.65824997	-89.42256	10	YES	NO	NO	NO	2007	NOT PRESENT
PL016	45.65930558	-89.42255552	1	YES	NO	NO	NO	2009	NOT PRESENT
PL017	45.6570278	-89.42277781	0	NO	NO	NO	NO	2009	NOT PRESENT
PL018	45.65394443	-89.42980553	0	NO	NO	NO	NO	2009	NOT PRESENT
PL020	45.65931	-89.41575	0	NO	NO	NO	NO	2010	NOT PRESENT
PL023	45.66278	-89.43389	2	YES	NO	NO	NO	2010	NOT PRESENT
PL024	45.66067	-89.43917	0	NO	NO	NO	NO	2010	NOT PRESENT
PL025	45.66092	-89.43869	0	NO	NO	NO	NO	2010	NOT PRESENT
PL026	45.65837586	-89.42275417	0	NO	NO	YES	NO	2011	NOT PRESENT
PL036	45.66104	-89.42197	1	YES	NO	NO	NO	2012	NOT PRESENT
PL037	45.66029	-89.42274	2	YES	NO	NO	NO	2012	NOT PRESENT
PL002	45.63680554	-89.41697225	10	YES	NO	NO	NO	2006	NOT PRESENT
PL004	45.63836114	-89.4155278	2	YES	NO	NO	NO	2006	NOT PRESENT
PL005	45.63891669	-89.41616667	2	YES	NO	NO	NO	2006	NOT PRESENT
PL006	45.63916664	-89.41708331	0	NO	NO	NO	NO	2006	NOT PRESENT
PL008	45.63994448	-89.41938892	0	NO	NO	NO	NO	2006	NOT PRESENT
PL009	45.63911115	-89.41669447	0	NO	NO	NO	NO	2006	NOT PRESENT
PL011	45.63813885	-89.41547222	5	YES	NO	YES	NO	2007	NOT PRESENT
PL012	45.63999997	-89.41944441	0	NO	NO	NO	NO	2007	NOT PRESENT
PL013	45.63991665	-89.41927778	0	NO	NO	NO	NO	2007	NOT PRESENT

PL015	45.64019443	-89.41977776	0	NO	NO	NO	NO	2008	NOT PRESENT
PL019	45.63680554	-89.41602778	4	YES	NO	YES	NO	2009	NOT PRESENT
PL021	45.63867	-89.41572	0	NO	NO	NO	NO	2010	NOT PRESENT
PL100	45.66042	-89.42264	9	NO	YES	NO	NO	2013	PLANT PULLED

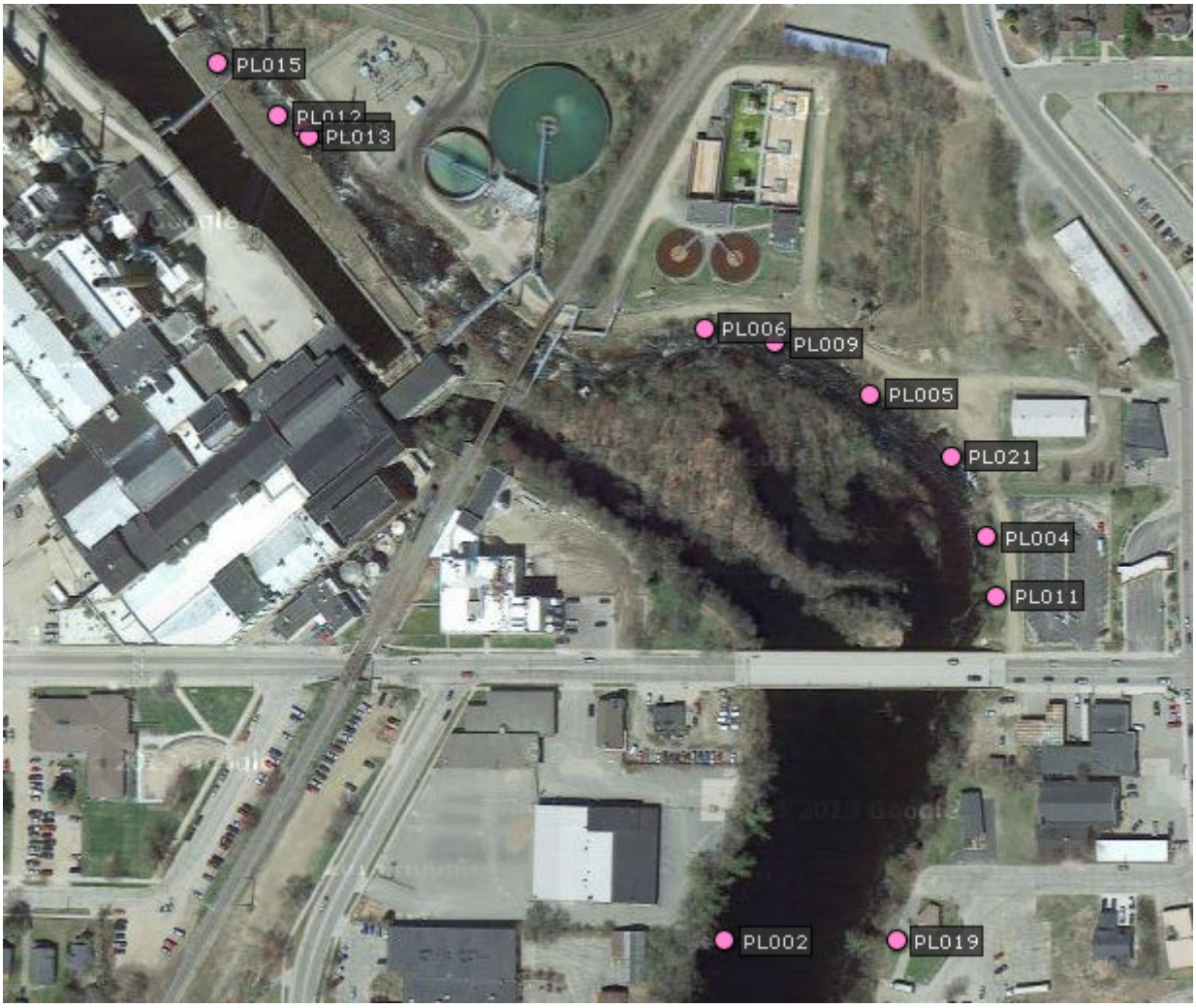
Site #'s in *italics* indicate purple loosestrife presence in 2014

Figure 2: Rhinelander Flowage above dam purple loosestrife (PL) locations

**Stars: 2014 Purple Loosestrife locations

**Circles: Prior Purple Loosestrife locations

Figure 3: Rhinelander Flowage below dam purple loosestrife (PL) locations



**Circles: Prior Purple Loosestrife locations

Note: No Purple Loosestrife observed in 2014

5.3 Aquatic forget-me-not

In surveys conducted during 2014 no Aquatic forget-me-nots were located. Two locations of aquatic forget-me-knot were observed in 2013 and both known areas were heavily searched for the presences in 2014 with none being located.

5.4 Spiny waterflea

Spiny waterflea was monitored using waterflea survey methods. The survey was completed on August 19, 2014 by two DNR employees. Five sites were sampled during survey for the presence of spiny waterflea (Figure 6). After collection, samples were sent to a laboratory for analysis. Table 3 lists information collected as part of the sites sampled. Laboratory results are pending and once results are received, all data will be entered into the WDNR SWIMS database. No spiny waterfleas have been detected in surveys completed prior to 2014.

Figure 6: Site locations for spiny waterflea samples in the Rhinelander Flowage

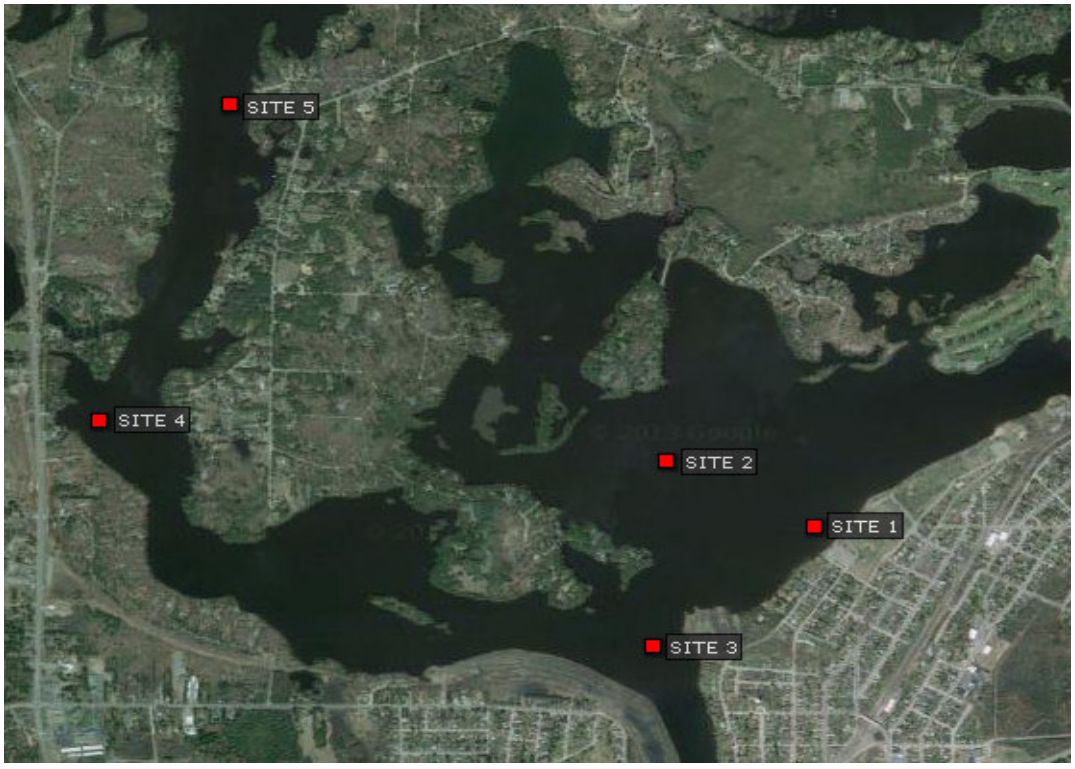


Table 3: Spiny waterflea sampling point data sheet

Site	Secchi Depth (m)	Depth Sampled(m)	Tow Pattern	Results
1	1.25	6	Oblique	***
2	1.25	6	Oblique	***
3	1.25	2	Oblique	***
4	1.25	2	Oblique	***
5	1.25	2	Oblique	***

5.5 Zebra mussel

Zebra mussels were monitored using veliger survey methods. Three sites were sampled on August 19, 2014 by two DNR employees (Figure 7). Samples were sent to a laboratory for analysis. Table 4 lists information collected as part of the sites sampled. Laboratory results are pending and once results are received, all data will be entered into the WDNR SWIMS database. No zebra mussels veligers have been detected in surveys previous to 2014.

Figure 7: Site locations for zebra mussel samples in the Rhinelander Flowage

Table 4: Zebra mussel sample points data sheet

Site	Secchi Depth (m)	Depth Sampled (m)	Number of Tows	Results
1	1.25	2	1	***
2	1.25	6	1	***
3	1.25	2	1	***

5.6 Yellow iris

Yellow iris was observed throughout the project boundaries in 2014 with a noticeable increase in population. The largest populations were noted along the shoreline of Hodag Park. Removal was preformed to reduce the spread in this area. Information about Yellow Iris was presented to private shoreline owners where Yellow Iris was located. When located within the project boundaries removal was done if shoreline erosion was not an issue. Other locations seed pods were removed and properly disposed of.

5.7 Chinese mystery snail

Chinese mystery snails were observed throughout the project boundaries in 2014 and were known to be present previous to 2014. The largest populations observed were up river locations adjacent to the wild rice fields.

5.8 Rusty crayfish

Rusty crayfish were observed throughout the project boundaries in 2014 and were known to be present previous to 2014.

5.9 Eurasian water-milfoil

Eurasian water-milfoil was not observed during any surveys in 2014 and has never been detected previous to 2014.

5.10 Watercraft inspections

Inspections were completed from June 2, 2014 to August 29, 2014. The inspections were completed using the watercraft inspection report form 3200-120 (Appendix 5). Inspection days focused on Friday, Saturday and Sunday to maximize the amount of boater contacts. Inspection locations were chosen based on the highest amount of traffic. Hodag Park boat landing was the primary location, and the boat launch off of Apperson Drive in the town of McNaughton was a secondary location. A total of 163 hours were logged resulting in 1044 people contacted and 421 watercrafts inspected. 147 hours were spent at Hodag Park and 16 hours off of Apperson Drive. During inspections there were zero noncompliance issues, all people contacted seemed eager to participate and were given up-to-date AIS information.

