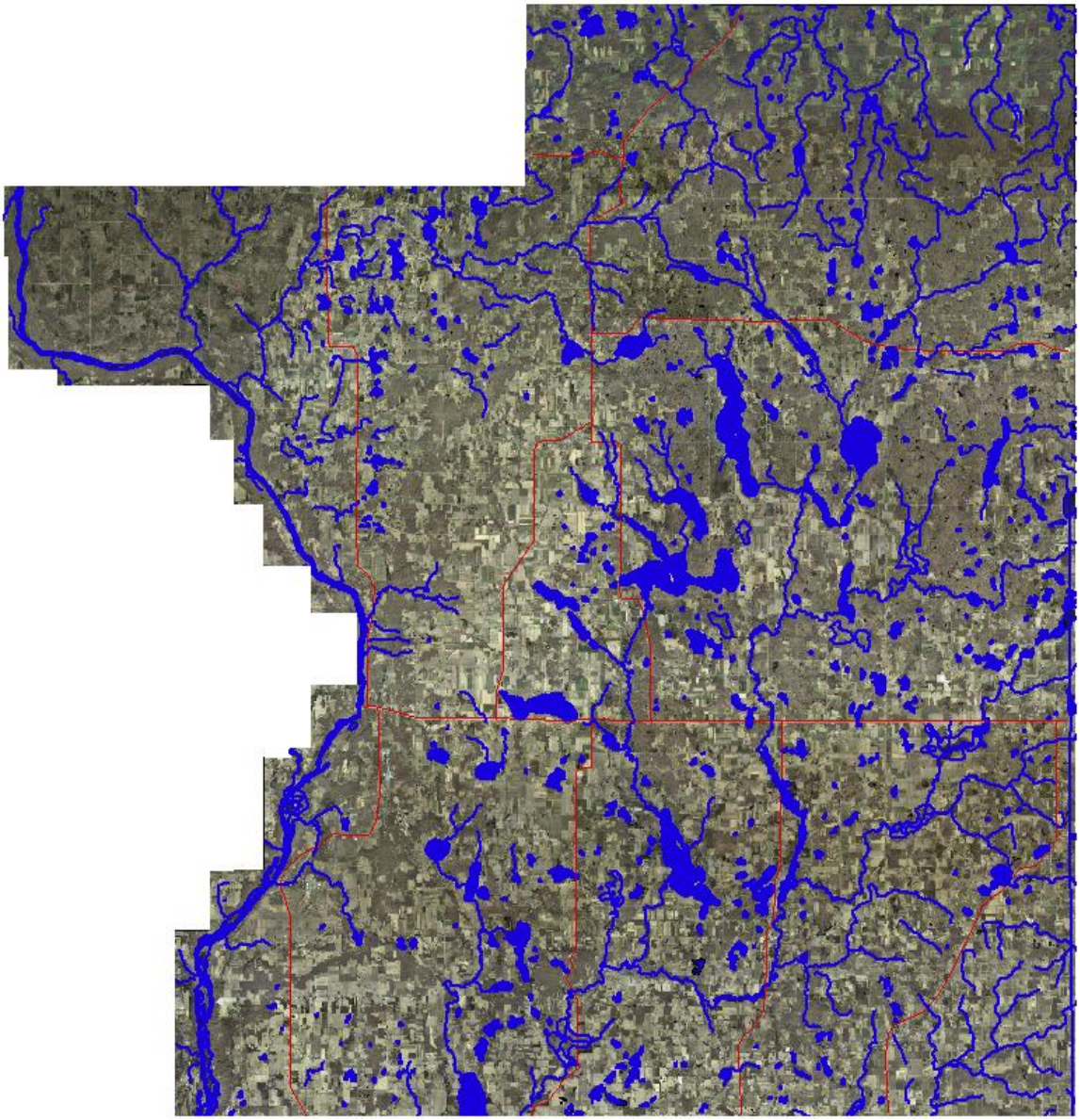
Polk County WDNR Aquatic Invasive Species Education, Prevention, and Planning Control Grant Final Report

AEPP-352-12
2012 and 2013



Polk County Land and Water Resources Department
100 Polk County Plaza—Ste 120
Balsam Lake, WI 54810

In April 2012, the Polk County Land and Water Resources Department received a two year Aquatic Invasive Species Education, Prevention, and Planning Control Grant from the Wisconsin Department of Natural Resources. The following report details the tasks completed from April 2012 through December 2013.

Camelia Lake, 2012.

AIS Early Detection Smart Prevention Protocol

In 2012 the Polk County LWRD partnered with the WDNR to implement the AIS early detection smart prevention protocol on Polk County Lakes. Seven Polk County lakes were randomly chosen for monitoring in 2012 and three were randomly chosen in 2013.

The monitoring protocol involves the collection of basic water quality data (secchi depth and conductivity) along with numerous detection methods for aquatic invasive species including:

- ✓ Snorkeling all boat landings for 30 minutes each
- ✓ Snorkeling 5 sites for 10 minutes each
- ✓ Three spiny water flea tows
- ✓ Three zebra mussel veliger tows
- ✓ Meander survey including rake throws and D-nets

Lakes monitored in 2012 include:

- ✓ Ward lake
- ✓ Antler Lake
- ✓ Big Blake Lake
- ✓ White Ash Lake (South)
- ✓ Big Lake
- ✓ North Twin Lake
- ✓ Camelia Lake

Lakes monitored in 2013 include:

- ✓ Sand Lake [1]
- ✓ Pine Lake
- ✓ Big Blake Lake [2]

Pine Lake, 2013.

Data for secchi depth, conductivity, and GIS location of AIS populations was entered into the Surface Water Integrated Monitoring System (SWIMS). Aquatic plant specimens were sent to the UW-Stevens Point Herbarium, waterflea and veliger samples were sent to the Wisconsin DNR, and snail specimens were sent to the UW-La Crosse Biology Department.

Under a previous aquatic invasive species grant, an additional ten lakes were monitored by LWRD in 2011 using the AIS early detection smart prevention protocol.

In total since 2011, nineteen lakes in Polk County have been monitored for AIS through the early detection smart prevention protocol. The number of invasive species found per lake ranged from zero to four. Sixteen percent of lakes sampled had zero invasive species, 21% had one invasive species, 42% had two invasive species, 11% had three invasive species, and 11% had four invasive species.

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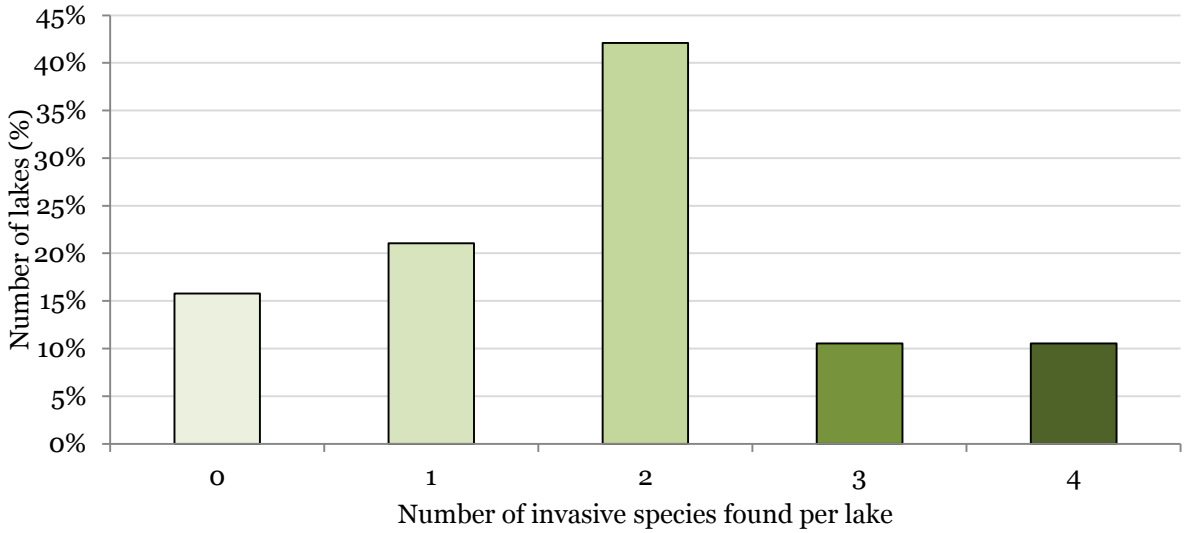
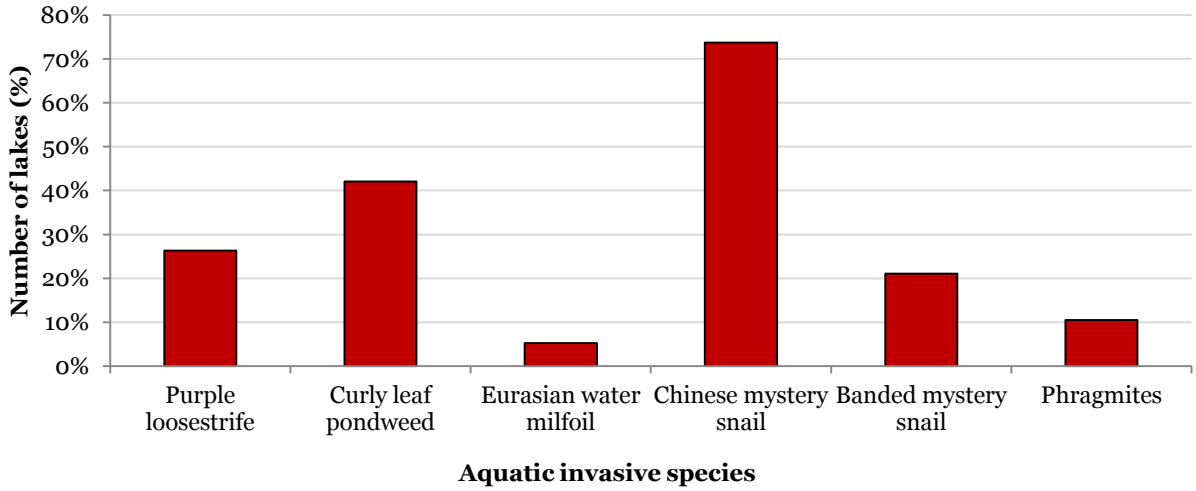
[1] Sand Lake was sampled in partnership with GLIFWC. Zebra mussel veliger tows, spiny waterflea tows, meander surveys, and vouchers were completed by GLIFWC. The remainder of the protocol was completed by LWRD.

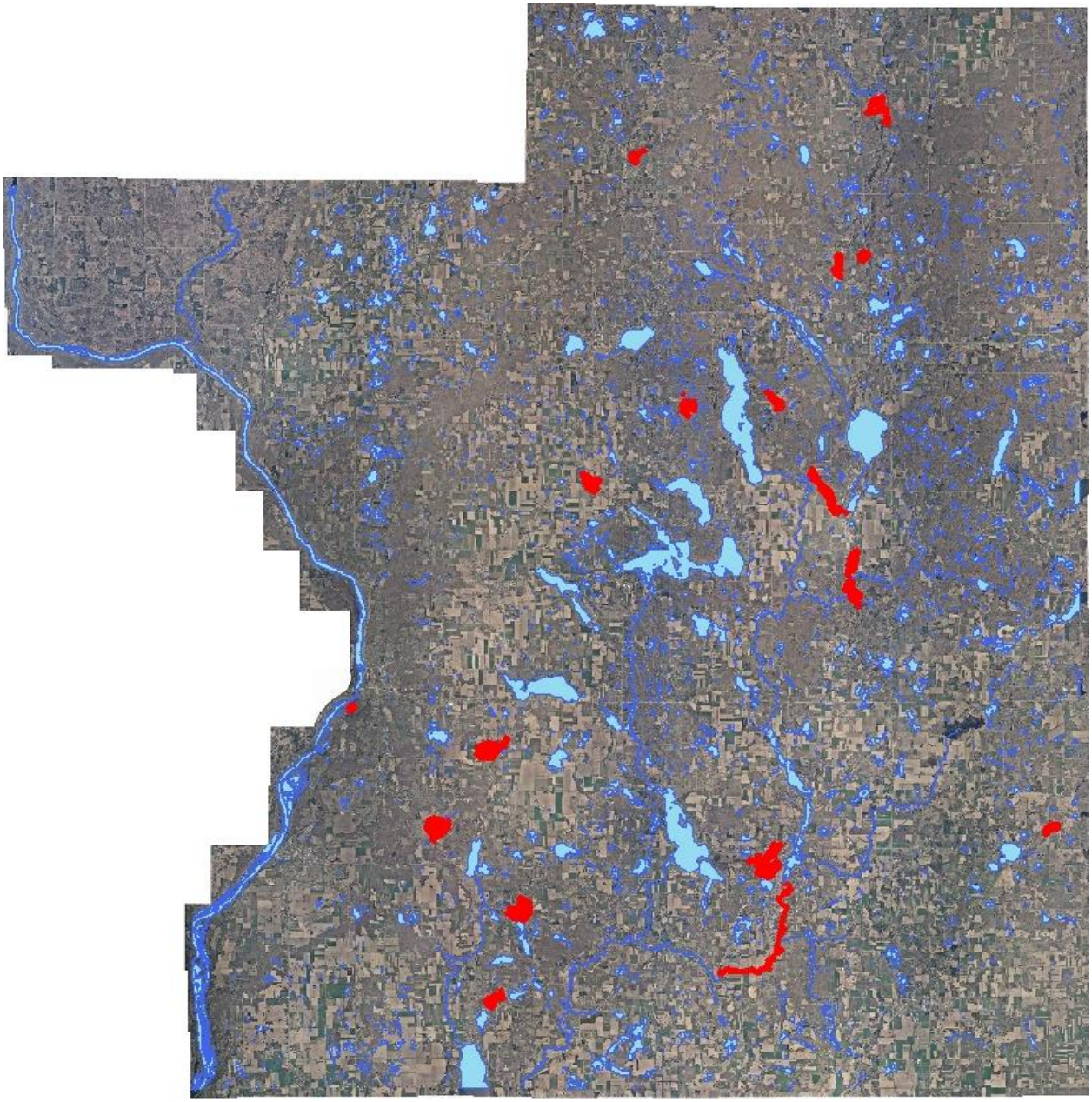
[2] Big Blake Lake was chosen as a revisit lake.



Species detected through the protocol include: purple loosestrife, phragmites, curly leaf pondweed, Eurasian water milfoil, Chinese mystery snail, and banded mystery snail.

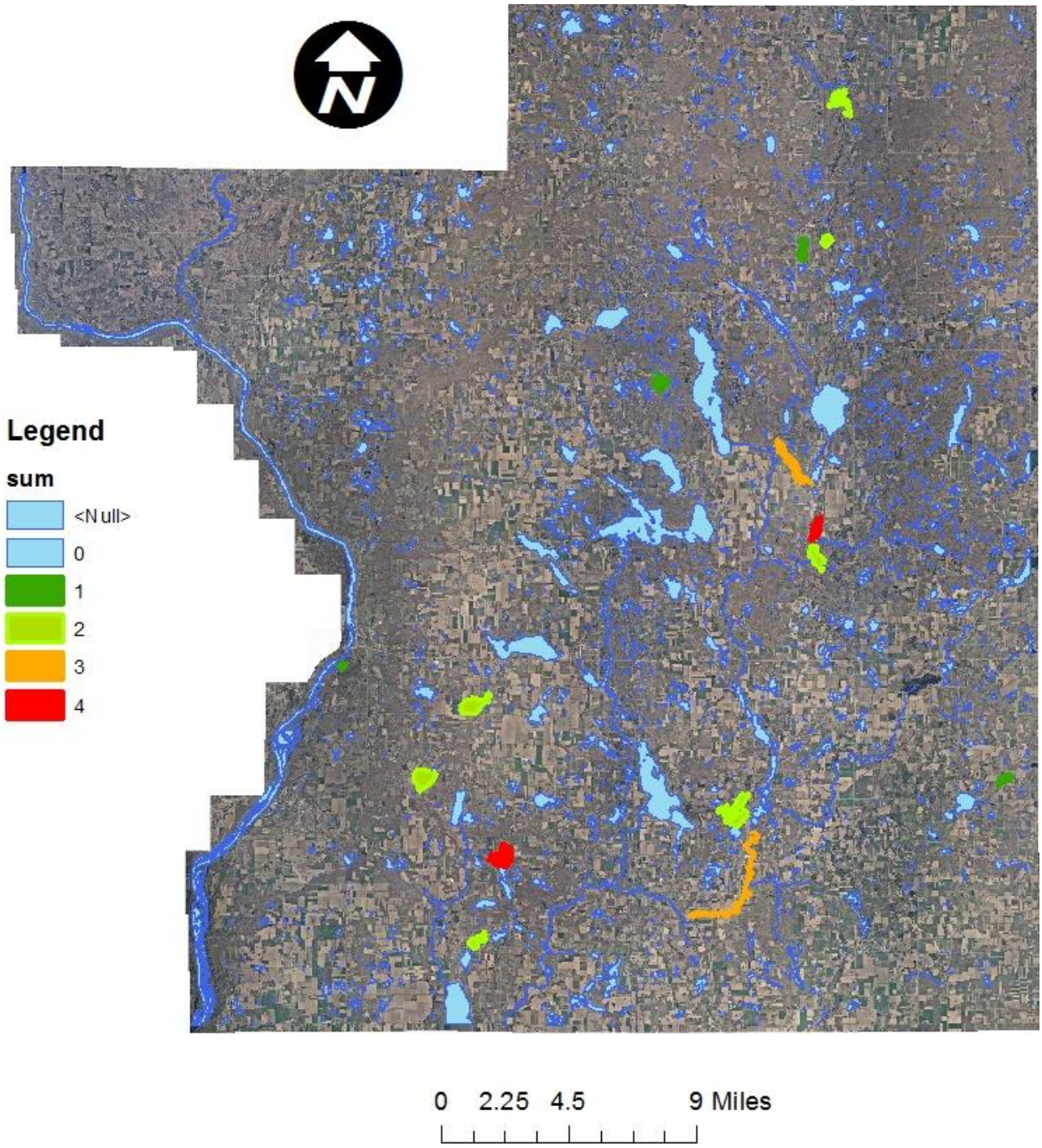
Chinese mystery snails were the most common invasive species detected, being found in three quarters (74%) of the lakes which were monitored. Curly leaf pondweed was detected in nearly half of lakes monitored (42%) and purple loosestrife and banded mystery snails were detected in approximately a quarter of lakes monitored (26% and 21%, respectively). Phragmites and Eurasian water milfoil were the least commonly documented invasive species, with phragmites being found in 11% of lakes sampled and Eurasian water milfoil in 5% of lakes sampled.





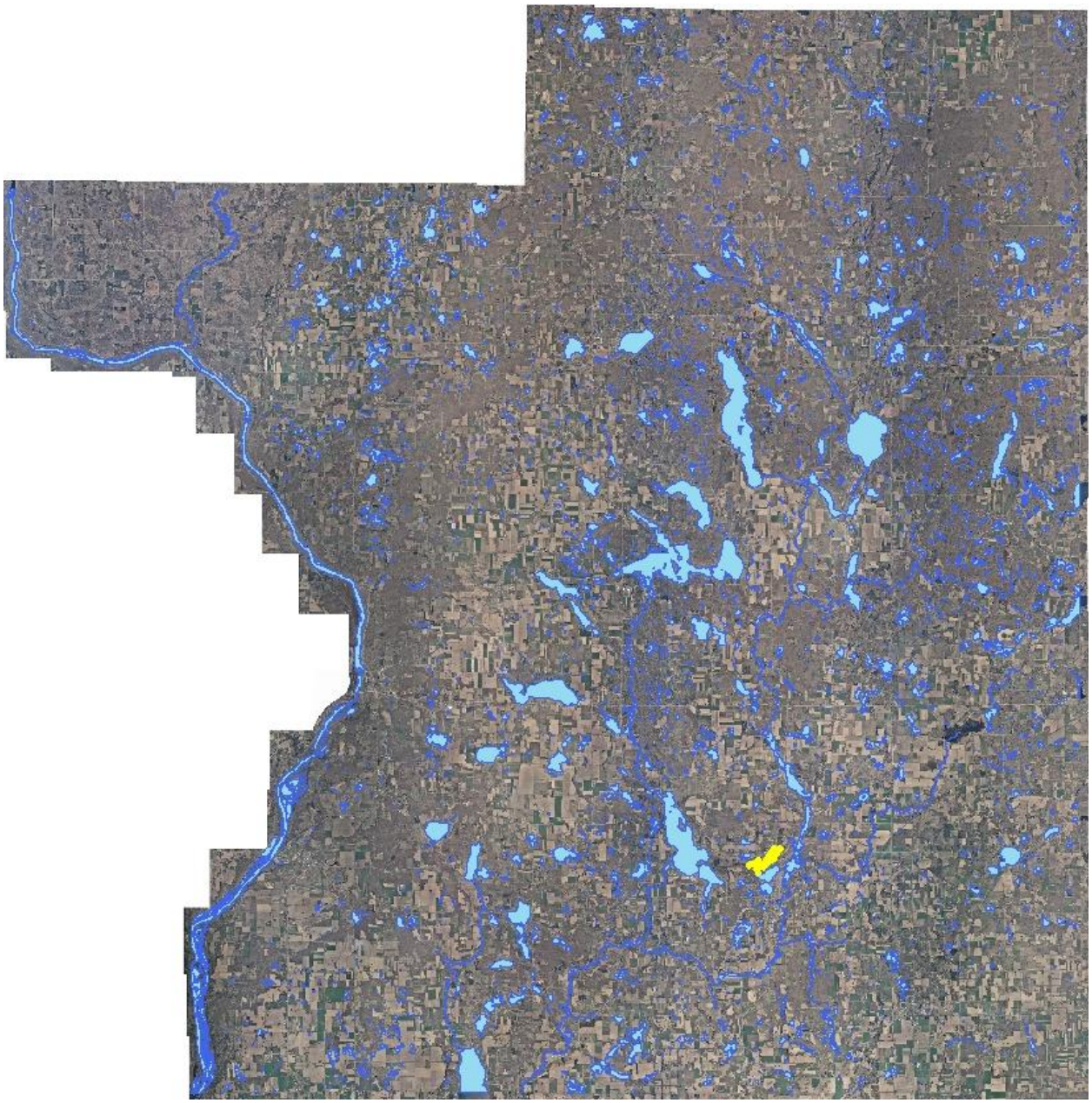
AIS Early Detection Smart Prevention Protocol Lakes, 2011-2013.

Lakes: Antler Lake, Big Blake Lake, Big Lake, Black Brook Flowage, Camelia Lake, Clam Falls Flowage, Coon Lake, Lake O' the Dalles, Lotus Lake, McKenzie Lake, North Twin Lake, Pike Lake, Pine Lake, Rice Lake, Sand Lake, Vincent Lake, Ward Lake, White Ash Lake, North White Ash Lake



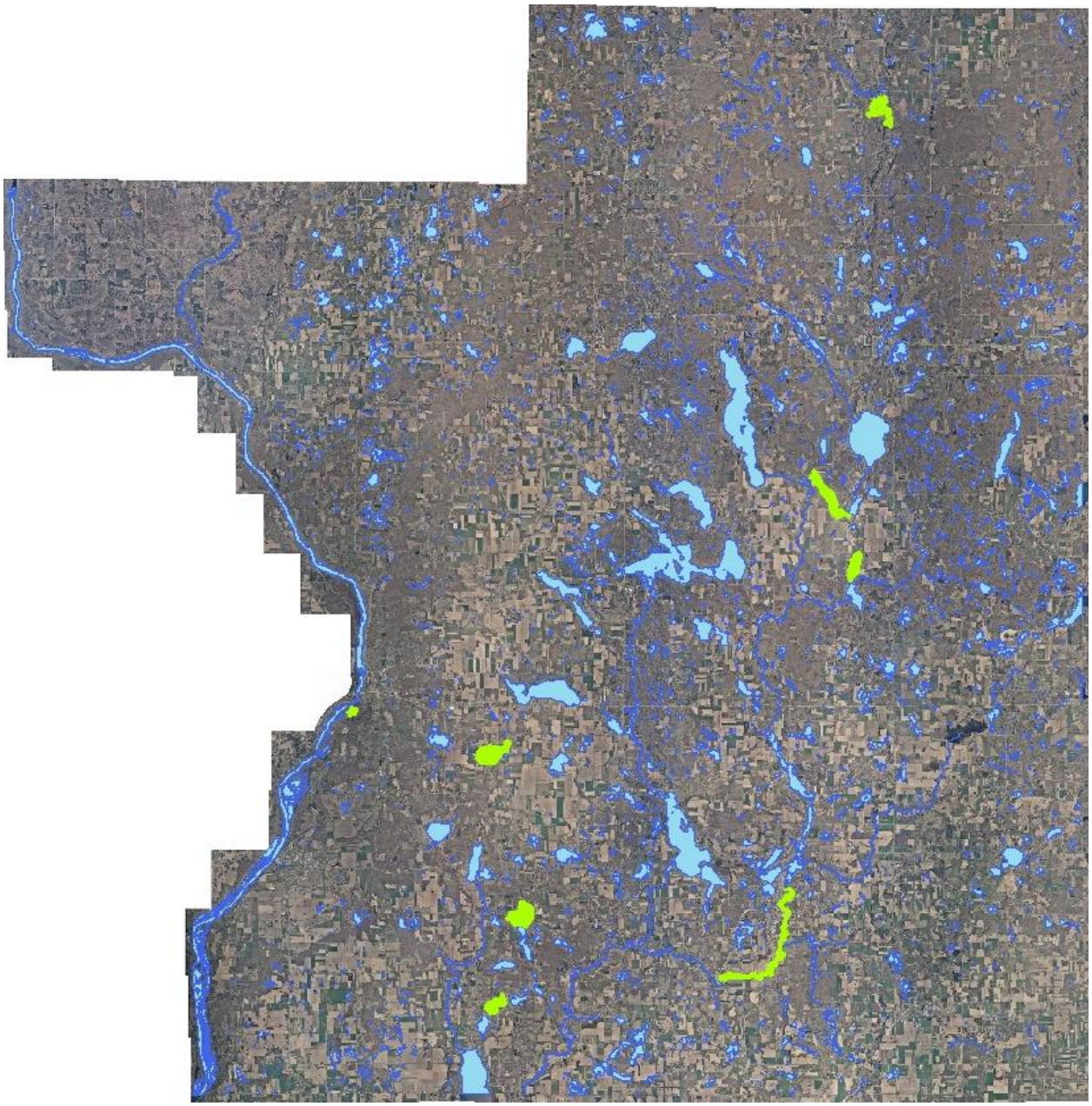
AIS Early Detection Smart Prevention Protocol Lakes, number of aquatic invasive species found per lake, 2011-2013.

Lakes with 0 AIS: Coon Lake, Rice Lake, Vincent Lake
Lakes with 1 AIS: Antler Lake, Camelia Lake, Lake O' the Dalles, Ward Lake
Lakes with 2 AIS: Clam Falls Flowage, Lotus Lake, McKenzie Lake, North Twin Lake, Pike Lake, Pine Lake, Sand Lake, White Ash Lake
Lakes with 3 AIS: Big Blake Lake, Black Brook Flowage
Lakes with 4 AIS: Big Lake, North White Ash Lake



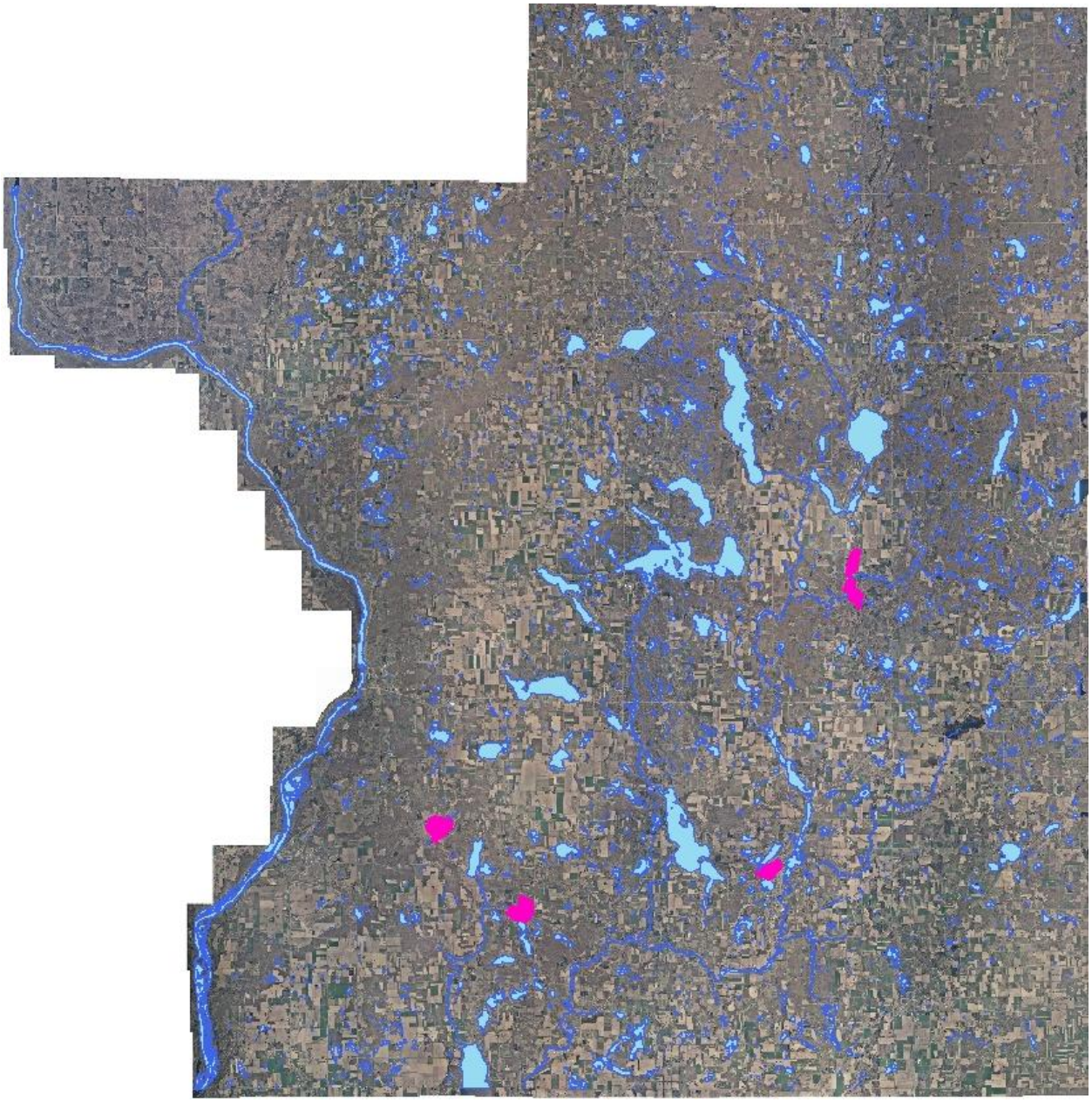
Eurasian water milfoil, AIS Early Detection Smart Prevention Protocol Lakes, 2011-2013.

1 Lake: Pike Lake



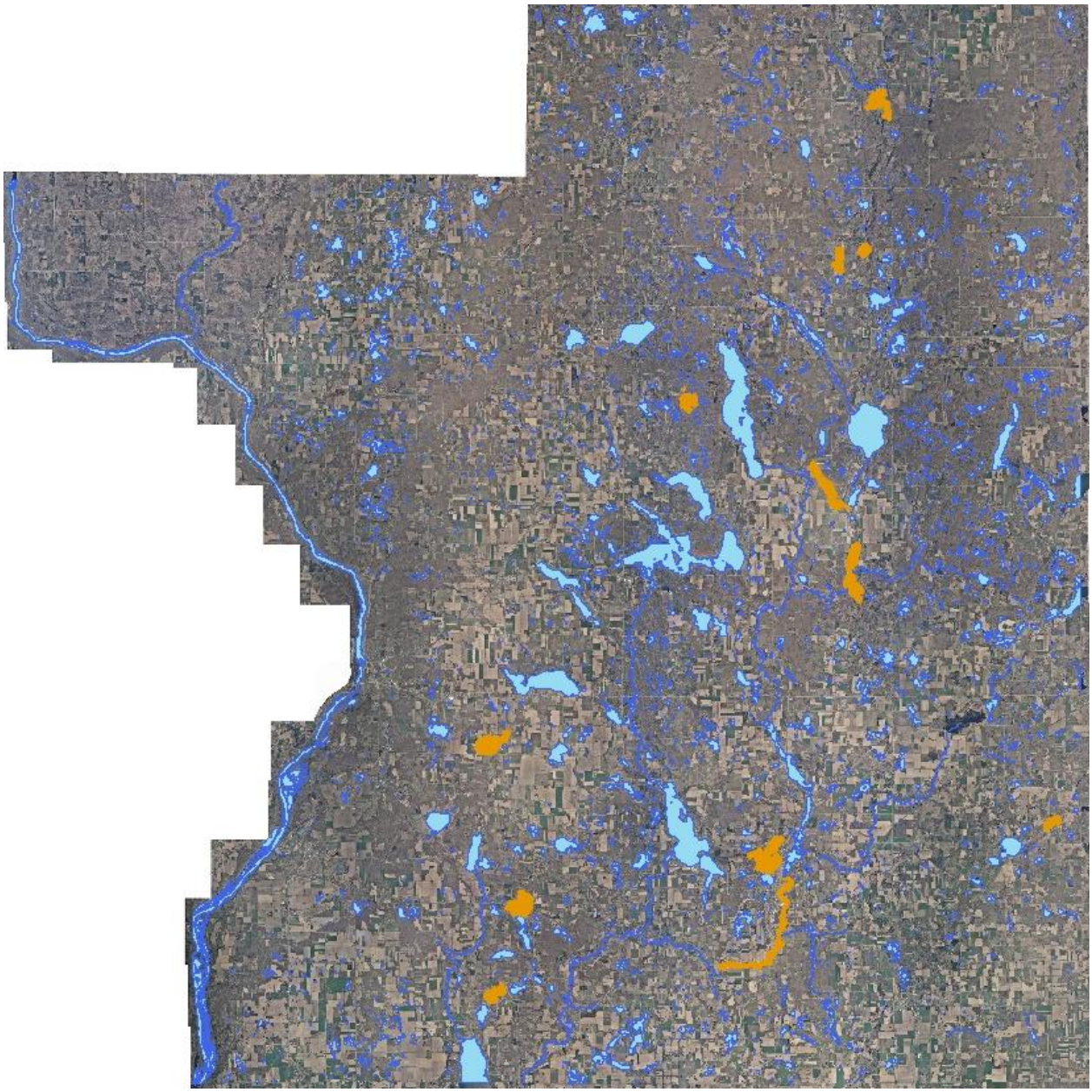
Curly leaf pondweed, AIS Early Detection Smart Prevention Protocol Lakes, 2011-2013.