8.0 Mapping Tools

The maps were created using the website *GPSVisualizer.com*. This is an online utility that creates maps from various forms of GPS data. The GPS points taken throughout the survey were uploaded to generate the maps in this report.

9.0 Literature cited

IMFWisconsin, *History of the Rhinelander Chain,* Uncategorized. Rhinelander. Web. Feb, 2013

McFarland, Erin, *Watercraft Inspector Handbook,* Wisconsin Lakes Partnership, 2012.

Andrew, M. Lloyd and Threinen, C.W., *Surface Water Resources of Oneida County,* Lakes and Streams Classification Project, Madison Wisconsin, 1966.

Appendix 1. Order amending invasive species management plan

135 FERC ¶ 62,132
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Wausau Paper Specialty Products, LLC Project No. 2161-019

ORDER AMENDING INVASIVE SPECIES MANAGEMENT PLAN PURSUANT TO ARTICLE 406

(Issued May 11, 2011)

1. On February 10, 2011, Wausau Paper Specialty Products, LLC (licensee), filed a request to amend the invasive species management plan for the Rhinelander Hydroelectric Project (FERC No. 2161), pursuant to article 406 of the project license.[1] The project is located on the upper Wisconsin River in Tomahawk, Newbold, Pine Lake, and Pelican townships, Oneida County, Wisconsin.

BACKGROUND

2. Article 406 requires the licensee,[2] after consultation with the Wisconsin Department of Natural Resources (Wisconsin DNR) and the U.S. Fish and Wildlife Service (FWS), to file an exotic species control plan to monitor invasive species, such as purple loosestrife (*Lythrum salicaria*) and Eurasian water milfoil (*Myriophyllum spicatum*), at the project. The approved invasive species management plan, as modified, requires the licensee to conduct annual surveys for invasive plants, especially purple loosestrife and Eurasian water milfoil, in project lands and waters, for at least five consecutive years.[3] The approved invasive species management plan requires the licensee to file annual monitoring reports with the Wisconsin DNR and FWS for review, and to file the annual monitoring reports, with any resource agency comments and recommendations, with the Federal Energy Regulatory Commission (Commission). The

[1] Order Issuing New License issued August 20, 2003 (104 FERC ¶ 62,134).

[2] On December 28, 2006, the Commission issued an Order Approving Transfer of License from Rhinelander Paper Company to Wausau Paper Specialty Products. *See* (117 FERC ¶ 62,270).

[3] Order Modifying And Approving Invasive Species Management Plan Pursuant To Article 406 issued April 27, 2006 (115 FERC ¶ 62,106).

licensee filed the five annual monitoring reports with the Wisconsin DNR and FWS, and subsequently with the Commission, in a timely manner.

3. The approved invasive species management plan requires that the fifth monitoring report be a comprehensive report containing a comparison of all data collected in the previous five years. Further, it states that if, after five consecutive years, there appears to be either no invasive plant species present or no spread of existing invasive plants, then the licensee may propose an alternative monitoring and reporting frequency, after consulting with the resource agencies.

4. The licensee filed its fifth monitoring report on December 10, 2010, which documented the survey of project lands and waters for invasive species for 2010. The licensee filed its comprehensive summary report separately on February 10, 2011, along with its request to amend the plan.

LICENSEE'S SUMMARY REPORT

5. In 2006, a baseline meander survey for purple loosestrife and Eurasian water milfoil was conducted for the project. Annual surveys were conducted in 2007, 2008, 2009, and 2010. During all of the surveys, no Eurasian water milfoil was found. In addition, point intercept surveys for Eurasian water milfoil were performed concurrently with the meander surveys, in all survey years at the project, and no Eurasian water milfoil was found.

6. In all survey years, purple loosestrife was found within the limits of the project, both upstream and downstream of the project dam. The total number of occurrences and plants has remained relatively low during the five years of surveys:

- 2006 - one occurrence (16 plants) located in the upstream (impoundment) and eight occurrences (28 plants) downstream (bypass reach and tailrace) of the dam (total = 44 plants)
- 2007 - two occurrences (14 plants) located in the upstream and five occurrences (25 plants) downstream of the dam (total = 39 plants)
- 2008 - two occurrences (12 plants) located in the upstream and nine occurrences (40 plants) downstream of the dam (total = 52 plants)
- 2009 - five occurrences (20 plants) located in the upstream and four occurrences (28 plants) downstream of the dam (total = 48 plants)
- 2010 - nine occurrences (35 plants) located in the upstream and eight occurrences (23 plants) downstream of the dam (total = 58 plants).

7. Overall, the number of purple loosestrife plants observed downstream of the dam has remained about the same while those upstream of the dam have shown an increase. The licensee cites the use of the Galerucella beetle as a biological control and the ability of the survey crew to remove the seed heads or to pull many of the plants from licensee-owned and/or publicly-accessible lands downstream of the dam. The licensee cites the absence of the Galerucella beetle and the difficulty in obtaining permission from land owners to enter their property to remove the plants upstream of the dam.

LICENSEE'S PROPOSED AMENDMENT

8. The licensee proposes, after consultation with the Wisconsin DNR, to provide funding to the Wisconsin DNR to hire a seasonal summer employee from mid-May through August. This person will be directed by the Wisconsin DNR and their duties would be focused both on control and monitoring of purple loosestrife in the project area. The licensee proposes that the seasonal employee's activities would include:

- watercraft inspections
- Aquatic Invasive Species (AIS) monitoring (Eurasian water milfoil, curly leaf pond weed, purple loosestrife, spiny water-flea, zebra mussels, and possibly others)
- public education and involvement
- updating signage as needed
- aquatic plant surveys
- AIS and aquatic plant mapping
- AIS removal
- train volunteers on watercraft inspection and citizen volunteering monitoring activities
- other AIS related activities as needed.

9. The licensee proposes to fund this position for a period of five years. At the end of the five-year period, the licensee proposes, in consultation with the resource agencies, to review the effectiveness of this procedure in the control of purple loosestrife and other invasive species. The licensee states that the funding of the AIS person would be a valuable contribution in the control of invasive species, and that the funding would provide a more effective and coordinated use of funds to enhance the quality of the project area.

RESOURCE AGENCY CONSULTATION

The licensee developed the proposed amendment in consultation with the Wisconsin DNR. By email dated February 3, 2011, the Wisconsin DNR concurred with the licensee's amendment request and provided an estimate of the costs for the seasonal AIS person. The licensee provided a copy of the plan to the FWS on February 10, 2011, for review and any comments. There were no comments received from the FWS.

DISCUSSION

10. The licensee's five-year invasive species summary report is a comprehensive and detailed accounting of the presence of purple loosestrife and Eurasian water milfoil within the project area, both upstream and downstream of the dam. The reasons provided by the licensee in support of its proposal to fund a position for a part-time aquatic invasive species person are reasonable as a way of continuing to control and monitor invasive weeds. While the Commission understands the cooperative nature of the funding for the hiring of an invasive species person, to be directed by the Wisconsin DNR, the licensee is reminded that pursuant to its approved plan, it is ultimately responsible for the management of invasive species within the project boundary. Therefore, that portion of the proposed amendment that state or refer to funding be provided to the Wisconsin DNR are stricken from the plan. The licensee is not restricted to the services of the Wisconsin DNR in carrying out their proposed amended plan, but is also not precluded from hiring a seasonal employee under the direction and expertise of the Wisconsin DNR.

11. The licensee's proposed amendment did not discuss the filing of annual reports. Similar to the currently approved invasive species monitoring plan, the licensee should file annual monitoring reports with the Wisconsin DNR and the FWS by October 31, and then with the Commission by December 31 in the year in which the monitoring is conducted. The licensee should also file a comprehensive summary report by December 31, 2015, that discusses the previous five years of activity and propose any future changes in the monitoring and control of invasive species at the Rhinelander Project.

12. The licensee's proposal to amend the Order Modifying And Approving Invasive Species Management Plan Pursuant To Article 406, as modified herein, should be approved.

The Director orders:

(A) The Wausau Paper Specialty Products' LLC (licensee) proposal to amend the Order Modifying And Approving Invasive Species Management Plan Pursuant To Article 406 of the Rhinelander Hydroelectric Project, as modified in ordering paragraphs (B) and (C), is approved.

Appendix 2. Memorandum of understanding

MEMORANDUM OF UNDERSTANDING

BETWEEN

WAUSAU PAPER MILLS, LLC ("WPM")
100 PAPER PLACE
MOSINEE, WI 54455

AND

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
("WDNR")
P. 0. BOX 7921
MADISON, WI 53707

THIS MEMORANDUM OF UNDERSTANDING ("MOU"), is made by and between WPM and WDNR.

WITNESSENTH: In consideration of the mutual promises herein contained, the parties have agreed and hereby do enter into this MOU according to the provisions set out herein:

A. The WDNR agrees to perform the following services:

WDNR agrees to provide an employee to perform and fulfill those seasonal services as specified in FERC License Article 406 for the Rhinelander Hydroelectric Project No. 2161 (issued August 20, 2003), as modified by that certain "Order Amending Invasive Species Management Plan Pursuant To Article 406 (issued May 11, 2011) (hereinafter, the "Invasive Species Order"). The terms and provisions of the said Invasive Species Order are incorporated into this MOU as if set forth at length herein and a copy of the Invasive Species Order is attached and incorporated hereto and marked as Exhibit A to this MOU. Specifically, WDNR agrees that said employee shall perform those tasks itemized in paragraph number 8 and ordering paragraph (B) of the Invasive Species Order. WNDR further agrees that said employee shall develop, prepare, and provide to WPM for its timely submission to FERC thereafter those annual monitoring reports and the comprehensive summary report as specified in ordering paragraph (C) of the Invasive Species Order. The parties hereto understand and acknowledge that WPM holds the ultimate obligation to comply with the provisions of the Invasive Species Order. In acknowledgment thereof, WDNR agrees that it shall use its best efforts to ensure that the tasks will be performed and the annual monitoring reports and comprehensive summary report will be developed, prepared and provided to WPM so as to allow WPM to timely meet its obligations as set forth in the said Invasive Species Order, particularly paragraph number 8 and ordering paragraphs (B) and (C) thereof. To that end, WNDR agrees that said employee shall develop, prepare, and provide the annual monitoring reports and the comprehensive summary report in final draft form to WPM by no later than **October 1** for the years in which annual monitoring reports are required to be submitted for agency consultation, and the finalized annual monitoring reports and the finalized comprehensive summary report shall be submitted to WPM

by no later than **December 1** for the years in which annual monitoring reports are required to be submitted to the FERC.

WDNR acknowledges that all of the tasks contemplated herein, all of the reporting contemplated herein, and all of the compensation for the performance of said tasks and reporting herein are for services and reporting within the Rhinelander Hydroelectric Project No. 2161 project boundary (hereinafter, "Project Boundary"). WDNR acknowledges, conversely, that any invasive species activities that the WDNR might conduct and/or report on outside the said Project Boundary are outside the scope of this MOU and are not to be compensated with any of the funds to be paid pursuant to this MOU.

In addition, WDNR agrees that the said employee shall attend and participate in status/updating meetings with WPM and/or WDNR as may be required from time to time.

WDNR further agrees that the following general expectations shall apply to said employee:

Employee is to be familiar with the current Article 406 Invasive Species Plan. Employees duties are expected to fulfill the plan requirements.

Employee is not authorized to represent Wausau Paper to the media, unless so directed and authorized in accordance with Wausau Paper Corporate policies.

Employee is expected to be a visual representative of professionalism, and environmental stewardship for both the WDNR and Wausau Paper.

WDNR will provide management and oversight of all employees associated with the scope of work.

Employee will at all times be considered an employee of WDNR and not of WPM.

B. Wausau Paper agrees to perform the following services:

1. Reimburse WDNR for the combined wages and expenses incurred in performing the services pursuant to this MOU in an amount not to exceed eight thousand dollars ($8,000.00) per year for the duration of this MOU.

2. Provide WDNR with the Project Boundary map.

3. Grant access to the WDNR for any land owned or controlled by Wausau Paper within the Project Boundary.

4. WDNR will provide an itemized invoice for the actual net costs incurred for review and acceptance at the completion of the scope of work. WDNR will submit the invoice no later than 90 days from the end the season. Payment shall be made only after WDNR has completely performed the duties under this MOU.

5. Invoices by the WDNR will be sent to:

   Accounts Payable
   Wausau Paper
   PO Box 900
   Mosinee, WI 54455

C. The parties further agree that the following shall be essential terms and conditions of this MOU:

1. No person on the grounds of handicap, race, color, religion, sex or national origin, will be excluded from participation in, or be denied benefits of, or be otherwise subjected to discrimination in the performance of this MOU, or in the employment practices of the MOU.