8 Lakes: Big Blake Lake, Big Lake, Black Brook Flowage, Clam Falls Flowage, Lake O' the Dalles, Pine Lake, Sand Lake, North White Ash Lake



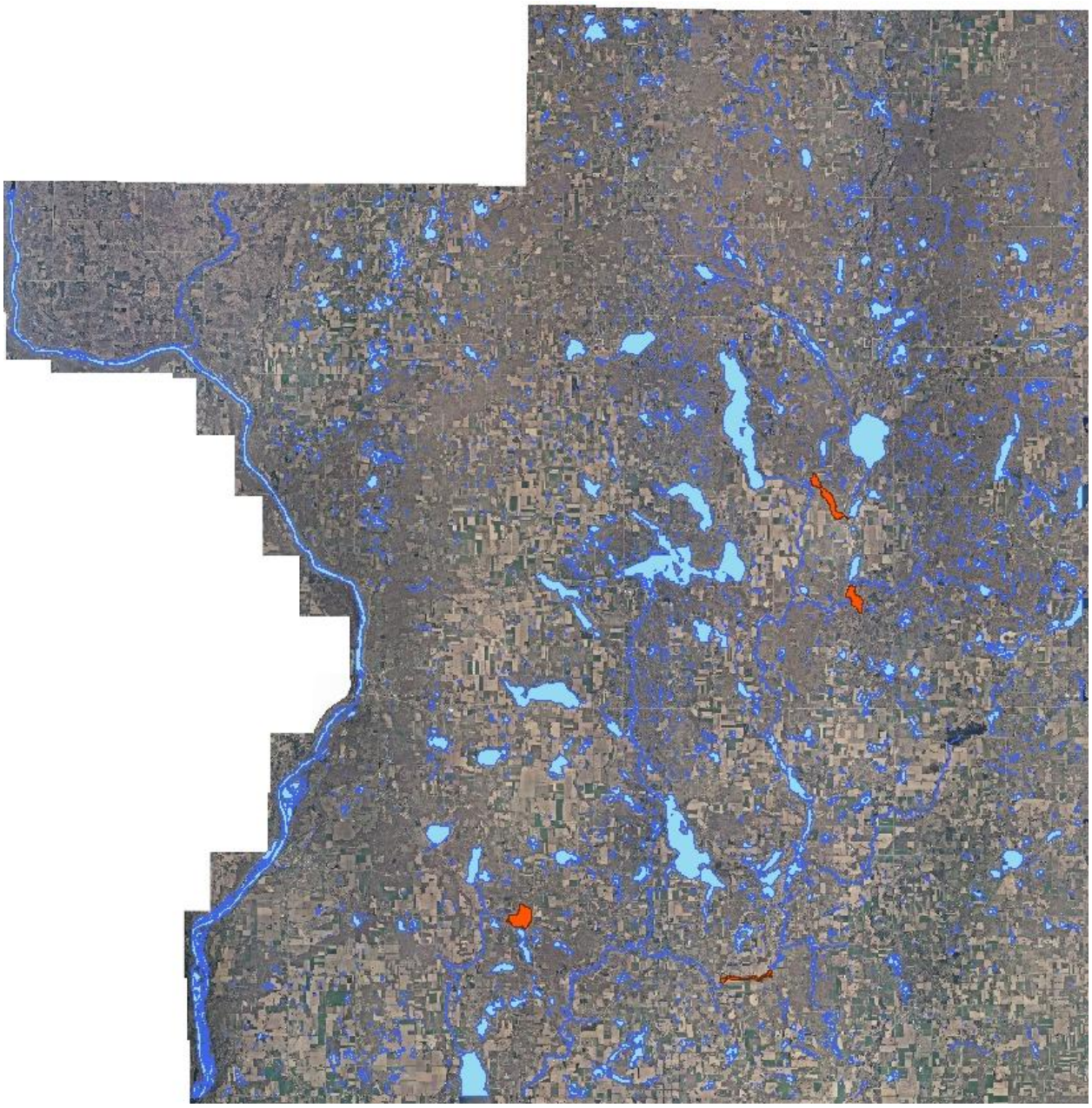
Purple loosestrife, AIS Early Detection Smart Prevention Protocol Lakes, 2011-2013.

5 Lakes: Big Lake, Lotus Lake, North Twin Lake, White Ash Lake, North White Ash Lake



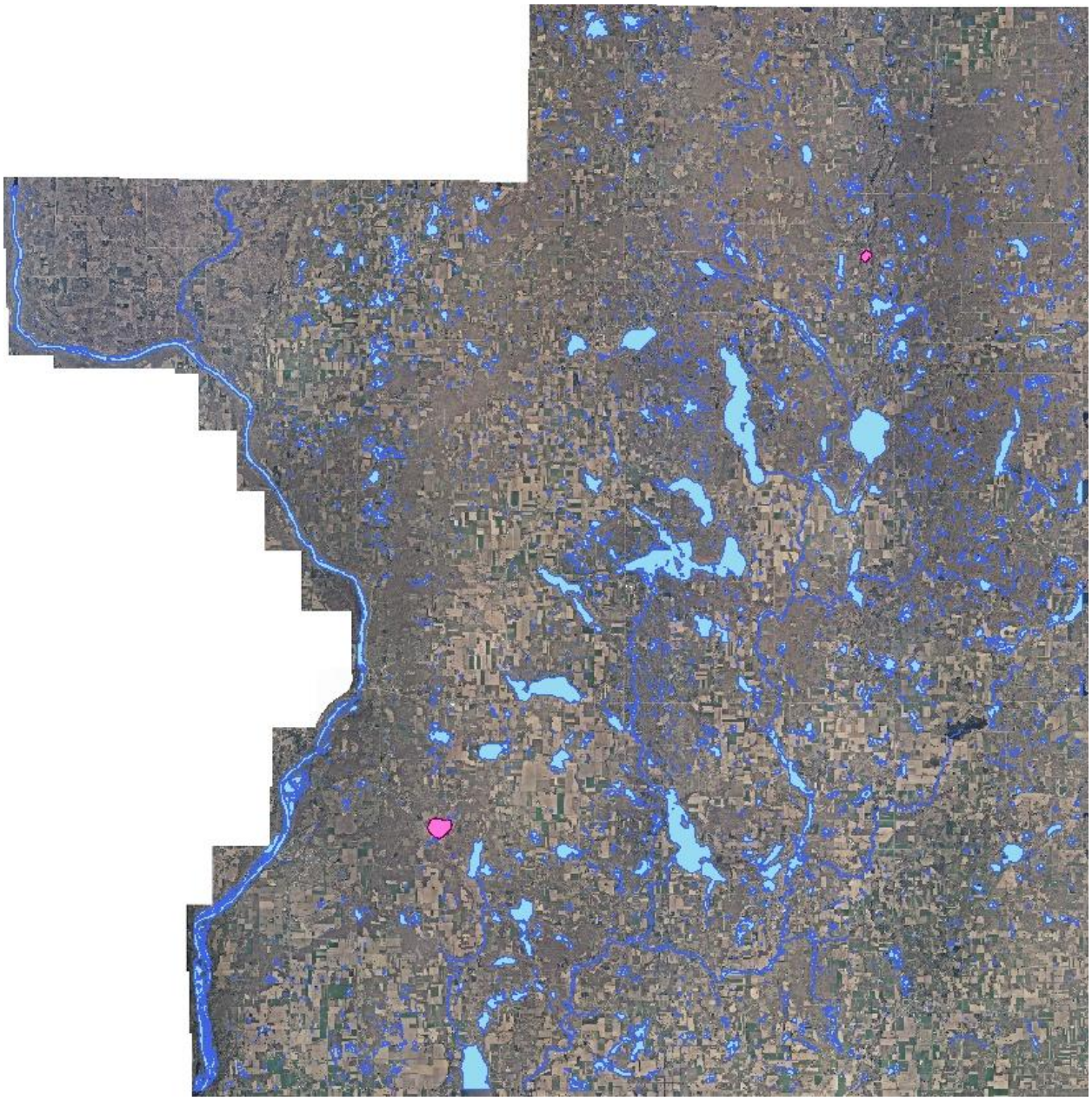
Chinese mystery snail, AIS Early Detection Smart Prevention Protocol Lakes, 2011-2013.

14 Lakes: Antler Lake, Big Blake Lake, Big Lake, Black Brook Flowage, Camelia Lake, Clam Falls Flowage, McKenzie Lake, North Twin Lake, Pike Lake, Pine Lake, Sand Lake, Ward Lake, White Ash Lake, North White Ash Lake



Banded mystery snail, AIS Early Detection Smart Prevention Protocol Lakes, 2011-2013.

4 Lakes: Big Blake Lake, Big Lake, Black Brook Flowage, White Ash Lake



Phragmites, AIS Early Detection Smart Prevention Protocol Lakes, 2011-2013.

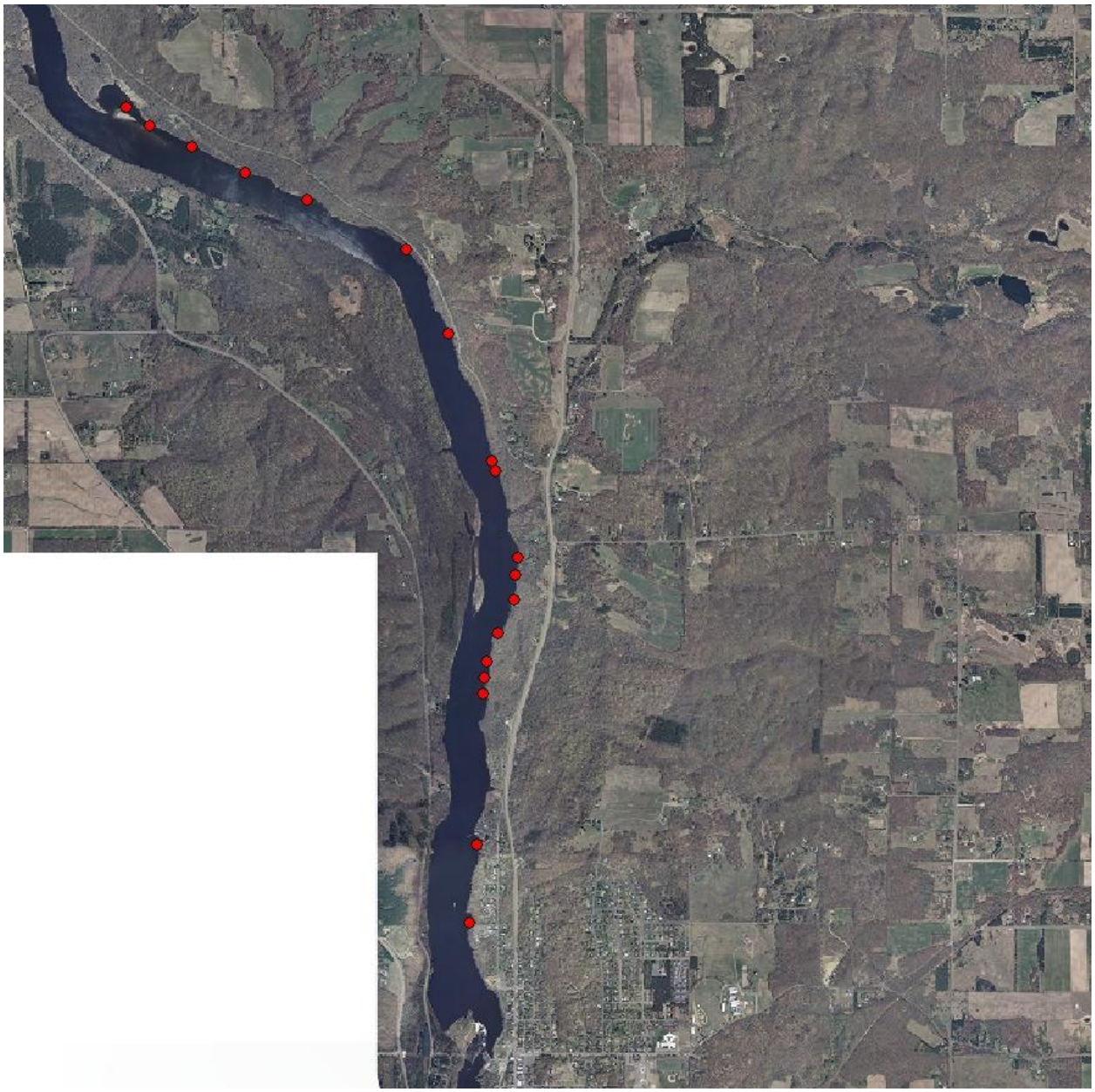
2 Lakes: McKenzie Lake, Lotus Lake

St. Croix River Monitoring

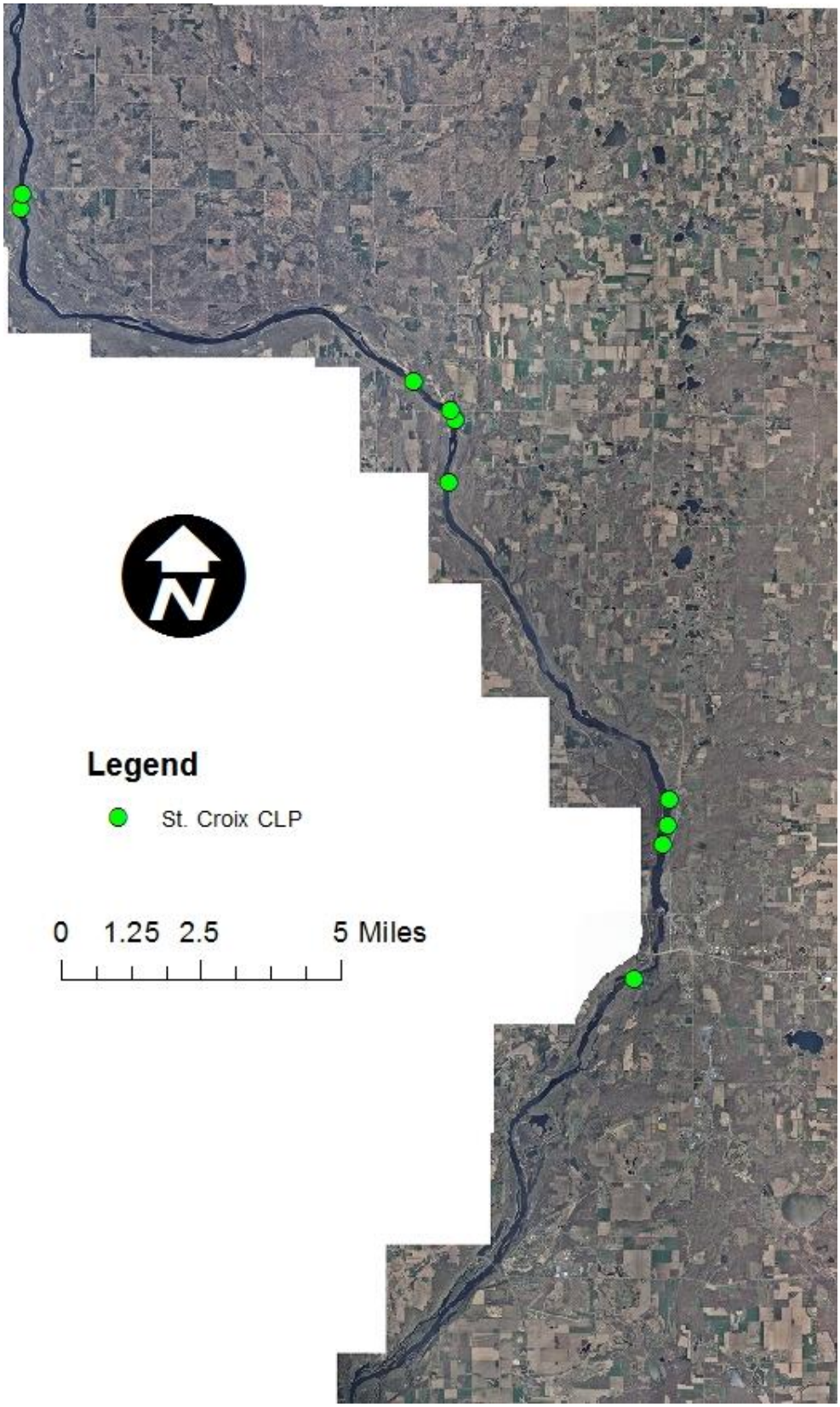
In 2013 LWRD undertook an extensive monitoring effort on the St. Croix River. Due to extreme low water levels, the northern most and southern most stretches of the river were not accessible. However, the remaining areas of the river were monitored using an adapted version of the AIS early detection smart prevention protocol for lakes. In addition to meandering the entire Wisconsin shoreline for invasive species, rakes and D-nets were thrown when visibility was low. Due to extreme currents, the protocol did not include snorkeling. However, at random locations along the river, the shoreline was traversed on foot to search for invasive species. Additionally, each tributary entering the St. Croix River on the Wisconsin side was monitored by motoring or walking upstream until navigation was not possible.

Two invasive species were detected on the St. Croix River: curly leaf pondweed and Eurasian water milfoil. Curly leaf pondweed was located throughout the entire river system, whereas, Eurasian water milfoil was confined to the area between Spanglers Landing and the hydroelectric dam in St. Croix Falls. In this area, Eurasian water milfoil was dotted in most places in the littoral zone in depths ranging from 1.5 to 5 feet. Although curly leaf pondweed has been found in many Polk County Lakes, Eurasian water milfoil has only been documented in three Polk County Lakes. As a result, the discovery of Eurasian water milfoil in the St. Croix River is a concern.

St. Croix River, 2013.



Eurasian water milfoil locations on the St. Croix River between Spanglers Landing and the hydroelectric dam in St. Croix Falls, 2013.



Curly leaf pondweed locations on the St. Croix River, 2013.

Eurasian Water Milfoil

Eurasian water milfoil is a submerged aquatic invasive plant with delicate, feather-like leaves arranged in a whorl around the stem of the plant. Eurasian water milfoil can be distinguished from native milfoils by the numerous (usually 12-21 leaflets) that make up each leaf. Additionally, whereas the leaves of most native milfoils remain erect when out of water, the leaves of Eurasian water milfoil are usually limp when out of water. Eurasian water milfoil is highly invasive and is capable of forming large, thick mats which interfere with swimming, boating, fishing, and waterfowl hunting. Additionally, Eurasian water milfoil can have devastating effects on native ecosystems, displacing native aquatic plants and impacting fish and wildlife populations.

Eurasian water milfoil was first discovered in North America in the 1940's. Since this time Eurasian water milfoil has invaded nearly every state in the United States. Eurasian water milfoil spreads when small fragments of the plant break off and float on water currents or are transported by boater traffic. Eurasian water milfoil is able to reproduce from small fragments, which sprout roots and are able to colonize new areas.

Establishment of Eurasian water milfoil populations in Polk County has occurred relatively recently. Eurasian water milfoil was first found in Polk County in Long Trade Lake in 1995. Long Trade Lake is part of the Trade River System, which includes Little Trade, Big Trade, and Round Lakes in Burnett County. Eurasian water milfoil was discovered in Round Lake in 2003 and in Little Trade Lake in 2009.

In addition to the Trade River System, Eurasian water milfoil was found in Horseshoe Lake in 2006, in Pike Lake in 2010, and most recently in the St. Croix River between Spanglers Landing and Lions Park Landing in 2013.

Eurasian water milfoil, St. Croix River, 2013.

Eradicating established populations of Eurasian water milfoil is nearly impossible, making monitoring and management of early detection pioneer populations crucial.

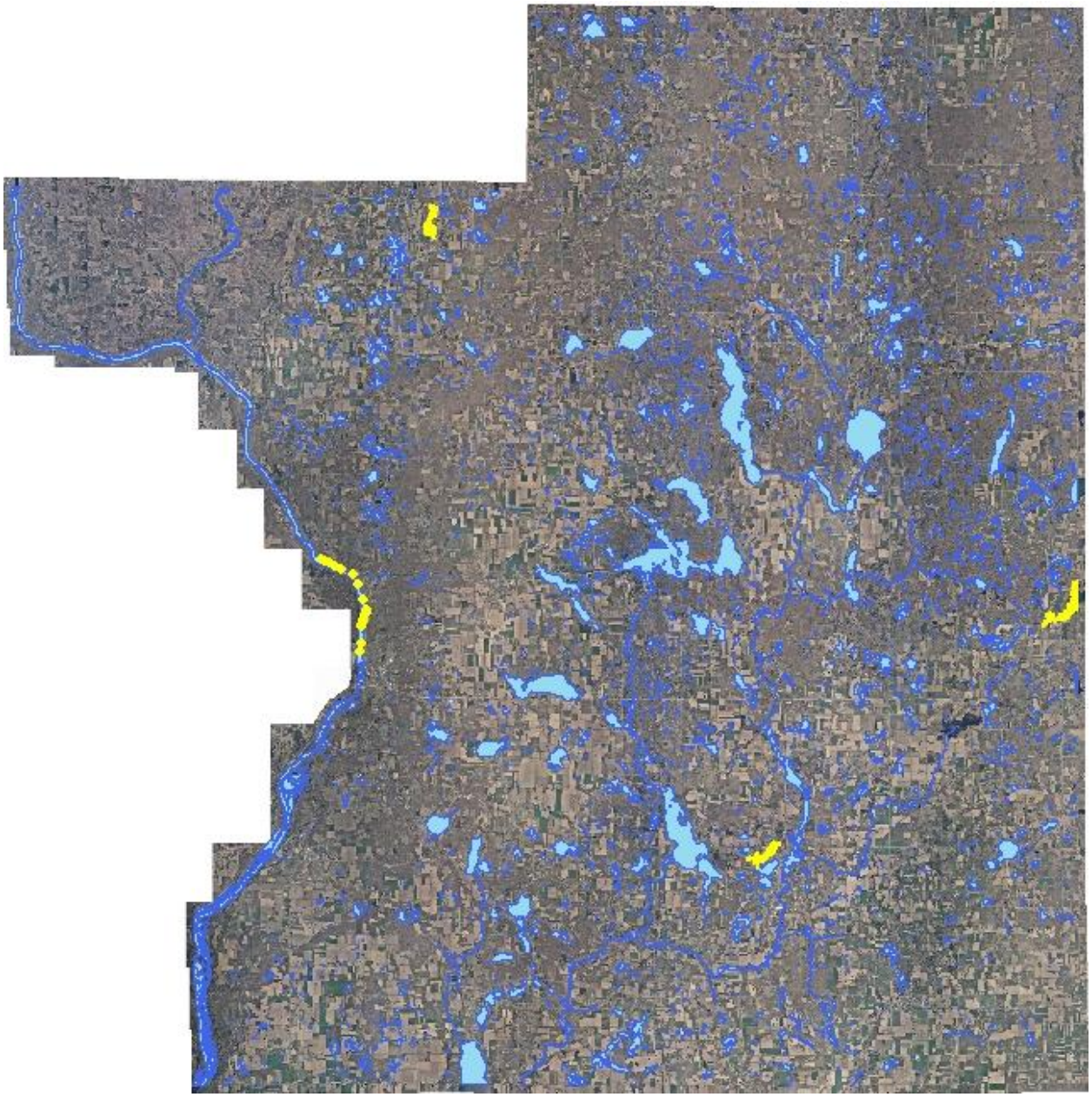
The following lakes were monitored for Eurasian water milfoil in 2012 and 2013 either due to proximity to an infested lake, an alert of an invasive species from a concerned citizen, or because the lake was visited for other reasons[3]: Wapogasset Lake, Bear Trap Lake, North Twin Lake, South Twin Lake, the Apple River Flowage, Long Lake, Big/Round/Church Pine Lakes, Lotus Lake, Big Round Lake, Big Blake Lake, and Clear Lake. Fortunately, Eurasian water milfoil was not found on any of the lakes monitored.

In July 2012, LWRD hand pulled Eurasian water milfoil on Pike Lake with Steve Schieffer, lake resident and Amery Lakes Board President. In July 2013, LWRD visited Long Trade Lake following an herbicide application for Eurasian water milfoil. At this time, LWRD was unable to locate any Eurasian water milfoil, indicating a successful 2013 herbicide application.

Big Blake Lake, 2013.

[3] Time for lakes visited for other reasons were not charged to the AIS grant.

Eurasian water milfoil has been documented on 4 Polk County waterbodies as of December, 2013: Horseshoe Lake, Long Trade Lake, Pike Lake, and the St. Croix River.



Curly Leaf Pondweed

Curly leaf pondweed, Apple River Flowage, 2012.

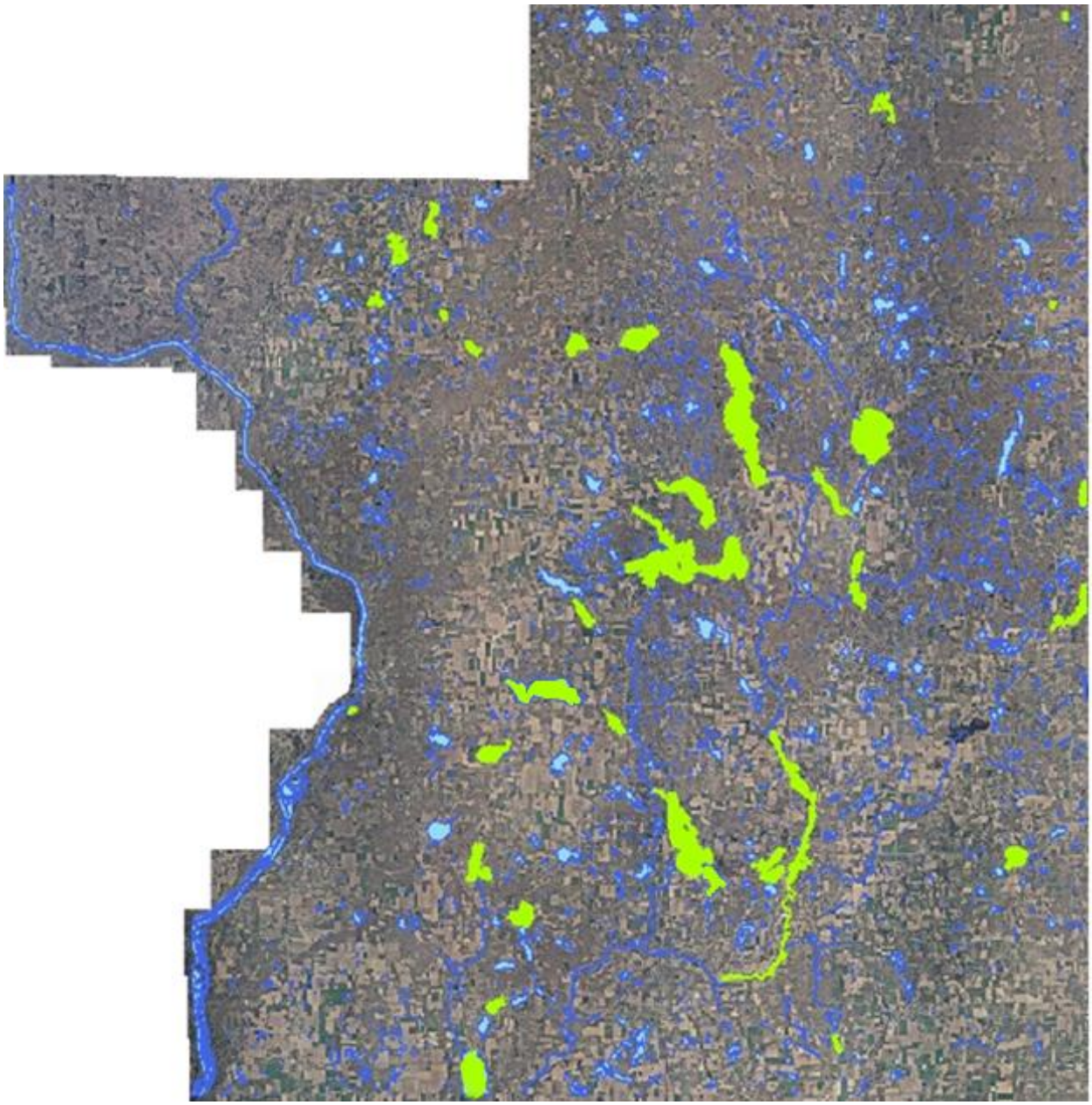
Curly leaf pondweed is a submerged aquatic invasive plant. The leaves of curly leaf pondweed are easily distinguished by their rounded tip, prominent mid-vein, and finely toothed edges. In certain growing conditions, the leaves appear wavy or crimped.

Curly leaf pondweed is found in a wide variety of habitats, although it prefers alkaline and high nutrient waterbodies and typically grows in less than 3 meters of water.

This invasive species is able to outcompete native aquatic plants because it exhibits rapid growth in the early spring, sometimes growing beneath ice cover. Curly leaf pondweed forms large, dense mats on the surface of waterbodies inhibiting the light necessary for native plant growth and interfering with navigation and recreational activities such as fishing, boating, and swimming.

Curly leaf pondweed was first discovered in Polk County in the Apple River Flowage in 1977. Since this time it has been documented in 38 waterbodies in Polk County.

Curly leaf pondweed has been documented on 38 Polk County waterbodies as of December, 2013 including: Alabama Lake, Apple River, Apple River Flowage, Balsam Lake, Bear Trap Lake, Big Blake Lake, Big Butternut Lake, Big Lake, Big Round Lake, Black Brook Flowage, Bone Lake (2454500), Bone Lake (2628100), Bridget Lake, Cedar Lake, Clam Falls Flowage, Deer Lake (2619400), Deer Lake (2460500), Dwight Lake, Half Moon Lake, Herby Lake, Horse Lake, Horseshoe Lake, Lake O' the Dalles, Little Butternut Lake, Little Mirror Lake, Long Trade Lake, Loveless Lake, Magnor Lake, North Twin Lake, Pike Lake, Pine Lake (2490400), Sand Lake, Sandhill Lake, Staples Lake, Unnamed (2658800), Wapogasset Lake, White Ash Lake, North White Ash Lake.



Purple Loosestrife

Purple loosestrife is an aquatic invasive perennial plant that grows 3-7 feet tall and develops a spike of small purple flowers in late summer. The leaves of the plant are oblong and arranged oppositely along a square shaped stem. Purple loosestrife spreads rapidly and colonizes wetlands, shorelines, and roadside ditches. Thick stands of purple loosestrife crowd out native vegetation and reduce food, shelter, and nesting sites for a variety of wildlife including birds, turtles, and frogs.

Purple loosestrife, North Twin Lake, 2012.

This plant, native to Europe and Asia, was introduced in North America in the 1800's for beekeeping and as a garden ornamental. Purple loosestrife has been present in Polk County for many years. An elaborate inventory was conducted in 2000 by Polk County LWRD to identify the extent of purple loosestrife in the county and to reduce its spread.

In 2012, Polk County LWRD partnered with the Luck Girl Scouts to raise and release *Galerucella* beetles for purple loosestrife control. On May 29th LWRD presented background information to the girl scouts regarding aquatic invasive species with a specific focus on purple loosestrife and assisted the girl scouts with collecting rootstock, collecting beetles, and adding beetles to the plants. The beetles were later released in the Luck wetland.

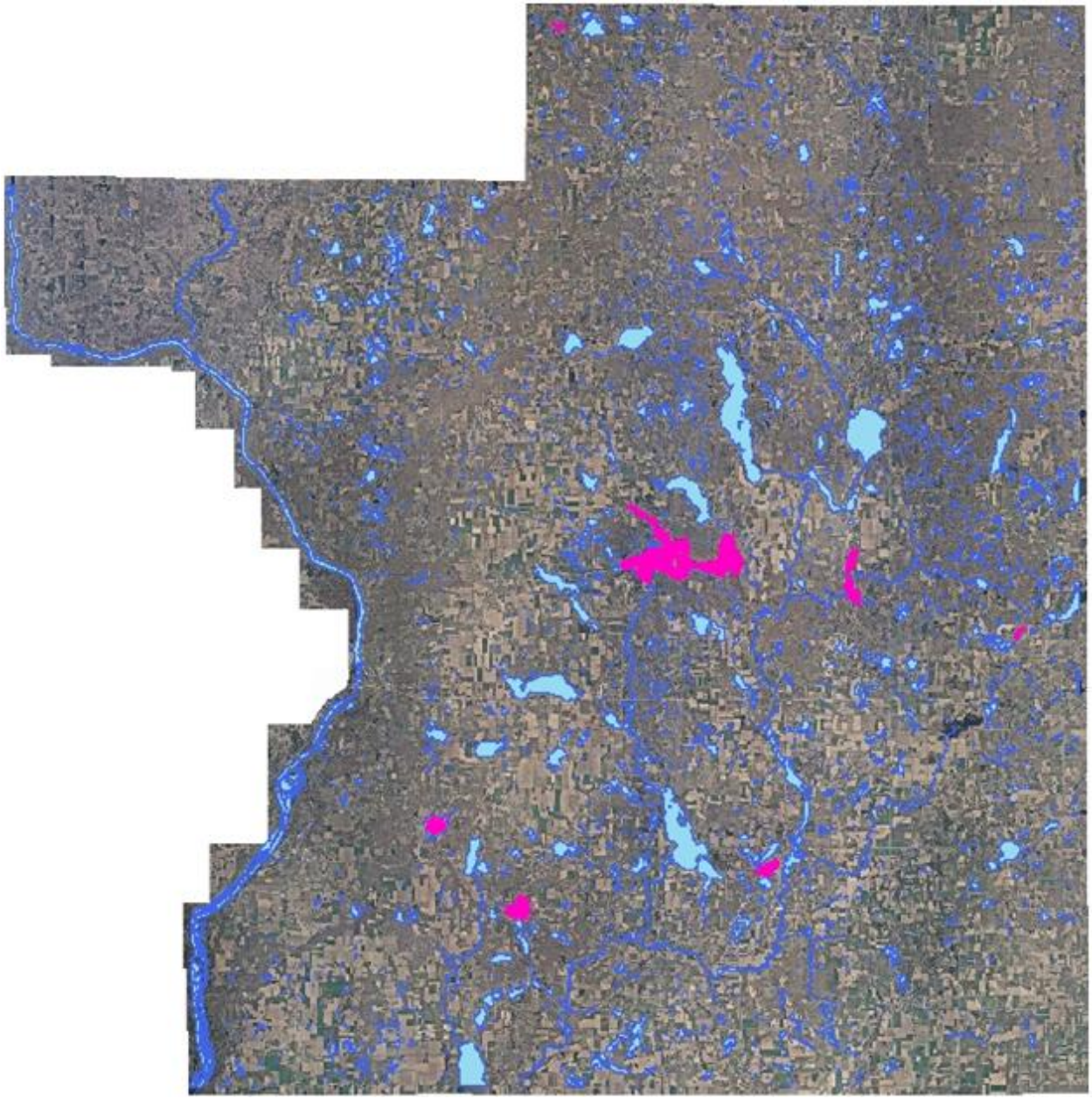
Luck Girl Scouts, *Galerucella* beetle project, 2012.

Three novel purple loosestrife sites were found in 2012. At two of the sites LWRD cut and bagged flowers and sprayed the remaining foliage with herbicide. The remaining stand was located in a wetland just south of Balsam Lake and was large enough to warrant the introduction of beetles.