2. The term of this MOU shall be from October 01, 2012, through December 31, 2015.

3. This MOU may be terminated by either party by giving written notice to the other, as least thirty (30) days before the effective date of the termination. In that event, the WDNR shall be entitled to receive just and equitable compensation for any satisfactory authorized work completed as of the termination date.

4. This MOU may be modified only by amendment executed by all parties hereto. The MOU, in no case can fulfill less than the license requirement of this position.

5. The WDNR shall, for a period of three (3) years after completion and acceptance by Wausau Paper, maintain books, records, documents, and other evidence directly pertinent to performance on work under this MOU in accordance with generally accepted accounting principles and practices. The WDNR shall also maintain the financial information and data used in the preparation or support of the cost submission in effect on the date of execution of this contract and a copy of the cost summary submitted to Wausau Paper.

6. Subject to assessment by the FERC, this position will be reviewed after the end of the 5th year ending December 31, 2015.

7. Each party agrees that, as related to this MOU, any loss or expense (including costs and attorney fees) by reason of liability imposed by law, will be charged to the party responsible for the officer, employee or agent whose activity caused the loss or expense.

D. All communications regarding this MOU will be made through the designated contacts. The designated contacts are:

Cara Kurtenbach
Wausau Paper
100 Paper Place
Mosinee, WI 54455
(715) 692-2023

Gary Renel
Rhinelander Mill
515 West Davenport Street
Rhinelander, WI 54401
(715) 369-4244

Program Contact: Cheryl Laatsch, Acting FERC Coordinator
Wisconsin Department of Natural Resources
101 S. Webster St
Madison WI 53707
(920) 387-7869

Financial Contact: Christina Isenring
Wisconsin Department of Natural Resources
101 S Webster Street
Madison WI 53707
(608) 266-5285

Reference: Exhibit A: FERC Article 406.

IN WITNESS WHEREOF, the parties have by their duly authorized representatives set their signatures.

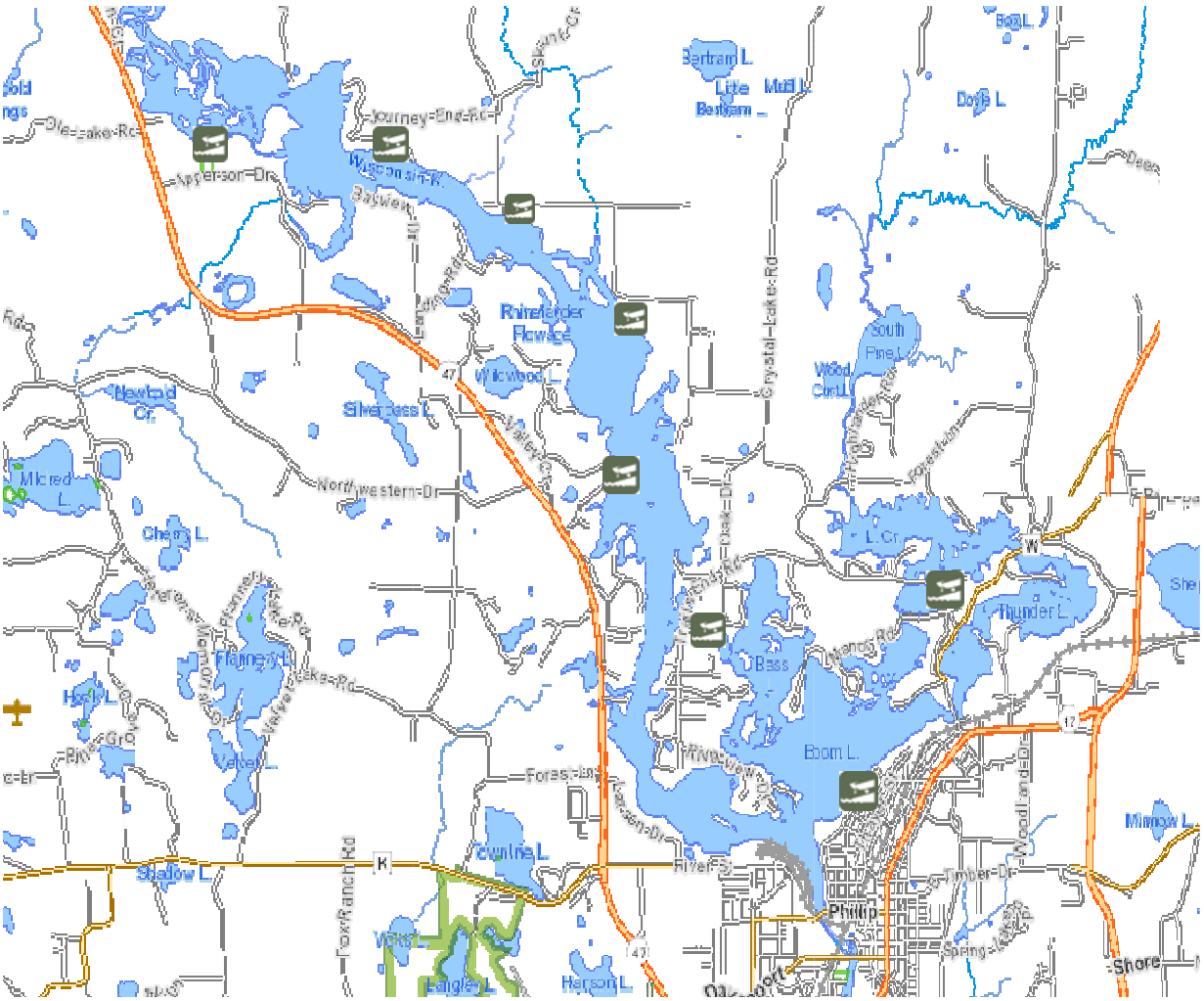
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

_____ _____
Cathy Stepp, Secretary Date

WAUSAU PAPER MILLS, LLC

_____ _____
By: Jeffery A. Verdoorn
As its: VP of Operations Date

Appendix 3. Rhinelander Flowage boat landings



Appendix 4. WISCONSIN DEPARTMENT OF NATURAL RESOURCES

AQUATIC INVASIVE SPECIES EARLY DETECTION MONITORING

STANDARD OPERATING PROCEDURES

DRAFT June 9, 2014

BACKGROUND

WDNR currently relies upon a strong network of volunteers (Citizen Lake Monitoring Network – CLMN), partners (e.g. Wisconsin River Alliance, Great Lakes Indian Fish and Wildlife Commission, University of Wisconsin-Madison, County AIS Staff) and Department staff to monitor lakes and streams for new aquatic invasive species (AIS). This system has been adequate to date but does not enable a statewide assessment of AIS presence/absence or the rate of spread and therefore an evaluation of the effectiveness of the State's AIS message which is aimed at stopping the spread of AIS by targeting transient boaters.

The statewide monitoring strategy outlined below will provide DNR and partners with the information needed to:

1. Establish baseline data on statewide AIS distribution.
2. Track the rate of AIS spread in a number of vulnerable waterbodies that will represent the state as a whole.
3. Evaluate the effectiveness of outreach and education efforts aimed at stopping the spread of AIS.

In addition to these three priority objectives this monitoring strategy may trigger statewide, regional or local implementation of a rapid response strategy, lead to an assessment of abundance and frequency within a waterbody and/or an evaluation of management activities. These secondary monitoring activities will depend on staff and funding availability and will likely be funded through competitive projects and AIS or other grants or by DNR partners.

In order to have a statistically valid assessment of AIS spread in the state's lakes it has been determined that the monitoring effort will require monitoring 200 randomly selected lakes per year over a 5 year period. At the end of the five years the Department will be able to say with statistical validity what the rate of AIS spread is in the state and with continued monitoring if that rate of spread is increasing or decreasing by as little as 3% annually.

Monitoring will be conducted by WDNR staff, County AIS Coordinators, partners, and volunteers. Forty percent of the three Great Lakes Basin AIS Specialist's (Daulton, Motiff, and Wolbers) time has been identified for monitoring. The statewide AIS monitoring coordinator (Ferry) and regional AIS coordinators and staff in non-Great Lakes basins (NORc-Hansen/Kreitlow, NORr-Gauthier, NORs-Toshner/Smith, SCR-Graham and WCR-Provost/Lepsch). The Great Lakes Indian Fish and Wildlife Commission, County AIS staff and Citizen Lake Monitoring volunteers will help where appropriate.

FIELD PREPARATION


Field Preparation.docx

TARGET SPECIES

Target species include: Chinese mystery snail (*Cipangopaludina*), banded mystery snails (*Viviparus georgianus*), zebra mussels (*Dreissena polymorpha*) quagga mussels (*D. bugensis*), spiny waterfleas (*Bythotrephes longimanus*), Eurasian watermilfoil (*Myriophyllum spicatum*), curly leaf pondweed (*Potamogeton crispus*), purple loosestrife (*Lythrum salicaria*), Phragmites (*Phragmites australis)*, flowering rush (*Butomus umbellatus*).

Other priority species include: Asian clam (*Corbicula fluminea*), Faucet snails (*Bithynia tentaculata*), New Zealand mudsnail (*Potamopyrgus antipodarum*), red swamp crayfish (*Procambarus clarkii*), rusty crayfish (*Orconectes rusticus*), Japanese knotweed (*Polygonum cuspidatum*), Japanese hop (*Humulus japonicas*), Yellow iris (*Iris pseudacorus*), European frog-bit (*Hydrocharus morus-ranae*), yellow floating heart (*Nymphoides peltata*), water chestnut (*Trapa natans*), Brazilian waterweed (*Egeria densa*), Hydrilla (*Hydrilla verticilata*), fanwort (*Cabomba caroliniana*), parrot feather (*Myriophyllum aquaticum*), water hyacinth (*Eichornia crassipes or E. azurea*), water lettuce (*Pistia stratiotes*), and rock snot (*Didymosphenia geminata*).

For guidance on target species identification and habitat preference, please review the Aquatic Invasive Species Field Guide the following websites:

- DNR website: http://dnr.wi.gov/topic/Invasives/species.asp?filterBy=Aquatic&filterVal=Y; and
- Aquatic Invasive Species Monitoring section of the Citizen Lake Monitoring Network Manual: http://www4.uwsp.edu/cnr/uwexlakes/clmn/publications.asp.

SAMPLING PERIOD

Sampling will be completed from June 15 through September 15 of each year.

FIELD METHODS

Data Collection

Report data on the AIS Early Detection Monitoring Form (attached).

EarlyDetectionForm_v2014.pdf

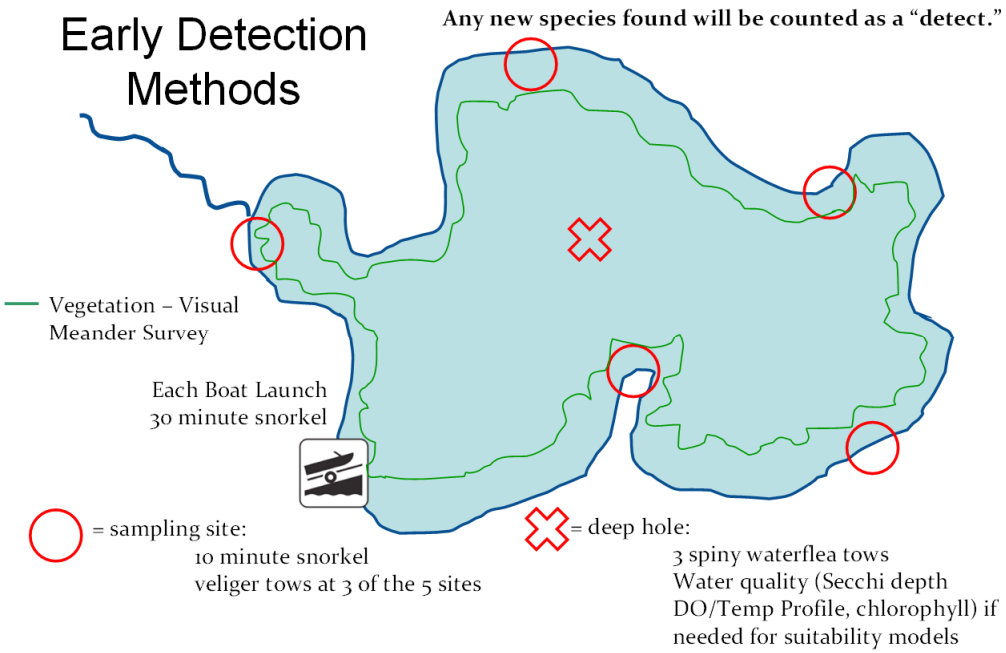
Voucher Collection Protocol

Collect specimens of **all observed** invasive plants, Dreissenids, snails, and didymo for verification.