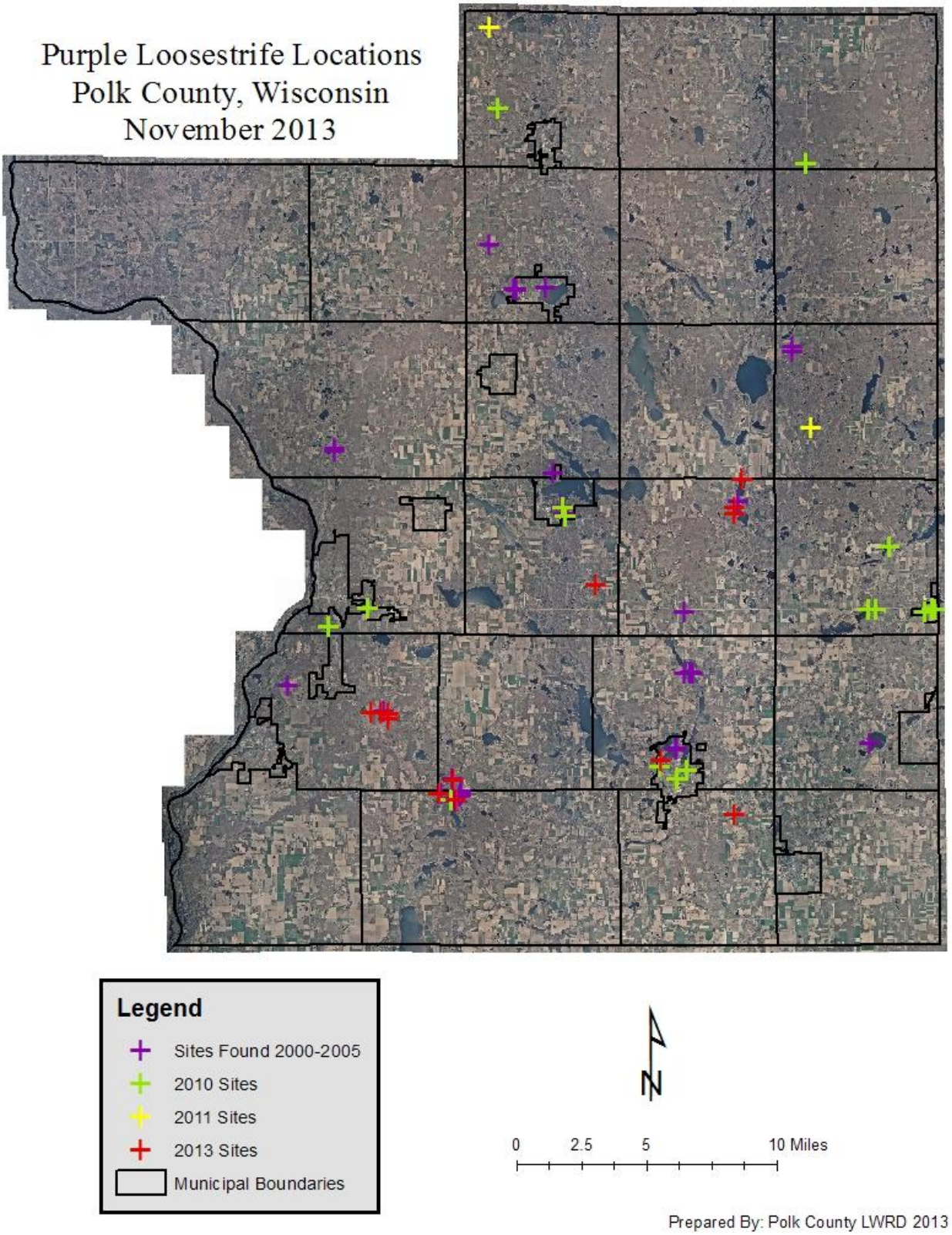
In 2013, LWRD partnered with a dedicated volunteer to raise *Galerucella* beetles. LWRD assisted the volunteer with collecting rootstock, adding beetles to the plants, and releasing beetles. Beetles raised in 2013 were released in the large stand south of Balsam Lake that was found in 2012. Late in the summer of 2013, commissioners with the Balsam Lake Protection and Rehabilitation District met with LWRD regarding a large stand of purple loosestrife on Balsam Lake. This site has been designated as a beetle release site for 2014.

2013 beetle release site, wetland south of Balsam Lake.

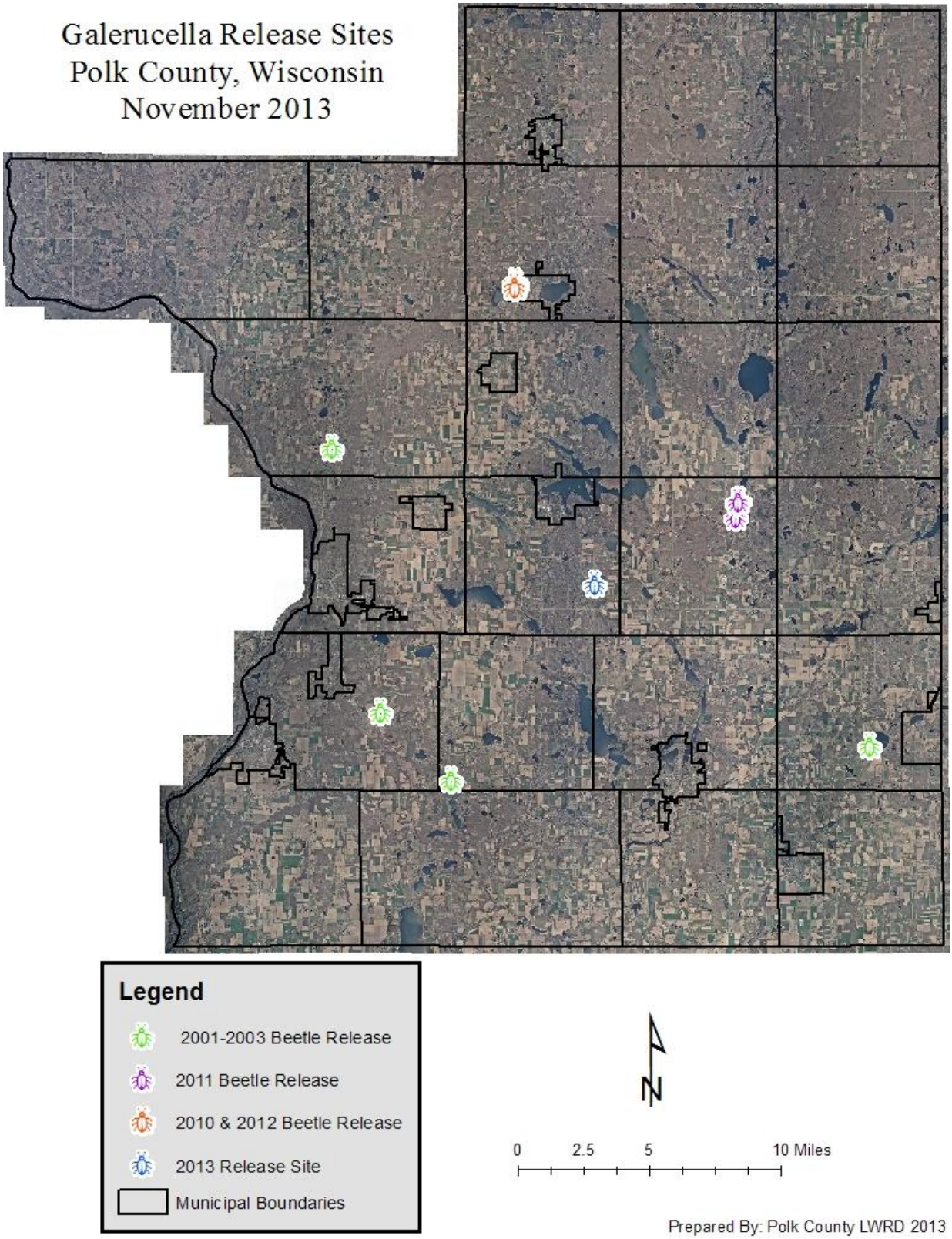
Purple loosestrife has been documented on 8 Polk County lakes as of December, 2013 including: Balsam Lake, Big Lake, Grimhs Lake, Lotus Lake, North Twin Lake, Silver Lake, White Ash Lake, and North White Ash Lake.



Polk County purple loosestrife sites as of December, 2013.



Polk County beetle release sites as of December, 2013.



Japanese and Giant Knotweed

Both Japanese and giant knotweed are native to Asia and were imported to the United States in the mid 1900's as ornamental plants. These species have begun to escape landscaping conditions, becoming more prevalent in the wild.

Japanese and giant knotweed are large robust perennial plants with very aggressive growth habits. Both species grow extremely fast and form a dense canopy of foliage which blocks sunlight from reaching the ground. As a result, native vegetation is unable to grow beneath a knotweed stand. When knotweed establishes on stream banks, the lack of understory can promote intense erosion causing soil and knotweed roots to move downstream.

Knotweed is a perennial, meaning that each spring it re-grows from its extensive root system. In the peak growing season knotweed can grow two to four inches per day. The maximum height of Japanese knotweed is 8 to 10 feet tall; whereas, giant knotweed can reach heights of 12 to 15 feet.

While height is one way to distinguish Japanese and giant knotweed, it is not the most reliable. Leaf size and shape are the most reliable way to distinguish the two species of knotweed. Typically, Japanese knotweed leaves are up to 6 inches in length with flat or truncated leaf bases. Giant knotweed leaves are much larger, growing up to 12 inches in length. The leaves of giant knotweed also differ slightly in shape, taking on a pronounced heart shape.

Both species of knotweed are easily distinguished by their hollow bamboo-like stalks. Additionally, in the late summer both species develop sprays of white flowers which are favored by bees and flies. Both species of knotweed are dioecious, meaning that a male and female plant are required to produce viable seed.

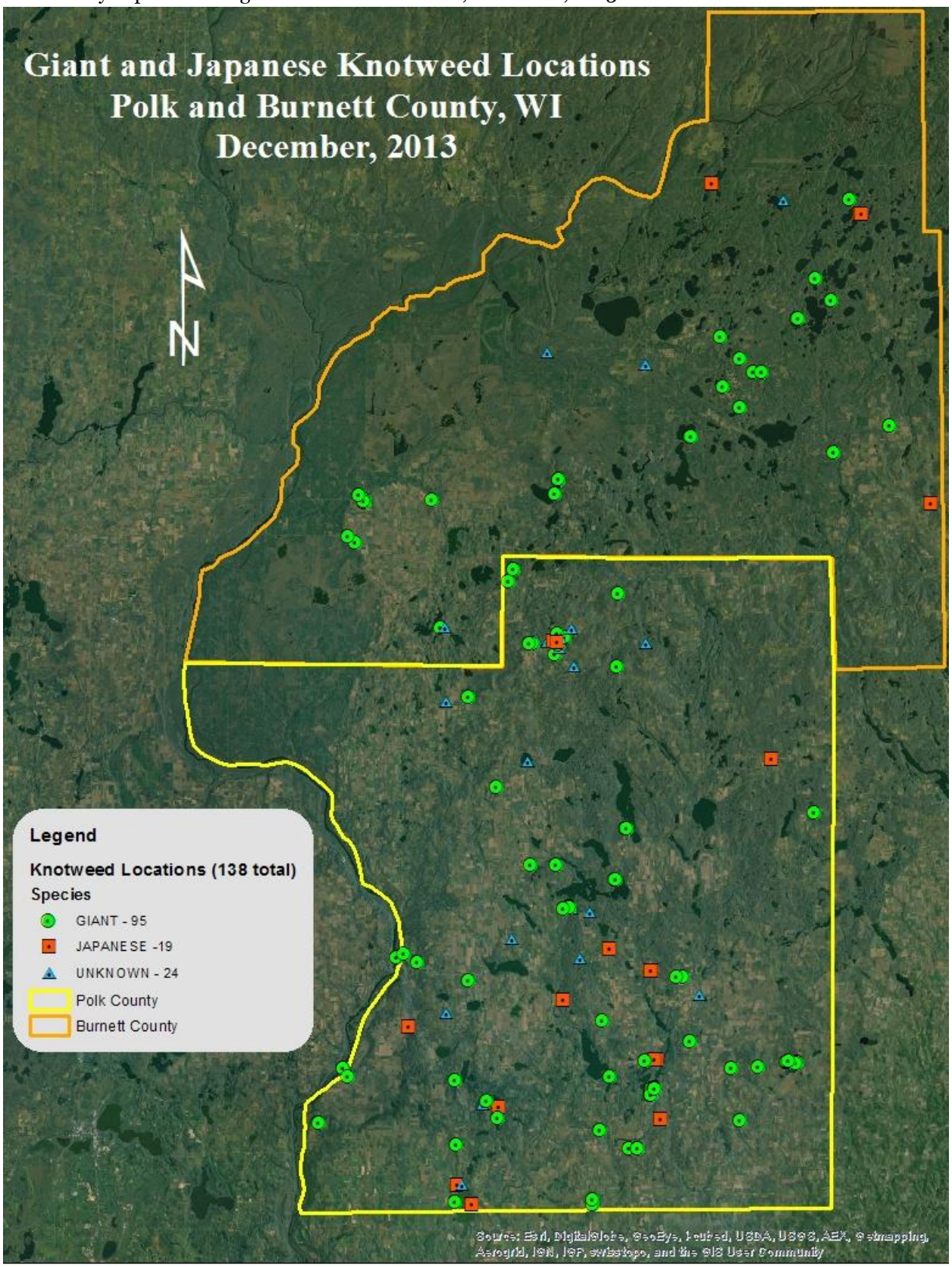
Since knotweed was sold as an ornamental it was thought that cultivars would not produce viable seed. However, as time passed, imports from many sources have likely introduced knotweed colonies of the opposite sex, making germination by seed a likely source for reproduction. In 2011, seed collected from a Polk County knotweed stand were analyzed by UW-Madison and found to be viable.

In addition to seed production, both species of knotweed can establish new clones from cut stems and root segments. Cut stems can develop roots at each node along the stem and a root segment as small as ¼ inch can develop into a new stand of knotweed.

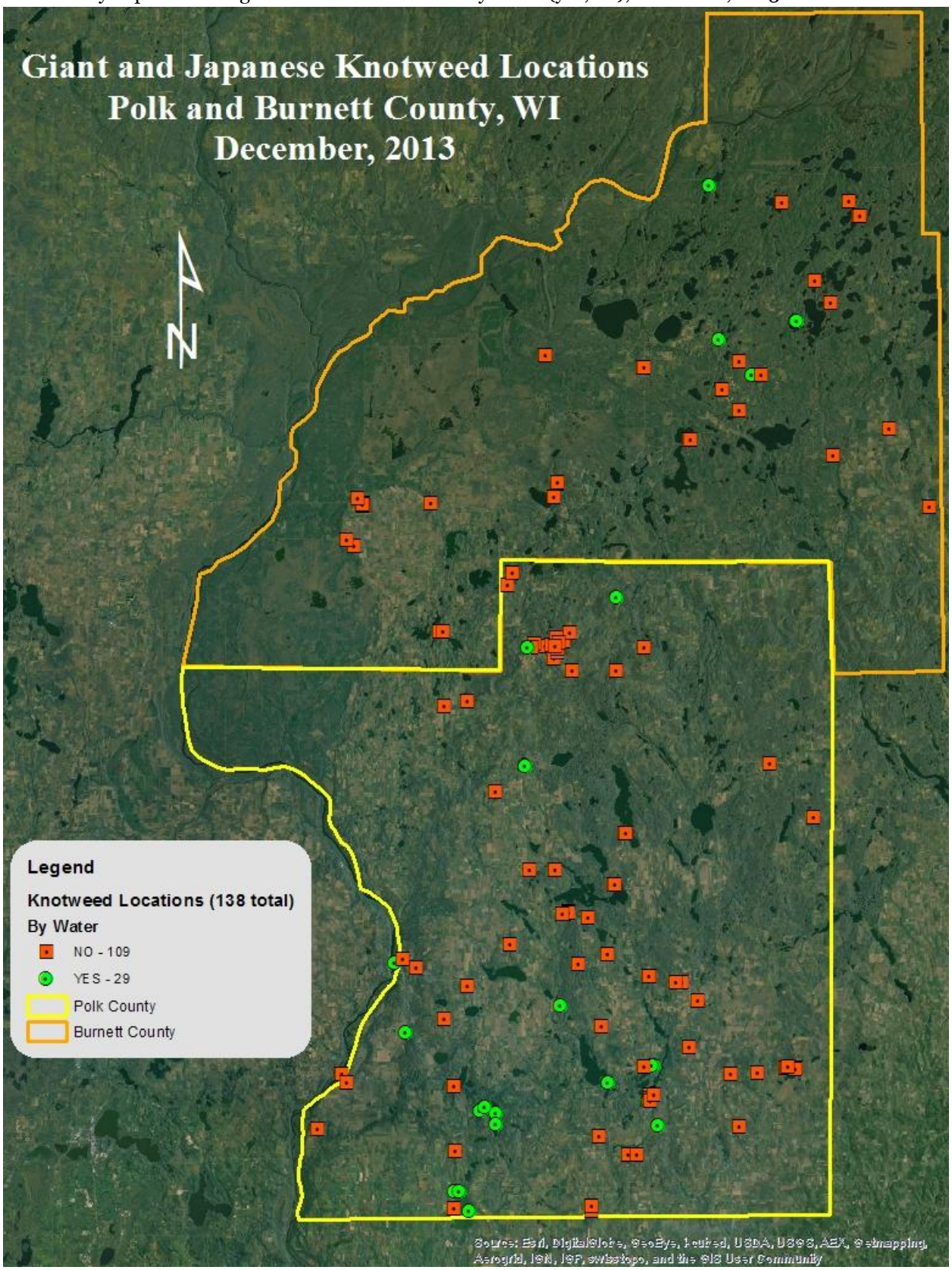
Knotweed is rhizominous, producing horizontal growing roots that can extend 60 ft from the parent colony. Rhizomes are responsible for colony expansion, making this species especially difficult to control.

Japanese and giant knotweed were first discovered in Polk County in 2009. As of 2013, knotweed has been documented at 93 sites in Polk County. In 2012 and 2013 knotweed control measures were conducted by LWRD under an early detection and response grant. The report for this grant can be located in the Appendix files for this report.

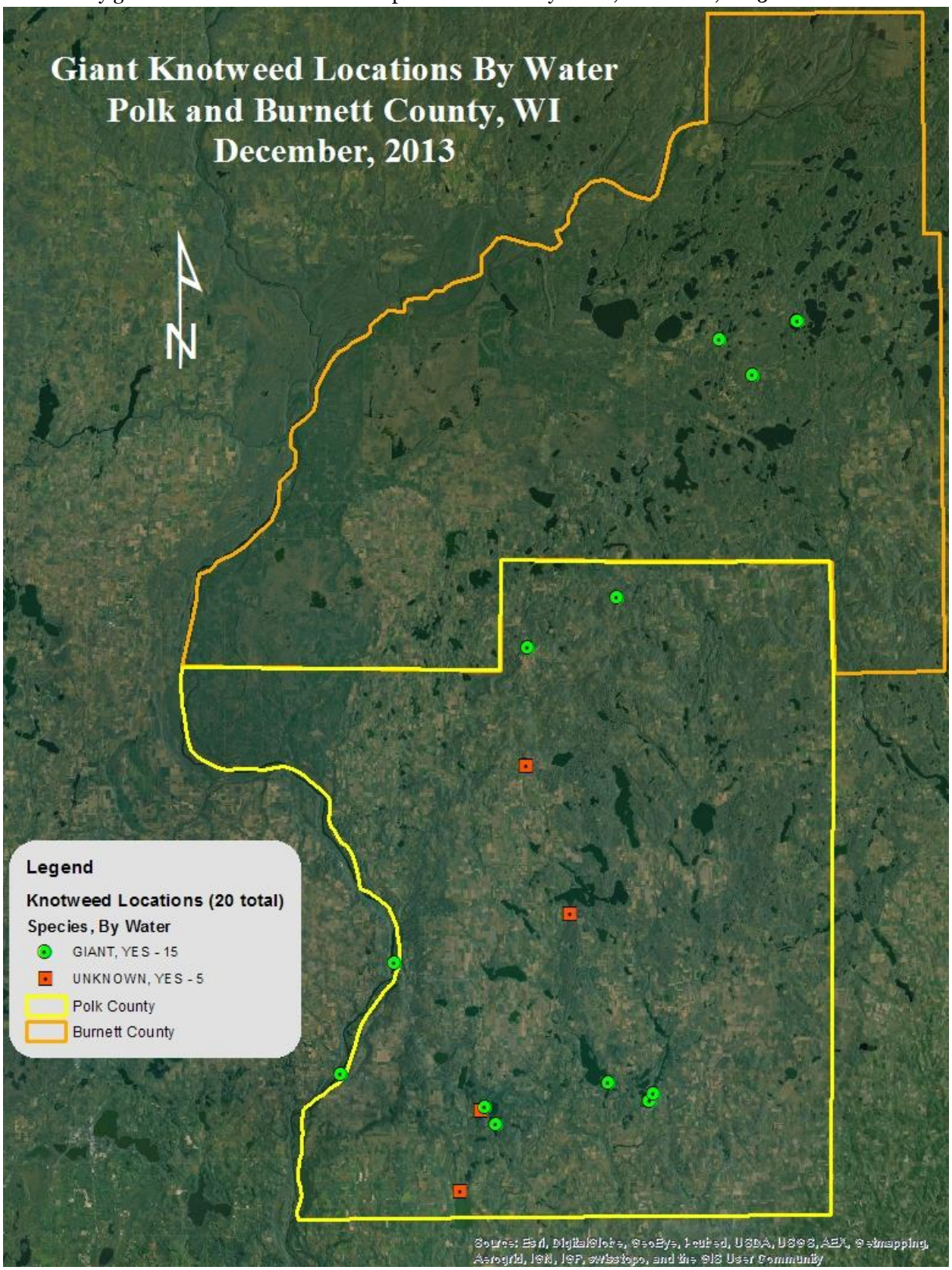
Polk County Japanese and giant knotweed locations, December, 2013.



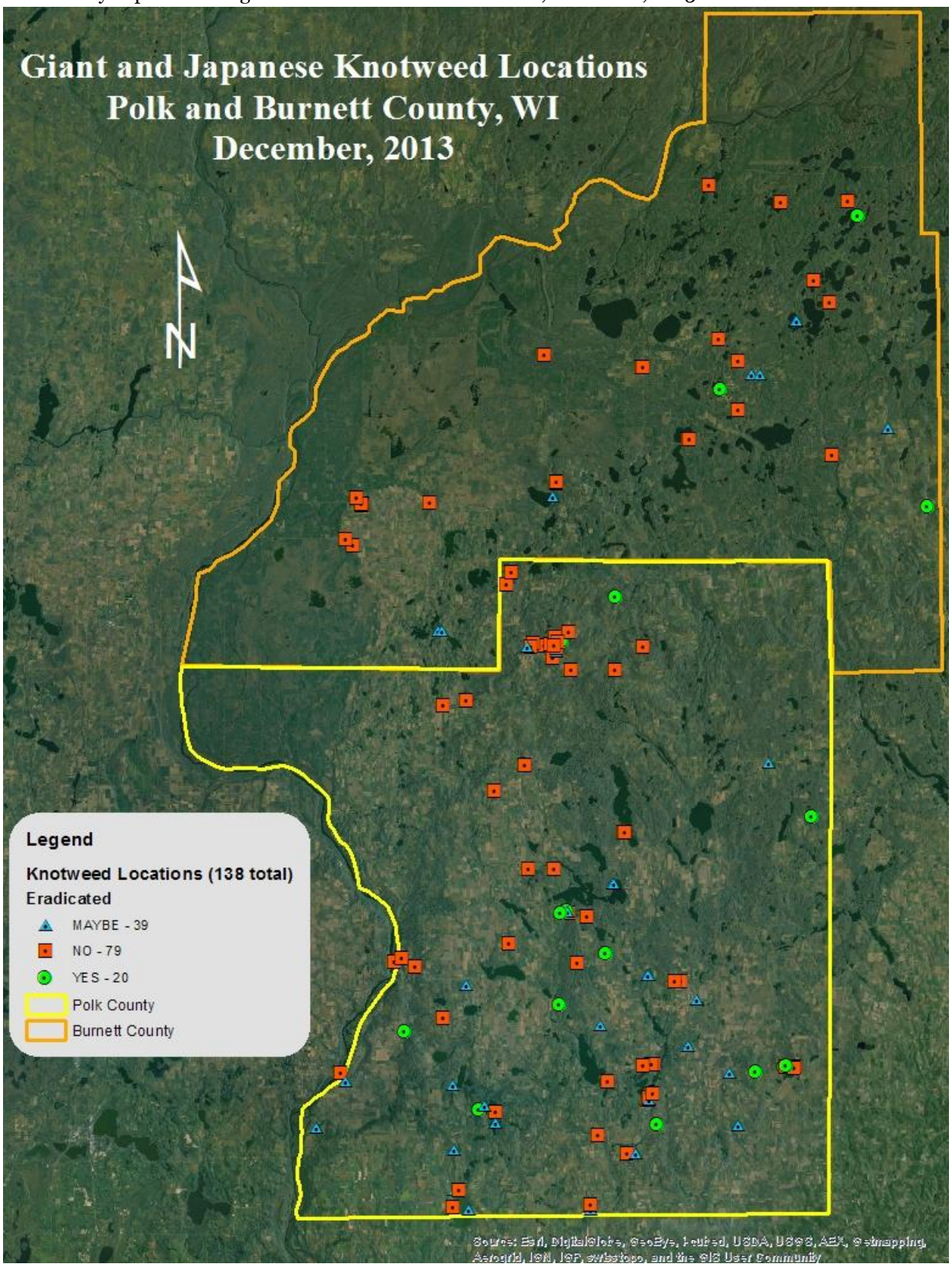
Polk County Japanese and giant knotweed locations by water (yes, no), December, 2013.



Polk County giant knotweed and unknown species locations by water, December, 2013.



Polk County Japanese and giant knotweed eradication status, December, 2013.



Zebra Mussels

Zebra mussels are aquatic invasive mussels with a D-shaped shell exhibiting alternating black and white stripes. Since they are able to attach to hard surfaces, zebra mussels can clog water intakes and damage equipment such as boat motors. When water bodies are infested with zebra mussels their shorelines become littered with sharp shells, impeding human recreational opportunities. Additionally, zebra mussels damage ecosystems by harming fisheries and smothering native mussels, snails, and crayfish.

Zebra mussels arrived in the Great Lakes in the late 1980's from contaminated ballast water. Since that time they have expanded in range via the Mississippi River. Zebra mussels have not been found in Polk County; however, in 2010 they were discovered in Bass Lake in St. Croix County.

The following lakes in the Horse Creek watershed were monitored for adult zebra mussels in 2012 and 2013 due to their proximity to Bass Lake: Big/Round/Church Pine Lakes, Lotus Lake, Paulsen Lake, and Pine Lake.

Zebra mussels, Bass Lake, St. Croix County, 2010.

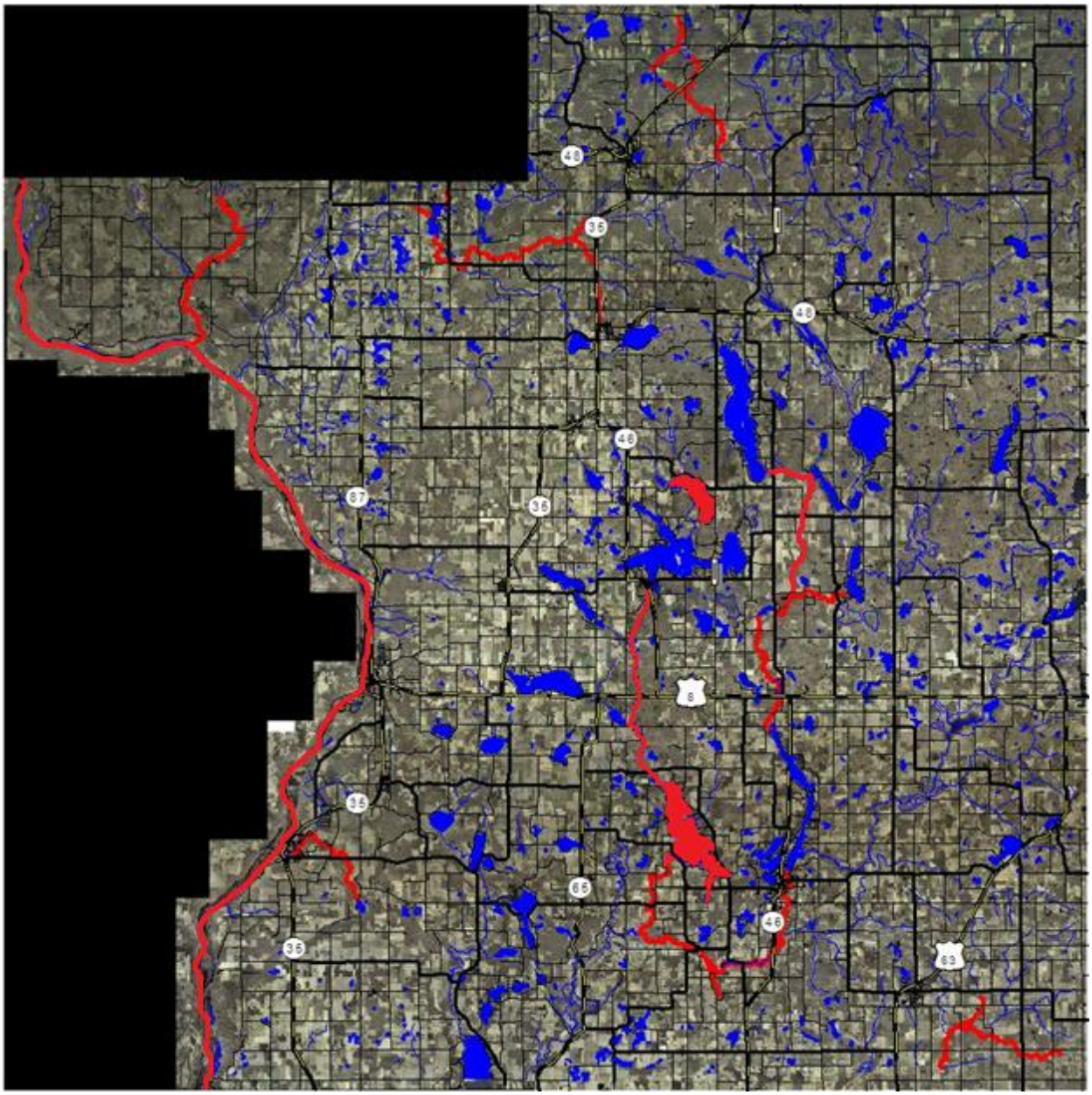
Rusty Crayfish

Rusty crayfish are invasive crustaceans that can have profound impacts on lakes, rivers, and streams. They are more aggressive than native crayfish and are better able to avoid predation than native crayfish. Rusty crayfish can also harm native fish populations by eating their eggs and young.

In August 2012 LWRD assisted in the positive identification of rusty crayfish brought in by a volunteer from Fox Creek.

Photo credit: WDNR

Rusty crayfish have been documented on 10 Polk County waterbodies as of December, 2013 including: Apple River, Balsam Branch, Fox Creek, Half Moon Lake, Osceola Creek, St. Croix River, Trade River, Wapogasset Lake, Willow River, and Wood River.



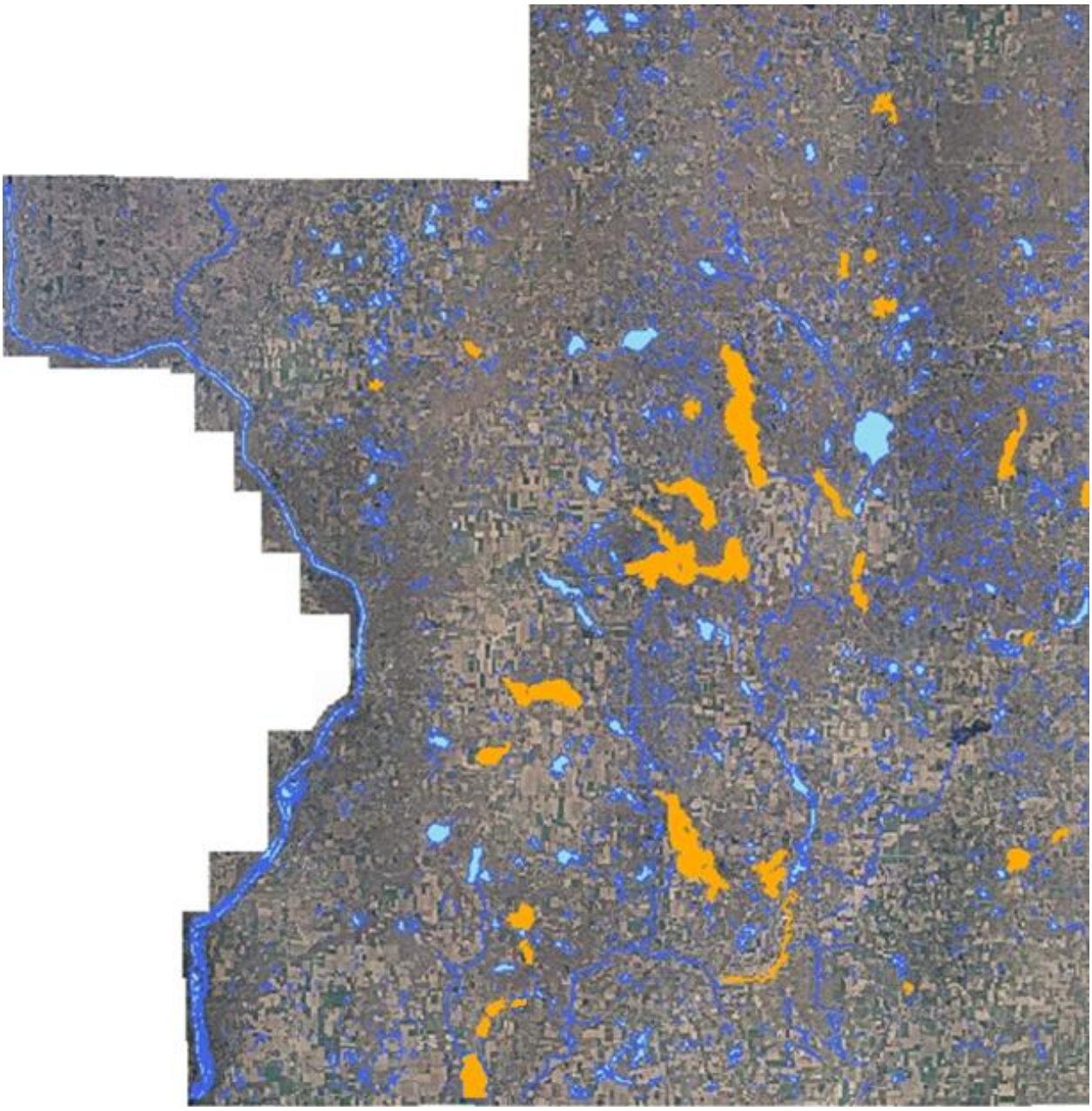
Chinese Mystery Snail

Chinese mystery snails were imported to the west coast in the late 1800's as a food source for the Asian market and have spread via aquarium release and other accidental and intentional introductions. When introduced to a new water body, the Chinese mystery snail alters the ecosystem composition, structure, and function by competing with native snails for food and space.

Populations of Chinese mystery snails are now established in many Northern Wisconsin lakes. At this time Chinese mystery snails have been documented in 35 waterbodies in Polk County.

Sand Lake, 2013.

Chinese mystery snails have been documented on 35 Polk County waterbodies as of December, 2013 including: Antler Lake, Apple River, Balsam Lake, Bear Trap Lake, Big Blake Lake, Big Lake, Black Brook Flowage, Bone Lake, Camelia Lake, Cedar Lake, Church Pine Lake, Clam Falls Flowage, Clear Lake, Deer Lake, Half Moon Lake, Horseshoe Lake, Lower Pine Lake, Magnor Lake, McKenzie Lake, Middle Pine Lake, North Pipe Lake, North Twin Lake, Pike Lake, Pine Lake, Pipe Lake, Sand Lake, Sandhill Lake, Silver Lake, South Twin Lake, Staples Lake, Swede Lake, Wapogasset Lake, Ward Lake, White Ash Lake, and North White Ash Lake.



Banded Mystery Snails

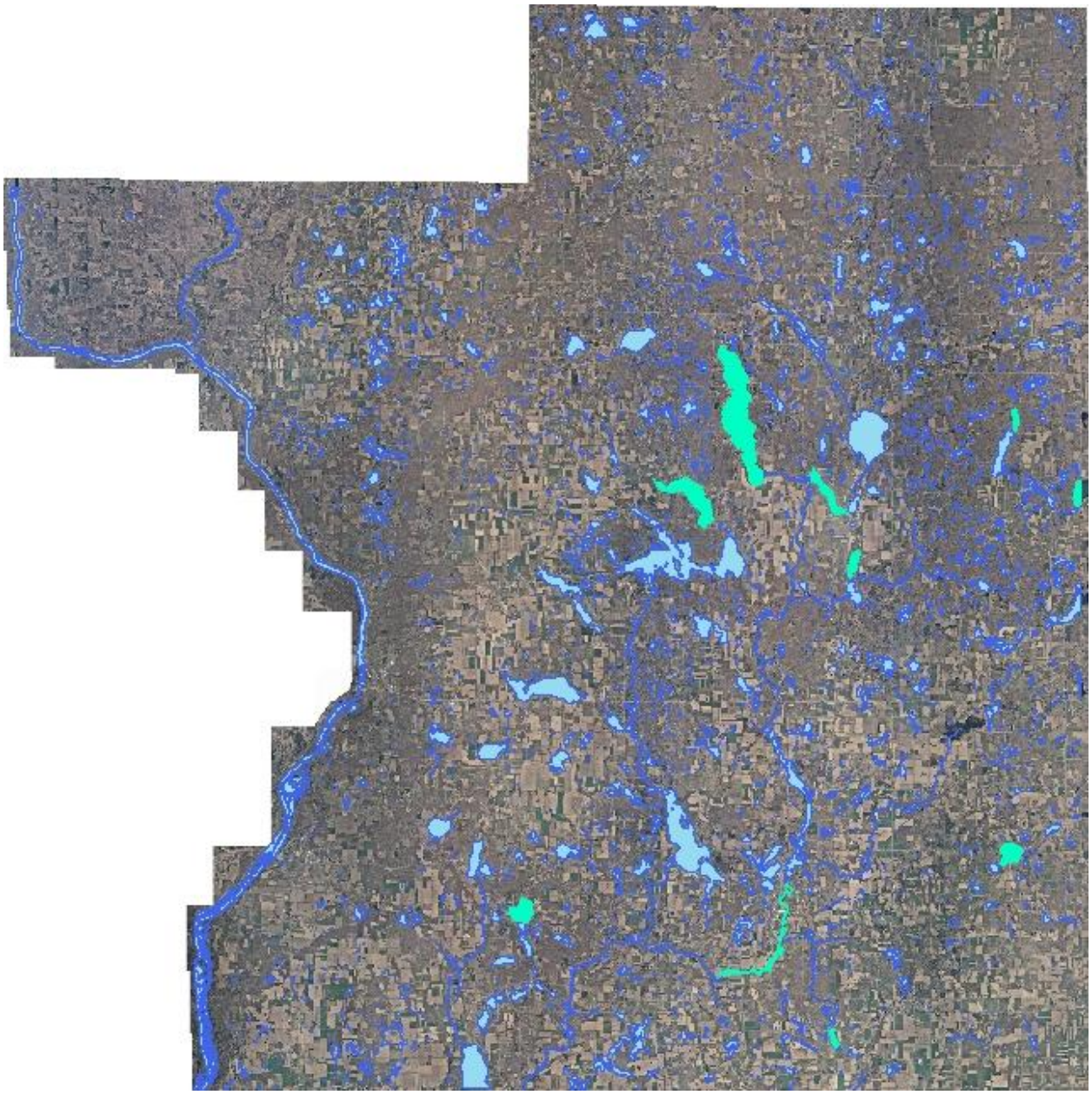
Banded mystery snails are native to the southeastern United States, being found primarily in the Mississippi River System up to Illinois. This invasive snail species is popular in the aquarium trade which likely explains it's presence outside its native range.

Besides causing aesthetic problems, banded mystery snails can cause mortality of largemouth bass embryos if nests are invaded.

The banded mystery snail is easily distinguished by the presence of reddish bands which are arranged parallel to the whorl of the shell.

Banded mystery snails were first documented in Polk County in 2003 in Half Moon Lake. Although their spread had continued, they are still much less common in Polk County as compared with the Chinese mystery snail and have been documented on only 10 Polk County waterbodies as of December, 2013.

Banded mystery snails have been documented on 10 Polk County waterbodies as of December, 2013 including: Big Blake Lake, Big Lake, Black Brook Flowage, Bone Lake (2454400), Bone Lake (2628100), Half Moon Lake, Magnor Lake, North Pipe Lake, North White Ash Lake, and Staples Lake.



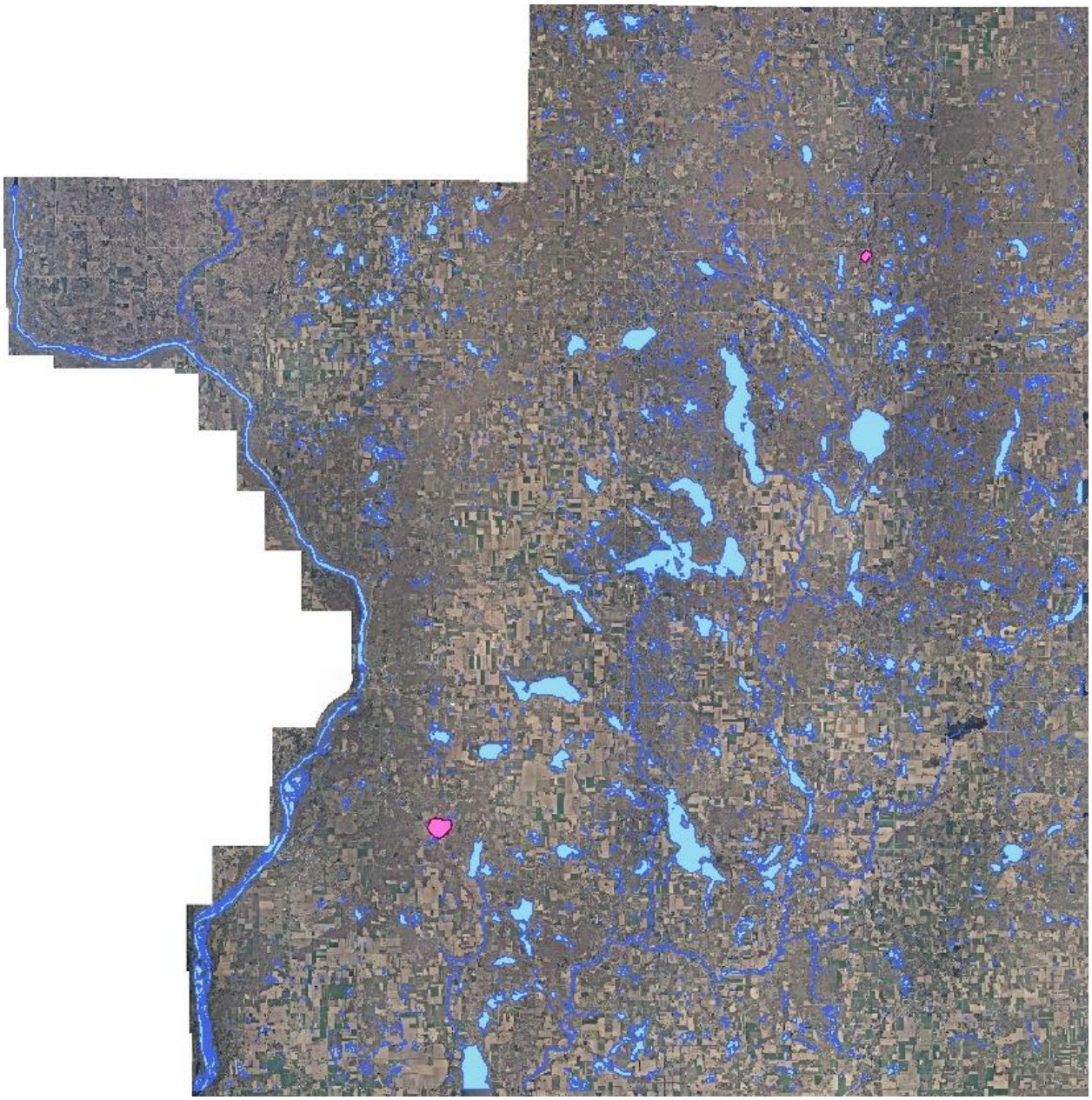
Phragmites

Phragmites is a wetland grass that invades moist habitats, although it can tolerate dry conditions. It can grow from 3-20 feet in height and has dull, rigid, hollow stems.

Phragmites has only been documented on two Polk County lakes: Lotus Lake and McKenzie Lake.

A comprehensive effort to inventory phragmites has never occurred in Polk County.

Phragmites has been documented on 2 Polk County lakes as of December, 2013 including:
Lotus Lake, McKenzie Lake.



Clean Boats, Clean Waters

The Clean Boats, Clean Waters program is an opportunity for citizens to conduct a boater education campaign in their community. Through Clean Boats, Clean Waters, volunteers are trained to organize and conduct watercraft inspections that help stop the movement of aquatic invasive species across the state.

Polk County LWRD provided Clean Boats Clean Waters training for two lake organizations in 2012 and three lake organizations in 2013.

Balsam Lake, April 24th, 2012: 29 participants

Horseshoe Lake, June 9th, 2012: 36 participants

Balsam Lake and Long Lake, April 16th, 2013: 19 participants

Church Pine, Round, and Big Lakes, May 11th, 2013: 4 participants

Balsam Lake and Long Lake CBCW Training, 2013.

Additionally, LWRD presented an overview of the Clean Boats Clean Waters program at the Big Round Lake District Annual Meeting on June 23rd, 2012. This presentation included a copy of the data collection sheet for each attendee.

LWRD also provided answers about the Clean Boats, Clean Waters program to lake organizations interested in starting a Clean Boats, Clean Waters program including the Apple River Flowage, Amery Lakes, Big Butternut Lake, Paulsen Lake, and Wild Goose Lake.

Balsam Lake CBCW Training, 2012.

Clean Boats, Clean Waters Story Hour

In 2012, LWRD implemented the Clean Boats, Clean Waters Story Hour developed by the WDNR for nine groups across Polk County.

- ✓ Balsam Lake Library, June 13th: 10 participants
- ✓ Dresser Library, June 25th: 18 participants
- ✓ Clear Lake Library, June 27th: 11 participants
- ✓ Clear Lake Library, June 28th: 13 participants
- ✓ Family Camp at West Denmark Church, July 3rd: 13 participants
- ✓ Milltown Library, July 10th: 23 participants
- ✓ Amery Library, July 25th: 90+ participants
- ✓ Osceola Library, July 25th: 5 participants
- ✓ St. Croix Falls Library, August 1st: 15 participants

Dresser Library CBCW Story Hour, 2012.

Landing Blitz

In 2013, LWRD assisted in organizing the Landing Blitz by providing information to all lake organizations in the County and gathering participant information. Nineteen Polk County Lakes participated in the 2013 Landing Blitz including:

- ✓ The Apple River Flowage
- ✓ Pike Lake
- ✓ North Twin Lake
- ✓ South Twin Lake
- ✓ Big Round Lake
- ✓ Bone Lake
- ✓ Balsam Lake
- ✓ Big Butternut Lake
- ✓ Pipe Lake
- ✓ North Pipe Lake
- ✓ Half Moon Lake
- ✓ North White Ash Lake
- ✓ White Ash Lake
- ✓ Church Pine Lake
- ✓ Big Lake
- ✓ Lake Wapogasset
- ✓ Bear Trap Lake
- ✓ Big Blake Lake
- ✓ Paulsen Lake

LWRD wrote a press release regarding the nineteen Polk County lakes participating in the Landing Blitz. The article was published in all local papers including: the Leader, the Ledger, the Osceola Sun, and the Amery Free Press. LWRD also served as a central location for picking up the free Landing Blitz towels.

Project RED (Riverine Early Detectors)

In 2013 LWRD partnered with the St. Croix River Association, the National Park Service, the River Alliance, and the Wisconsin Department of Natural Resources to offer two Project RED trainings.

The first training was held on July 16th, 2013 and was attended by 12 volunteers. The second training occurred on July 27th, 2013 and was attended by 9 volunteers. Although both trainings were scheduled to include a paddle, the second group decided to forgo the paddle due to severe weather.

In total, 5 volunteers monitored a total of 35 times in 2013. Data that has been verified has been entered into SWIMS.

Project RED, 2013.

Education and Outreach

Polk County LWRD delivered AIS education and outreach at numerous events and meetings throughout Polk County for a variety of audiences.

- ✓ Earth Day at the Recycling Center (4th and 5th graders County-wide), April 20th, 2012
- ✓ Clayton School 3rd grade field trip, May 29th, 2012
- ✓ Loveless Lake Association, May 2012 Newsletter
- ✓ NW WI Lakes Conference (display board), June 21st, 2012
- ✓ White Ash Lakes District Fair, June 23rd, 2012
- ✓ Wild Goose Lake Annual Meeting, July 14th, 2012
- ✓ 2012 Polk County Fair Education Tent: July 26th-29th, 2012
- ✓ Loveless Lake, August Newsletter 2012
- ✓ Bone Lake Annual Meeting, August 11th, 2012 (display board and specimens)
- ✓ Hunters Night Out, August 29th, 2012
- ✓ Amery 4th grade presentation, September 27th, 2012
- ✓ Boy Scouts Invasive Species Merit Badge Pilot, October 6th, 2012
- ✓ Mr. Y's St. Croix Falls 5th grade camp, October 9th, 2012
- ✓ Amery Lakes, 2012 newsletter
- ✓ Osceola 4th grade presentation, March 22nd, 2013
- ✓ Luck High School Conservation Class presentation, May 9th, 2013
- ✓ Amery Free Press AIS article, May 28th, 2013
- ✓ Clayton School 3rd grade field trip, June 3rd, 2013
- ✓ NW WI Lakes Conference (display board), June 21st, 2013
- ✓ Big Round Annual Meeting, June 22nd, 2013
- ✓ Family Camp, July 1st, 2013
- ✓ 2013 Polk County Fair Education Tent, July 25th-28th, 2013
- ✓ Ward Lake AIS plant training, August 9th, 2013
- ✓ LCC Committee presentation, August 14th, 2013
- ✓ County Board presentation, September 17th, 2013
- ✓ Clayton High School presentation, October 11th, 2013
- ✓ Amery School 5th grade presentation, October 18th, 2013
- ✓ Amery Lakes, 2013 newsletter

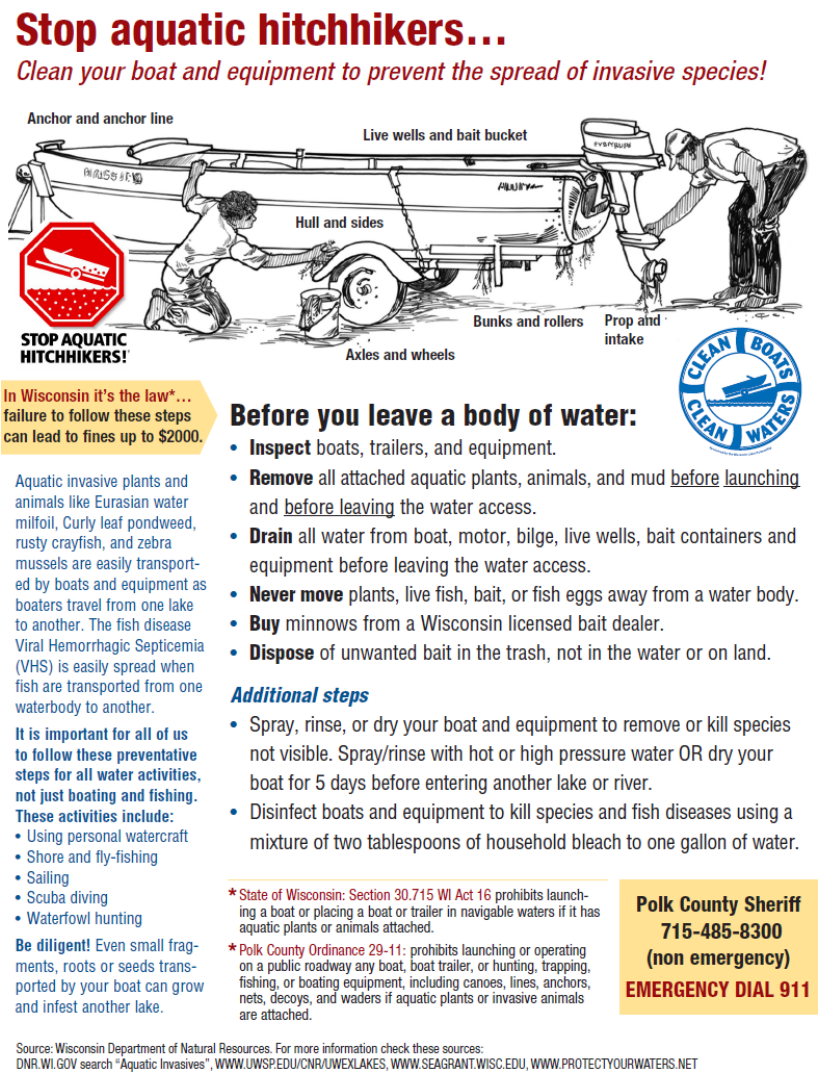
Lake Maps

Polk County LWRD, in collaboration with the Polk County Association of Lakes and Rivers, produced and printed lake/AIS flyers for seven lake organizations. The two sided flyers were printed in full color on waterproof paper, 8.5 x 11 inches. One side of the flyer has a contour bathymetric map of the lake with relevant information such as maximum depth, acres, and species of fish present and the other side of the flyer has AIS prevention information, Clean Boats, Clean Waters information, and emergency phone numbers.

Although the grant paid for the professional design work of the flyers, lake organizations were required to pay for individual printing costs.

Participating lakes included:

- ✓ Pipe and North Pipe Lakes
- ✓ Apple River Flowage
- ✓ Big Butternut Lake
- ✓ Bone Lake
- ✓ Big, Round, and Church Pine Lakes
- ✓ Big Blake Lake
- ✓ Balsam Lake



Lake Map Flyer.

AIS Signs

In 2012 and 2013 an extensive effort was made to install the new WDNR AIS signs at Polk County Boat Landings. Whenever possible, outdated AIS signage was removed. LWRD provided signs to numerous lake organizations. Lakes where volunteers installed signs provided by LWRD are indicated with an * below.

Signs were installed at the following lakes (multiple landings are indicated in parenthesis):

- ✓ Diamond Lake
- ✓ Godfrey Lake
- ✓ Somers Lake
- ✓ Clam Falls Flowage
- ✓ Long Trade Lake
- ✓ Coon Lake
- ✓ Herby Lake
- ✓ Little Mirror Lake
- ✓ Sandhill Lake (2)
- ✓ Big Twin Lake
- ✓ Little Butternut Lake
- ✓ Big Butternut Lake
- ✓ Rice Lake
- ✓ Half Moon Lake (2) *
- ✓ Bone Lake
- ✓ Big Round Lake *
- ✓ Pipe Lake *
- ✓ Big Blake Lake (2) *
- ✓ Little Blake Lake
- ✓ Balsam Lake (4) *
- ✓ Long Lake (Johnston) *
- ✓ Long Lake (Centuria) (2)
- ✓ Loveless Lake
- ✓ Wild Goose Lake *
- ✓ White Ash Lake (3) *
- ✓ North White Ash Lake *
- ✓ Horseshoe Lake *
- ✓ Lake Wapogasset (3)
- ✓ Deer Lake
- ✓ Sand Lake
- ✓ Bridget Lake
- ✓ Apple River Flowage (2) *
- ✓ Magnor Lake
- ✓ Camelia lake
- ✓ Clear Lake
- ✓ Pike Lake
- ✓ North Twin Lake
- ✓ South Twin lake
- ✓ Pike Lake
- ✓ King Lake
- ✓ Black Brook Flowage
- ✓ Lotus Lake
- ✓ Horse Lake
- ✓ Dwight Lake
- ✓ Church Pine Lake *
- ✓ Paulsen Lake *
- ✓ Swede Lake
- ✓ Lower Pine Lake
- ✓ Cedar Lake

AIS Billboard

In August 2012 an AIS billboard was installed along HWY 87 north of the Lions Park in St. Croix Falls. The billboard was designed by the Wisconsin Lakes Partnership. The billboard serves as a reminder that Wisconsin state law requires everyone to inspect boats, trailers, and equipment; remove all attached aquatic plants, animals, and mud before launching / leaving the water access; and to drain water from all equipment before leaving the water access.

Additionally, in 2013 LWRD partnered with the Bone Lake Management District and Wildlife Forever to locate billboard space along HWY 8 near the Wisconsin/Minnesota boarder. Unfortunately, there were no available billboard spaces for 2013. However, banners were purchased through this partnerships for the 2013 season (banners were not purchased by LWRD).

AIS billboard, Hwy 87.

Protect Wisconsin Waters/It's the Law Media Campaign

Whenever applicable, Polk County LWRD submitted news articles to promote the AIS educational message to local newspapers. Articles were published related to:

- ✓ Balsam Lake Clean Boats, Clean Waters Training
- ✓ Horseshoe Lake Clean Boats, Clean Waters Training
- ✓ Balsam Lake Clean Boats, Clean Waters and AIS laws
- ✓ Purple Loosestrife Beetle Rearing Project with Luck Girl Scouts
- ✓ Osceola Clean Boats, Clean Waters Story Hour
- ✓ AIS Billboard
- ✓ Healthy Lakes
- ✓ Landing Blitz Participation by 19 Polk County Lakes
- ✓ Zebra Mussel Fall Detection

Additionally, LWRD was interviewed by the Leader regarding the early detection smart prevention protocol although an article was never published.

LWRD was also a featured guest on WPCA radio bi-weekly throughout the 2012 and 2013 year. Interviews were used as an opportunity to discuss AIS.

The Polk County LWRD also filmed and produced three videos related to invasive species. Film topics included identification and control of three aquatic invasive species:

- ✓ Eurasian water milfoil
- ✓ Japanese and giant knotweed
- ✓ Purple loosestrife

Films were posted to YouTube and are available for viewing at the Polk County Land and Water Resources Department website: www.co.polk.wi.us/landwater/videos.asp

Lastly, LWRD distributed Babe Winkelman AIS wallet size maps and the WDNR Stop Aquatic Hitchhikers brochures to area sporting goods and bait shops. Additionally, LWRD distributed the WDNR Stop Aquatic Hitchhikers brochures at area libraries, convenience stores, and coffee shops where display areas were available.

YouTube videos.

Augmented Enforcement

In 2012, Polk County LWRD partnered with the Polk County Sheriff's Department and planned to provide augmented enforcement of the Balsam Lake Boat Landing on the morning of Saturday, June 30th to coordinate with the 4th of July festivities during Balsam Lake's Freedom Festival. However, due to other priorities deputies were not able to provide augmented enforcement. A similar attempt was made to provide augmented enforcement in 2013. As another attempt to fulfill this grant requirement, LWRD contacted the Polk County Water Guard in regards to providing a presentation and decontamination unit for Polk County in 2013.

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

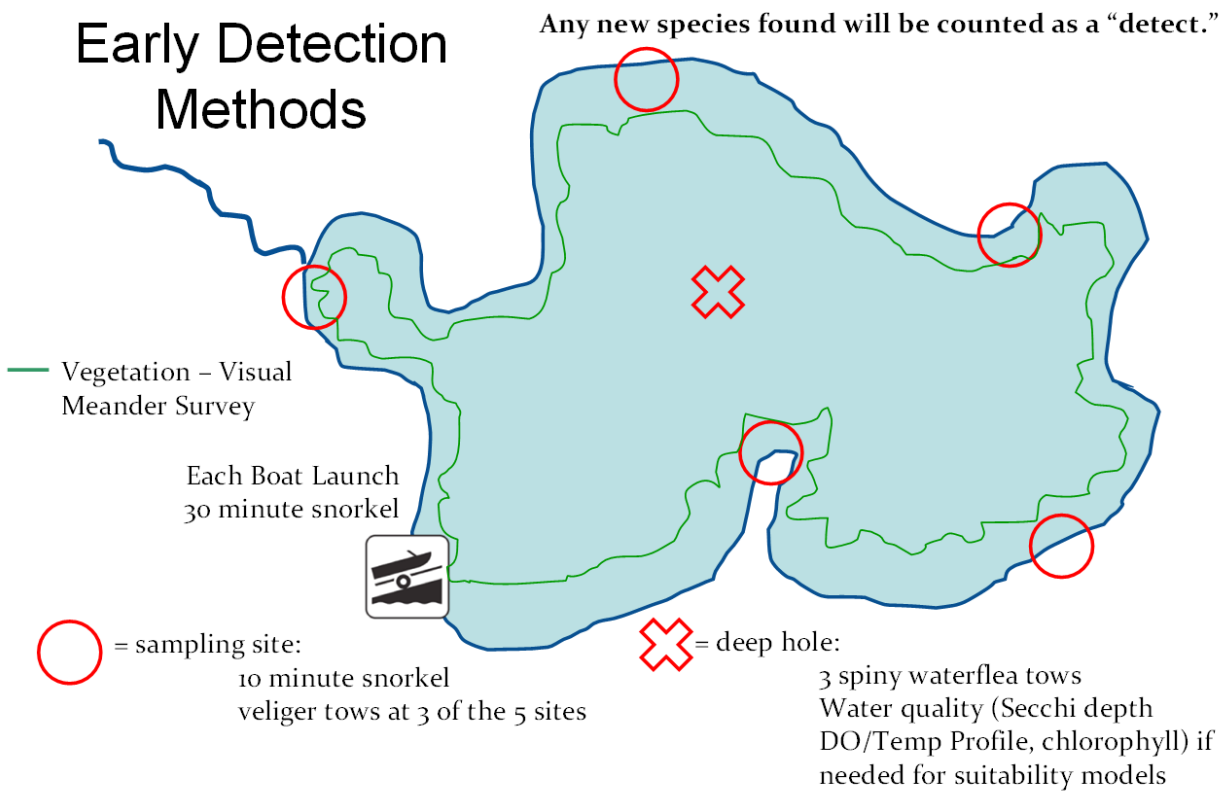
- Check equipment list (Appendix B).
- Print Early Detection Form (Appendix C) on waterproof paper.
- Specimen labels from the State Lab of Hygiene which may be obtained from the DNR central office AIS program staff.

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:

1) if lake is **deeper than 6 meters** (~19.7 feet), then collect each tow **4 meters** (~13.1feet) from the surface; or
2) 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 gandland@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 A

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 monitoring throughout 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.

To identify invasive Eurasian water-milfoil count the individual leaflets per leaf (leaves grow in whorls of four). The plant often has pinkish or red colored flexible stems.

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/

DRAFT

APPENDIX B

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 C

Lake Name	County	WBIC	AIS sign? Y N	Secchi (ft or m)	Conductivity (ZM tow if ≥ 99 umhos/cm)
Date(s)	Data collectors	Start time (nearest 15 min)		End time (nearest 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 D

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 fishook 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 E

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 F

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 G

	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*

Lake	WBIC	Date	Secchi depth (ft)	Conductivity (µs/s)	AIS present	Density	Latitude	Longitude
North Twin	2623900	7/5/12	14	234	Chinese mystery snail	1 1 1 1 1	45.18822 45.18716 45.18964 45.19074 45.18935	92.21982 92.22254 92.22246 92.21937 92.21869
					Purple loosestrife	1	45.18742	92.22507
Ward Lake	2599400	7/30/12	7	42	Chinese mystery snail	1 1 1 1 2 1	45.36184 45.36076 45.36219 45.36506 45.36649 45.36504	92.19398 92.19121 92.19136 92.19119 92.19200 92.19286
White Ash Lake	2628600	7/31/12	2.5	223	Chinese mystery snail	3 1 3 3 1 3	45.26784 45.26960 45.27166 45.27119 45.26929 45.26714	92.18373 92.18614 92.18866 92.18722 92.18829 92.18757
					Purple loosestrife	1 1	45.26962 45.27145	92.18970 92.18975
					Narrow leaf cattail	1	45.26714	92.18757
Antler Lake	2449400	8/3/12	10.5	35	Chinese mystery snail	1 2 4 2 1 1	45.32460 45.32139 45.32287 45.32248 45.32380 45.32294	92.25542 92.25647 92.25359 92.25177 92.25383 92.25615
Camelia Lake	2079400	8/10/12	4	43	Chinese mystery snail	1 1 1 1 1	45.20059 45.20139 45.20184 45.19939 45.20018	92.10359 92.10307 92.10332 92.10779 92.10657
					Narrow leaf cattail along shoreline			
Big Blake Lake	2627000	8/13/12 8/23/12	1.5	167	Chinese mystery snail	1	45.29402	92.19438
					Banded mystery snail shell at 3 sites			
Big Lake	2615900	8/27/12	4	183	Purple loosestrife	3 1 1	45.17446 45.18115 45.17658	92.32183 92.32301 92.32957

					Chinese mystery snail	1 1 1 1	45.17446 45.18115 45.17808 45.17732	92.32183 92.32301 92.32816 92.31939
					Curly leaf pondweed	1	45.17658	92.32957
					Banded mystery snail shell at 1 site			
Big Blake Lake	2627000	8/13/12 8/23/12	1.5	167	Chinese mystery snail	1	45.29402	92.19438
Pine Lake	2490400	7/10/13	16	64	Chinese mystery snail	1	45.15073	92.33746
					Curly leaf pondweed	1	45.15194	92.33270
Sand Lake	2495000	7/11/13			Chinese mystery snail	3 4 2 2 1 1	45.22423 45.22528 45.22463 45.22240 45.22194 45.22272	92.33274 92.33516 92.33976 92.34042 92.33823 92.33402
					Curly leaf pondweed	2 1 1 1 1 1	45.22423 45.22528 45.22463 45.22240 45.22194 45.22272	92.33274 92.33516 92.33976 92.34042 92.33823 92.33402
Big Blake Lake	2627000	7/18/13	4	190	Banded mystery snail	1 1 1	45.30443 45.29402 45.30217	92.20316 92.19438 92.20083
					Curly leaf pondweed	1 1 1 1 1	45.30443 45.29402 45.29947 45.30217 45.30263	92.20316 92.19438 92.19735 92.20083 92.20420

St. Croix River Monitoring

Date	Species	Density (1-3)	Lat	Long	Comment
8/27/13			45.35209	92.52978	
8/27/13			45.35695	92.53128	
8/27/13	CLP	1	45.35802	92.53139	1 plant
8/27/13	CLP	1	45.35915	92.53107	1 plant
8/27/13			45.34085	92.51889	Sunrise Landing
8/29/13	CLP	1	45.32427	92.43463	
8/29/13	CLP	1	45.32568	92.43592	
8/29/13	CLP	1	45.33020	92.44384	
8/29/13			45.33958	92.46034	Campsite
8/29/13			45.34070	92.46141	Trade River Inlet
8/29/13			45.34114	92.47206	
8/30/13	CLP	1	45.31454	92.43606	
8/30/13			45.31109	92.43597	Campsite
8/30/13			45.30544	92.43061	
8/30/13			45.29825	92.42295	Spanglers Landing
8/30/13			45.29624	92.42115	Campsite
8/30/13			45.32172	92.43416	Nevers Dam Landing
9/5/13	CLP	1	45.25836	92.38855	
9/5/13	EWM	1	45.25916	92.38839	
9/5/13	EWM	1	45.25968	92.38833	
9/5/13	EWM	1	45.26020	92.38826	
9/5/13	CLP, EWM	1,1	45.26115	92.38769	
9/5/13			45.26228	92.38694	Campsite
9/5/13	EWM	1	45.26309	92.38693	longer stretch of EWM
9/5/13	EWM	1	45.26365	92.38677	Rock Creek
9/5/13	CLP, EWM	1,1	45.26519	92.38708	
9/5/13	EWM	1	45.26654	92.38782	
9/5/13	EWM	1	45.26685	92.38803	
9/5/13	EWM	1	45.27106	92.39004	
9/5/13	EWM	1	45.27385	92.39204	
9/5/13			45.27494	92.39555	Campsite
9/5/13	EWM	1	45.27549	92.39669	
9/5/13	EWM	1	45.27640	92.39959	
9/5/13	EWM	1	45.27725	92.40207	
9/5/13	EWM	1	45.27793	92.40407	
9/5/13			45.28969	92.41634	Campsite
9/5/13			45.25415	92.38868	
9/5/13	EWM	2	45.25157	92.38904	Houseboats
9/11/13	CLP	1	45.23733	92.39489	WI Interstate Park Landing
9/11/13			45.23158	92.40211	Backwash south of landing

Purple Loosestrife Beetle Rearing Project

Purple Loosestrife

Adult Beetle

Beetle Larvae

Sixth graders with the Luck Girl Scout Troop are working with the Polk County Land and Water Resources Department to raise and release a tiny insect with a big appetite—the *Galerucella* beetle. These beetles feed extensively on the foliage of purple loosestrife, a wetland invasive plant that displaces native vegetation, provides little to no wildlife benefits, and has the potential to devastate wetland ecosystems.

Although small stands of purple loosestrife are easily managed by removing flowers and applying herbicide, extensive stands are best managed through beetle control. The beetles feed extensively on the foliage of purple loosestrife plants stressing the plant enough so that it is unable to produce seeds. Seed production is the main way purple loosestrife is spread from one area to the next, with a single plant capable of producing over a million seeds. As a result, using beetles to control purple loosestrife can result in long-term, sustainable population control.

The Girl Scouts—with LWRD assistance—first located and potted purple loosestrife plants and subsequently used aspirators to "suck" beetles into a vial. The girls next put a fine mesh cage around the plants and placed ten beetles on each plant. Since the plants are caged, beetles are allowed to reproduce free of predators and their populations quickly multiply into the hundreds. The Girl Scouts will be monitoring the beetles throughout the summer. Around July the beetles will be released at purple loosestrife sites in Polk County.

Luck Girl Scouts raise beetles for purple loosestrife control

LUCK – Sixth-graders with the Luck Girl Scout Troop led by Chelsey Foeller are working with Katelin Holm from the Polk County Land and Water Resources Department to raise and release a tiny insect with a big appetite – the galerucella beetle. Galerucella beetles feed extensively on the foliage of purple loosestrife, a wetland invasive plant that displaces native vegetation, provides little to no wildlife benefits, and has the potential to devastate wetland ecosystems. Although small stands of purple loosestrife are easily managed by removing flowers and applying herbicide, extensive stands are best managed through beetle control. The beetles feed extensively on the foliage of purple loosestrife plants stressing the plant enough so that it is unable to produce seeds. Seed production is the main way purple loosestrife is spread from one area to the next, with a single plant capable of producing over a million seeds. As a result, using beetles to control purple loosestrife can result in long-term, sustainable population control.

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If you are interested in raising galerucella beetles for purple loosestrife control and would like more information or are aware of any new stands of purple loosestrife in Polk County please contact Katelin Holm, katelin.holm@co.polk.wi.us, 715-485-8637. - *submitted*

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Luck Girls Scouts raise beetles for purple loosestrife control

Sixth graders with the Luck Girl Scout Troop led by Chelsey Foeller are working with Katelin Holm from the Polk County Land and Water Resources Department (LWRD) to raise and release a tiny insect with a big appetite—the Galerucella beetle.

Galerucella beetles feed extensively on the foliage of purple loosestrife, a wetland invasive plant that displaces native vegetation, provides little to no wildlife benefits, and has the potential to devastate wetland ecosystems. Although small stands of purple loosestrife are easily managed by removing flowers and applying herbicide, extensive stands are best managed through beetle control.