- Collect up to five specimens of each new invasive plant population to send to the Freckmann Herbarium.
- Collect up to 20 individuals of Dreissenids to send to DNR Science Services.
- Collect up to 3 of each snail species observed. All species should be combined into one sample jar and sent to UW-La Crosse for verification.

See *Vouchering Preparation and Shipping* section below for appropriate vouchering protocols for each type of species and the location to send specimen. Record data on the Early Detection Form.

Figure 1. Schematic of AIS Early Detection Survey Design (Latzka and Van Egeren 2010). This map does not accurately illustrate tows and has additional water quality information that is not collected during these surveys.



Boat Landing Search(es)

Survey all public boat landings (public and commercial). Do not include small, backyard boat ramps. Record the location of each boat landing from center of site at shoreline in decimal degrees using a GPS (datum WGS84) whether or not any AIS are found. Each landing is searched for 30 minutes using snorkeling, D-nets, rakes, and surveying shoreline. Snorkel for 15 minutes covering an area of shoreline 200' long out to the maximum depth of plant growth or 100' from shore, whichever comes first. The other 15 minutes are spent using the D-net and rake in the shallow and also examining the shoreline for 200'. For distance reference, baseball bases are 90' apart and a football field is 300' long. If there is poor visibility or safety is a concern (e.g. blue-green algae bloom), do not snorkel. Instead, analyze rake tows and D-net samples for about 30 minutes. Record data on Early Detection Form

Water Quality

From deep hole obtain:

1) secchi depth (preferably between 10 AM and 4 PM); and
2) conductivity reading.

Record data on Early Detection Form.

Waterflea Tows

Collect 3 oblique waterfleas tows using a ~250 micron mesh net from the deep hole according to the Water Flea Monitoring Protocol: http://dnr.wi.gov/lakes/forms/protocols/SpinyWaterflea_MonitoringProtocol.pdf.

In non-motorized or shallow lakes, it is difficult to collect oblique tows. If possible, collect 3 horizontal tows. If the water is too shallow with dense macrophytes, attempt collecting 3 vertical tows, but avoid collecting macrophytes. Indicate on the data sheet comments of you could not collect a waterflea tow.

Rinse samples into the sample bottle and decant as much water as possible. Record data on Early Detection Form and the Water Flea Tow Monitoring Report form 3200-128: http://dnr.wi.gov/lakes/forms/3200-128-waterflea.pdf. See Voucher Preservation and Shipping for instructions on preservation and labelling.

Veliger Tows

Reference the Dreissenid (Zebra and Quagga) Mussel Monitoring Protocol to gain background sampling information: http://dnr.wi.gov/lakes/forms/protocols/ZebraMussel_MonitoringProtocol.pdf.

Revised Veliger Tow Protocols

Variations from the established Dreissenid (Zebra and Quagga) Mussel Monitoring Protocol include using conductivity to determine whether veliger tows are conducted, locations within lakes to be sampled, and the depth to collect tows from.

Lakes with a conductivity of 99 umhos/cm or greater must be sampled for veligers. If you do not have a conductivity meter, lakes listed as suitable, borderline suitable or unknown in the Smart Prevention model should be sampled for veligers: http://www.aissmartprevention.wisc.edu/.

Collect 3 vertical zebra mussel veliger net tows (using the 64 micron mesh net); one from the deep hole and 2 other tows from deep areas along the downwind side of the lake. Veligers are plankton and will move with the wind. In lakes that stratify, veligers will be in higher abundance above the stratification so samples should be collected slightly deeper than the established protocol indicates. Please sample from the depths outlined below.

The depth of the veliger tow will depend on the depth of the water using the following criteria:

1) if water column is **deeper than 6 meters** (~19.7 feet), then collect each tow with the ring of the net **4 meters** (~13.1feet) from the surface; or
2) if the water column is **shallower than 6 meters** (~19.7 feet), attempt to collect a vertical tow with the ring of the net within **2 meters** of the bottom.

The net must be lowered slowly to not disturb the bottom sediments and get sediment in the net. Rinse samples into the sample bottle and decant as much water as possible. Record data on Early Detection Form and the Mussel Veliger Tow Monitoring Report (http://dnr.wi.gov/lakes/forms/3200-135-veliger.pdf). See Voucher Preservation and Shipping for instructions on preservation and labelling.

Targeted Search Sites

Stop at each targeted search site and conduct 10 minute snorkel searches. If there are two people, one person should snorkel for 5 minutes while the other person examines the shallows and shoreline for 5 minutes (while also keeping watch on the snorkeler). Look for: snails, zebra mussels and aquatic invasive plants in the water column and on sediments; zebra mussels on macrophytes; and snails on the above water stems of any emergent macrophytes. For QAQC purposes, collect specimens of all AIS recorded. If there is poor visibility or safety is a concern (e.g. blue-green algae bloom), do not snorkel. Instead, at each site analyze rake tows and D-net samples for about 10 minutes.

Record the site number and location (center of site at shoreline in decimal degrees) of each site on the datasheet whether or not any AIS are found. Record the name of any species found and density rating (as defined on the back of the datasheet). If you find additional appropriate search sites as you are driving around the lake, you can add additional 10 minute searches or replace the sites that you pre-selected. Record data on Early Detection Form.

Meander Survey

To sample areas between targeted sites, drive boat slowly between target sites and look for aquatic invasive plants, mussels, and snails in the water and along the shoreline. Meander between shallow water and maximum rooting depth or 100' from shore whichever comes first.

If not snorkeling the target sites due to poor visibility or safety concerns, visibility will likely be difficult during the meander survey also. To perform samples during the meander survey, collect 50 rake tows/D-net samples during the meander survey.

Collect specimens of all AIS reported for QAQC purposes. Record the site number, location in decimal degrees and the name and density of each species observed at each site (as defined on the back of the datasheet). Only collect separate GPS points from discretely different beds or populations of invasive species. If three discrete locations of a certain species are found either at targeted search sites and/or during the meander survey stop recording new locations during the meander survey. Three discrete locations of one species will indicate that the species is established in the lake. Record data on Early Detection Form.

FOLLOWING FIELD PROTOCOL

Equipment Disinfection

Equipment Disinfection.docx

Notification

Send weekly updates to DNR Central Office AIS Staff (Maureen.Ferry@wisconsin.gov) with what lakes have been surveyed and which AIS were observed in each lake. If AIS not previously observed in a waterbody are found, follow the Department's communication protocol: http://dnr.wi.gov/lakes/invasives/AISDiscoveryCommunicationProtocol.pdf. To expedite verification of a prohibited species or pioneer population, notify the taxonomic expert, the regional DNA Lake Coordinator and Maureen and request immediate verification.

Data Entry

Enter all Early Detection form data into SWIMS once each week in the "Aquatic Invasive Species Early Detection Surveys 2014" project. Contact Maureen Ferry if you have questions about SWIMS data entry.

Voucher Preservation and Shipping

Macrophytes

Collect up to 5 intact specimens of new invasive plants from each lake. Try to get the root system, all leaves as well as seed heads and flowers when present. Place aquatic plants in a ziplock bag with a small amount of water and riparian/wetland plants in a bag with no water. Guidance on pressing plants can be found in p. 25-26 in the aquatic plant monitoring protocol: http://www4.uwsp.edu/cnr/uwexlakes/ecology/APM/Appendix-B.pdf.

Ship vouchers either to the Freckmann Herbarium or the Wisconsin State Herbarium with a letter and self-addressed envelope, and also email a spreadsheet with voucher information requesting results to be mailed or emailed to you (the collector), Maureen.Ferry@wisconsin.gov and Jennifer.Filbert@wisconsin.gov.

Sending vouchers to UW Stevens Point Fre

Freckmann voucher labels.docx

UW Madison voucher list.xlsx

Dr. Robert Freckmann

Robert Freckmann Herbarium

800 Reserve Street

TNR 304

Stevens Point, WI 54481

Mark Allen Wetter

Collections Manager/Senior Academic Curator

Wisconsin State Herbarium (WIS)

Department of Botany

430 Lincoln Dr.

University of Wisconsin-Madison

Madison, WI 53706

email: mawetter@wisc.edu

phone: 608-262-5109/262-2792

fax: 608-262-7509

Snails, spiny water flea and zebra mussel veligers

Preserve with 95% ethanol in a ratio of 4 parts ethanol and 1 part sample. If space allows, place all samples in the same jar and for spiny water flea and zebra mussel veliger tows, record "Y" that samples have been consolidated on the Early Detection Form. If needed, split the sample into two (or more) sample bottles and label as "1 of 2" and "2 of 2". **Please add sufficient ethanol** - samples without enough ethanol will smell bad.

Include internal and external labels on all samples. Internal labels can be on Rite in the Rain paper with a #2 pencil. External labels can be on Rite in the Rain paper or a heavy card stock with a #2 pencil. Do not use sharpies, pen or wax pencils - ethanol used to preserve the samples will wash the label off.

Label sample jar with WBIC, lake name, county, sample date, sample type (snails, spiny water flea or zebra mussel) and collector. Legibility is appreciated.


Blank Labels.docx

Please also complete the attached "Snail collection" excel spreadsheet and email to gsandland@uwlax.edu and Maureen.ferry@wisconsin.gov.


Snail collection.xlsx

Staff shipping samples that are preserved in ethanol MUST attend a hazardous shipping training workshop. Samples shipped in ethanol should be enclosed in a Ziploc bag and stored vertically to prevent leakage. Place bottles in Ziploc facing same direction so that labels can be easily read when box is opened and bag is lifted.

Ship samples in a Styrofoam insert to protect contents (http://www.thermosafe.com/). If you want shipping containers returned after samples are analyzed, please complete the flip card return label (Ziploc envelope) that is supplied with the container. DNR Science Service Operations may use an existing account to return containers. We do not have a shipping contract set up with UW La Crosse yet, so if you want your shipping containers returned, include a note for them to hold your container and DNR central office staff can pick them up.

Ship the samples via SpeeDee, FedEx, Dunham or USPS. Hand delivery is nice, but can be an unnecessary hassle.


Shipping EtOH.pdf


USPS ethanol.pdf

Be sure all bottles are labeled properly. Include a copy of the datasheets.

Send samples to DNR Science Service and UW La Crosse each month. **Do not wait** to send samples until the end of summer as this increases work for the verifiers.

Send spiny water flea and zebra mussel samples to:

Paul Garrison

Wisconsin Dept. of Natural Resources Science Service Operations
2801 Progress Road
Madison, WI 53716

Send snail specimens to:

Greg Sandland

Biology Department

855 East Ave North

University of Wisconsin-La Crosse,

La Crosse, WI 54601

WISCONSIN DEPARTMENT OF NATURAL RESOURCES AQUATIC INVASIVE SPECIES EARLY DETECTION MONITORING

STANDARD OPERATING PROCEDURES

DRAFT JUNE 7, 2013

BACKGROUND

The Wisconsin Department of Natural Resources (WDNR) currently supports an Aquatic Invasive Species program of about $7 million dollars, $4 million of which support AIS grants. An unknown amount of private support also contributes to this program. Projects include building partnerships, prevention, monitoring, control, enforcement, and research. In 2011, the WDNR received a Great Lakes Restoration Initiative grant from the U.S. Environmental Protection Agency and U.S. Fish and Wildlife Service. This grant provided resources to develop a statewide AIS monitoring protocol that would provide a statistically valid means of addressing the rate of AIS spread in state to evaluate the effectiveness of the statewide AIS program. The aim is to survey 200 lakes per year, with 10% re-visits, for five years. Upon completion of this 5 year project, over 50% (about 920 of the 1,600) of Wisconsin lakes with public access will be monitored for AIS. The following is the protocol that was developed to achieve this goal.

FIELD PREPARATION

General Guidelines

- No employees shall work alone in the field to complete AIS surveys.
- All State employees must have completed boat operation safety course.
- If non-State employees (county, RC&D, tribes, university, citizen, non-profit, etc.) will be working as part of a field crew as a passenger in a boat or vehicle, a volunteer form must be completed. Please email the DNR Safety and Risk Management Section (Thomas.Joestgen@Wisconsin.gov and Karen.Kreger@Wisconsin.gov) at the beginning of each week giving them the names of any non-State passengers who will be working with you, the business purpose, where and when you will be.
- Crews should carry an operational communications device (cell phone or portable radio) recognizing that these devices may lack coverage in some areas.
- Crews should inform a designated third party where they will be working (directly or indirectly via voice-mail, email, or calendaring). They should include as much detail as possible on location(s) of the work to be conducted, estimated time required to complete the task, and procedures to follow in case of emergencies.
- Employees must wear appropriate personal flotation gear at all times while boating.
- All staff taking part in surveys should be trained in First Aid and CPR.