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If you are interested in raising Galerucella beetles for purple loosestrife control and would like more information or are aware of any new stands of purple loosestrife in Polk County please contact Katelin Holm, katelin.holm@co.polk.wi.us, (715) 485-8637.

Giant and Japanese Knotweed Control in Polk and Burnett Counties

Aquatic Invasive Species Early Detection and Response Project Grant Final Report

AIRR-102-11

Polk County Land and Water Resources Department
100 Polk County Plaza, Ste 120
Balsam Lake, WI 54810

In April 2011, the Polk County Land and Water Resources Department received a three year Aquatic Invasive Species Control Early Detection and Rapid Response Grant from the Wisconsin Department of Natural Resources to control Giant and Japanese Knotweed in Polk and Burnett Counties. This is the second rapid response grant received for control of these species in Polk and Burnett Counties.

Species Information

Both Japanese and Giant Knotweed are native to Asia and were imported to the United States in the mid 1900's as ornamental plants. These species have begun to escape landscaping conditions, becoming more prevalent in the wild.

Japanese and Giant Knotweed are large robust perennial plants with very aggressive growth habits. Both species grow extremely fast and form a dense canopy of foliage which blocks sunlight from reaching the ground. As a result, native vegetation is unable to grow beneath a knotweed stand. When knotweed establishes on stream banks, the lack of understory can promote intense erosion causing soil and knotweed roots to move downstream.

Knotweed is a perennial, meaning that each spring it re-grows from its extensive root system. In the peak growing season knotweed can grow two to four inches per day. The maximum height of Japanese Knotweed is 8 to 10 feet tall; whereas, Giant Knotweed can reach heights of 12 to 15 feet.

While height is one way to distinguish Japanese and Giant Knotweed, it is not the most reliable. Leaf size and shape are the most reliable way to distinguish the two species of knotweed. Typically, Japanese Knotweed leaves are up to 6 inches in length with flat or truncated leaf bases. Giant Knotweed leaves are much larger, growing up to 12 inches in length. The leaves of Giant Knotweed also differ slightly in shape, taking on a pronounced heart shape.

Both species of knotweed are easily distinguished by their hollow bamboo-like stalks. Additionally, in the late summer both species develop sprays of white flowers which are favored by bees and flies. Both species of knotweed are dioecious, meaning that a male and female plant are required to produce viable seed.

Since knotweed was sold as an ornamental it was thought that cultivars would not produce viable seed. However as time passed, imports from many sources have likely introduced knotweed colonies of the opposite sex, making germination by seed a likely source for reproduction.

In addition to seed production, both species of knotweed can establish new clones from cut stems and root segments. Cut stems can develop roots at each node along the stem and a root segment as small as ¼ inch can develop into a new stand of knotweed.

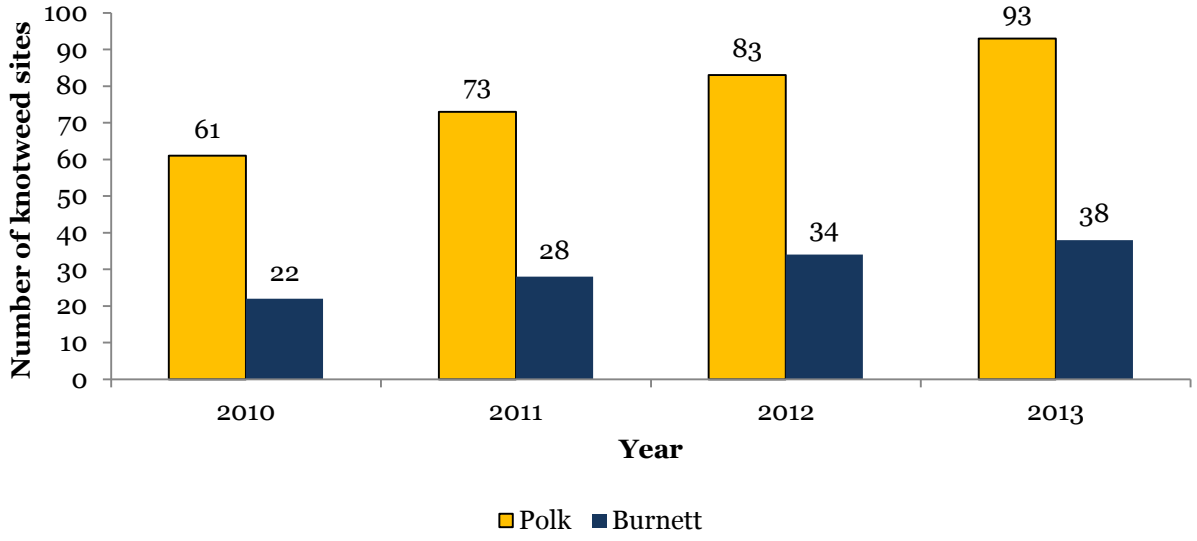
Knotweed is rhizominous, producing horizontal growing roots that can extend 60 ft from the parent colony. Rhizomes are responsible for colony expansion, making this species especially difficult to control.

Infestation Inventory

Total number of knotweed sites

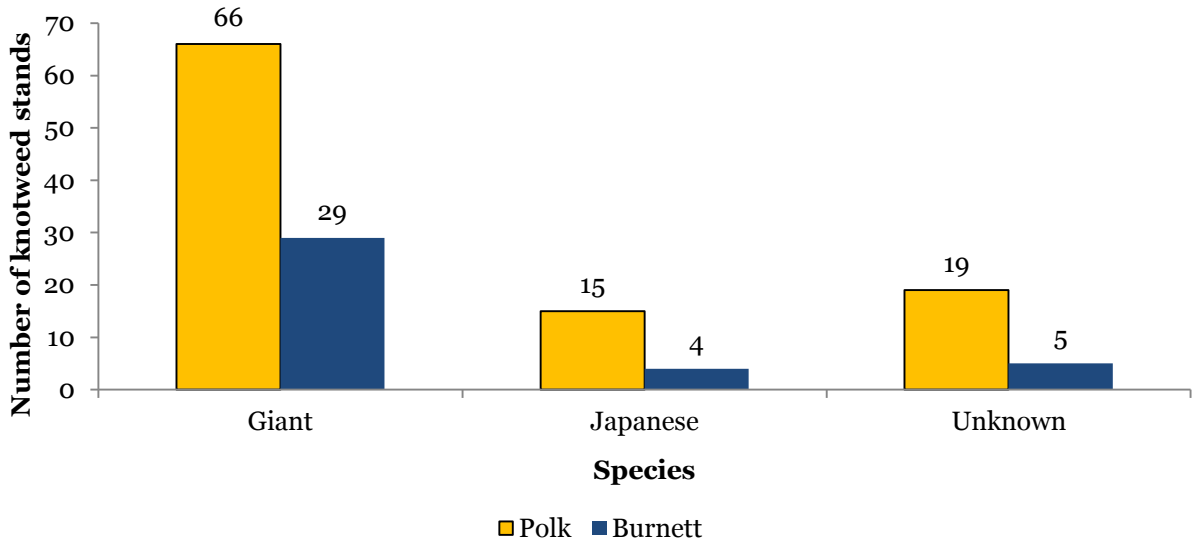
The number of known knotweed sites has continued to grow each year. At the end of 2010—when the first control grant expired—there were sixty-one known knotweed sites in Polk County and twenty-two in Burnett County. During the term of this grant, an additional thirty-two knotweed sites have been documented in Polk County and an additional sixteen have been documented in Burnett County. Currently, there are ninety-three known knotweed sites in Polk County and thirty-eight in Burnett County. A few of the sites have multiple stands of knotweed.

New sites were located by landowners, Polk County Land and Water Resources Department staff, or Burnett County Land and Water Conservation Department staff. Additionally, once landowners were able to identify knotweed and made aware of the issues this plant poses, they often alerted neighbors and friends of the presence of stands of knotweed on their property.



Species information for knotweed stands

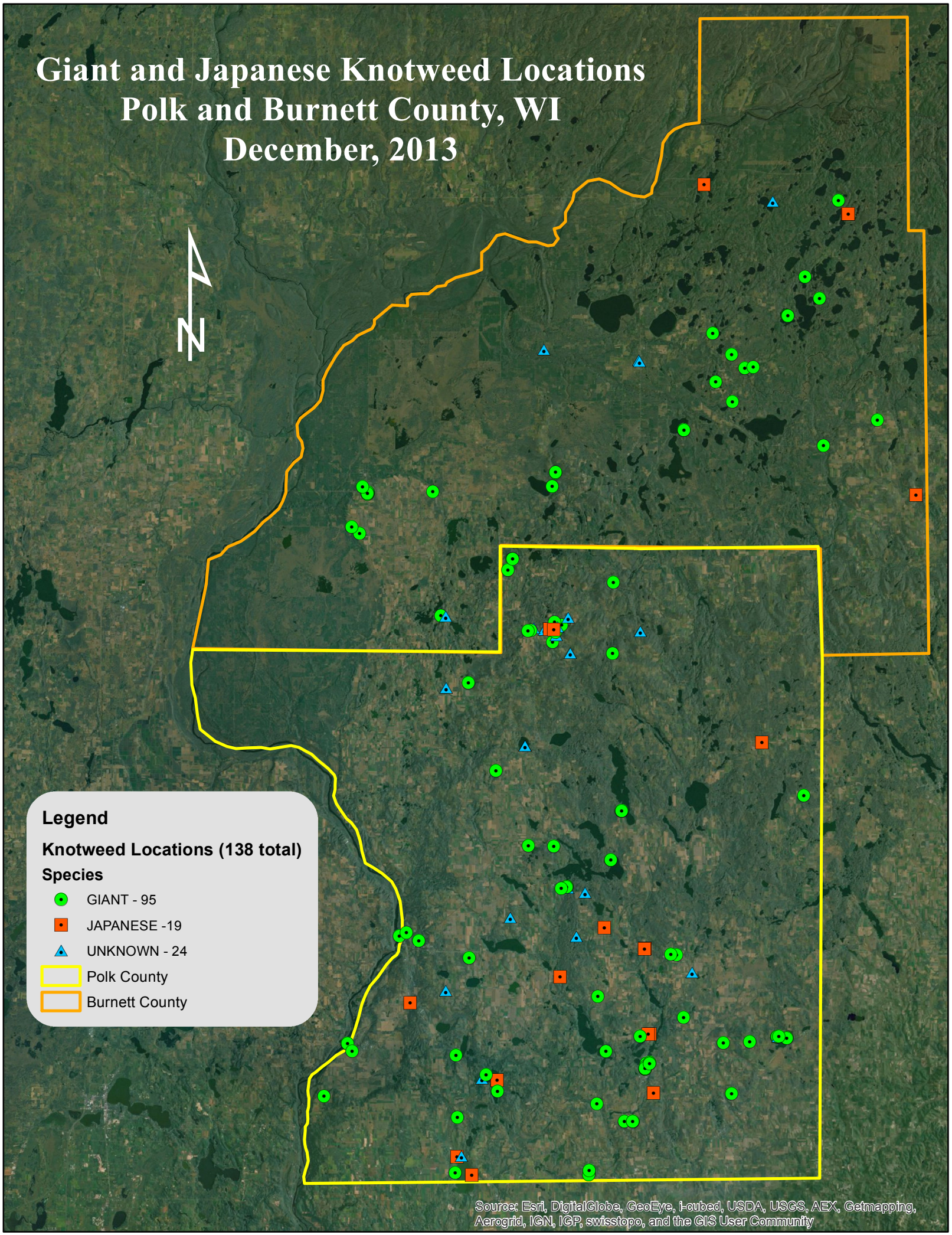
Giant Knotweed is listed as a prohibited species[1] under the Wisconsin invasive species rule; whereas, Japanese Knotweed is listed as a restricted species[2]. Unfortunately, the majority of knotweed stands present in both Polk and Burnett County have been identified as Giant Knotweed (66% and 76% respectively). There are a number of stands in Polk and Burnett County where the species of knotweed has not yet been verified. These stands are typically young stands of knotweed, stands located in poor soils, or stands that have been treated with herbicides in the past. Stunted conditions associated with these factors can make positive species identification difficult.



[1] "Prohibited invasive species" or "prohibited species" means an invasive specie individuals, small populations or small pioneer stands of terrestrial species, or in the case s that the department, at the time of listing under s. NR 40.04 (2), has determined is likely to survive and spread if introduced into the state, potentially causing economic or environmental harm or harm to human health, but which is not found in the state or in that region of the state where the species is listed as prohibited in s. NR 40.04 (2), with the exception of isolated of aquatic species, that are isolated to a specific watershed in the state or the Great Lakes, and for which statewide or regional eradication or containment may be feasible. (Wis. Adm. Code ch. NR 40)

[2] "Restricted invasive species" or "restricted species" means an invasive species that the department, at the time of listing under s. NR 40.05 (2), has determined is already established in the state or in that region of the state where the species is listed as restricted in s. NR 40.05 (2) and that causes or has the potential to cause economic or environmental harm or harm to human health, and for which statewide or regional eradication or containment may not be feasible. (Wis. Adm. Code ch. NR 40)

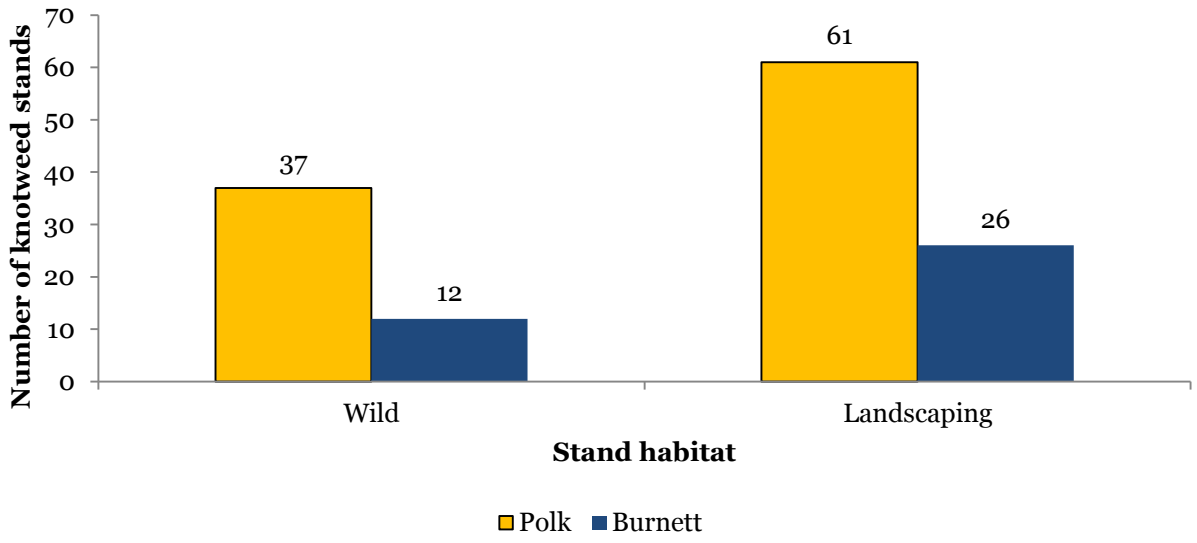
Giant and Japanese Knotweed Locations
Polk and Burnett County, WI
December, 2013



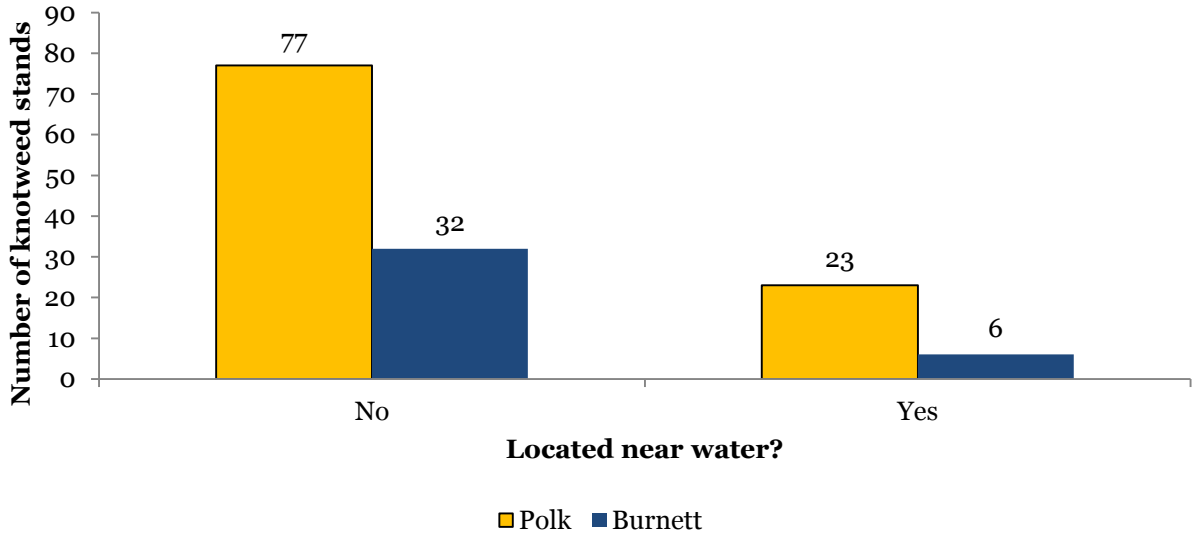
Environment knotweed stands are located in

The majority of knotweed stands are located in lawn and landscaping environments which is unsurprising given that knotweed was introduced as an ornamental landscaping plant. In both Polk and Burnett County, approximately two thirds of the knotweed stands are located in lawn and landscaping environments (62% and 68% respectively).

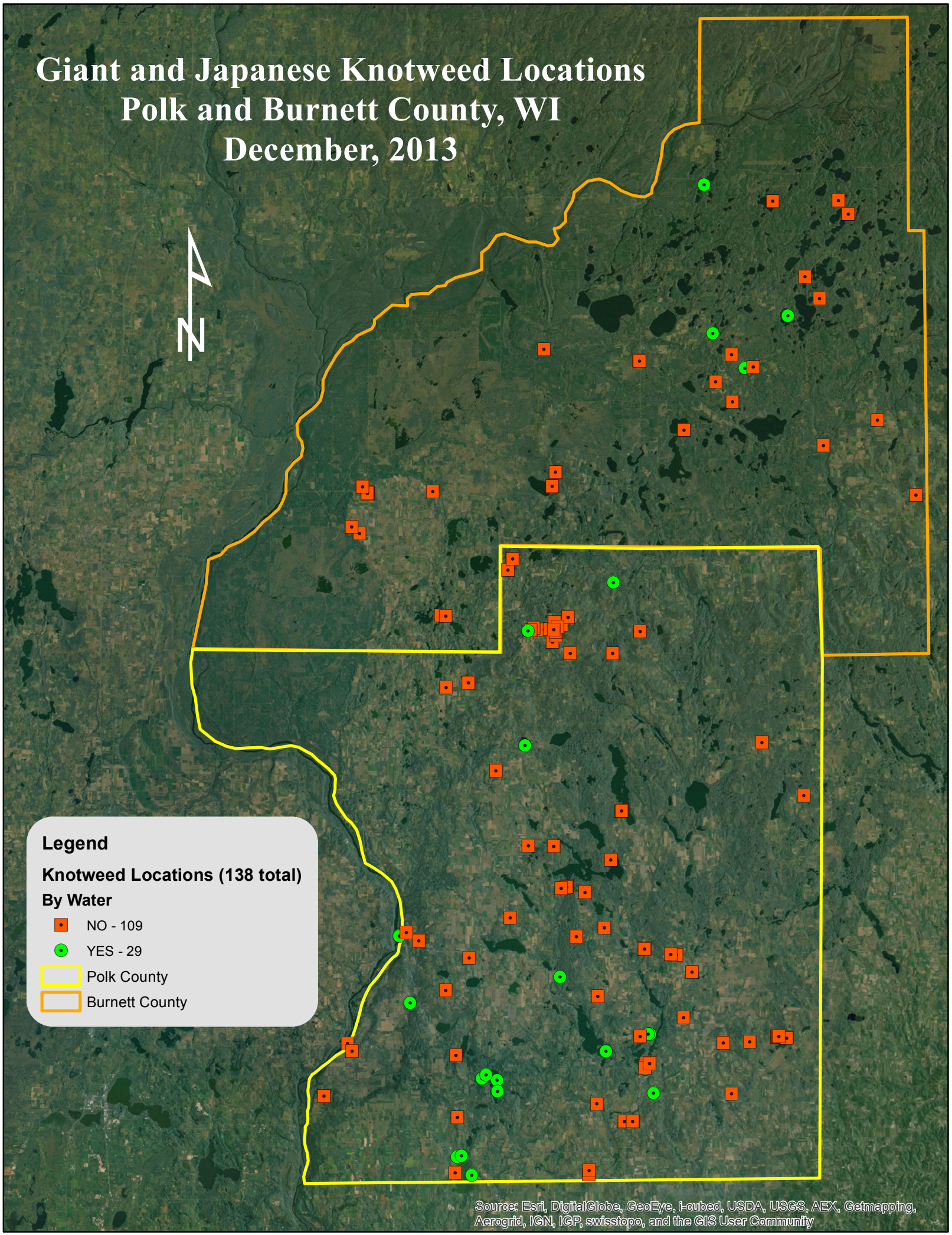
The remaining knotweed stands are located in wild environments, or areas that are minimally maintained such as road right of ways, fields in the conservation reserve program (CRP), woodlots, fence rows, and shorelines. Likely, these wild colonies were established due to the existence of a nearby colony in a yard or landscaped setting.

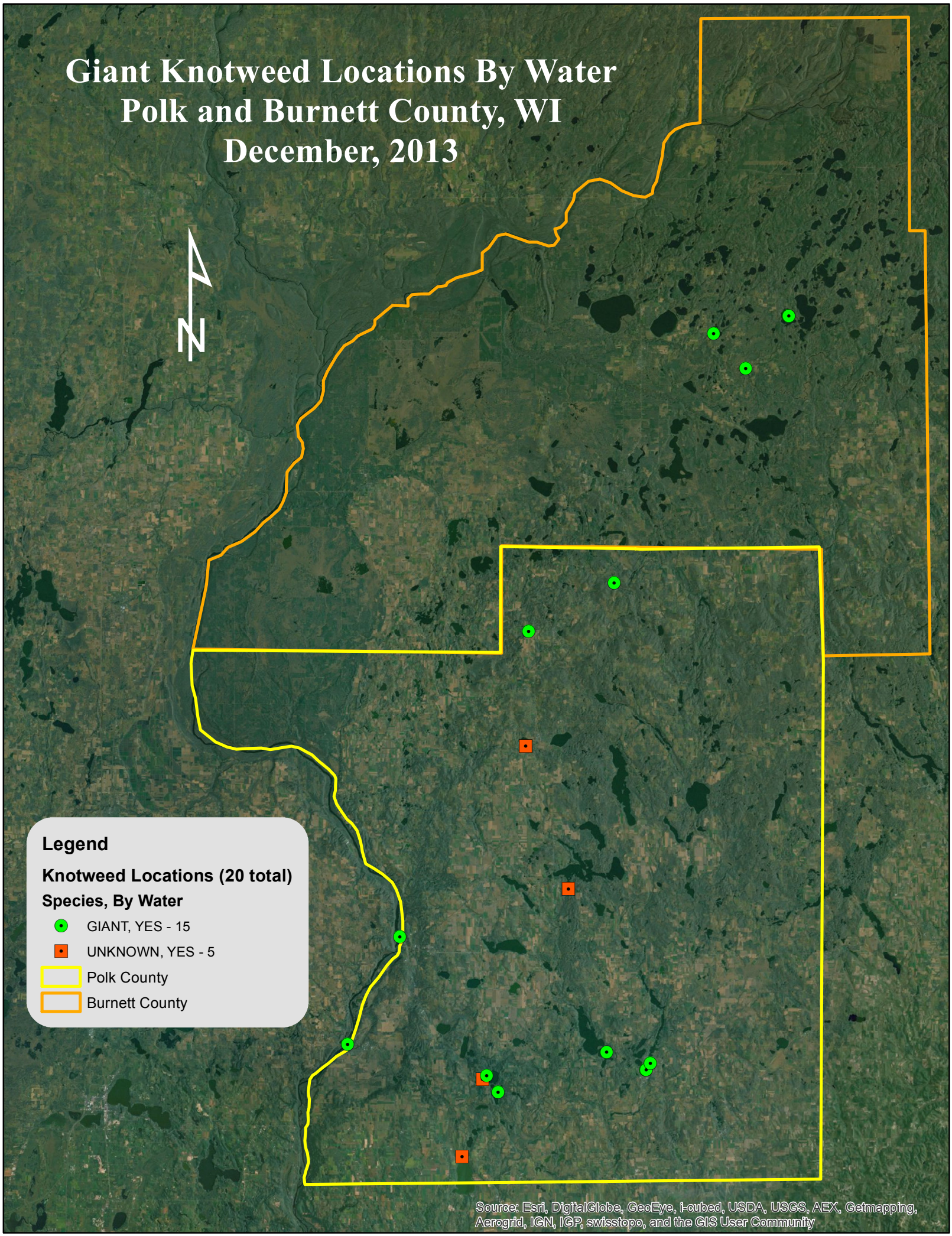


The majority of knotweed stands are located in terrestrial environments as compared to near water. In both Polk and Burnett Counties, less than a quarter of knotweed stands are located near water (23% and 16% respectively).



Giant and Japanese Knotweed Locations
Polk and Burnett County, WI
December, 2013




Giant Knotweed Locations By Water
Polk and Burnett County, WI
December, 2013
N
Legend
Knotweed Locations (20 total)
Species, By Water
GIANT, YES - 15
UNKNOWN, YES - 5
Polk County
Burnett County
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Treatment Methods and Results

2010 Treatment Methods[3]

In 2010, three different herbicides were used for knotweed control: Habitat (Imazapyr), Milestone (Aminopyralid), and Cornerstone Plus (Glyphosate). These herbicides were chosen for their good reputation for knotweed control and because they are labeled for use in different environments. Herbicides were either foliar applied or injected directly into the stem of the plant.

Habitat is labeled for use near water and was used on sites in close proximity to surface water. Milestone, a selective herbicide only effective on broadleaves, was used in grassed areas to avoid damage to grasses. Habitat [4] and Milestone [5] were used on large stands where foliar application was necessary due to the size of the stand or the density of stems. Foliar application was typically completed in late July through August to take advantage of the fact that knotweed is most susceptible to herbicides before flowering.

Cornerstone Plus can be used near water and is a non-selective herbicide, meaning it kills everything. For this reason, Cornerstone Plus was only used with injection systems. Cornerstone Plus is very effective used in its concentrate form and when applied in the stem as close to the roots as possible. However, since stem injection is time intensive, it is not practical for large stands or stands with very dense stems.

Mowing was also incorporated into the management of some stands. If a stand was not able to be treated early and was large enough to make entire stand access difficult, mowing operations were performed. Mowing allowed the stand to be accessible and forced the plant to re-grow. Re-growth expends a great deal of energy and was found to make the plant more susceptible to herbicide treatment. Once the stand regenerated to a height of 2 to 3 feet tall, a foliar treatment of herbicide was applied in the middle of the summer.

Mowing was not performed as the only control effort on any stands. Mowing was always followed by a foliar treatment of either Habitat or Milestone.

2010 Treatment Results

Most sites treated with Milestone or Habitat by foliar applications in 2010 resulted in stand reductions between 75-98%. Most sites will require a foliar follow-up application in 2011 to treat small amounts of re-growth. The percentage of re-growth seen was dependant on the original size of the stand. In larger stands more re-growth was observed in 2011. In smaller stands less re-growth was seen. This shows the importance of treating a stand early and as soon after establishment as possible.

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[3] Prior rapid response grant.
[4] Habitat was mixed with water at a 2.5-3% solution. Approximately 3 to 4 ounces of Habitat was mixed to one gallon of water.
[5] Milestone was mixed using 10 milliliters of herbicide per gallon of water.

2011 Treatment Methods

In 2011, two additional herbicides were tested: Turflon Amine and Garlon 3A . The active ingredient in both of these herbicides is Triclopyr, which was used because of the lack of soil residual carryover of this herbicide. Milestone and Habitat have significant soil activity and non-target species mortality was seen around areas treated with these herbicides even when no herbicide was applied to the non-target species. These species were injured through root uptake.

Turflon Amine, a selective herbicide effective only on broadleaves, was used in lawns so grass would not be killed. Garlon 3A is labeled for use near water and was used on sites in close proximity to surface water. Both herbicides were used in foliar applications.

In 2011, twenty-one stands of knotweed were treated in Polk County and twelve were treated in Burnett County.

2011 Treatment Results

Observations of stands treated with Tryclopyr herbicides Turflon Amine and Garlon 3A indicated poor to fair control. Stands treated with Turflon Amine (15.2% Triclopyr) showed no signs of stem reduction in 2012 following 2011 treatment. Garlon 3A (44.4% Triclopyr) showed fair control, reducing stand size by inhibiting re-growth or delaying re-growth until late summer, if re-growth was seen at all. Due to poor control, Turflon Amine and Garlon 3A were not used after the 2011 season.

Stands that were stem injected with Glyphosate showed signs of root dormancy. The stand would be dormant underground for one whole growing season following treatment and re-growth would be observed the following year and require a foliar treatment.

Green Shoots LLC injection system prototype.

2012 Treatment Methods

No new herbicides were used in 2012 due to the quantity of herbicide already purchased for the project. However, a new rhizome injection system from Green Shoots, LLC was tested in 2012. This method of injection targets the rhizome, specifically the green node of the plant. This system made late fall treatments possible even after frost had burned down the above ground growth. A Habitat herbicide and water solution was used with this method.

The new method of injection proved to be more difficult than expected. The rhizome was difficult to inject and caused damage to the injection system. It appeared that very little herbicide was injected into the green node, instead being deposited in the hollow reservoir left

from cutting the stems. A follow up visit 6 weeks later proved the method of treatment successful in killing the root masses with large stems. However, it was not successful in translocating herbicide to the outer roots producing stems too small for injection. A foliar follow up treatment of Milestone herbicide was administered to kill this re-growth.

A YouTube video was created demonstrating the use of this system and can be found at: http://www.co.polk.wi.us/landwater/videos.asp

In 2012, twenty-three stands of knotweed were treated in Polk County and nine were treated in Burnett County.

2012 Treatment Results

The green node injection system seemed to show good results following the 2012 treatment. This method was successful in eliminating the large stem clusters and their root masses and significantly decreased stand density. However, this treatment did not eradicate the entire root system. The small roots around the outside margin of the stand were not affected and re-growth was significant. To get adequate results the green node injection method needs to be paired with a foliar treatment of the re-growth following the green node injection.

2013 Treatment Methods

No new herbicides were used in 2013 due to the quantity of herbicide already purchased for the project. Milestone continued to be the herbicide of choice. A foliar treatment was administered to kill the remaining re-growth on stands which were initially treated with the green node injection system. Some of the stands treated with Turflon Amine and Garlon 3A were re-treated in 2013 with Milestone to achieve better results. Milestone applied in the late summer early fall, before any frost, has showed the best results throughout the course of this project. Milestone will be used almost exclusively for future treatments.

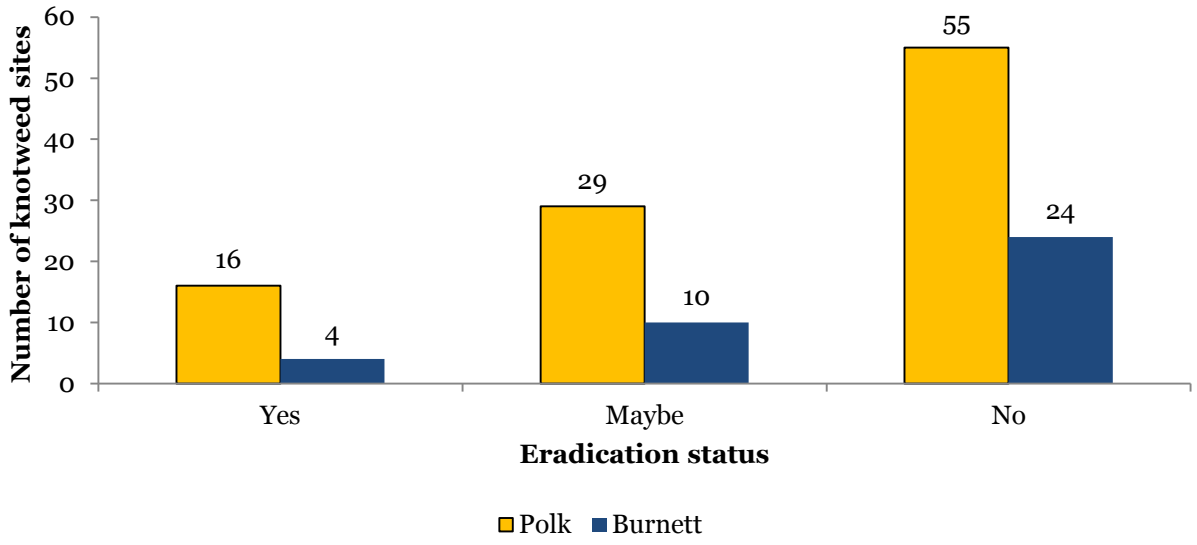
In 2013, nineteen stands of knotweed were treated in Polk County and seven were treated in Burnett County.

Stem injection with a JK International, LLC knotweed injection system.

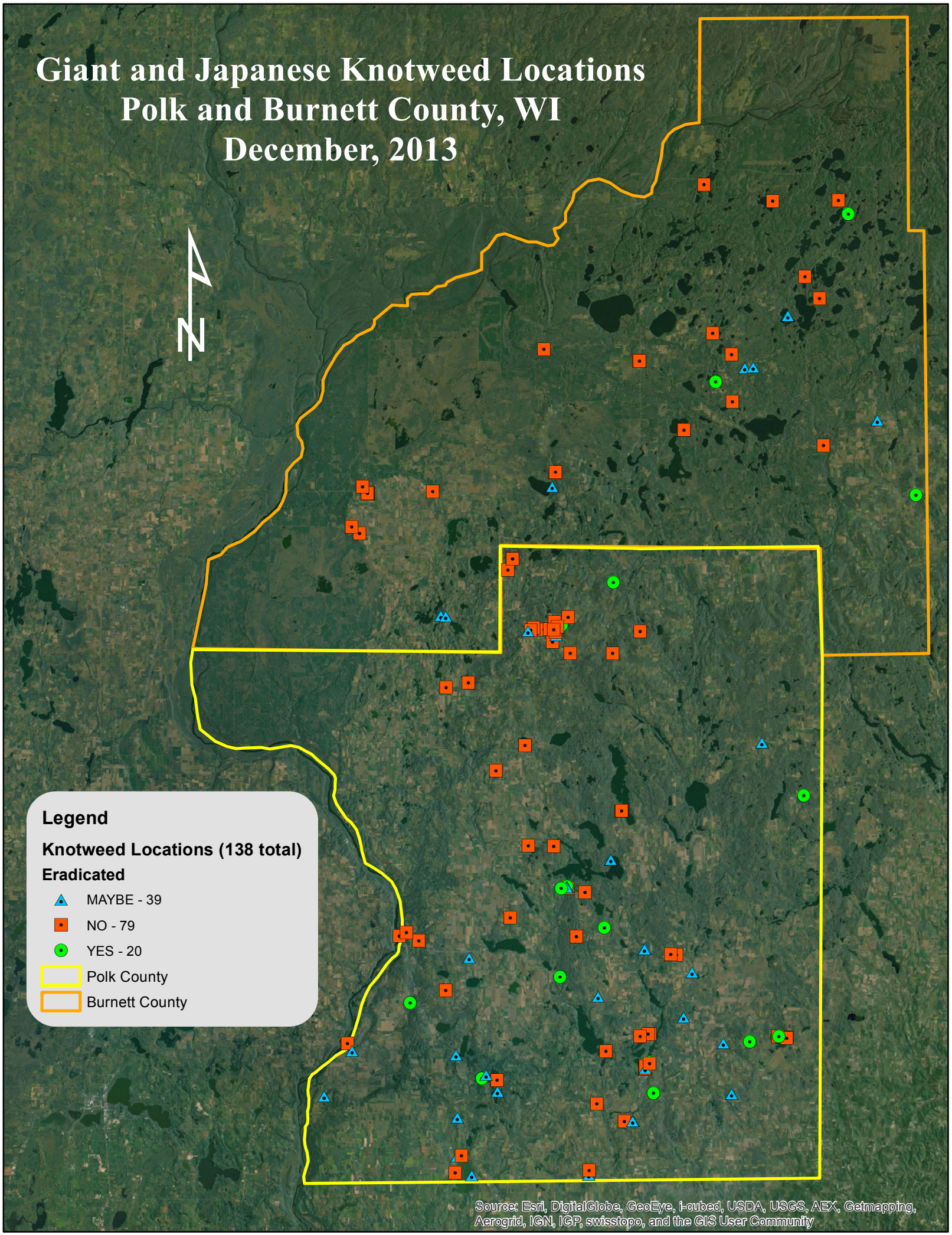
Stand Eradication

Eradication success is still questionable for many of the knotweed stands that have been treated. Successful eradication has only been seen on a small number of stands, though many stands have been dramatically reduced. Hopefully, affected landowners will continue to address this species on their own and eradicate stands on their property. The Polk County LWRD will continue to address new knotweed stands with future aquatic invasive species projects.