Crew Formation

- Central office AIS staff will distribute the list of lakes to be monitored and confirm a lead monitor for each lake.
- The lead monitor will form a crew and coordinate monitoring efforts with the assistance of the central office AIS staff. Crew may include DNR LTEs, county AIS coordinator, tribes, university, citizens, etc. While coordinating with citizens involves additional work, the experience can be very meaningful for all parties and also improve communication between the state and the citizens we represent.

Communication

- Notify county AIS coordinator, lake association, warden, fish biologist, boat landing owner, etc., that survey will take place (this can be done via one mass email).
- Statewide AIS Monitoring Lead will draft statewide news release for Lakes Blog Late May to Late June. The Lakes Blog release can be tailored to meet local needs and distributed to local news outlets by the regional monitoring lead.
- Monitoring lead or county AIS coordinator should notify lake association and CLMN volunteers which lakes will be monitored (one mass email early summer). The Lakes Blog article as well as the flier developed by Diane Daulton (Appendix A) may be used as a supplement to the email.
- Send weekly updates to DNR Central Office AIS Staff (Maureen.Ferry@wisconsin.gov and Erin.VennieVollrath@wisconsin.gov) with what lakes have been surveyed and which AIS were observed in each lake.

Site pre-evaluation

- Check SWIMS or the Statewide AIS list to determine which AIS are already present: http://dnr.wi.gov/lakes/invasives/AISByWaterbody.aspx.
- Check zebra mussel suitability data.
- Print bathymetric lake maps may be found on the following DNR intranet site (must be DNR to access) or can be requested from Dennis.Weise@Wisconsin.gov or obtained by DNR staff at: \\central\lakesdata\Information Technology\Maps\Early Detection Lake Maps\plot. From the maps, select five targeted sites where AIS are likely to be present (inlets, plant filled bays, rocky bars/points, developed shorelines, shorelines downwind of boat landings, backyard boat access points, etc.) and circle on the map. These sights can be changed once on the lake if better sites are apparent.

Data collection preparation

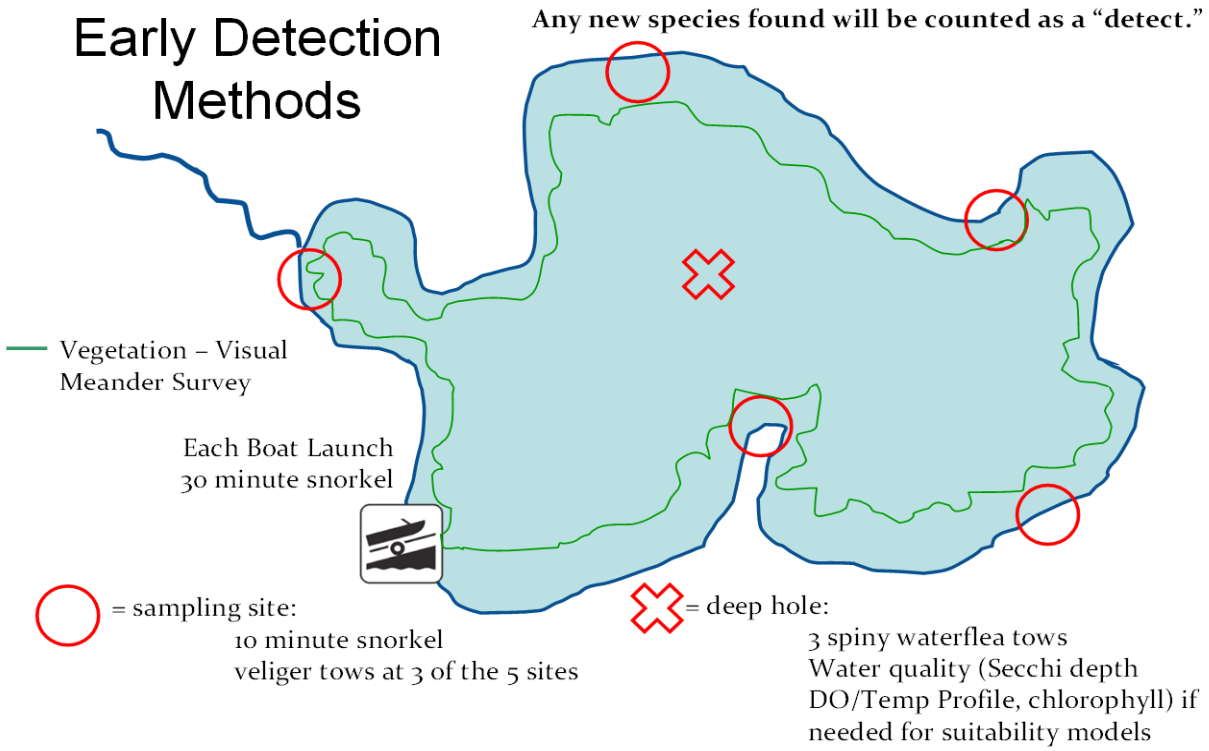
- Check equipment list (Appendix B).
- Print Early Detection Form (Appendix C) on waterproof paper.
- Specimen labels from the State Lab of Hygiene which may be obtained from the DNR central office AIS program staff.

Precaution

- If sampling more than one lake per day organize the surveys so that work on infested waters (especially those with zebra mussels or spiny waterfleas) is always done last.

FIELD METHODS

Figure 1. Schematic of AIS Early Detection Survey Design (Latzka and Van Egeren 2010).



Diving Guidelines

- Diving flags (per definition in State Statute 30.70 shall be used to mark each field crew member that is snorkeling (http://nxt.legis.state.wi.us/nxt/gateway.dll?f=templates&fn=default.htm&d=stats&jd=30.70).
- A surface observer will accompany the field crew to keep the diving area free of motor boats and assist the divers as necessary.
- No snorkeling shall take place in unsafe locations including:
  - Near boat landings (without a safety lookout) or sites with flowing water directly upstream of a dam.
  - In water with poor visibility where underwater logs, roots or rocks will not be visible to divers.
  - In water with visible concentrations of cyanobacteria.

Boat Landing Search(es)

Survey all public boat landings (public, commercial, and private). Do not include small, backyard boat ramps. Record the location of each boat landing from center of site at shoreline in decimal degrees using a GPS (datum WGS84) whether or not any AIS are found. Each landing is searched by snorkeling for 30 minutes (30 minutes if one person, 15 minutes if two people). Cover an area of shoreline 200' long out to the maximum depth of plant growth or 100' from shore, whichever comes first. For distance reference, baseball bases are 90' apart and a football field is 300' long.

If there is poor visibility or safety is a concern (e.g. blue-green algae bloom), do not snorkel. Instead, analyze 15 rake tows and 15 D-net samples or for about 30 minutes, whichever comes first. Spend the first half of sample time on the shallow section of the site and then switch to the deep half of the site.

For guidance on target species identification and habitat preference, please review the Aquatic Invasive Species Monitoring section of the Citizen Lake Monitoring Network Manual: http://www4.uwsp.edu/cnr/uwexlakes/clmn/publications.asp. Recent research has identified that zebra mussels use macrophytes most frequently and that locations with wood and rock have a higher probability of zebra mussel occurrence. Record species observed and density rating (defined on back of datasheet).

Voucher Collection Protocol

Collect specimens of new discoveries of invasive plants, Dreissenids, snails, and didymo for verification.

- Collect up to five specimens of each new invasive plant population to send to the Freckmann Herbarim.
- Collect up to 20 individuals of Dreissenids to send to DNR Science Services.
- Collect up to 30 of each snail species observed. Each lake should have no more than three jars of snails: one jar for suspected Chinese mystery snails, one for suspected Banded Mystery snails, and one jar for all other snails to be sent to UW-La Crosse.

See *Vouchering Preparation* in the *Following Field Protocols Collection* section below for appropriate vouchering protocols for each type of species and the location to send specimen. Record data on the Early Detection Form.

Water Quality

From deep hole obtain: (1) secchi depth (preferably between 10 AM and 4 PM); and (2) conductivity reading. Record data on Early Detection Form.

Targeted Search Sites

Stop at each targeted search site and conduct 10 minute snorkel searches. Look for: snails, zebra mussels and aquatic invasive plants in the water column and on sediments; zebra mussels on macrophytes; and snails on the above water stems of any emergent macrophytes. Collect specimens of each AIS found that has not been previously recorded.

If there is poor visibility or safety is a concern (e.g. blue-green algae bloom), do not snorkel. Instead, at each site analyze 5 rake tows and 5 D-net samples or for about 10 minutes, whichever comes first.

Record the site number and location (center of site at shoreline in decimal degrees) of each site on the datasheet whether or not any AIS are found. Record the name of any species found and density rating (defined on back of sheet). If you find additional appropriate search sites as you are driving around the lake, you can add additional 10 minute searches or replace the sites that you pre-selected. Record data on Early Detection Form.

Meander Survey

To sample areas between targeted sites, drive boat slowly between target sites and look for aquatic invasive plants, mussels, and snails in the water and along the shoreline. Meander between shallow water and maximum rooting depth or 100' from shore whichever comes first.

If not snorkeling the target sites due to poor visibility or safety concerns, visibility will likely be difficult during the meander survey also. To perform samples during the meander survey, collect about 10 rake throws and 10 D-net samples between target sites for a total of 50 meander survey sites on each lake.

Collect specimens of each AIS found that had not been previously reported. Record the site number and location in decimal degrees where new populations of AIS are found in a lake. Record the name and density rating (from back of datasheet) of species found. Only collect separate GPS points from discretely different beds of invasive plants. Once five specimens of a plant species has been collected at any site (boat landing, target site, or meander survey) there is no need to collect additional specimens for vouchering at other sites.

If three discrete locations of a certain species are found either at targeted search sites and/or during the meander survey stop recording new locations during the meander survey. Three discrete locations of one species will indicate that the species is established in the lake. Record data on Early Detection Form.

Waterflea Tows

Collect waterfleas tows according to the Water Flea Monitoring Protocol: http://dnr.wi.gov/lakes/forms/protocols/SpinyWaterflea_MonitoringProtocol.pdf.

2013 Vertical Pilot Protocol

In non-motorized lakes, it is difficult to collect oblique/horizontal tows. Instead, collect 3 vertical tows to ensure that enough water volume is sampled. Lower the net to within 2 meters (~6.5 feet) of the lake bottom, rinse into sample jar and repeat two more times.

Rinse all samples into one sample bottle and label (using #2 pencils). If space allows, place all samples in the same jar and record "Y" that samples have been consolidated on the Early Detection Form. See the Water Flea Monitoring Protocol for preservation and shipping protocols. Record data on Early

Detection Form and the Water Flea Tow Monitoring Report form 3200-128: http://dnr.wi.gov/lakes/forms/3200-128-waterflea.pdf (Appendix D).

Veliger Tows

Reference the Dreissenid (Zebra and Quagga) Mussel Monitoring Protocol to gain background sampling information: http://dnr.wi.gov/lakes/forms/protocols/ZebraMussel_MonitoringProtocol.pdf.

2013 Veliger Tow Pilot Protocol

Variations from the established Dreissenid (Zebra and Quagga) Mussel Monitoring Protocol include using conductivity to determine whether veliger tows are conducted, locations within lakes to be sampled, and the depth to collect tows from.

Lakes with a conductivity of 99 umhos/cm or greater must be sampled for veligers. If you do not have a conductivity meter, lakes listed as suitable, borderline suitable or unknown in the Smart Prevention model should be sampled for veligers: http://www.aissmartprevention.wisc.edu/.

Collect three vertical zebra mussel veliger net tows (using the 54 um net) in targeted locations such as: 1) deep hole; 2) near outlet or a downstream location; and/or 3) in down-wind areas of the lake.

The depth of the veliger tow will depend on the depth of the lake using the following criteria:

3) if lake is **deeper than 6 meters** (~19.7 feet), then collect each tow **4 meters** (~13.1feet) from the surface; or
4) if the lake is **shallower than 6 meters** (~19.7 feet), attempt to collect a vertical tow with the top of the net within **2 meters** of the bottom.

The net must be lowered slowly to not disturb the bottom sediments and get sediment in the net.

Rinse samples into the sample bottle, label (using #2 pencil), preserve, and ship as outlined in the Dreissenid (Zebra and Quagga) Mussel Monitoring Protocol: http://dnr.wi.gov/lakes/forms/protocols/ZebraMussel_MonitoringProtocol.pdf. The shipping address is identified in *Voucher and Shipping* section below. Record data on Early Detection Form and the Mussel Veliger To Monitoring Report (http://dnr.wi.gov/lakes/forms/3200-135-veliger.pdf (Appendix E).

Equipment Decontamination

Following field work, equipment must be disinfected as per Manual Code 9183.1. Review the DNR disinfection protocol for background information: http://dnr.wi.gov/lakes/forms/protocols/Disinfection_Protocol.pdf. The protocols outlined for boat, trailer, and equipment are sufficient, but additional steps are needed for waterflea and veliger nets.