In both Polk and Burnett Counties less than a quarter of knotweed stands have been eradicated (16% and 11% respectively) and over half have not been eradicated (55% and 63%). For the remaining sites, additional follow up is required to determine if the stand has been eradicated.



Giant and Japanese Knotweed Locations
Polk and Burnett County, WI
December, 2013



Seed Viability

In 2011, both male and female knotweed colonies were identified in the Frederic area just over 1 mile apart. The female stand was found to be producing seed. Seeds were collected from the female stand and were analyzed for viability at the UW-Madison Lab. Of the one hundred forty-four seeds analyzed, forty-three germinated, demonstrating 30% viability in 2011. Since this stand was known to produce viable seed, it was treated with herbicide in 2012.

In 2012, a second stand was located that was producing seed. This stand was located along the scenic St. Croix River in Osceola. Seed was collected in the fall of 2012 and sent to the UW-Madison Lab for viability testing. Test reports indicated that none of the seed collected in 2012 was viable. However, since knotweed seed viability is known to vary from year to year, seed was also collected from this site in the fall of 2013.

Additionally, in 2013, seed was collected from a second knotweed stand located on the St. Croix River site in Osceola and from a stand located along County Road C in the Town of Alden. As of December 2013, viability results have not been received for the three stands where seed was collected in the fall of 2013.

Education Efforts

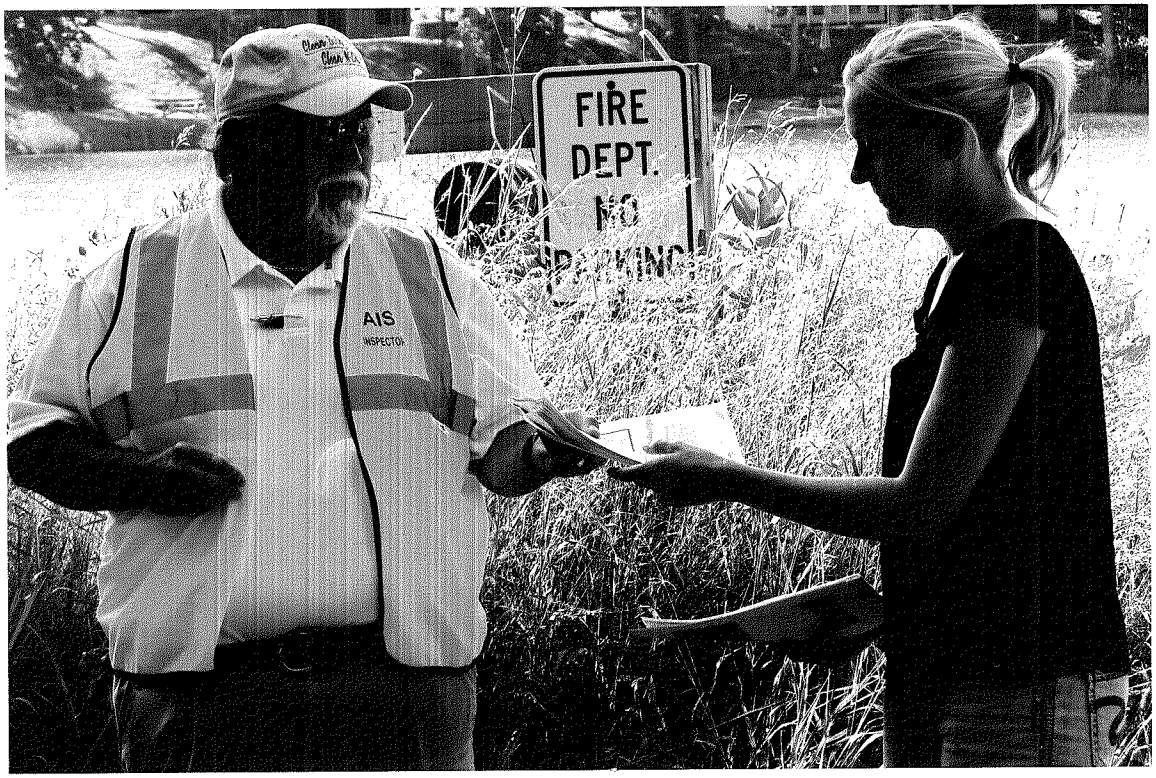
Throughout the term of the grant, LWRD made every possible effort to provide education to the public regarding Japanese and Giant Knotweed. Additionally, each landowner with knotweed on their property was contacted in person or via mail and provided with the WDNR knotweed brochure.

In 2012, LWRD filmed a YouTube video demonstrating the green node injection system which is available on the County website.

In August 2013, a field demonstration was held by LWRD staff for lake residents on Cedar Lake and members of the Star Prairie Fish and Game Sportsman's Club. During this demonstration those in attendance were shown how to identify the different species of knotweed, educated on effective herbicides and proper timing of applications, and given a demonstration of foliar application of Milestone. Eight members of the public attended and have since committed to continue raising awareness around the lake.

Clean Boats Clean Waters programs throughout the county will be beginning this weekend with fishing opener on Saturday. Carl Holmgren and the staff from the Polk County Land and Water Resource department were on hand training Unity students to monitor Balsam Lake. Pictured with the instructors were from left: Elaine Butala, Mercedes Kobs, Kourtney Collins, Savannah Sande, Michelle Jorgensen, Jena Alling, and Cullen Madison.

County Ledger Press 5/3/12 Front page



Clean Boats, Clean Water

The Horseshoe Lake Improvement Association invites the public to the Horseshoe Lake Public Landing located on County Road T - Horseshoe Drive, Turtle Lake, WI on Saturday, June 9th for a presentation by Kaitlin Holm, Polk County Information Specialist at 9:00 a.m. A short information packed hour is planned.

Ms. Holm will provide important information regarding the identification of many Aquatic Invasive Species, how to inspect your boat and equipment when entering and leaving lakes, promote stewardship and responsible boating practices.

We are blessed to have many beautiful lakes and rivers to enjoy but we each must do our part to assure they remain healthy for the future generations.

Any questions feel free to contact Jack Sullivan, HLIA Landing/ Monitoring Coordinator at 715-986-2963.

Front page
The Times 6/7/12

Clean Boats, Clean Water *Watercraft Inspection Program*

The Clean Boats, Clean Waters program is an opportunity for citizens to conduct a boater education campaign in their community. Through Clean Boats, Clean Waters, volunteers are trained to organize and conduct watercraft inspections that help stop the movement of aquatic invasive species (AIS) across the state.

What do Clean Boats, Clean Waters volunteers do?

The three main tasks completed by volunteers are:

- Informing and educating boaters about aquatic invasive species
- Performing watercraft inspections
- Collecting and reporting watercraft data

Clean Boats, Clean Waters volunteers are not at landings to enforce ordinances and laws. Rather volunteers are at boat landings to raise awareness of AIS and encourage and demonstrate the steps necessary to avoid spreading invasive species.

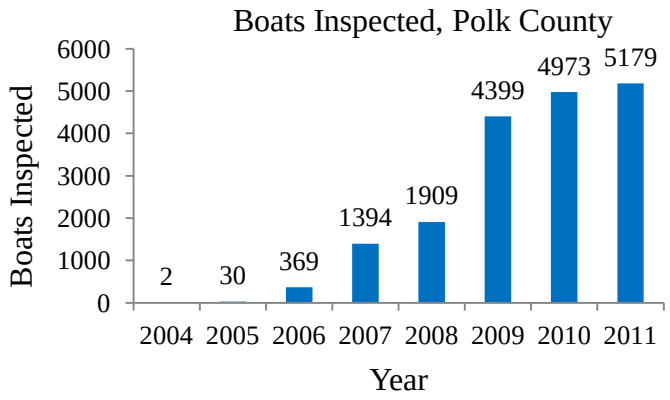
What prevention education message should Clean Boats, Clean Waters volunteers provide?

There are four main AIS prevention steps that volunteers should share with boaters:

- Inspect boats, trailers, and equipment
- Remove all attached aquatic plants and animals
- Drain all water from boat, vehicles, and equipment
- Never move plants or live fish away from a water body

Polk County Data

Eleven lakes in Polk County currently have Clean Boats, Clean Waters programs. In 2011, over 5,000 boats in Polk County were inspected for aquatic invasive species and over 10,500 people were contacted with the Clean Boats, Clean Waters message.



The Sun
pages 5 & 6
August 1
2012

Program educates public about "evil river invaders"

by JASON DEMOE
Contributing Writer

The threat of invasive species in our waterways is not lost on Katelin Holm, an educator with the Polk County Land and Water Resource Department. Holm travels the county, sharing information on how invasive critters harm our abundant waterways.

"Polk County is rich in water resources, boasting 437 lakes and over 300 miles of streams and rivers," Holm said. "An increasing number of lakes are being infested by populations of aquatic invasive species."

Holm brings the book, Up North at the Cabin, to her educational children's programs to help them understand the importance of the lakes. On July 25 in Osceola,

Invaders See page 6

Invaders from page 5

Holm talked with children about their favorite things to do at the river.

Of course, her educational expertise extends beyond children. Much of what she has to teach is important for boaters to understand.

"Just like you can get a ticket for speeding in a car, you can also get a ticket for driving down the road with plants on your trailer," Holm said. "Local ordinance provides for a $200 to $500 fine, but if a State DNR officer stops you, the fine could exceed $2,000."

Aquatic invasive species are plants, animals and pathogens that are not native to a specific lake or river. A species is regarded as invasive if it is introduced to an area and becomes capable of establishing population and spreads widely throughout the new location.

A species Holm highlighted was the Eurasian Water Milfoil, an aquatic plant that forms large floating mats of vegetation along the surface of lakes and rivers.

"This infestation is not something that you would want to swim in," Holm said. "More importantly, it poses a great threat to fish that would normally dart out to catch their food. The fish don't know how to react to a thick mass of plant in their way. If a small piece of milfoil is on your boat and you transport it to a lake that has not been infected, that piece will grow roots and spread."

Other common invasive species in this area include rusty crayfish, curly leaf pondweed, spiny waterflea, and zebra mussels.

"The most important and obvious things are to inspect boats and remove all aquatic plants and animals before leaving the water," Holm said. "Always buy your bait from a licensed dealer and dispose of leftover bait in the trash can as opposed to dumping it over the side of your boat in case the bait is infected with some disease."

Milltown's Fishermen's Party was an absolutely huge success over the weekend. The weather held up nicely for the most part and Sunday was a glorious day for the parade, which saw an increase in entries, mostly floats – just shy of 70. Everyone seemed to be in high spirits. Please page through this paper in its entirety, as there are photos in each section - the Ledger, Enterprise, Standard and Sports. - *Photo by Lynda C. Olds*

the village's big Memory community festival, which from July 12-14. The so-c "drop dead date" of the cor is June 8.

(Completion cont. pg 3)

"Landing Blitz" on 19 area water bodie

Citizen volunteers and aquatic invasive species experts will be teaming up to educate boaters and conduct free boat checks during the weekend of July 4th at boat landings throughout Wisconsin to assure the boaters do not accidentally spread Eurasian water-milfoil, zebra mussels, and other aquatic invasive species (AIS).

This is the fifth annual Landing Blitz in Wisconsin where inspectors will be stationed at more than 200 high-use boat landings from July 4 to 7 to help boaters understand Wisconsin's invasive species laws and what they must do before leaving a landing. Inspectors come from a wide partnership of citizen volunteers, state and local AIS staff, wardens and water guards, and a variety of lake associations, organized by the Wisconsin Department of Natural Resources and the UW-Extension's Clean Boats, Clean Waters program. Last year, more nearly 18,000 boats were inspected and over 39,000 people contacted during the holiday.

The Landing Blitz will be conducted on 19 Polk County waterbodies including: The Apple River Flowage, Pike Lake, North Twin Lake, South Twin Lake, Big Round Lake, Bone Lake, Balsam Lake, Big Butternut Lake, Pipe and North Pipe Lake, Half Moon Lake, North White Ash and White Ash Lake, Church Pine and Big Lake, Lake Wapogasset, Bear Trap Lake, Big Blake Lake, and Paulsen Lake.

"Most Wisconsin lakes remain free of invasive species. Recent research shows boats, and not ducks or other aquatic birds, move invasive species," stated Bob Wakeman, Wisconsin's Statewide Aquatic Invasive Species Coordinator. "Consequently, boaters can protect lakes by taking a few minutes to clean their boats and trailers and know their efforts aren't being undone by waterfowl."

Invasive species can crowd out native species, disrupt lake ecosystems, and interfere with boating, fishing and other recreation. The main way that invasive species and fish diseases such as viral hemorrhagic septicemia (VHS) spread to new waters is aboard boating and fishing equipment and with live fish or water moved from one waterbody to another.

The inspectors, who have been trained through Wisconsin's Clean Boats, Clean Waters program, will demonstrate the required prevention steps boaters must take, provide educational prompts to remind them of these steps, and talk about Wisconsin invasive species and VHS laws. Boaters found practicing good boat hygiene can be rewarded with a free boating towel.

Boaters, anglers, and others enjoying Wisconsin w are required to: Inspect b trailers, and equipment; re all attached aquatic plants animals; and drain all water boats, vehicles, and equipm

Also, one is never to plants or live fish away fr waterbody, with some li exceptions. Visit www wi.gov and search for laws."

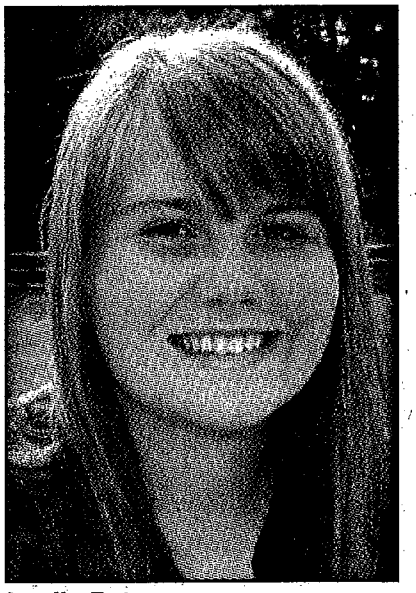
"We've stopped the flo invasive species into the Lakes since new laws gove ballast water discharge implemented in 2 Wakeman continues. "We make similar strides a inland waters with the conti cooperation of boaters."

Big Blake Lake volu provided further informati the *Ledger*.

(Blitz cont. pg 2)

Volunteer boat inspectors on Big Blake Lake (left to right) include: Max Bay, Joyce Booth, Mike Rogge, Vicky Dorner, Marge Filkins, Jim Filkins, Jim Thorn, and Peggy Lauritsen. – *Photo submitted*

Balsam Lake Freedo Fest Queen Pageant



Leslie Peterson

By Lynda C. Olds

There is just one cand running for queen this ye the pageant, which kicks o Freedom Fest on the Four July in the Unity auditoriu 7:30 p.m.

But the pageantry will go on the lovely Leslie Peterson, 1 Balsam Lake. She is the dau of David and Carolyn Pet and has an older brother, L

Leslie will be a junior this Unity and is involved in te served as girls' basketball softball manager, class presi school play, variety s band, color-guard co-captai marching band, dance line,

(Pageant cont. pg 3)

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Ledger Publications

Dry (cont. from pg 1)

"The last weekend in June leads to Fourth of July – which is known for boating fun. Patrols will be out to enforce the message boating is fun and even more fun for all when you're sober," Schaller said. "This is a very simple lesson wardens will be pushing – never drink while behind the wheel of anything – a boat, a car, a snowmobile, an ATV."

Operation Dry Water 2013 is a nationwide education and enforcement initiative launched by the National Association of State Boating Law Administrators (NASBLA) in partnership with the U.S. Coast Guard. It puts thousands of local, state and federal marine law enforcement officers on the water across the country to give operating-while-intoxicated enforcement high visibility during the peak boating season.

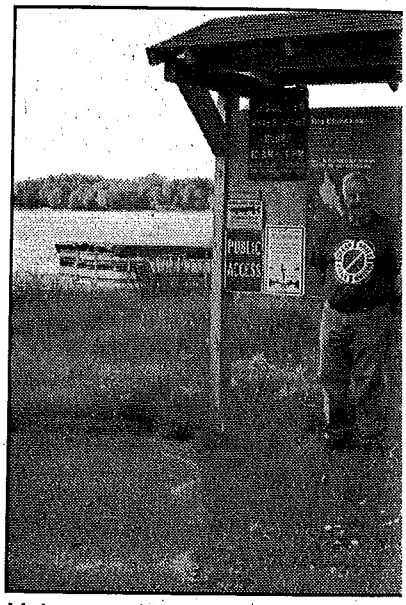
Since the launch of Operation Dry Water in 2009, the percentage of boating fatalities with alcohol listed as a contributing factor has decreased from 19 percent to 17 percent in the United States. Despite the decrease, BUI still accounts for a disproportional number of on-the-water deaths. In 2011, alcohol was a contributing factor in 8 percent of boating accidents overall, but figured in 17 percent of boating fatalities.

"Wardens will be removing intoxicated boat operators from the water. We hope to educate as many boaters as possible about the hazards of operating while intoxicated to achieve voluntary compliance," Schaller said.

People found operating a motorboat with a blood alcohol concentration of 0.08 percent or higher will find their voyage terminated and they will be removed from the water for everyone's safety.

Statewide in 2012, 157 officers from 23 state and local law enforcement patrols participated in Operation Dry Water. During the three-day weekend, Wisconsin law enforcement officers contacted 1,488 vessels and 3,030 boaters, made 11 boating under the influence (BUI) arrests and issued 704 citations and warnings for violations.

A boat operator or passenger with a blood alcohol concentration above the legal limit runs a



Volunteer Clean Boats Clean Wa
Lake (left to right) are: Tom Bord
Maxwell, Joan Maxwell, and Dian

Blitz (cont. from pg 1)

"Invasive species are a top threat to water quality and property value. Wisconsin lakes are great for fishing and boating. By following simple steps, boaters can preserve the quality of our lakes for future generations to enjoy," says Peggy Lauritsen, "We have over 40 dedicated volunteers who give 400 hours per season to help protect water quality on Big Blake Lake," stated Peggy Lauritsen, Clean Boats, Clean Waters, AIS coordinator, adding, the volunteer inspectors will be visible at East and West landings to help boaters understand Wisconsin's invasive species laws and what they must do clean equipment entering or exiting the water.

The volunteers, who have been trained through Wisconsin's Clean Boats, Clean Waters program, will demonstrate the required prevention steps boaters must take, provide stickers for boaters to place on their trailer posts to remind them of these steps, and will talk about Wisconsin invasive species and VHS laws.

With the growing concern over the spread of aquatic invasive species to Wisconsin's inland lakes, many lake association members and other concerned citizens are looking for ways to get involved. The Clean Boats, Clean Waters volunteer watercraft inspection program is an opportunity to take a front line defense against the spread of aquatic invasive species.

School (cont. from pg 1)

grim and there will either be a reduction in services or increase in co-pay and/or premiums.

In other business, the board went into closed session to discuss candidates for a new high school principal and the terms and conditions that they would be hired under.

On Wednesday, after negotiations were made, Peggy Ryan has accepted the position as the High School Principal. Ryan will start as the new principal on July 1.

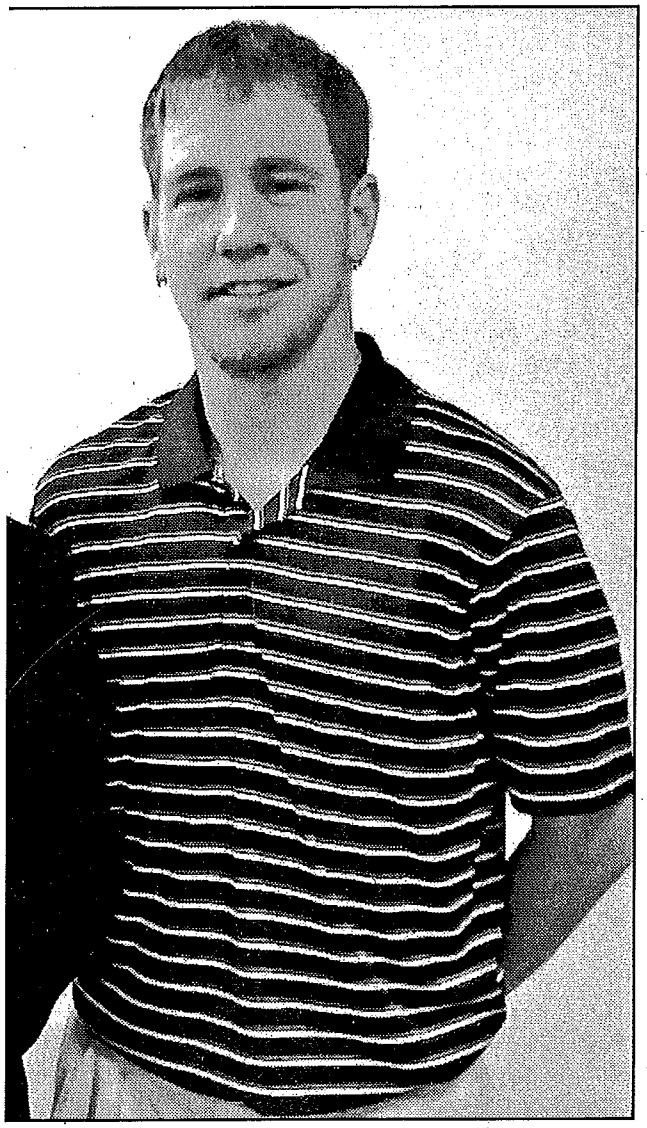
Strangulation charges filed a

By Lynda C. Olds

Around 10:45 a.m. on June 22, someone who said he had been in a physical altercation with his girlfriend, Kirsten Booth, 23, of Amery, approached an officer. He said he came into the apartment they share and they began arguing.

Kristen Booth

He said he took a step forward and Booth grabbed him by the throat with



l a certificate of Outstanding Achievement Award from the ting on behalf of the agency were Assistant Corporation Financial Specialist Chad Hoig. (Photo by Jason DeMoe)

Support Agency nding achievement

hment rate of 90 er.

year 2012, Polk umber one in the lishing paternity," Many people don't ddition to helping support, we also ig father's names cates for children dlock. We do the right in our office. very proud that we ne in the state for en care of for fam-

the teen pregnancy rate in Polk County has dropped by over 13 percent. I have no firm proof that our program was the cause, but we will take full credit for it," Malone joked. "In all seriousness, though, I truly do believe we have influenced the deduction. Before we began going to these schools, the number of teen pregnancies was steady and ever so slightly increasing. This downturn is a substantial change and something that had not happened before."

The awards were presented to the 18 county agencies on April

Nineteen Polk County Lakes participate in statewide Landing Blitz to tackle Aquatic Invasive Species

Polk County – Citizen volunteers and aquatic invasive species experts will be teaming up to educate boaters and conduct free boat checks during the weekend of July 4th at boat landings throughout Wisconsin to assure the boaters do not accidentally spread Eurasian water-milfoil, zebra mussels, and other aquatic invasive species (AIS).

This is the fifth annual Landing Blitz in Wisconsin where inspectors will be stationed at more than 200 high use boat landings from July 4th – 7th to help boaters understand Wisconsin's invasive species laws and what they must do before leaving a landing. Inspectors come from a wide partnership of citizen volunteers, state and local AIS staff, wardens and water guards, and a variety of lake associations, organized by the Wisconsin Department of Natural Resources and the UW-Extension's Clean Boats, Clean Waters program. Last year, more nearly 18,000 boats were inspected and over 39,000 people contacted during the holiday.

The Landing Blitz will be conducted on nineteen Polk County waterbodies including: the Apple River Flowage, Pike Lake, North Twin Lake, South Twin Lake, Big Round Lake, Bone Lake, Balsam Lake, Big Butternut Lake, Pipe and North Pipe Lake, Half Moon Lake, North White Ash and White Ash Lake, Church Pine and Big Lake, Lake Wapogasset, Bear Trap Lake, Big Blake Lake, and Paulsen Lake.

"Most Wisconsin lakes remain free of invasive species. Recent

dinator. "Consequently, boaters can protect lakes by taking a few minutes to clean their boats and trailers and know their efforts aren't being undone by waterfowl."

Invasive species can crowd out native species, disrupt lake ecosystems, and interfere with boating, fishing and other recreation. The main way that invasive species and fish diseases such as viral hemorrhagic septicemia (VHS) spread to new waters is aboard boating and fishing equipment and with live fish or water moved from one waterbody to another.

The inspectors, who have been trained through Wisconsin's Clean Boats, Clean Waters program, will demonstrate the required prevention steps boaters must take, provide educational prompts to remind them of these steps, and talk about Wisconsin invasive species and VHS laws. Boaters found practicing good boat hygiene can be rewarded with a free boating towel.

Boaters, anglers, and others enjoying Wisconsin waters are required to:

INSPECT boats, trailers, and equipment.

REMOVE all attached aquatic plants and animals.

DRAIN all water from boats, vehicles, and equipment.

NEVER MOVE plants or live fish away from a waterbody. *

*Limited exceptions apply. Visit www.dnr.wi.gov and search for "bait laws."

"We've stopped the flow of invasive species into the Great Lakes since new laws governing ballast water discharge were im-

Bank, Knutson Construction and many others. *Submitted photo*

Landing Blitz to tackle invasive species

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Blitz See page 20

Our Photos Make
GREAT
GIFTS!

www.osceolasun.smugmug.com

Mosaic Telecom is a successful and growing telecommunications company known as a leader in its industry. We are currently accepting resumes for the following position:

Sales Associate

This individual will be responsible for positively impacting customer retention, meeting and exceeding sales goals, accurate order processing and providing overall customer service excellence.

Qualified candidates must have:

*Cellular sales experience a plus, but not required.
*2 years experience in sales preferred.
*Excellent customer service skills and an ability to assist customers with products and services that meet their needs.
*A strong attention to detail and the ability to work in a fast-paced, changing environment.
*Strong verbal, written and interpersonal communication skills.
*Experience with and working knowledge of personal computers and other office equipment.
*The ability to maintain a flexible work schedule (some evenings and weekends).
*Flexibility to work at retail offices located in both Barron and Polk counties.
*High school education minimum.

Salary is commensurate with experience. Excellent benefit and retirement package provided. Interested parties may send or email a cover letter, resume and salary requirements to:

Human Resources
Mosaic Telecom
P.O. Box 664
Cameron, WI 54822

employment@mosaictelecom.com

mosaic telecom

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Middle School
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For job qualifica
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OSL

GREAT CAREER
SALES HEL

- Meet New People
- Have Fun & Make M
- Work Independentl
- Great Hours
- Great Benefits
- Great Work Environ

Sales experience or marketi
Must have computer exper
suite, be good with people
are driven to succeed and
this position is for you.

Send cover letter
Publi
Osceola Sun,
Osceola W

Blitz from page 14

Boaters found practicing good boat hygiene can be rewarded with a free boating towel.

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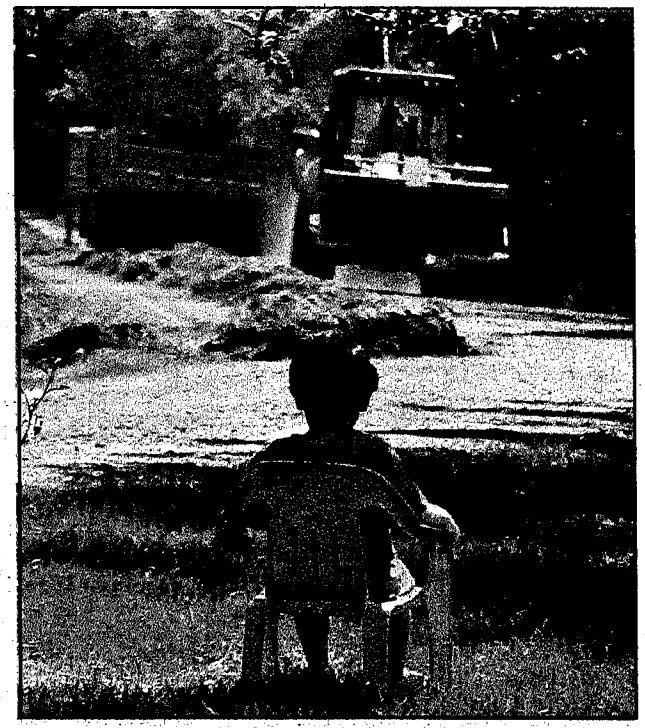
"We've stopped the flow of invasive species into the Great Lakes since new laws governing ballast water discharge were implemented in 2006," Wakeman continues. "We can make similar strides among inland waters with the continued cooperation of boaters."



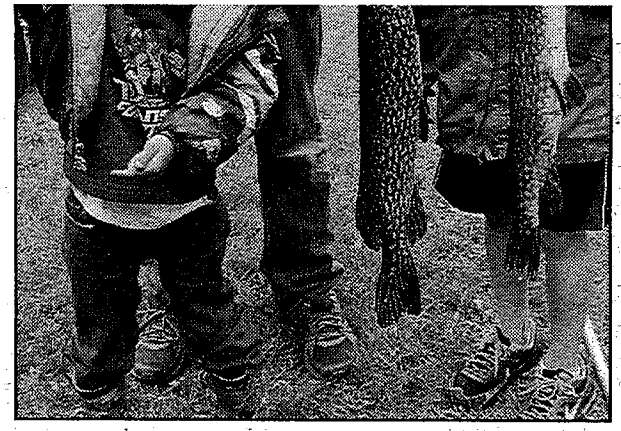
Adrian Anderson, a Dresser youngster, pulled up a seat to watch John Adam, Osceola Township employee, do work on a local road. A great way to spend a beautiful day. *Submitted photo*

We've Moved Education
To a Higher Level.

We are a K-8 school where the high standards of education are matched with the traditional values of Christian faith.

A place where God has a presence and where we support the family's Christ-centered message from home and church.

It's time for you and your children to experience a difference.



Ethan Peterson, age 5, talked about the one that got away as Brad Peterson and Austin Hughes held the first- and second-place northerns for Ethan.

The youngest fishermen at the Unity Lions Club Kids-R-First fishing contest included: Tori Hollingsworth, Thomas Koethe, Kali Hockstetler and Catherine Beauvais.

Some nice rock bass were caught, although not everyone wanted to hold their fish. Area businesses donated hundreds of door prizes for the 130 kids that were fishing at the Unity Lions Club Kids-R-First fishing contest.

Landing Blitz to tackle aquatic invasive species

Nineteen lakes participating in Polk County

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Great Northern Outdoors Bass Fishing League Standings Week 7

Sponsored by Great Northern Outdoors and BLC Well Drilling in Milltown

Standings

1. Fish Whisperer, 67 lbs., 7 oz.
2. Young Guns, 62 lbs., 6 oz.
3. 46 Store, 53 lbs., 14 oz.
4. Main Dish, 52 lbs., 6 oz.
5. Luck Sport Marine, 51 lbs., 3 oz.
6. Subway, 48 lbs., 6 oz.
7. Bon Ton 1, 44 lbs., 9 oz.
8. Air World, 41 lbs., 14 oz.
9. Milltown Dock, 38 lbs., 5 oz.
10. Country Side Inn, 37 lbs., 10 oz.
11. GNO, 37 lbs., 9 oz.
12. Northern Bar, 37 lbs., 6 oz.
13. Monty's, 33 lbs., 14 oz.
14. BLC Well, 30 lbs., 14 oz.
15. Dairy Queen, 30 lbs., 10 oz.
16. Ones/Robertson, 28 lbs., 1 oz.
17. Bon Ton II, 21 lbs., 6 oz.
18. Whiskers, 20 lbs., 15 oz.

Big bass/Big bag weekly winner:

Big Bass:
Dairy Queen, 3 lbs., 0 oz.

Big Bag:
Luck Sport Marine, 7 lbs., 9 oz.

Fish weighed:
68

Anglers and Paddlers! Protect Your River…

Project RED

Do your part **to help detect invasive plants and animals in Wisconsin's rivers and streams.**

Project RED will teach you to monitor your river by canoe, kayak, or on foot for local species of concern. The protocols are fun…organize a local scavenger hunt for invasives! Use this activity to become more familiar with your river or stream and to engage your friends and neighbors!

Free Training Session
July 16 from 1 – 5:30 pm
or **July 27 9:00am – 1:30pm**
at the St. Croix River Association
230 S. Washington St., St. Croix Falls, WI

To register for this workshop please call (715) 483 3300, or register online at www.stcroixriverassociation.org

Photo Credit: Remfry

RIVER ALLIANCE of Wisconsin

St. Croix River ASSOCIATION

NATIONAL PARK SERVICE

WISCONSIN DEPT. OF NATURAL RESOURCES

Polk County Land & Water Resources Department

Riverine Early Detectors protecting Wisconsin's flowing waters

Project RED

Invasive Species of Concern

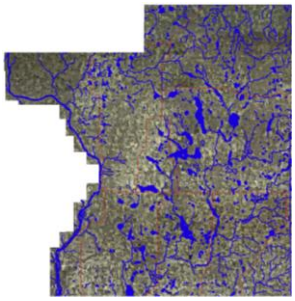
- Didymo/Rocksnot
- Purple loosestrife
- Reed canary grass
- Japanese knotweed
- Japanese hops
- Phragmites
- Flowering rush
- Hydrilla
- Curly-leaf pondweed
- Eurasian water milfoil
- Brazilian waterweed
- Yellow floating heart
- Mile-a-minute
- Japanese stilt grass
- Water lettuce
- Water hyacinth
- Parrot feather
- Silver carp
- Bighead carp
- Grass carp
- Round goby
- Western Mosquitofish
- Quagga mussel
- Zebra mussel
- Asian clam
- New Zealand mudsnail
- Faucet snail
- Spiny and fishook waterflea
- Red swamp crayfish
- Rusty crayfish
- Viral Hemorrhagic Septicemia

Polk County AIS Monitoring

- ✓ Curly leaf pondweed
- ✓ Eurasian water milfoil
- ✓ Purple loosestrife
- ✓ Japanese knotweed
- ✓ Chinese mystery snail
- ✓ Banded mystery snail
- ✓ Rusty crayfish

- ✓ Yellow iris
- ✓ Narrow leaf cattail
- ✓ Phragmites

- ✓ Zebra mussel
- ✓ Quagga mussels
- ✓ Spiny waterflea



Project RED Monitoring

PLANTS

- Garlic Mustard
- Oriental Bittersweet
- Japanese knotweed
- Purple loosestrife
- Yellow Iris
- Eurasian watermilfoil
- Curly-leaf pondweed

ANIMALS

- New Zealand mudsnail
- Zebra mussel
- Quagga mussel

Garlic Mustard (*Alliaria petiolata*)

1ST YEAR - ROSSETTE

Low, kidney shaped leaves

2ND YEAR - FLOWERING

1 – 4 feet tall flowering stalks

Garlic Mustard (*Alliaria petiolata*)

- Crushed leaves smell like garlic
- Flowers late April - June

- Flowers have four pedals in the shape of a cross

Garlic Mustard (*Alliaria petiolata*)

Garlic Mustard

- A single plant can produce hundreds of seeds
- Seeds spread by wind, water, wildlife, and people
- Seeds viable for five or more years in the soil

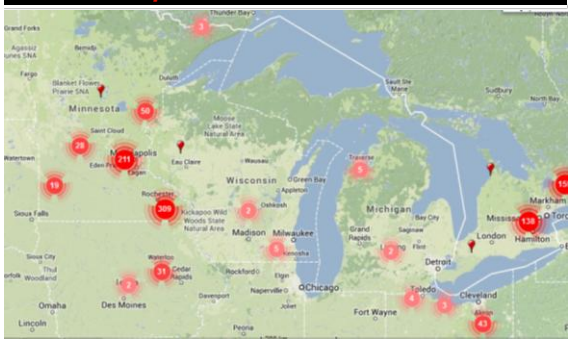
Garlic Mustard (*Alliaria petiolata*)

- Displaces native spring wildflowers such as Spring Beauty, Trilliums, and Wild Ginger
- Produces a toxin that prevents native trees and other plants from growing

Garlic Mustard (*Alliaria petiolata*)

Garlic Mustard (*Alliaria petiolata*)

EDDMapS Early Detection & Distribution Mapping System



Garlic Mustard (*Alliaria petiolata*)

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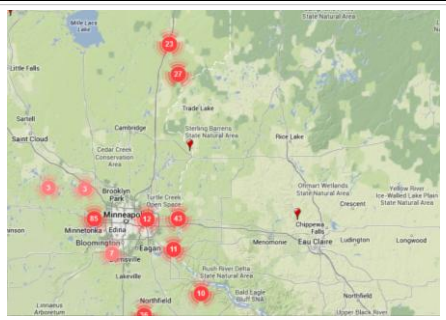


Oriental Bittersweet (*Celastrus orbiculatus*)

Fruits are
- round
- change in color from green to bright red
- **yellow capsule** as they mature.
- can produce up to 370 fruits which ripen in the fall

Oriental Bittersweet (*Celastrus orbiculatus*)

Leaves
- Alternate
- Oblong to Round
- 2 – 5 inches long
- Margins have rounded teeth

Oriental Bittersweet (*Celastrus orbiculatus*)

Oriental Bittersweet (*Celastrus orbiculatus*)

Non-native vs. Native

ORIENTAL BITTERSWEET
- Fruit clusters in the leaf axils

AMERICAN BITTERSWEET
- clusters at its branch tips

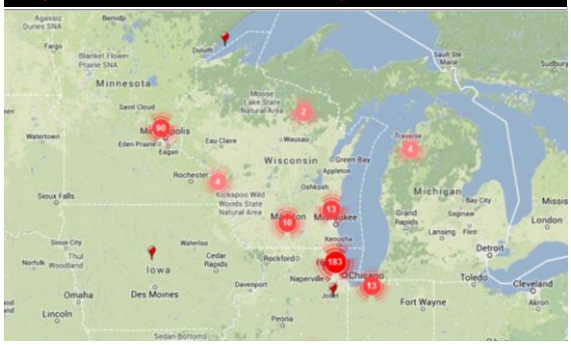
Non-native vs. Native

AMERICAN BITTERSWEET

ORIENTAL BITTERSWEET

Oriental Bittersweet (*Celastrus orbiculatus*)

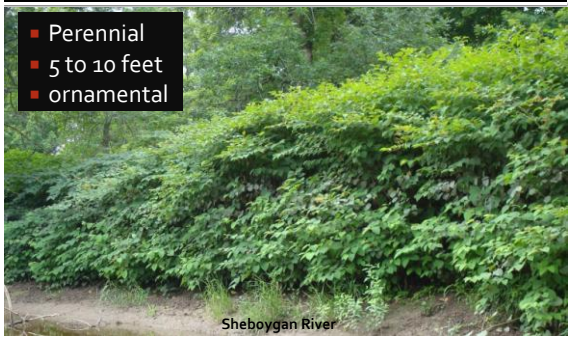
EDDMapS Early Detection & Distribution Mapping System



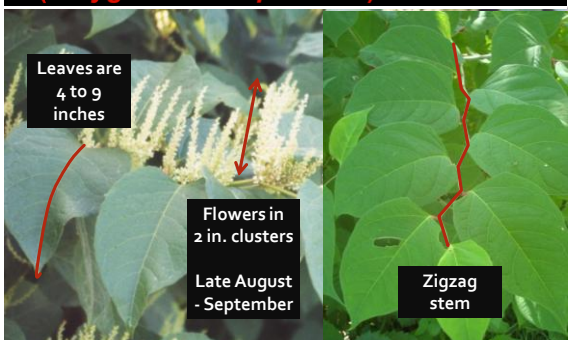
Oriental Bittersweet (*Celastrus orbiculatus*)

EDDMapS Early Detection & Distribution Mapping System

Japanese Knotweed (*Polygonum cuspidatum*)



Japanese Knotweed (*Polygonum cuspidatum*)



Hollow stems more brittle than bamboo

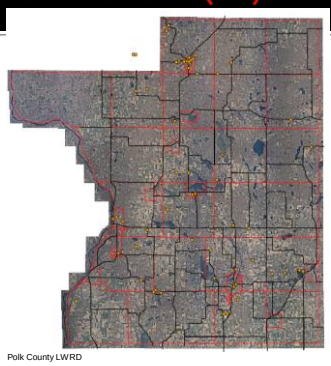
Japanese Knotweed seeds

Impacts: alters stream's nutrients and hydrology

- Sequesters nitrogen (nutrients) in rhizomes before leaf fall,
- Providing litter of lower nutritional quality, impacting the productivity of macroinvertebrates
- Can alter the hydrology of a stream year round

Japanese knotweed (*Polygonum cuspidatum*)

Japanese knotweed (80)

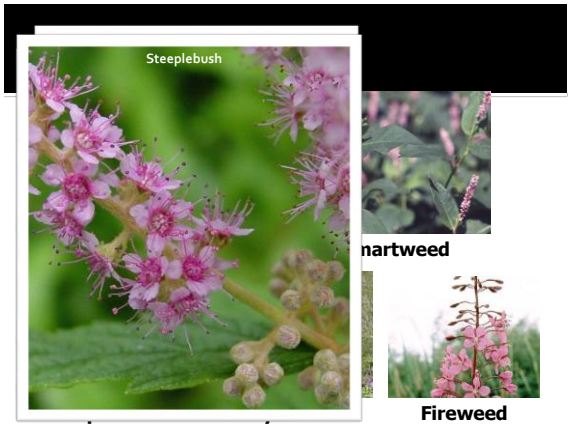


Polk County LWRD

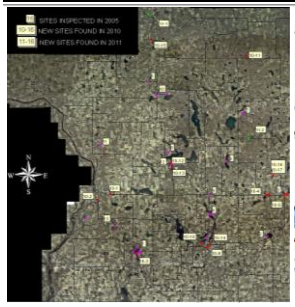
Purple Loosestrife (Lythrum salicaria)

Smooth leaves
1 – 4 inches long

Semi-woody
stem with edges

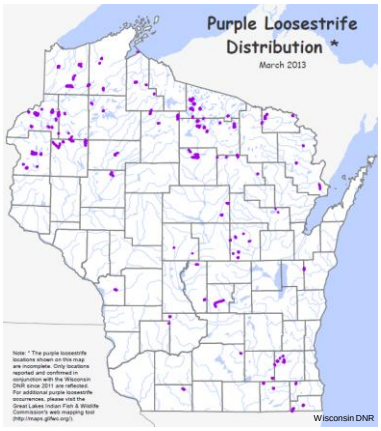


Purple loosestrife (32)



Polk County LWRD

Great Lakes Indian Fish and Wildlife Commission



Wisconsin DNR

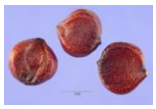
Yellow Iris (*Iris pseudacorus*)

- Typically 3 – 4 feet tall
- Spreads by seed and vegetatively
- Seeds float
- All parts of the plant are poisonous
- Flowers May

Yellow Iris (*Iris pseudacorus*)

Yellow Iris (*Iris pseudacorus*)

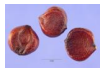
- 6-angled, egg shaped fruit capsule
- About 120 seeds per capsule



Non-native vs. Native

YELLOW IRIS

- Yellow Flower
- 6 sided seed pod
- Seed capsule opens at maturity



BLUE FLAG IRIS

- Blue Flower
- 3 sided seed capsule
- Seed capsule <u>does not</u> open

Eurasian Water-milfoil (*Myriophyllum spicatum*)

7 native milfoils in Wisconsin

EWM only easily confused with northern water milfoil

Most likely found in slow flowing water 10 feet deep or less

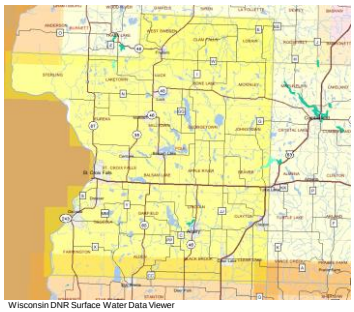
Eurasian Water-milfoil

Native Northern Watermilfoil or Eurasian?

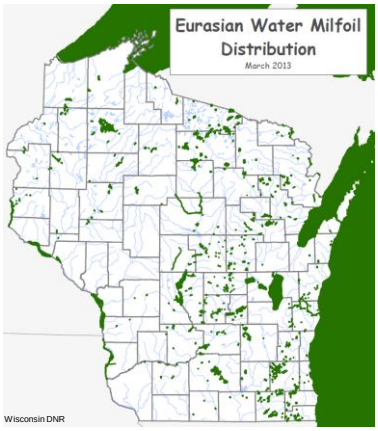
Native Northern Watermilfoil or Eurasian?

Eurasian water milfoil (3 lakes)

- Polk
  - Long Trade
  - Pike
  - Horseshoe
- Burnett
  - Little Trade
  - Round
- Barron
  - Shallow
  - Sand
  - Beaver Dam
  - Lower Vermillion
  - Echo
- Saint Croix
  - Bass Lake
  - Bass Lake



Wisconsin DNR Surface Water Data Viewer



Wisconsin DNR

Curly-leaf Pondweed (Potamogeton crispus)

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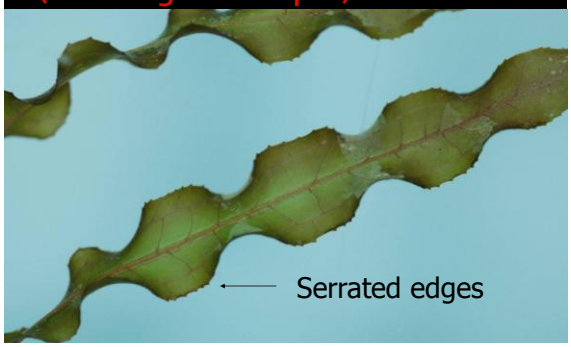
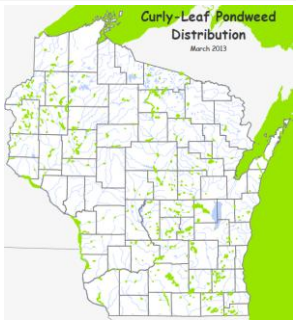
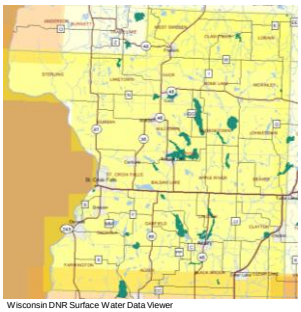


Curly-leaf Pondweed (Potamogeton crispus)

Curly-leaf Pondweed (Potamogeton crispus)



Curly leaf pondweed (28 lakes)



Wisconsin DNR Surface Water Data Viewer

Curly leaf pondweed

- Apple River Flowage
- Balsam Lake
- Big Blake Lake
- Big Butternut Lake
- Big Lake
- Big Round Lake
- Black Brook Flowage
- Bone Lake
- Bone Lake T32N R16W WS27
- Bridget (Mud) Lake
- Cedar Lake
- Clam Falls Flowage
- Deer Lake
- Half Moon Lake
- Horseshoe Lake
- Lake O' the Dalles
- Little Butternut
- Long Trade Lake
- Loveless Lake
- Magnor Lake
- North Twin Lake
- Pike Lake
- Round Lake
- Staples Lake
- Unnamed Lake
- Wapogasset Lake
- White Ash Lake

New Zealand mudsnails
(Potamopyrgus antipodarum)

New Zealand mudsnail
(Potamopyrgus antipodarum)

- 1/10 to ¼ inch high
- Operculum present
- Light to dark brown
- Cone shaped shell with 5-6 whorls
- Raised carina (keel) on whorls

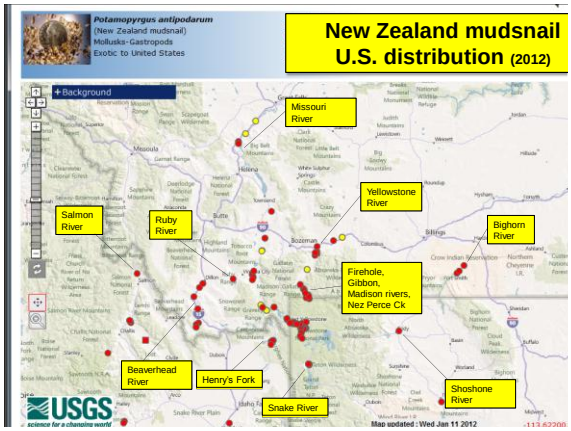
New Zealand mudsnail
(Potamopyrgus antipodarum)

New Zealand mudsnail
(Potamopyrgus antipodarum)

- More than half million per square meter,
- Frequently comprising over 95% of the invertebrate biomass in a river,
- Asexual (it only takes one specimen to establish a new population),
- 2% of the nutritional value of traditional fish food
- Can survive up to 25 days or longer out of water.

Distribution of New Zealand mudsnail

Suggested citation: Benson, A. J. 2011. New Zealand mudsnail sightings distribution. Retrieved 2/24/2011 from newzealandmudsnaildistribution.aspx.



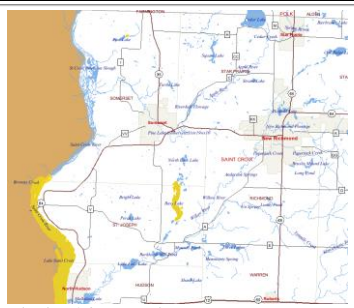
Zebra Mussel
(Dreissena polymorpha)

Zebra Mussels On Native Milfoil

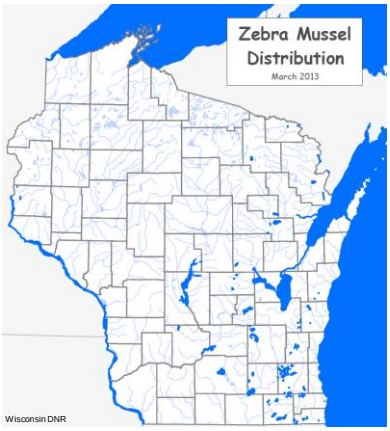
Native (Amblema plicata) with the Zebra mussels

Zebra mussels

- St. Croix County
  - Bass Lake
  - Bass Lake
- Lake St. Croix



Wisconsin DNR Surface Water Data Viewer

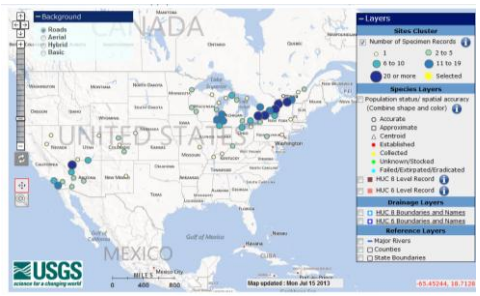


Wisconsin DNR

Quagga Mussels
(Dreissena bugensis)

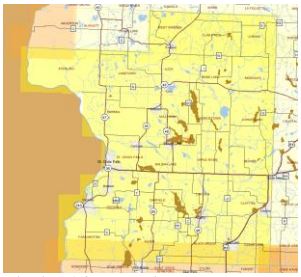
Bissell threads are bad news.

Quagga Mussels *(Dreissena bugensis)*



Quagga Mussels *(Dreissena bugensis)*

Chinese mystery snail (32)

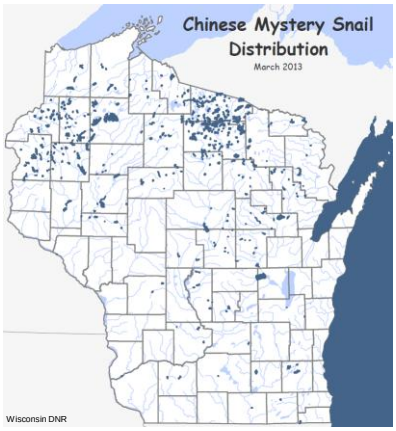


Wisconsin DNR Surface Water Data Viewer

Chinese mystery snail (32 + 13 = 45)

- Antler Lake
- Balsam Lake
- Bear Trap Lake
- Big Blake Lake
- Big Lake
- Black Brook Flowage
- Bone Lake
- Camelia Lake
- Cedar Lake - T32 R18W S34
- Church Pine Lake
- Clam Falls Flowage
- Clear Lake
- Deer Lake
- Half Moon Lake
- Horseshoe Lake
- Lower Pine Lake
- Magnor Lake
- McKenzie Lake
- North Pipe Lake
- North Twin Lake
- North White Ash Lake
- Pike Lake
- Pine Lake
- Pipe Lake
- Sand Lake
- Silver Lake
- South Twin Lake
- Staples Lake
- Swede Lake
- Wapogasset Lake
- Ward Lake
- White Ash Lake

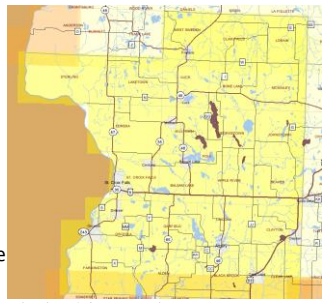
Apple River Flowage, Bass, Big Butternut, Big Round, Bridget, Godfrey, Little Mirror, Long (T), Long (I), Loveless, Paulsen, Poplar, Sandhill



Wisconsin DNR

Banded mystery snail (10)

- Big Blake Lake
- Big Lake
- Black Brook Flowage
- Bone Lake
- Bone Lake
- Half Moon Lake
- Magnor Lake
- North Pipe Lake
- North White Ash Lake
- Staples Lake

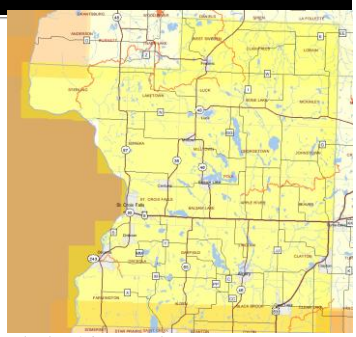


Wisconsin DNR Surface Water Data Viewer

Rusty crayfish (8)

- Apple River
- Osceola Creek
- St. Croix River
- Trade River
- Willow River
- Wood River

- Balsam Branch
- Bone Lake



Wisconsin DNR Surface Water Data Viewer

Wisconsin DNR

Spiny water flea (11)

- Lake Michigan
- Lake Superior

- Vilas County
- Iron County

- Dane County
- Door County

Wisconsin DNR

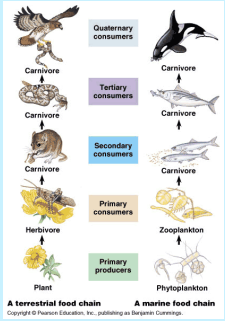
Grass carp = green
Bighead carp = blue
Silver carp = gray

Wisconsin DNR Surface Water Data Viewer

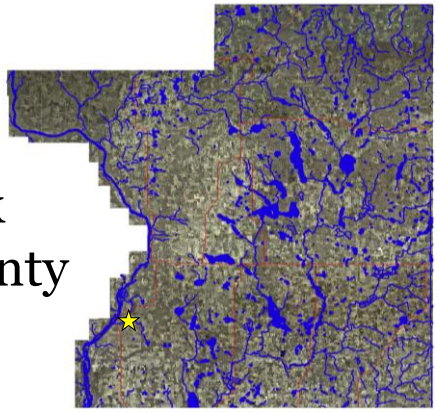
Aquatic Invasive Species

What makes a species invasive?

- Not from Wisconsin
- Lots of seeds or eggs
- No natural predators
- Can tolerate many conditions



Polk County



Curly leaf pondweed and Eurasian water milfoil

Mystery snails

Purple loosestrife
Galerucella beetles

Spiny water flea

Zebra Mussels

Rusty crayfish

Sea Lamprey

Asian carp

Polk County cares about our water resources!
LOCAL ORDINANCE
Boaters must remove all aquatic plants and invasive animals before launching and entering a roadway.
Fines - $200-$500.
Illegal to Transport
Polk County Ordinance 10-08
www.co.polk.wi.us/landwater/

Invasive Species Merit Badge Pilot
October 5-7th Eagle River District
Program Presentation Side Boards

Pre-work: Scouts will have researched at least one invasive species not found in their local area prior to checking in on October 5th. We are looking for two presenters per station. Presenters will only need to be at the work site near New Richmond from 11 am to 5 or 6 PM on October 6th.

Principles of Chemical Application (Station 1): Lee 4-Control

- Have fun with the scouts.
- Make the station memorable
- Bring hands on activities, equipment, tools to help promote learning in your station and talk about the safety equipment necessary to use these tools.
- Explain and demonstrate the proper usage and care of equipment you will use to treat invasive species. Maybe hand sprayers, backpack sprayers, atv sprayers, etc or other chemical application equipment keeping the first two bullets in mind.
- Describe and show some of the proper safety gear that could be worn when applying chemicals. (Don't make it scary. Emphasize that chemicals are important and when you use them correctly this safety gear shouldn't need to be worn, but it is there to ensure your safety, etc…)

Equipment Showcase (Station 2): Glup

- Have fun with the scouts.
- Make the station memorable
- Explain and demonstrate the proper usage and care of equipment you will use to treat invasive species. Maybe hand sprayers, backpack sprayers, ATV sprayers, etc. or other chemical application equipment keeping the first two bullets in mind.
- Utilize hands on activities if possible to keep scouts engaged.

Oak Savanna Restoration (Station 3):

- Have fun with the scouts.
- Make the station memorable
- Name and talk about at least two invasive species found within this habitat, how they got there and how to treat them.
- Talk about a microorganism such as those that cause oak wilt, etc…that impact terrestrial plant. What makes these organisms invasive?
- Mention and define the terms terrestrial plants, animals and insects, native species.
- Show examples of native species.
- Utilize hands on activities if possible to keep scouts engaged.

Invasive Species Spread/Vectors (Station 4):

- Have fun with the scouts.
- Make the station memorable

Invasive Species Merit Badge Pilot
October 5-7th Eagle River District
Program Presentation Side Boards

- Define vector, pathway, habitat, biodiversity. What makes an invasive species so invasive (plant biology and seed dispersion)
- Give example of invasive terrestrial animal/insect. (emerald ash borer?).
- Utilize hands on activities if possible to keep scouts engaged.

Aquatic Species Management (Station 5): Jeremy Williamson; Polk County

- Have fun with the scouts.
- Make the station memorable
- Use and describe the meaning of Aquatic, Aquatic Plant, Aquatic animals/insects.
- List the similarities and differences between terrestrial and aquatic invasive plants.
- Name and talk about at least two invasive species found within this habitat, how they got there and how to treat them.
- Identify at least one invasive animal and why it is invasive and how we are treating it.
- Be creative and hit your agency focal points such as aquatic hitch hikers, etc…
- Bring hands on activities, equipment, tools to help promote learning in your station and talk about the safety equipment necessary to use these tools.
- Utilize hands on activities if possible to keep scouts engaged.

Local Invasive Species "What's going on in the local area?" (Station 6): Bill Hogseth WI DNR

- Have fun with the scouts.
- Make the station memorable
- Identify several local invasive species and discuss how to develop a management plan for the infestation. Touch on the importance of an integrated approach.
- Show examples of native species
- Utilize hands on activities if possible to keep scouts engaged.

Bio Control (Station 7): Mike Mlynarek USFWS

- Have fun with the scouts.
- Make the station memorable
- What are bio controls and how are they used. Touch on integrated management techniques and how bio controls are a part of this equation.
- Utilize hands on activities if possible to keep scouts engaged.

Grazing/ Plant Biology (Station 8):

- Have fun with the scouts.
- Make the station memorable
- Name and talk about at least two invasive species found within this habitat, how they got there and how to treat them.

Invasive Species Merit Badge Pilot
October 5-7th Eagle River District
Program Presentation Side Boards

- Gear presentation toward grazing as a tool and use the following terms: Ecosystem, native species, introduced species (not necessarily invasive but are not local), displacement, threatened and endangered species. Try to show some examples of these terms on the landscape.
- Utilize hands on activities if possible to keep scouts engaged.

Note: Requirements 1, 2 and 4 will be touched upon during Troop breakout sessions and during the introduction presentation on October 6th.

General agenda for the day

Check in starts at 8:30 AM
Turn in Permission Slips

Locate First Aid Station

Mixed work teams will assemble. Your team may consist of Cub Scouts and their adult partners and Boy Scouts and Venturers.

Team Leaders will direct activity

Walk to work area

Many Opportunities for informational presentations

Lunch break
Tour Demonstration Area

Continue Conservation Project

Afternoon invasive species learning stations

Closing Ceremony starts at 5:30PM

Registration information online at
http://eagleriver.nsbsa.org/EventsActivities/DistrictwideActivities/ConservationDayofService.aspx

What to bring, what you'll do

Come as your schedule allows. The event is open to all Eagle River District Cub Scouts, Boy Scouts, Venturing Crews and their families. *

This Conservation Day is a hands-on field day designed to introduce Scouts of all ages to issues related to habitat restoration. It will provide opportunity for Service hours appropriate to all levels of Scouting to be applied to Journey to Excellence.

Work at a pace you are comfortable with.

Suggested Items to bring
Small Daypack
Hat
Work Gloves
Long Sleeve Shirt
Filled Water Bottle
Small first aid kit
Closed-toe footwear –NO Sandals
Rain jacket
Trail snack

Lunch is included in the day's fee

* Not suitable for toddlers or pre-schoolers. Five years old suggested as minimum age. No limit at maximum age – use your common sense.

Service Hours

The participation in a Service Project is usually applied to one advancement requirement at a time.

However there may be parts of the event that can be applied to various Achievement, Elective, Rank, or Merit Badge requirements.

Completing advancement requirements is a natural outcome of many of our events, even when they are not specifically identified. Look through your Cub or Scout handbook and sign-off on items that were covered today

Conservation Service Project

Bird Study

Wildlife habitat concerns

Pollution effects

Tool Safety

Weather issues

Plant and Animal Identification

And various other opportunities to work toward other awards…

Conservation Day

Service Project

Record your participation and turn this portion into your Scout Leader.

Name _____

Address_____

City _____

State _____

Age _____

Pack / Troop / Crew # _____

Check Scouting Level:

_____Lion or Tiger Cub Scout
_____Wolf or Bear Cub Scout
_____Webelos Scout
_____Boy Scout, current rank

- □ Scout
- □ Tenderfoot
- □ Second Class
- □ First Class
- □ Star
- □ Life
- □ Eagle

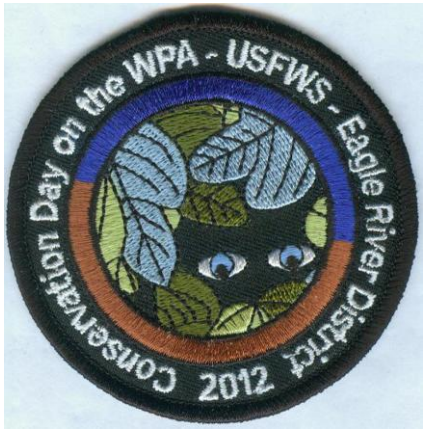
_____Venturing Scout

Write a brief statement of what you did.
Today I helped …_____
_____
_____
_____
_____
_____

The primary goal of today's event is to encourage outdoor activities and to be engaged with others in the Scouting community. Scouting is a 'game with a purpose' and today was an opportunity to be involved with local conservation issues

Check your Handbook for details on the World Conservation Award.

Event Sponsors:



2012
Event patch

Conservation Day Service Project

Saturday, October 6, 2012

*9 am – 6 pm

*Registration begins at 8:30

Oak Ridge Waterfowl Production Area
Star Prairie, Wisconsin

2 miles East of WI Hwy 65 on 220th Ave, 1 mile south of Star Prairie/ County H.
(Approx. 5 miles north of New Richmond)

Fee - $2 [per person]

Sponsored by
US Fish and Wildlife Service
Friends of the St Croix Wetland Mngt District
and
Eagle River District Activities Committee
Boy Scouts of America

crane's neck is straight. You might hear a distinctive "kraak" when the bird is flying overhead. The heron, although a relatively quiet bird, also emits a call when disturbed or greeting other herons. Successful hunting of fish, frogs, salamanders, snakes, crayfish, dragonflies, grasshoppers, and even small mammals and birds is aided by keen eyesight, long legs and a 5-1/2 inch dagger-like bill. Hunting is accomplished by two methods: "standing" and "walking slowly." Prey caught using either of these methods is swallowed immediately; if the prey is too big, the heron will kill it by beating it on the ground and then pick it apart.

The cold winters in Wisconsin force the great blues, like other birds, to migrate southward. Unlike the human version of "snowbirds," birds migrate for a food source. Our great blues, flying at an impressive 20-30 miles per hour, likely set their sights on the lakes and marshes of southern states or Mexico to spend the winter. They make

this trip twice yearly, and it can be for many years. The two oldest known great blues lived until 23 and 20 years, respectively. While the population of great blue herons is stable now, that was not always so. In the late 19th and early 20th centuries, birds with flamboyant plumage were shot for their feathers, which decorated hats. The Migratory Bird Treaty Act of 1918 put a stop to that practice and saved the great blue (and many other species) from extinction. Today, their main threat is human development. For a successful breeding season, nests need to be located away from disturbances. While there are a few established rookeries in more urban areas, they are anomalies. More commonly, disturbances clear out a rookery. There are many documented instances of a housing development or other human disturbance forcing herons to find a new home. If this occurs during nesting season, a generation of herons is lost. Preserving rookery sites and consideration for a healthy great blue population today will allow some person many years in the future to kayak around a bend in the shoreline of a small, wild lake and watch as a tall, majestic bird walks slowly in pursuit of bluegills.

by Mary Pardee
UW-Extension Lakes Program

Zebra Mussels – *Provided by Jeremy Williamson, Water Quality Specialist and Aquatic Invasive Species Coordinator, Polk County*

Zebra mussels are aquatic invasive mussels with a D-shaped shell exhibiting alternating black and white stripes. Since they are able to attach to hard surfaces, zebra mussels can clog water intakes and damage equipment such as boat motors. When water bodies are infested with zebra mussels their shorelines become littered with sharp shells, impeding human recreational opportunities. Additionally, they damage ecosystems by harming fisheries and smothering native mussels, snails, and crayfish.

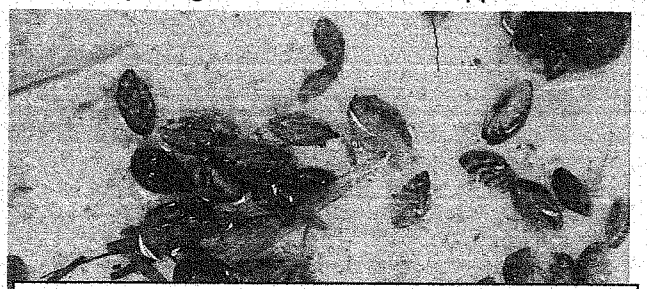


Figure 1. Zebra mussels from Bass Lake, St. Croix County, 2011.

Zebra mussels arrived in the Great Lakes in the late 1980's from contaminated ballast water. Since that time they have expanded in range in Minnesota and Wisconsin including the St. Croix River and the 7 county Twin Cities metro area.

Zebra mussels have not been found in Polk County; however, in 2010 they were discovered in Bass Lake in St. Croix County (Figure 1). In response to the discovery of zebra mussels in Bass Lake in St. Croix County in 2011, an extensive monitoring program was implemented for zebra mussels in Polk County Lakes located north of Bass Lake. Vertical and horizontal plankton tows were taken and analyzed for aquatic invasive species. Fortunately, these samples yielded no zebra mussel veligers (larvae). Additionally, spiny water fleas were not found in any of the lakes sampled.

We are fortunate that zebra mussels have not been found in Polk County lakes yet. However, our lakes are still very susceptible, so remember to inspect your boat, remove any vegetation, animals, or sediment, and drain the live well before leaving or entering a lake.