Boat and Trailer

- Inspect and remove any aquatic plants, animals, and mud from the boat and trailer.
- Drain all water from the boat and motor by pulling the plug and lowering the motor.
- Disinfect boat, trailer, and equipment.

Wetsuits

- Scrub wetsuit with or place in disinfection bleach solution for at least 10 minutes.

Veliger/Plankton Nets

- Place plankton nets in disinfection bleach solution in tubs for 10 minutes.
- If traveling to another lake, rinse veliger net with water and place in tub with vinegar for 10 minutes.
- For lakes that will be monitored for zebra mussel veligers using DNR standard protocol an additional vinegar wash must be used to prevent contamination of samples with dead veligers from previous lakes. Bleach kills the veligers, but the dead shells may stick to nets giving a false positive for the next lake. Full strength vinegar has been shown to dissolve these small veligers shells.
- If you will be traveling to multiple lakes in one day and collecting veliger samples from each follow the steps below between lakes:

  1: soak nets in bleach for ten minutes

  2: rinse nets with fresh water

  3: soak nets in full strength vinegar for ten minutes.

- If you only have one lake to collect zebra mussel veligers on in a given week or have multiple nets to use then follow the normal bleach disinfection practice and hang the net to dry for at least five days before using it on another lake. The veliger shells will disintegrate over this time.

FOLLOWING FIELD PROTOCOL

Notification

If AIS not previously known to exist in a waterbody was found email the regional DNR coordinator within the week to let them know. If the species is an aquatic plant and only found at one or two sites in the lake let them know that this could be eligible for a rapid response action. The list of regional DNR AIS coordinators can be found on the following link: http://dnr.wi.gov/topic/Invasives/report.html

Data Entry

Enter all Early Detection form data into SWIMS once each week in the "Aquatic Invasive Species Early Detection Surveys 2013" project. Contact Maureen Ferry or Erin Vennie-Vollrath if you have questions about SWIMS data entry.

Voucher Preparation and Shipping

All samples shipped in ethanol should be enclosed in a Ziploc bag to prevent leakage and shipped in a Styrofoam insert to protect contents: http://www.thermosafe.com/. If you want shipping containers returned after samples are analyzed, please complete the flip card return label (Ziploc envelope) that is supplied with the container. DNR Science Service Operations may use an existing account to return containers. We do not have a shipping contract set up with UW La Crosse yet, so if you want your shipping containers returned, include a note for them to hold your container and DNR central office staff can pick them up. Please contact central office staff if you do not have access to SpeeDee or another shipper.

Macrophytes

Collect up to 5 intact specimens of new invasive plants from each lake. Try to get the root system, all leaves as well as seed heads and flowers when present. Place aquatic plants in a ziplock bag with a small amount of water and riparian/wetland plants in a bag with no water. Guidance on pressing plants can be found in p. 25-26 in the aquatic plant monitoring protocol: http://www4.uwsp.edu/cnr/uwexlakes/ecology/APM/Appendix-B.pdf. Voucher labels to be used for macrophytes submitted to the Freckmann Herbarium are included in Appendix F.

Press aquatic plant specimens once per week and send to UW-Stevens Point Herbarium once a month. **Be sure all specimens are labeled properly!**

Dr. Robert Freckmann

Robert Freckmann Herbarium

800 Reserve Street

TNR 304

Stevens Point, WI 54481

Spiny water flea and zebra mussel veligers

Preserve samples and complete appropriate report forms for water flea tow samples (Appendix D) and veliger samples (Appendix E). Be **sure all bottles are labeled properly! Include a copy of the datasheets!**

Each month, send a shipment of waterflea and veliger samples and adult zebra mussel specimens to DNR Science Services at the following address:

Paul Garrison

Wisconsin Dept. of Natural Resources Science Service Operations
2801 Progress Road
Madison, WI 53716

Snails

On each lake, collect up to 30 individuals of each snail species observed. Each lake should have no more than three jars of snails: one jar for suspected Chinese mystery snails, one for Banded Mystery snails, and one jar for all others. Label sample jar with identification (Chinese, banded, or other), WBIC, lake name, and county and preserve with 95% ethanol. If faucet snails or New Zealand mudsnails are collected, gently crack shell under a hard object before placing in ethanol. **Be sure all bottles are labeled properly! Include a copy of the datasheets!** Please also complete the excel Snail spreadsheet (Appendix G) and email to gsandland@uwlax.edu.

Each month send a shipment of snail samples to University of La Crosse at the following address:

Greg Sandland

Biology Department

855 East Ave North

University of Wisconsin-La Crosse,

La Crosse, WI 54601

APPENDIX 4A

Who's that on my lake?

STOP AQUATIC HITCHHIKERS!

Wisconsin Department of Natural Resources is working on an Early Detection study along with conservation staff, college and university partners, and volunteers to survey Wisconsin lakes for aquatic invasive species.

Invasive plants, animals and pests are taking a toll on Wisconsin's lakes, rivers and landscapes. The DNR is working with citizens and partners to slow the spread of invasive species and protect our environment.

Why monitor my lake now?

Our overall goal is to collect enough data to determine if efforts to slow the spread of aquatic invasive species are working and to obtain a scientific baseline of how many lakes are currently affected. Statewide we survey about 200 lakes each year and are on track through our 5-year study.

Lakes are randomly chosen so that by the end of the study we will have developed a representative picture of aquatic invasive species in Wisconsin waters. We also hope this monitoring will detect invasive species early so control is successful.

How do we look for Aquatic Invasive Species?

Staff conduct underwater surveys using snorkeling gear or rake the lake bottom to look for invasive plants or animals. They also tow nets behind boats to collect smaller organisms.

What are we looking for?

- ✓ Plants…Eurasian water-milfoil, curlyleaf pondweed, or purple loosestrife
- ✓ Animals… Chinese and banded mystery snails, faucet snails, zebra and quagga mussels
- ✓ Easily overlooked animals such as spiny and fish-hook water fleas, or tiny New Zealand mudsnails.

How can I learn more to help protect my lake?

- ***Flag us down*** if you see us out on the lake, and we will take some time to discuss our findings.
- ***You can request results from your lake's AIS survey*** to share with your friends and neighbors. *Contact Diane Daulton to request results at 715-685-2911 or email diane.daulton@wisconsin.gov.*
- ***Join Wisconsin's Citizen Lake Monitoring Network (CLMN)*** - for volunteer opportunities and training check out http://www4.uwsp.edu/cnr/uwexlakes/clmn/
- ***Visit DNR's website*** for more information, pictures, or to report an invasive species you suspect at http://dnr.wi.gov/topic/invasives/

APPENDIX 4B

AIS Early Detection Monitoring Equipment List

All lakes

___ 54 μm plankton net (veliger samples)

___ 243 μm plankton net (waterflea samples)

___ Mesh bag (nylons or fruit mesh bags can be used) – to place specimens in underwater.

___ Ziploc bags for plant preservation (can be reused)

___ Waterproof paper (to print monitoring forms and specimen labels on)

___ Plastic bottles for benthic invertebrate specimens and plankton samples (~3 per lake)

___ Bottle labels ~ available from Maureen Ferry or Erin Vennie-Vollrath

___ Ethanol (95%) for veliger, waterflea, snail and mussel preservation

___ Squirt bottle(s) filled with ethanol or deionized water (for plankton samples)

___ GPS

___ Bathymetric map of lake

___ Plant press and herbarium paper

___ Depth finder (in boat or handheld)

___ Jonboat and/or canoe

___ Sorting trays for plants and inverts

___ Polarized sunglasses

___ Boat ladder (for easily exiting and entering the boat in deep water)

___ Tubs for equipment disinfection

___ Snorkel mask clearing solution

___ Sonde or Hydrolab (to measure conductivity)

___ Secchi disk

___ Backpack sprayer and bleach solution (for decontamination)

___ Shipping container http://www.thermosafe.com/

Turbid lakes

___ D-net

___ Aquatic plant rake ~ (detailed instructions in aquatic plant monitoring protocol)

___ Latex or other gloves to protect hands from blue-green algae.

Clear lakes

___ Wetsuits

___ Snorkel, mask, fins and weightbelt

___ Diveflag, float and anchor

___ Stopwatch

Appendix 4C

AIS Early Detection Monitoring Data Form — Form 3200-xxx (R 6/2013)

Lake Name	County	WBIC	Date(s)	AIS sign? Y N	Secchi (ft or m)	Conductivity (ZM tow if ≥ 99 umhos/cm)

Data collectors	Lead monitor phone and email	End time (~15 min)	End time (~ 15 min)	Total collector time (hrs x # collectors)

Look for the following species: Purple loosestrife, Phragmites, flowering rush, Hydrilla, Brazilian waterweed, Eurasian water-milfoil, curly-leaf pondweed, yellow floating heart, zebra mussel, quagga mussel, Chinese mystery snail, banded mystery snail, faucet snail, New Zealand mud snail, didymo, water flea, and any other AIS found.

STEP 1: Record locations of sampling sites (in decimal degrees). Sampling sites include all public boat landings (BL), 5 targeted sites (TS) and the meander survey sites (MS). List AIS found at each site or record none. Collect a sample of any new AIS found. Collect five new invasive plant specimens, 20 Dreissenids, and 30 of each snail species and label with species, collector, date, lake name, WBIC and sampling site.

Site	Latitude	Longitude	Snorkel (Y or N*)	If N snorkel, indicate why†	Species (density 1-5)‡

*** For lakes/sites not snorkeled, substitute:**

Boat landing site - 15 rake throws and 15 D-net samples OR 30 minutes, whichever comes first

Targeted site - 5 rake throws and 5 D-net samples OR 10 minutes, whichever comes first

50 meander sites - 10 rake throws and 10 D-net samples during meander survey between sampling sites for a total of 50 meander survey sites

† If lake/site was not snorkeled, indicate why: stained water, turbid water, blue-green bloom, chemical treatment, other (please describe).

‡ **Density Ratings**

1 – A few plants or invertebrates

2 – One or a few plant beds or colonies of invertebrates

3 – Many small beds or scattered plants or colonies of invertebrates

4 – Dense plant, snail or mussel growth in a whole bay or portion of the lake

5 – Dense plant, snail or mussel growth covering most shallow areas

Step 2: Collect Waterflea Tows from 3 sites: the deep hole (DH) and 2 other sites in water deeper than 15 feet (if possible). Submit sample and Water Flea Tow Monitoring Report form to Science Services.

Site	Depth sampled	Method (hor, obliq, vert)	Net diameter (30 or 50 cm)	Ethanol added (Y or N)	Samples combined (Y or N)	Sample sent to, date

Step 3: Collect Veliger Tows from 3 sites; the deep hole (DH), outlet site (OS), and or downwind site (DS) in water depth of about 4 meters (if possible). Submit sample and Mussel Veliger Tow Monitoring Report form to Science Service.

Site	Depth sampled	Net diameter (30 or 50 cm)	Ethanol added (Y or N)	Samples combined (Y or N)	Sample sent to, date

Step 4: Were plant voucher specimens submitted? Yes No (circle) If yes, where? (circle) Freckmann Herbarium, Other_____

Step 5: Were snail voucher specimens submitted (separate into Chinese, banded, all others)? Yes No (circle) If yes, where? (circle) UW La Crosse or Other_____

Step 6: Data was entered into SWIMS on _____ by _____

Step 7: Data was proofed on _____ by _____

Notes:

APPENDIX 4D

State of Wisconsin
Department of Natural Resources
Wisconsin Lakes Partnership

Water Flea Tow Monitoring Report
Form 3200-128 (R 02/10)

The purpose of this form is to track the presence/absence of spiny or fishhook water fleas collected using a plankton net during AIS monitoring.

Notice: Information on this voluntary form is collected under ss. 33.02 and 281.11, Wis. Stats. Personally identifiable information collected on this form will be incorporated into the DNR Surface Water Integrated Monitoring System (SWIMS) Database. It is not intended to be used for any other purposes, but may be made available to requesters under Wisconsin's Open Records laws, ss. 19.32 - 19.39, Wis. Stats.

Primary Data Collector			
Name		Phone Number	Email
Monitoring Location			
Waterbody Name	WBIC	County	Township Name
Date and Time of Monitoring			
Start Date	Start Time	End Date (= Start Date)	End Time

Monitoring Results

Method used: ☐ horizontal tows (near surface) ☐ oblique tows (thermocline to surface) ☐ vertical tows (bottom to surface)

Diameter of plankton net opening 30cm 50cm other_____ (circle one)

Site 1: Latitude (optional): Longitude (optional): ☐ Preservative Added

Secchi depth (m)_____ (optional) Depth sampled (if vertical or oblique tow) _____ ft/m circle one

Site 2: Latitude (optional): Longitude (optional): ☐ Preservative Added

Secchi depth (m)_____ (optional) Depth sampled (if vertical or oblique tow) _____ ft/m circle one

Site 3: Latitude (optional): Longitude (optional): ☐ Preservative Added

Secchi depth (m)_____ (optional) Depth sampled (if vertical or oblique tow) _____ ft/m circle one

☐ Have you consolidated all of your samples into one composite bottle?

☐ Have you sent your samples to the DNR Plymouth Service Center?

During this monitoring trip, did you find what you suspect are Spiny or Fishhook Waterfleas in this waterbody? ☐ Yes ☐ No

Voucher Sample

If you found Spiny or Fishhook Water fleas, did you collect a voucher specimen and bring it to your local DNR office? If so, which office?

☐ Rhinelander ☐ Spooner ☐ Green Bay ☐ Oshkosh ☐ Did not take sample to a DNR office

☐ Fitchburg ☐ Waukesha ☐ Eau Claire ☐ Superior ☐ Other Office: _____

If you find Spiny or Fishhook Water Fleas

Please bring a copy of this form, along with a voucher specimen and if possible, a map showing where you found the suspect waterfleas to your regional Citizen Lake Monitoring Coordinator at the DNR. All initial discoveries should be placed in rubbing alcohol until verification by an expert is obtained.

If you don't Find Spiny or Fishhook Water Fleas

If you submit your data online, that is all you need to do. Otherwise, please mail a copy to your regional DNR Citizen Lake Monitoring coordinator. http://dnr.wi.gov/lakes/contacts

For DNR staff to fill out			
Volume of sample that was analyzed (ml)		Date analyzed	
Name of plankton sample analyst:			
Name of person or museum who identified the voucher specimen			
Was the specimen confirmed as....?			
Spiny Waterflea? ☐ Yes ☐ No		Fishhook Waterflea? ☐ Yes ☐ No	
Have you entered the results of the voucher in SWIMS? ☐ Yes ☐ No			
DNR staff: Please enter voucher information for new AIS findings into SWIMS under the Incident Report Project for your county (Choose Incident Report Form in SWIMS). Enter date of sampling for "Start Date", Person who identified specimen as "Data Collector", and Monitoring location as "Station".			

APPENDIX 4E

State of Wisconsin
Department of Natural Resources
Wisconsin Lakes Partnership

Mussel Veliger Tow Monitoring Report

Form 3200-135 (R 02/10)

The purpose of this form is to track the presence/absence of zebra or quagga mussel larvae (veligers) collected using a plankton net during AIS surveillance monitoring.

Notice: Information on this voluntary form is collected under ss. 33.02 and 281.11, Wis. Stats. Personally identifiable information collected on this form will be incorporated into the DNR Surface Water Integrated Monitoring System (SWIMS) Database. Personally identifiable information collected on this form will be incorporated into the DNR aquatic invasive species database. It is not intended to be used for any other purposes, but may be made available to requesters under Wisconsin's Open Records laws, ss. 19.32 - 19.39, Wis. Stats.

Primary Data Collector			
Name		Phone Number	Email
Monitoring Location			
Waterbody Name	WBIC	County	Township Name
Date and Time of Monitoring			
Start Date / Start Time		End Date (= Start Date)	End Time

Monitoring Results

Guidelines for how many tows to collect: If Secchi depth is >4 m (13 feet) take two 2m deep tows; if Secchi depth is between 2-4 m (6.5-13 feet) take one 2m deep tow; if Secchi depth is <2 m (<6.5 feet) take one 1m tow.

Diameter of zooplankton net opening 30cm 50cm other_____ (circle one)

Site 1: Latitude (optional): Longitude (optional): ☐ Preservative Added

Secchi depth (m)_____ Number of net tows_____ Depth of tows (m) _____

Site 2: Latitude (optional): Longitude (optional): ☐ Preservative Added

Secchi depth (m)_____ Number of net tows_____ Depth of tows (m) _____

Site 3: Latitude (optional): Longitude (optional): ☐ Preservative Added

Secchi depth (m)_____ Number of net tows_____ Depth of tows (m) _____

☐ Have you consolidated all of your samples into one composite bottle?

☐ Have you sent your samples to the DNR Plymouth Service Center?

COMMENTS/OBSERVATIONS:

For DNR staff to fill out

Volume of sample that was analyzed (ml)	Date analyzed
Name of plankton sample analyst:	
Name of person or museum who identified the voucher specimen:	
Did the samples contain zebra mussel veligers? ☐ Yes ☐ No	
Have you entered the results of the samples in SWIMS? ☐ Yes ☐ No	

DNR staff: Please enter voucher information for new AIS findings into SWIMS under the Incident Report Project for your county (Choose Incident Report Form in SWIMS). Enter date of sampling for "Start Date", Person who identified specimen as "Data Collector", and Monitoring location as "Station".

APPENDIX 4F

Flora of Wisconsin Marathon County Haloragaceae ***Myriophyllum tenellum* Bigelow** Sandy substrate, 0.3-1m deep, with *Juncus pelocarpus*, *Eleocharis acicularis*, *Eriocaulon aquaticum.* Location: Mission Lake Collector: Paul Skawinski 22 June 2010 ROBERT W. FRECKMANN HERBARIUM (UWSP) University of Wisconsin – Stevens Point	

APPENDIX 4G

	Collector	Phone Number	Date collected	County	Lake Name	WBIC	Suspected ID	Verified ID
Example:	*Steltenpohl*	*920-662-5110*	*06/27/2012*	*Shawano*	*Koth*	*325400*	*BMS*	*BMS*

Appendix 5. Watercraft inspection protocol

Watercraft Inspections

Materials to Have When Working at a Boat Landing

Not all your materials need to be taken to the boat landings. It's better to sort through the materials and decide what educational information is best suited for your area. The "Clean Boats, Clean Waters" program provides a plastic container in which to store all the educational materials in the resource kit. We recommend at least one resource kit for every landing you are monitoring. By using multiple resource kits, each inspection team can have all the materials they need and have them protected from the weather.

A key brochure to distribute to all boaters is "Help Stop Aquatic Hitchhikers" (WT-801). This brochure not only has pictures of the different aquatic invasive species, but also describes the prevention steps that boaters need to take every time they leave the water. In addition, the brochure describes Wisconsin's illegal-to-launch law and the penalties that can occur if an invasive species is not removed before the boat is launched. This brochure is a good reminder to all boaters, whether or not they have talked with a watercraft inspector.

Select other materials to take to the boat launch based on which aquatic invasive is most threatening in your area. Perhaps Eurasian water-milfoil is really a pressing issue for your lake; then it makes sense to give boaters an EWM/NWM identification card in addition to the "Help Stop Aquatic Hitchhikers" brochure. Resist the temptation to give the boater one of every card in the resource kit because boaters will often discard them. It's best to start by handing out a little bit of information and have additional brochures available if the boaters want to learn more about a particular invasive species.

Boat landings can be very busy during the summer, and it is expected that you will need more materials. Please refer to the Aquatic Invasive Species Publication List in Section 9 of this handbook. This list explains what publications are available, how to order more publications, and how to print some brochures from Web site links.

Additional boat launch items to consider:

- Clipboard and pencil.
- Copy of the boat landing script (see Section 6).
- Watercraft Inspection Report and Watercraft Check Points List (see Section 7).
- Listing of lakes affected with AIS in your area.
- Wisconsin map.
- Stop Aquatic Hitchhikers decals.
- Selected free AIS publications (see Section 9).
- Plastic bags, permanent marker, and cooler to collect and store any suspect specimens.
- Cell phone and local contact phone numbers for emergencies.
- Digital camera

Watercraft Inspection Tips

Use the following DO and DON'T lists to prepare your boat landing message.

The DO List

- Wear the "Clean Boats, Clean Waters" T-shirt to promote the message. This message gives credibility to the
- Try to approach boat owners before they are on the ramp.
- Always ask if the boater would mind answering a few questions.
- Be polite and courteous to all boaters you encounter.
- Listen to a boater's concerns. Remember that you are encouraging boaters to take an interest in invasive species.
- Make sure boaters know that they can make a difference!

The DON'T List

- Don't begin asking questions immediately upon approaching boaters, because as they might be confused about who you are and why they should give you their time.
- Avoid delaying boaters too much or causing a backup.
- Never preach to a boater; your mission is to educate, not alienate.
- Do not emphasize the idea that fines are involved, because this approach can make people hostile or defensive.
- If the boater is reluctant to cooperate, hand out educational material and record whatever information you can.

An effective watercraft team is prepared to raise boater awareness and to encourage and demonstrate the necessary steps to avoid spreading invasive species. On very rare occasions, you may be uncomfortable about a situation or person. Always back away from a potentially dangerous or violent situation. Never encourage confrontation, no matter how strongly you might feel about the subject. **Remember, you are not enforcers of rules and should never jeopardize your own safety**. If you are suspicious of someone (for example, a loiterer or someone who is not intending to go boating), do not hesitate to leave the launch site. You are better to be safe than sorry. If you feel that a boat launch site is unsafe in any way, please notify the organization you are working for.

Boat Landing Message

Getting out and speaking to the public can be intimidating. New inspectors can feel a little anxious and nervous. This prepared script will help inspectors practice and role-play before their first boater shows up at the landing. Practicing with other folks will give them the confidence it takes to greet a boater. If new inspectors really want to watch a "pro," they just need to ask a few kids to get involved. Are kids intimidated? No way!

This prepared script is only one sample of the many methods of addressing boaters at the landings and performing watercraft inspections. Each inspector should develop his or her own style and learn how to adapt in a variety of boat landing experiences. Try to approach boaters before they are on the ramp, and use the Watercraft Inspection Report form to record the information about the boater (see Section 7). At times you may have only 30 seconds to talk to the boater; other times, long lines at the landings may provide you with lots of time to talk. Remember, if the boater is not interested, just hand out educational material and record whatever information you can.

No matter what style you use to approach boaters, any watercraft inspection process should include these points:

1. Tell them who you are, whom you represent, and why you are there.

2. Ask if they have a short time to answer some questions.

3. Collect information on the Watercraft Inspection Report form.

4. Ask if they are familiar with aquatic invasive species, such as Eurasian water-milfoil or zebra mussels. Briefly explain about these invasive species or other invasives found locally.

5. Ask if they will join you in an inspection of their boat and equipment.

6. Talk while inspecting, and point out watercraft checkpoints. If they do not want to assist you in the inspection, continue to talk about invasive species as you inspect.

7. Give your final message, the prevention steps:

   Inspect your boat, trailer and equipment and

   Remove any attached aquatic plants, animals, and mud.

   Drain all water from your boat, motor, bilge, live well, bait containers, and equipment.

   Dispose of unwanted bait in the trash, not in the water or on the land.

   Rinse your boat and recreational equipment with hot water OR dry for at least five days.

8. Give them the "Stop Aquatic Hitchhikers" decal and other educational materials.

9. Thank them for their time and cooperation!

Sample Script

As the boat approaches, write down the time of the boat inspection and if the boat is entering or leaving the water.

Introduce yourself:

Good Morning / Afternoon. I am from _____. We are working with state agencies and local groups to talk with boaters about invasive species and help them check their boats for Eurasian water-milfoil (EWM) and zebra mussels (ZM). We are trying to keep EWM/ZM and other harmful exotics from spreading from lake to lake. I have a few quick questions I would like to ask you, and then I would like to walk around your watercraft with you and point out a few places where these species can attach to boats and trailers.

Ask the questions and record on the Watercraft Inspection Report:

1. In the past 30 days, how many times have you been contacted by a watercraft inspector?

2. Was boat used during the past 5 days on a different waterbody? (If the answer is yes) Where?

3. In a typical month of boating, about how many waterbodies do you visit?

4. Last time you went boating, please describe the steps you took when removing your boat from the water. (Mark each step that is mentioned, "Took No Steps" if no steps were taken, or "I Did Not Ask Boater" if this question was not asked.)

5. In 2009, Wisconsin laws were passed that prevent the transport of aquatic plants, animals, and water from one waterbody to another. This includes draining water from containers holding your catch and livewells. Were you aware that this is the law?

(If the answer is no) As of 2009, Wisconsin laws prohibit the transport of plants, animlas, or water from a boat landing. Fines for not complying with the rules can be upwards of $300! I'm just here to share information with you on how to properly clean your boat so that you don't inadvertently transport aquatic invasive species from one lake to another. However, law enforcement officers will be out enforcing these AIS laws this summer, so I just wanted to let you know about the new rules.

Perform a watercraft check:

If you would walk around your boat with me, I can show you some areas to look for invasive hitchhikers.

Make sure you talk aloud as you inspect; it helps reinforce the "Clean, Boats, Clean Waters" behavior. Talk to boaters about inspecting and cleaning their watercraft and about draining the water from their boat—such as the bilge, bait buckets and live wells—before they leave the access.

Water is another way invasives can move from lake to lake so it is always a good idea to drain your water. Vegetation can be found on motor boats, the motor/prop, anchors, bunks, rollers, the trailer axle, lights/wiring; for jet skis, it can be found in the intake grate and propeller; and for sailboats, it can be found in the centerboards. Check your anchor and anchor line to see if any plants are clinging to it.

Some aquatic invasives, such as zebra mussels, are also found on the motor/prop, on the sides and bottom of boat below the waterline, on the anchor, and clinging to vegetation. It is a good idea to drain water from the motor, live well, bait well, bait bucket, bilge, and transom wells. Always inspect the hull and sides of your boat for aquatic invasives; if it feels gritty or sandy, it may be that new zebra mussels are attached.

An extra precaution that you can take to eliminate other aquatic invasives is to wash your boat with warm tap water or take your boat through a car wash or dry your boat and equipment in the sun for five days before entering another lake.

Leave boaters with a final message: "Clean Boats = Clean Waters"

Please make it a habit to:

Inspect your boat, trailer and equipment and

Remove any attached aquatic plants, animals, and mud.

Drain all water from boats, motors, live wells, bait containers, and equipment.

Dispose of unwanted bait in the trash, not in the water or on the land.

Rinse your boat and recreational equipment with hot water OR dry for at least five days.

Offer boaters the "Stop Aquatic Hitchhikers" brochure and decal and help them place the decal on the handle side of the trailer winch post. Tell them that this decal will let other inspectors know that you have talked to the

boater this summer. Remind boaters to follow the precautions listed on the "Stop Aquatic Hitchhikers" decal every time they leave a water body.

Thank the boaters for their time and cooperation!

Potential Scenarios/Questions from Boaters

"Why are you out here wasting resources when the plant is going to come anyway?"

Even the most educated will ask this question. Just be prepared mentally for such viewpoints and think about why you are out here and what you will say in reply. Expect the unexpected. Here are some suggested responses:

Even if we cannot keep the plants out completely, we can prevent a lot of widespread damage. Prevention also gives us time to adopt new control methods as they are developed in the future. The longer we keep invasives out of a lake, the longer we put off the enormous costs of management and property devaluation.

"Aren't all plants bad anyway?"

It is important to clear up this misconception! This is what you can say:

Native plants are essential lifelines for an aquatic ecosystem, providing the basis for all life within. The problem lies with non-native, invasive plants that have no natural inhibitors and, therefore, outcompete native plants, lowering the water body's aquatic diversity.

"I don't have time for this… I know all about it already!"

This remark is fairly common. If the boaters do not wish to help you with the survey, you must respect their rights and let them be. In such a situation, the suggested action would be to offer them a brochure and wish them a nice day.

"Why did it take Wisconsin so long to do something, when milfoil has been a national problem for over a decade?"

There is no good answer to this question because it's a very good point. Here is how you can respond:

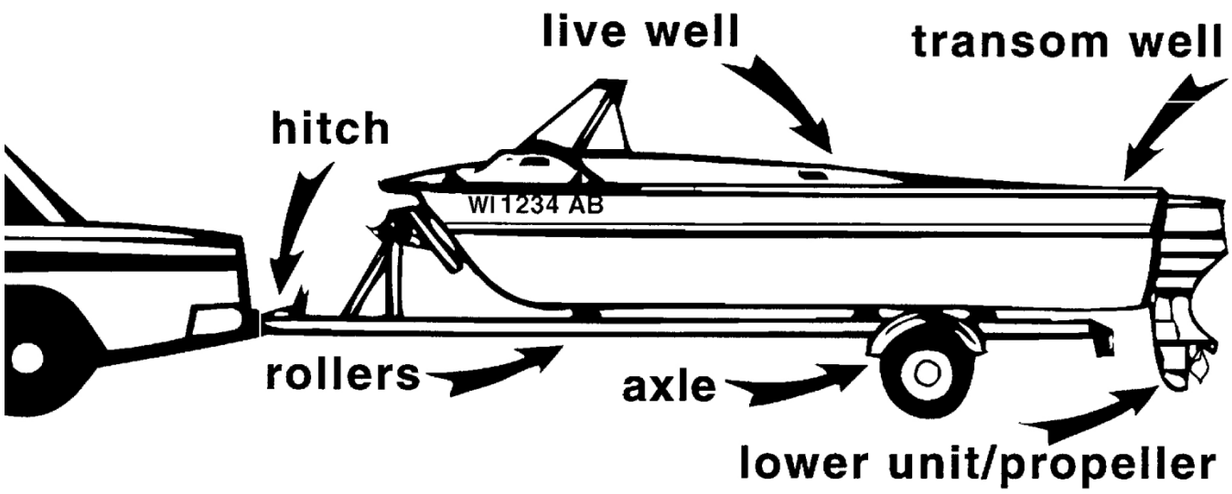
Traditionally, environmental problems become established before we do anything about them. In this case, we have learned from other states, and are trying to take action well before these plants spread to many of our sensitive environments. Instead of focusing on what could have been done, we should focus energies on the present and future.

"Why do I have to take these prevention steps when I only use my boat in one lake?"

This question gives you the opportunity to talk about the value of changing our behaviors and why it is important.

That's a great question! Although you always visit the same lake, it is still useful for you to take these prevention steps every time you boat. Repeating these steps helps the actions become a regular part of your boating behavior, so that if you do ever decide to take your boat to another lake, you will remember to take the prevention steps. Prevention is the key to stopping the spread of aquatic invasive species.

Watercraft Check Points



Watercraft Check Points

Trailer:

- ✓ Axle
- ✓ Bunks
- ✓ Frame
- ✓ License Plate
- ✓ Lights/wiring
- ✓ Rollers
- ✓ Spare Tire
- ✓ Wheels
- ✓ Winch Rope

Boat Accessories:

- ✓ Anchor
- ✓ Bow Line
- ✓ Ladder
- ✓ Tow Rope
- ✓ Transducer

Other Accessories:

- ✓ Bait Bucket
- ✓ Fishing Line
- ✓ Landing Net
- ✓ Tackle

Boat:

- ✓ Floor
- ✓ Hull
- ✓ Livewell
- ✓ Transom Well

Motor:

- ✓ Intake Pipe

✓ Prop ✓ Lower Unit

How to Handle Violations

With thousands of boaters traveling throughout the state and with many of those boaters jumping from lake to lake within one day, it is very realistic to expect someone to try to launch a weed-filled trailer at your landing. Since 2001, it has been illegal to launch a boat or trailer with aquatic plants or zebra mussels attached, and in 2009 it became illegal to transport aquatic vegetation or water from one place to another, in addition to other AIS laws (see Section 3 for more details). Not all folks know about Wisconsin's AIS laws. Even after a number of publications, news articles, and television programs concerning invasive species, not all boaters realize the importance of their action or lack of action in preventing the spread. Keep in mind that you should first try to educate the public.

If you choose to report launching violations, make sure you have done your homework. Contact your local DNR Conservation Warden and local law enforcement to let them know that you'll be doing inspections. Ask if they are willing to provide you with support in the case of a violation, what information is necessary for enforcement, and more importantly, ask whether the enforcement officer will be willing be act on a violation if he or she has not witnessed the event. Knowing these answers before the event will certainly predict a better outcome.

So what happens when a boater violates an AIS law? Several options can occur, from the least offensive reaction to the strongest objections to remove and comply with the law.

The soft touch: Boaters who are unaware of the AIS laws will probably put the boat in the water and think nothing about it. Unfortunately, this has been the practice for many years, which is one reason Wisconsin is struggling to control the spread of aquatic invasive species. However, you have an opportunity to educate that boater about the dangers of invasive plants and the prevention steps that boaters need to take each time they leave a body of water. With luck, boaters will listen to your message and remove aquatic plants and drain all water without any assistance.

An assertive approach: So what do you do if a boater doesn't get the point? Offer to assist the boater in checking and removing any aquatic plants. Always ask permission first before you touch any boat, trailer, or personal equipment. If the boater gives you permission, go ahead and help remove the plants and ask if you can keep a sample, especially if you suspect an invasive species. Let the boater know that you're just trying to prevent them from receiving a citation from any law enforcement or wardens that stop by, because the wardens are stepping up the number of citations they're issuing for AIS violations.

The strongest approach: And what if the boater refuses to remove the aquatic plants or drain water from their boat and equipment? At this time, you really stress the fact that it is illegal to not comply with the prevention steps that you're recommending, and you use the Violation Report form to record the basic information that a law enforcement officer requires in order to pursue the complaint. If you take a picture, it should include the boat registration number and attached plants. Usually, by this last step, the boater complies, the plants come off the boat, and the lake remains safe from another invasive inoculation.

If the boater chooses to launch after all your efforts, then you can report the facts to a law enforcement officer. The definition of "law enforcement officer" for purposes of section 30.715 (4), Wisconsin Statutes, is noted at section 30.50 (4s), Wisconsin Statutes, which reads:

30.50 (4s) "Law enforcement officer" has the meaning specified under s. 165.85 (2) (c) and includes a person appointed as a conservation warden by the department under s. 23.10 (1).

Section 165.85 (2) (c), Wisconsin Statutes, in turn defines "law enforcement officer" as any person employed by the state or any political subdivision of the state, for the purpose of detecting and preventing crime and enforcing laws or ordinances and who is authorized to make arrests for violations of the laws or ordinances that the person is employed to enforce.

The definition of "law enforcement officer" is obviously very broad and would clearly allow law enforcement officers of counties and municipalities throughout the state to enforce the AIS regulations and laws. Your best resource is your regional DNR Water Guard or local DNR Conservation Warden. Before you pursue any enforcement action, make contact with your local warden to know what information the warden expects from you. The warden will decide how to process the violation.

We are excited to now have DNR Conservation Wardens devoted primarily to providing education and enforcement on the AIS laws and regulations. Each DNR region in Wisconsin has at least one Water Guard; in some cases, more than one.
Photo provided by WDNR6 - 17

AIS Violation Report Form

Landing/Location:_____
Date:_____ Time:_____ AM or PM
County:_____ Town/Village/City:_____
Vehicle License Number:_____ State Registered:_____
Boat Registration:_____ State
Registered:_____ Car/Boat/Personal Watercraft Information - Year:_____
Make:_____ Model:_____ Color:_____ Violator Information:
Male or Female Name of Boat
Operator:_____
Hair:_____ Eyes:_____ Approx. Height/Weight:_____ Other
Description (clothing, etc.):_____ Photo Taken
of Violation: Yes or No Description of
Violation/Comments:_____
_____
_
_____
_
_____
_ CBCW Inspector's Contact Information - Name:_____ Phone
Number:_____
Address:_____
__ Please check box if law enforcement may contact you for more information about the violation. You will ☐ remain confidential in this case. Please check box if you do not want law enforcement to contact you for more information about the ☐ violation. **To report the violation, contact your area Water Guard or DNR Warden OR call 1-800-TIP-WDNR** Regional Water Guard Contact Info:
_____ _____ Local DNR Warden Contact Info:
_____ _____

Appendix 6. Form 3200-120

State of Wisconsin
Department of Natural Resources
Wisconsin Lakes Partnership

Watercraft Inspection Report

Form 3200-120 (R 5/12)

Notice: Information is collected under s. 33.02, Wis. Stats. Personally identifiable information, including names of volunteers, will be broadly distributed in conjunction with lakes data.

Inspector Name(s)	☐ Volunteer ☐ Paid	Date	Waterbody Name	County	Landing Location Description

Inspection Time	Boat Was... Entering	Boat Was... Leaving	Questions to Ask Boater: In the past 30 days, how many times have you been contacted by an inspector? 0	1-2	3-4	5 +	Was boat used during the past 5 days on a different waterbody? Y	N	If yes, where? Waterbody Name / County / State	In a typical month of boating, about how many waterbodies do you visit? 1-2	3-4	5 +	Last time you went boating, describe the steps you took when removing your boat from the water. (Mark each step that is mentioned.) Inspect boat, trailer & equip for plants/ animals	Remove any attached plants/animals	N/A (nothing attached)	Drain All Water from... Boat	Live well	Dispose of Unwanted Bait in Trash	N/A (does not fish)	Took no steps	I did not ask boater	In 2009, WI laws passed that prevent transport of aquatic plants, animals & water from one waterbody to another. This includes draining water from containers holding your catch & livewells. Were you aware that this is the law? Y	N	Unsure	Number of People Contacted
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Totals																									

Total Hours Spent at this Location	**Comments:**

Please report totals online at: **dnr.wi.gov/lakes/cbcw-data**

If you have any questions, please call 715-346-4978.

Sheet ____ of ____