Aquatic Invasive Species Monitoring and Control

WDNR Statewide AIS Early Detection Monitoring

Extensive protocol completed on ~10 lakes/year

Eurasian Water Milfoil

Monitor susceptible lakes and hand pull small stands

Japanese/Giant Knotweed

Foliar application and stem injection of herbicide

Purple Loosestrife

Rear & release beetles at large stands and cut /bag flowers & apply herbicide at small stands

Zebra Mussels

Monitoring susceptible lakes for early detection

Aquatic Invasive Species Education and Training

Information & Education at Lake Meetings and Community Events

Clean Boats, Clean Waters

Four presentations scheduled for training volunteer monitors in 2012

Youth Education

AIS education for schools

Clean Boats, Clean Waters Story Hour

Presentations scheduled at seven Polk County Libraries and one youth camp in summer 2012

Signage at Boat Landings

Install new DNR AIS signs and Polk County AIS Ordinance signs and distribute signs to lake organizations

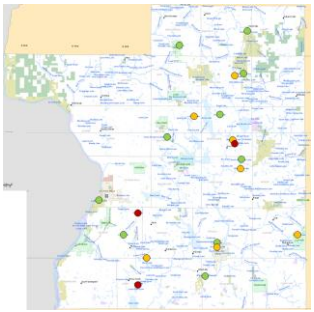
Clean Boats, Clean Waters

- Invasive plants and animals threaten Wisconsin's water and land by outcompeting native plants and animals and disrupting natural habitat systems.
- Boats, trailers, fishing nets, personal watercraft, and other equipment can act as transportation devices for aquatic invasive species, allowing invasive species to become established in new areas.
- Clean Boats, Clean Waters is a program designed to provide an opportunity for volunteers to help stop the spread of invasive species throughout the state by using the "Stop Aquatic Hitchhikers" message.
- Through Clean Boats, Clean Waters volunteers are trained to organize and conduct a boater education campaign in their community.
- At Clean Boats, Clean Waters training sessions volunteers learn how to:

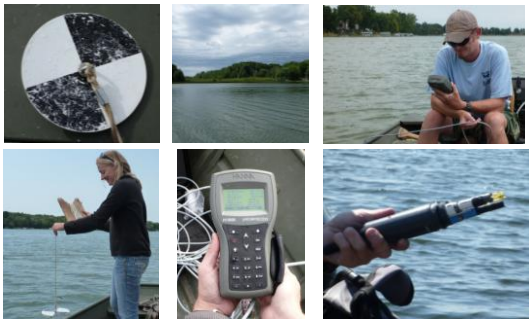
1. Identify aquatic invasive species
2. Report potential new invasive species
3. Perform boat and trailer checks
4. Set up a boat launch monitoring program
5. Record pertinent data
6. Spread the Clean Boats, Clean Waters message

Aquatic Invasive Species Monitoring

- Statewide protocol
- Third year of data collection
- ~200 lakes/year
- Randomly picked



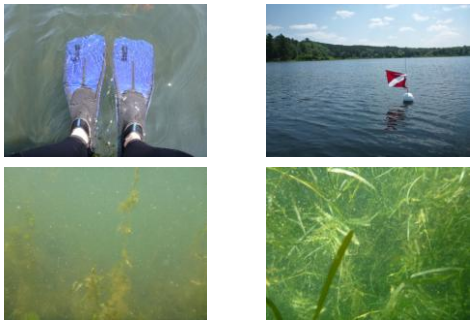
Aquatic Invasive Species Monitoring



Aquatic Invasive Species Monitoring

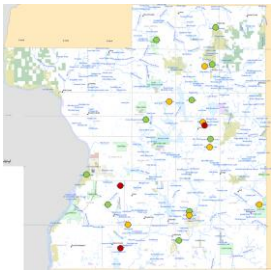
Aquatic Invasive Species Monitoring

Aquatic Invasive Species Monitoring



Results

- 19 lakes
- 3 no AIS
- 11 Chinese mystery snails
- 6 curly leaf pondweed
- 4 purple loosestrife
- 1 Eurasian water milfoil



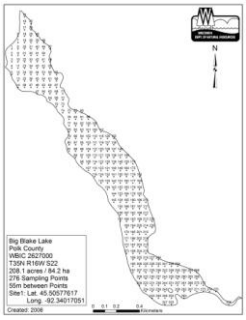
Project RED Training

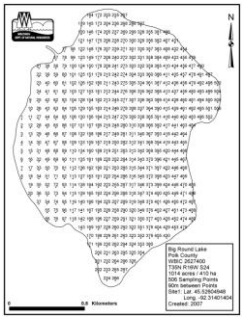
- 21 participants

PCALR workshop

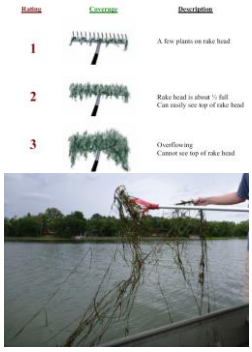
- 3 sessions
- 34 registrations
- Attendance average 23 people/session
- Positive feedback

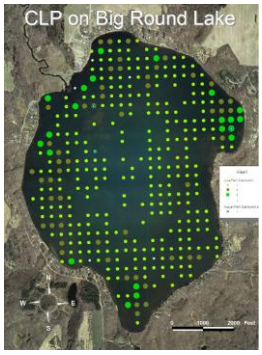
Plant Surveys





Plant Surveys





Lake Grants

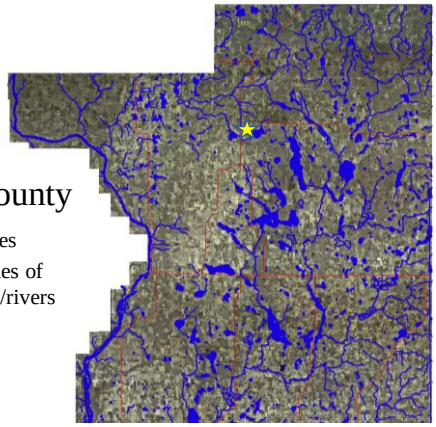
- Church Pine, Round, and Big Lake
- Apple River Flowage
- Long Lake
- Blake Lake
- Lotus Lake

Basic Lake Grant

- Data collection
  - Water quality (physical & chemical)
  - Biological community
  - Shoreline health
  - Land use
  - Nutrient loading
- Educational programs
- Meetings
- Lake Management Plan

Polk County

- ✓ 437 lakes
- ✓ 365 miles of streams/rivers



Climate change

Microbial health

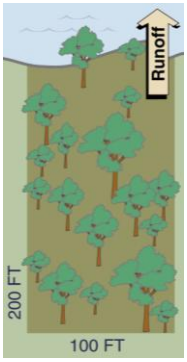
- ✓ Fecal coliform bacteria
  - ✓ Live in intestines/waste of animals
  - ✓ Indicate potential presence of disease carrying organisms
- ✓ Polk County Public Beaches
  - ✓ Half Moon Lake
  - ✓ Big Butternut Lake
  - ✓ Balsam Lake
  - ✓ South Twin Lake

© Shirley Owens, Center for Electron Optics, MSU, 1996

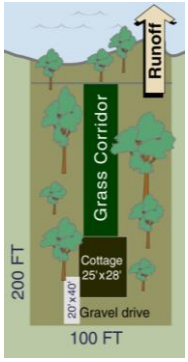
Development

- Increased runoff, nutrients, and sediments

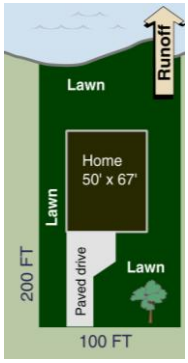
Undeveloped Lot:

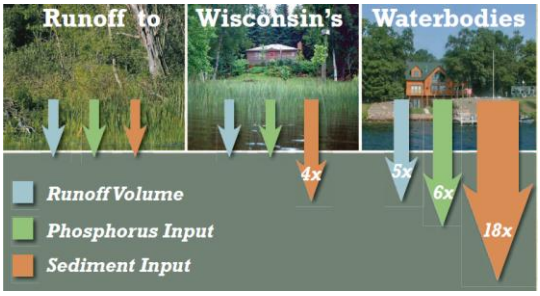


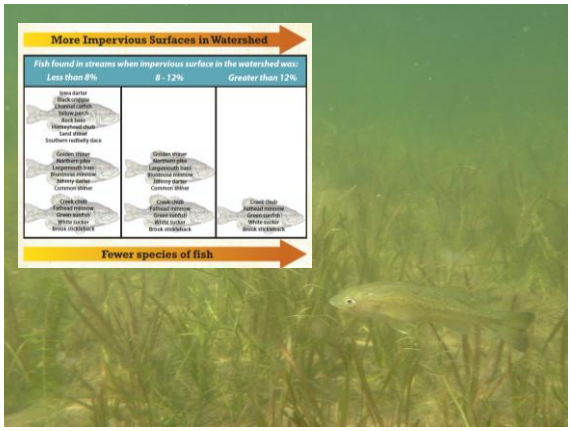
1940s development:



Today's development:

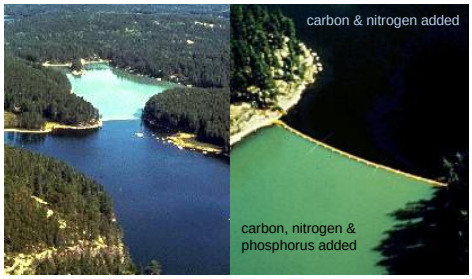






Lawns vs. natural vegetation

Most Wisconsin Lakes Phosphorus Limited



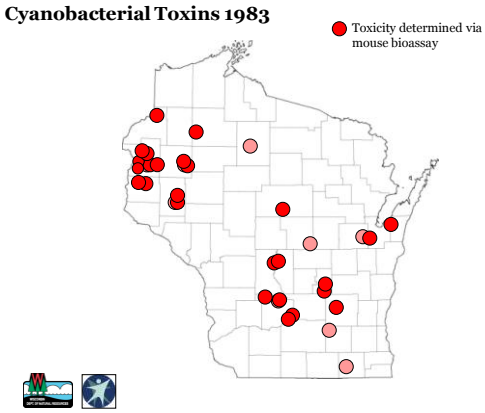
Lake 226, Ontario, Canada

Source: Experimental Lakes Area, Canada

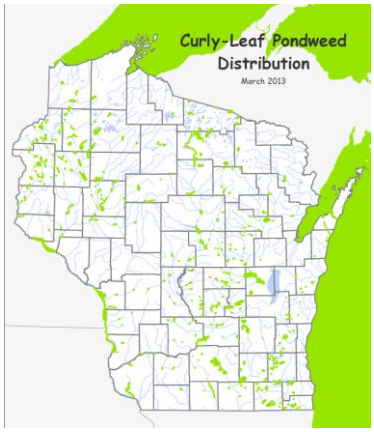
PCALR 2013

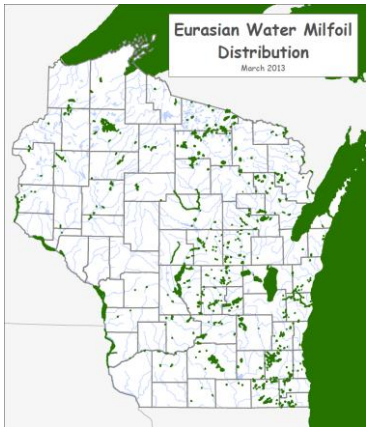
Eutrophication

Cyanobacterial Toxins 1983



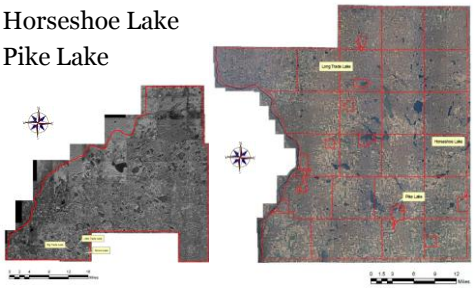
Curly leaf pondweed and Eurasian water milfoil





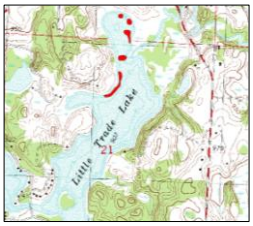
Eurasian Water Milfoil

- Long Trade Lake
- Horseshoe Lake
- Pike Lake



Spread of EWM in Little Trade, Burnett

- Spring 2010
- Spring 2011



Eurasian water milfoil management

- Spray in early season before water hits 65°F
  - Little Trade (RR grant, along with Big Trade)
  - Horseshoe
  - Pike
- Hand removal

Lakes WITHOUT Chinese Mystery Snails 2010

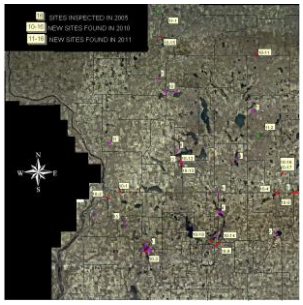
- Blake
- Coon
- Diamond
- Dwight
- Horse
- King
- Little Butternut
- Long Trade
- Lotus
- Pickerel
- Rice
- Somers
- Twin
- Vincent
- Ward
- Wild Goose

Lakes WITH Chinese Mystery Snails

- Apple River
- Balsam
- Bass
- Bear Trap
- Big Butternut
- Big
- Big Round
- Bone
- Bridget
- Camelia
- Cedar
- Church Pine
- Clam Falls Flowage
- Clear
- Deer
- Godfrey
- Half Moon
- Horseshoe
- Little Mirror
- Long (Cty Rd T)
- Long (Cty Rd I)
- Loveless
- Lower Pine
- Magnor Lake
- McKenzie
- North Twin
- Paulsen
- Pike
- Pine
- Pipe
- Poplar
- Sand
- Sandhill
- South Twin
- Wapogasset
- White Ash

Purple loosestrife in Polk County

- Big Lake
- Round Lake
- Magnor Lake
- Amery/Apple River
- White Ash Lake
- Lotus Lake
- Ghrims Lake
- Silver Lake
- Balsam Lake
- South Twin Lake



Management for purple loosestrife

- Flower removal and herbicide
- Raising *Galerucella* beetles

Releasing *Galerucella* beetles

- 2010 and 2012 → Luck Wetland
- 2011 → White Ash Lake Channel

Impacts of herbivory

Japanese and Giant Knotweed

Japanese and giant knotweed

Management for Japanese Knotweed

- Foliar application
- Stem injection

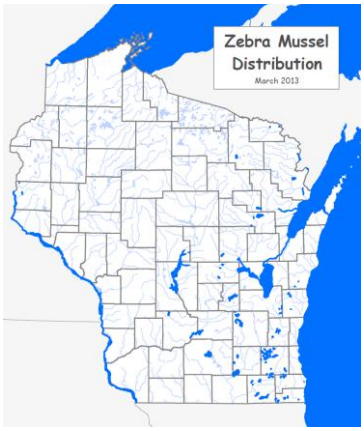
Rusty
crayfish

Rusty Crayfish
Distribution
March 2013

Spiny
water flea

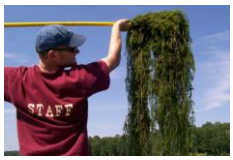
Spiny Waterflea
Distribution
March 2013

Zebra
Mussels



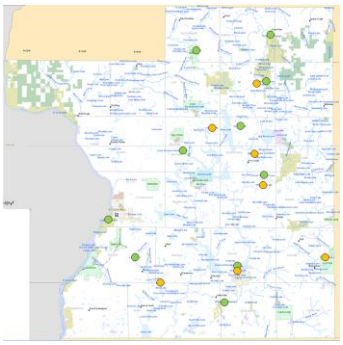
Early detection monitoring

- Meander survey
- 50 rake throws
- Plankton tows
  - Zebra mussels
  - Spiny water fleas
- Snorkel sites
  - Boat landing
    - 30 minutes
  - 5 sites in lake
    - 20 minutes
- Secchi
- Conductivity



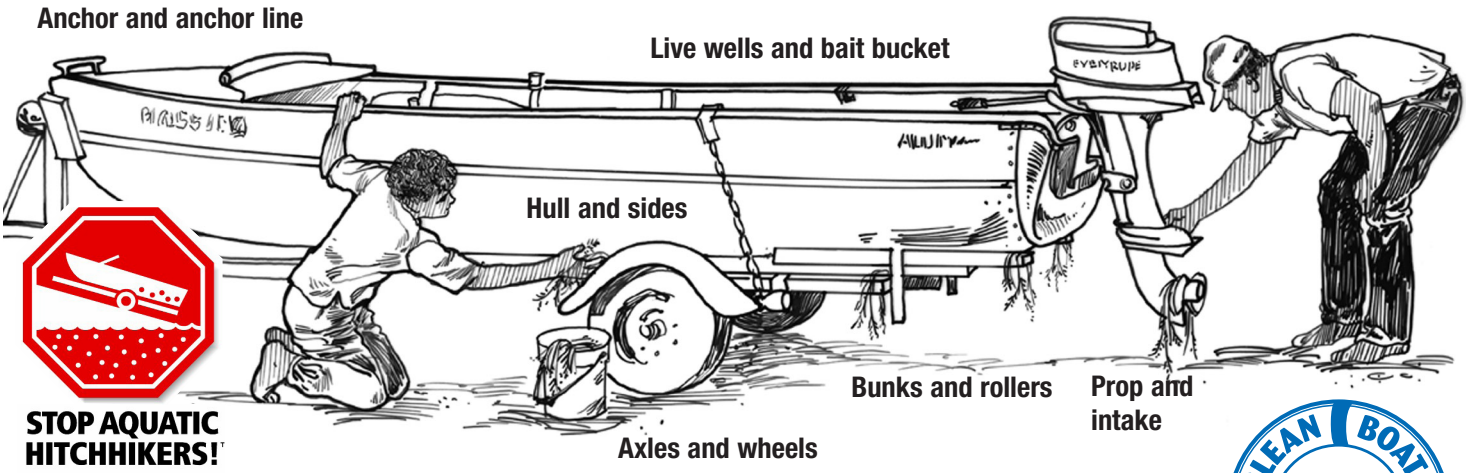
Early Detection Monitoring

- North White Ash
- Clam Falls Flowage
- Black Brook Flowage
- Lake O' the Dalles
- McKenzie
- Rice
- Lotus
- Pike
- Coon
- Vincent
- Ward
- Antler
- Big Blake
- White Ash
- Big
- North Twin
- Camelia



Stop aquatic hitchhikers…

Clean your boat and equipment to prevent the spread of invasive species!



In Wisconsin it's the law*… failure to follow these steps can lead to fines up to $2000.

Aquatic invasive plants and animals like Eurasian water milfoil, Curly leaf pondweed, rusty crayfish, and zebra mussels are easily transported by boats and equipment as boaters travel from one lake to another. The fish disease Viral Hemorrhagic Septicemia (VHS) is easily spread when fish are transported from one waterbody to another.

It is important for all of us to follow these preventative steps for all water activities, not just boating and fishing. These activities include:

- Using personal watercraft
- Shore and fly-fishing
- Sailing
- Scuba diving
- Waterfowl hunting

Be diligent! Even small fragments, roots or seeds transported by your boat can grow and infest another lake.

Before you leave a body of water:

- **Inspect** boats, trailers, and equipment.
- **Remove** all attached aquatic plants, animals, and mud before launching and before leaving the water access.
- **Drain** all water from boat, motor, bilge, live wells, bait containers and equipment before leaving the water access.
- **Never move** plants, live fish, bait, or fish eggs away from a water body.
- **Buy** minnows from a Wisconsin licensed bait dealer.
- **Dispose** of unwanted bait in the trash, not in the water or on land.

Additional steps

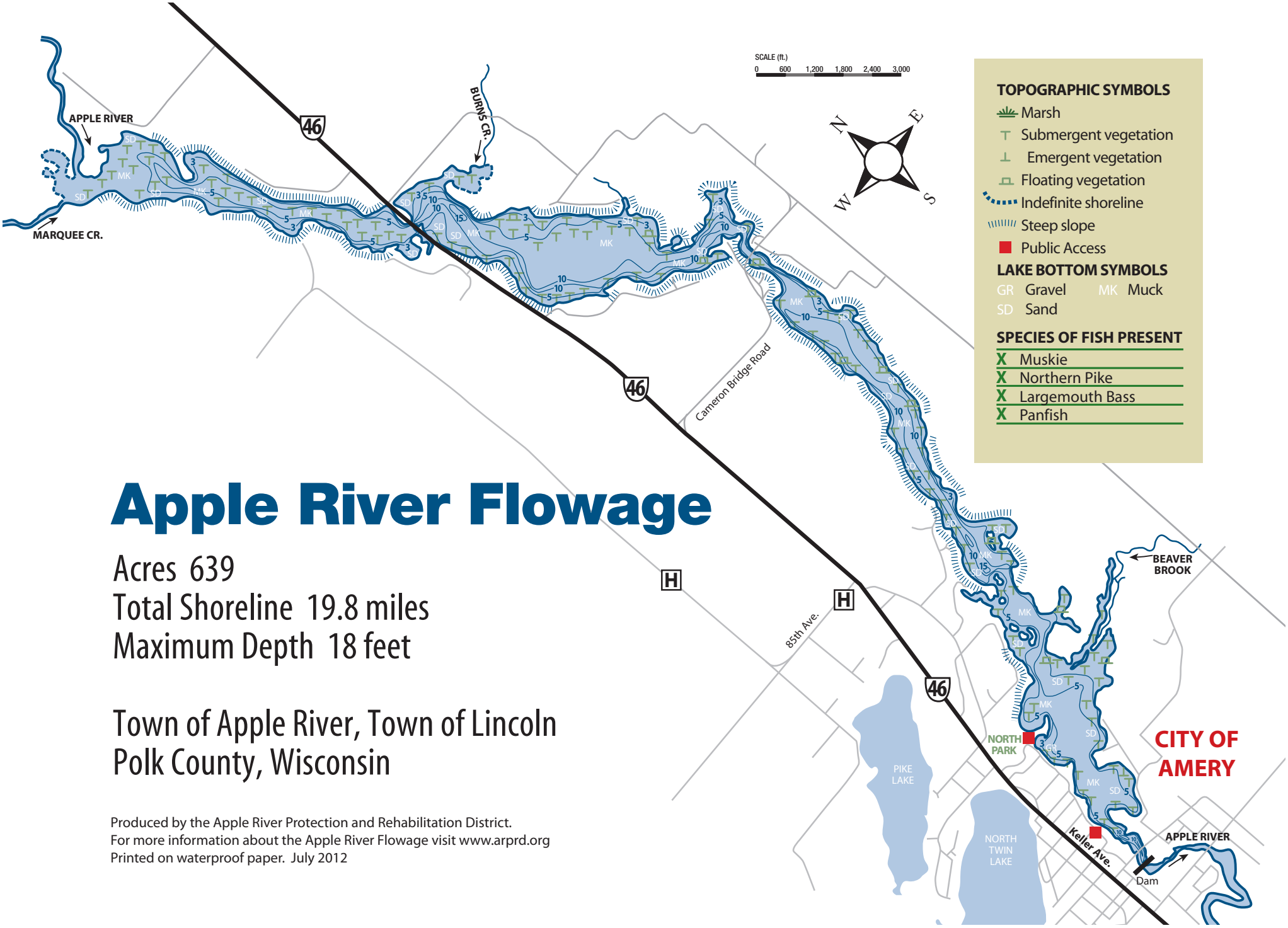
- Spray, rinse, or dry your boat and equipment to remove or kill species not visible. Spray/rinse with hot or high pressure water OR dry your boat for 5 days before entering another lake or river.
- Disinfect boats and equipment to kill species and fish diseases using a mixture of two tablespoons of household bleach to one gallon of water.

*State of Wisconsin: Section 30.715 WI Act 16 prohibits launching a boat or placing a boat or trailer in navigable waters if it has aquatic plants or animals attached.

*Polk County Ordinance 29-11: prohibits launching or operating on a public roadway any boat, boat trailer, or hunting, trapping, fishing, or boating equipment, including canoes, lines, anchors, nets, decoys, and waders if aquatic plants or invasive animals are attached.

Polk County Sheriff
715-485-8300
(non emergency)
EMERGENCY DIAL 911

Source: Wisconsin Department of Natural Resources. For more information check these sources:
DNR.WI.GOV search "Aquatic Invasives", WWW.UWSP.EDU/CNR/UWEXLAKES, WWW.SEAGRANT.WISC.EDU, WWW.PROTECTYOURWATERS.NET



Apple River Flowage

Acres 639
Total Shoreline 19.8 miles
Maximum Depth 18 feet

Town of Apple River, Town of Lincoln
Polk County, Wisconsin

Produced by the Apple River Protection and Rehabilitation District.
For more information about the Apple River Flowage visit www.arprd.org
Printed on waterproof paper. July 2012

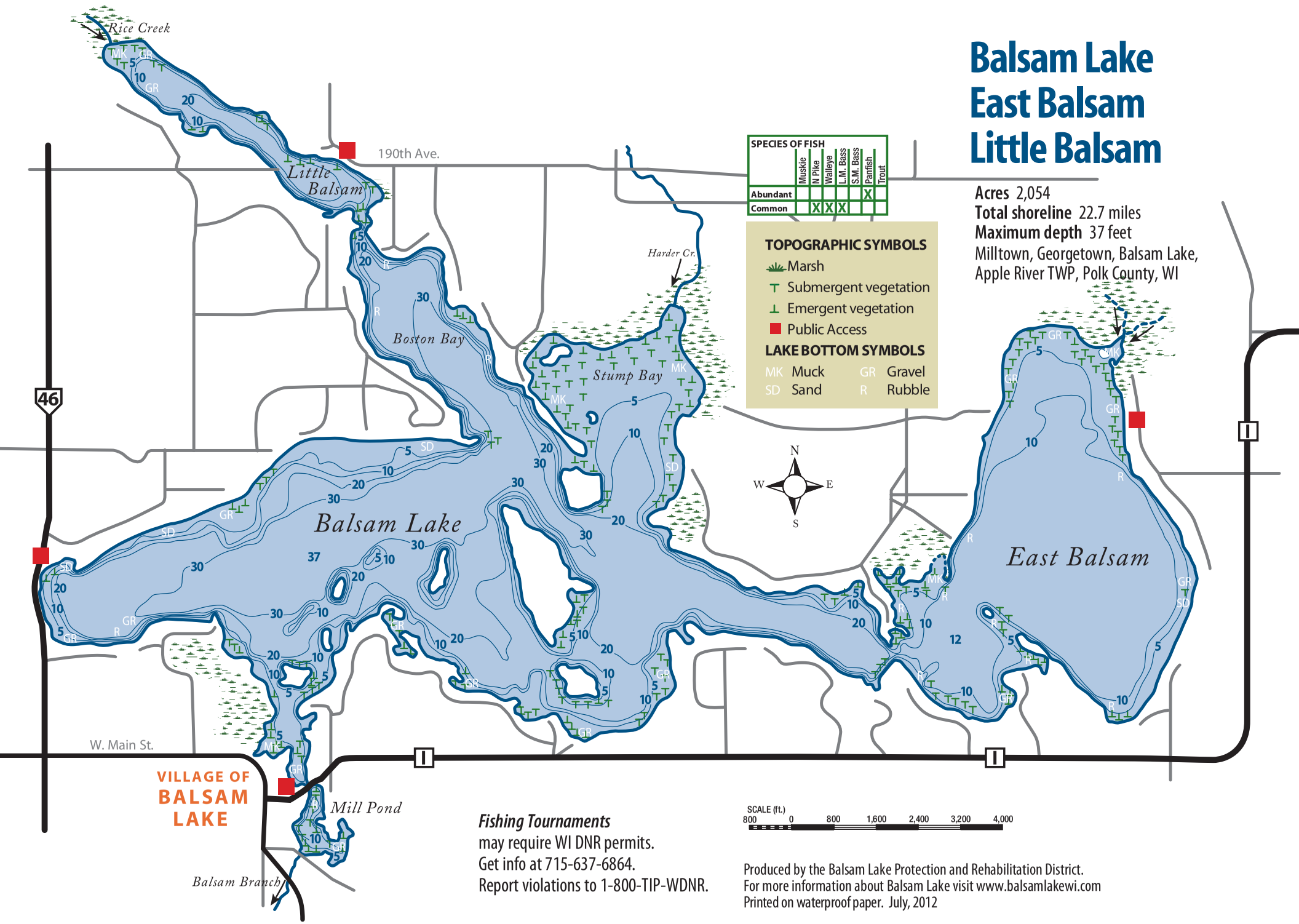
Balsam Lake
East Balsam
Little Balsam

Acres 2,054
Total shoreline 22.7 miles
Maximum depth 37 feet
Milltown, Georgetown, Balsam Lake, Apple River TWP, Polk County, WI

SPECIES OF FISH	Muskie	N Pike	Walleye	L.M. Bass	S.M. Bass	Panfish	Trout
Abundant						X	
Common		X	X	X			

TOPOGRAPHIC SYMBOLS
- Marsh
- Submergent vegetation
- Emergent vegetation
- Public Access

LAKE BOTTOM SYMBOLS
- MK Muck
- GR Gravel
- SD Sand
- R Rubble



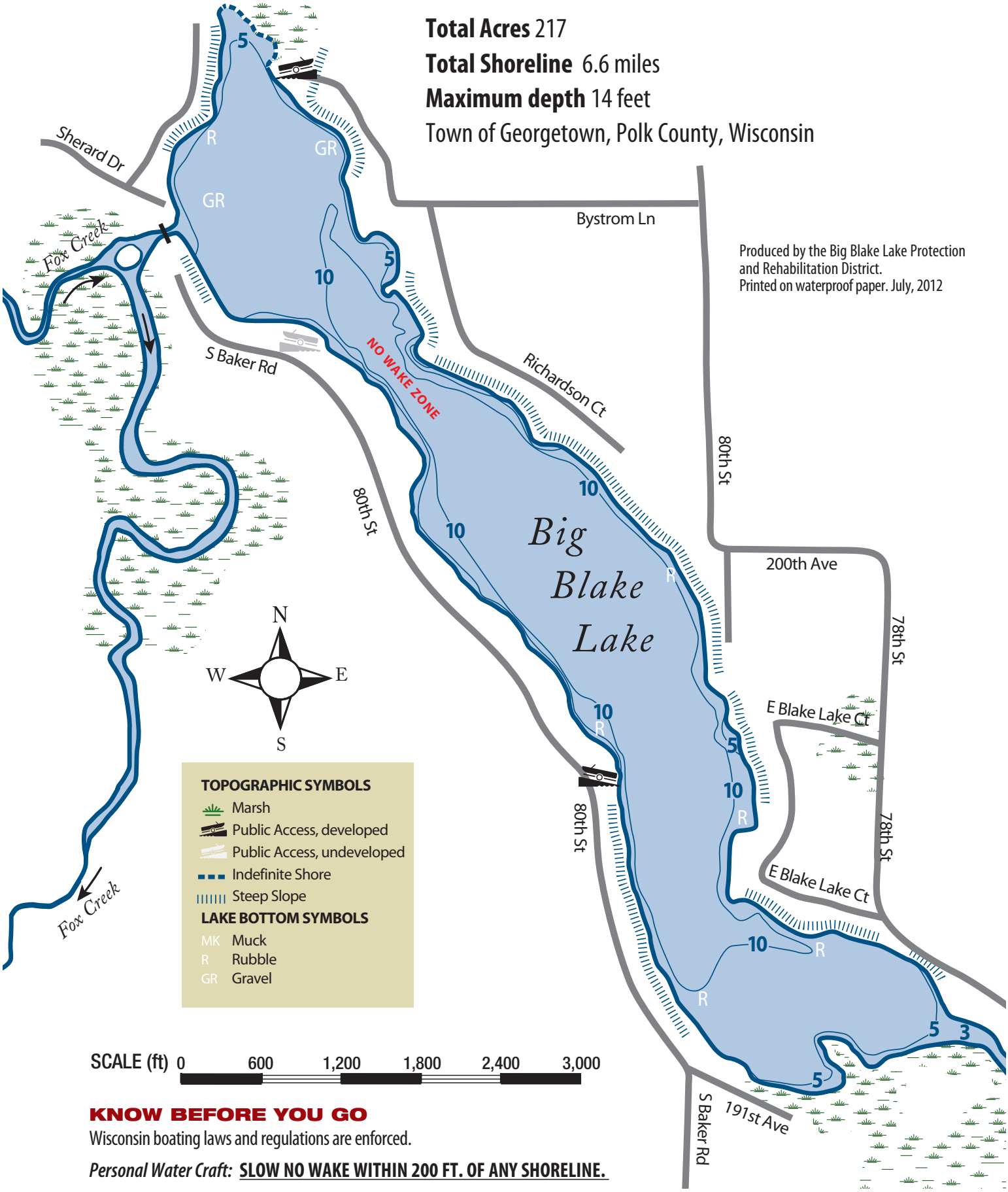
SCALE (ft.)
800 0 800 1,600 2,400 3,200 4,000

Fishing Tournaments
may require WI DNR permits.
Get info at 715-637-6864.
Report violations to 1-800-TIP-WDNR.

Produced by the Balsam Lake Protection and Rehabilitation District.
For more information about Balsam Lake visit www.balsamlakewi.com
Printed on waterproof paper. July, 2012

Big Blake Lake

Total Acres 217
Total Shoreline 6.6 miles
Maximum depth 14 feet
Town of Georgetown, Polk County, Wisconsin



Produced by the Big Blake Lake Protection and Rehabilitation District.
Printed on waterproof paper. July, 2012

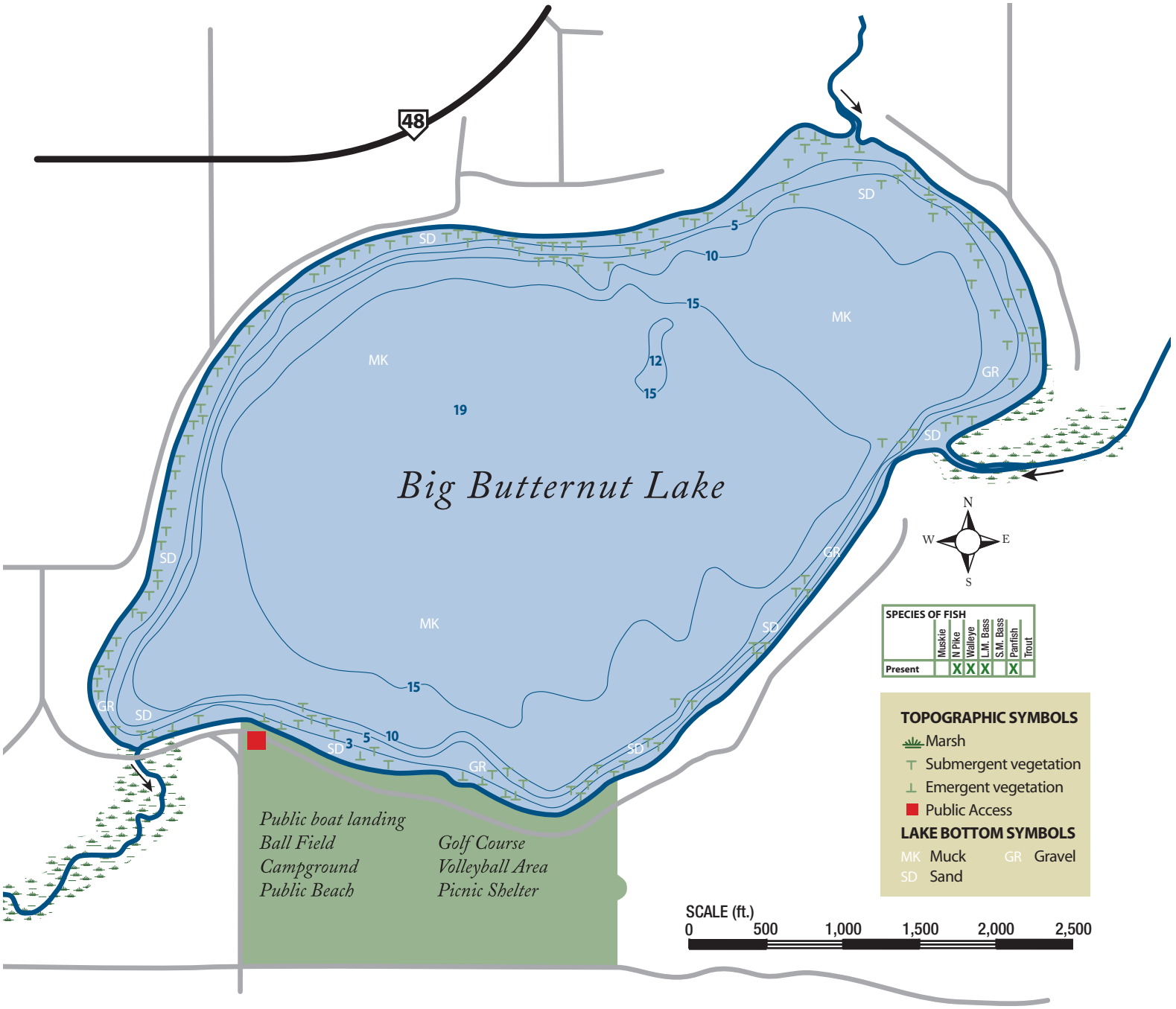
KNOW BEFORE YOU GO

Wisconsin boating laws and regulations are enforced.

Personal Water Craft: **SLOW NO WAKE WITHIN 200 FT. OF ANY SHORELINE.**

Big Butternut Lake

Total Acres 384
Total Shoreline 3.4 miles
Maximum depth 19 feet
Village of Luck, Town of Georgetown, Polk County, Wisconsin



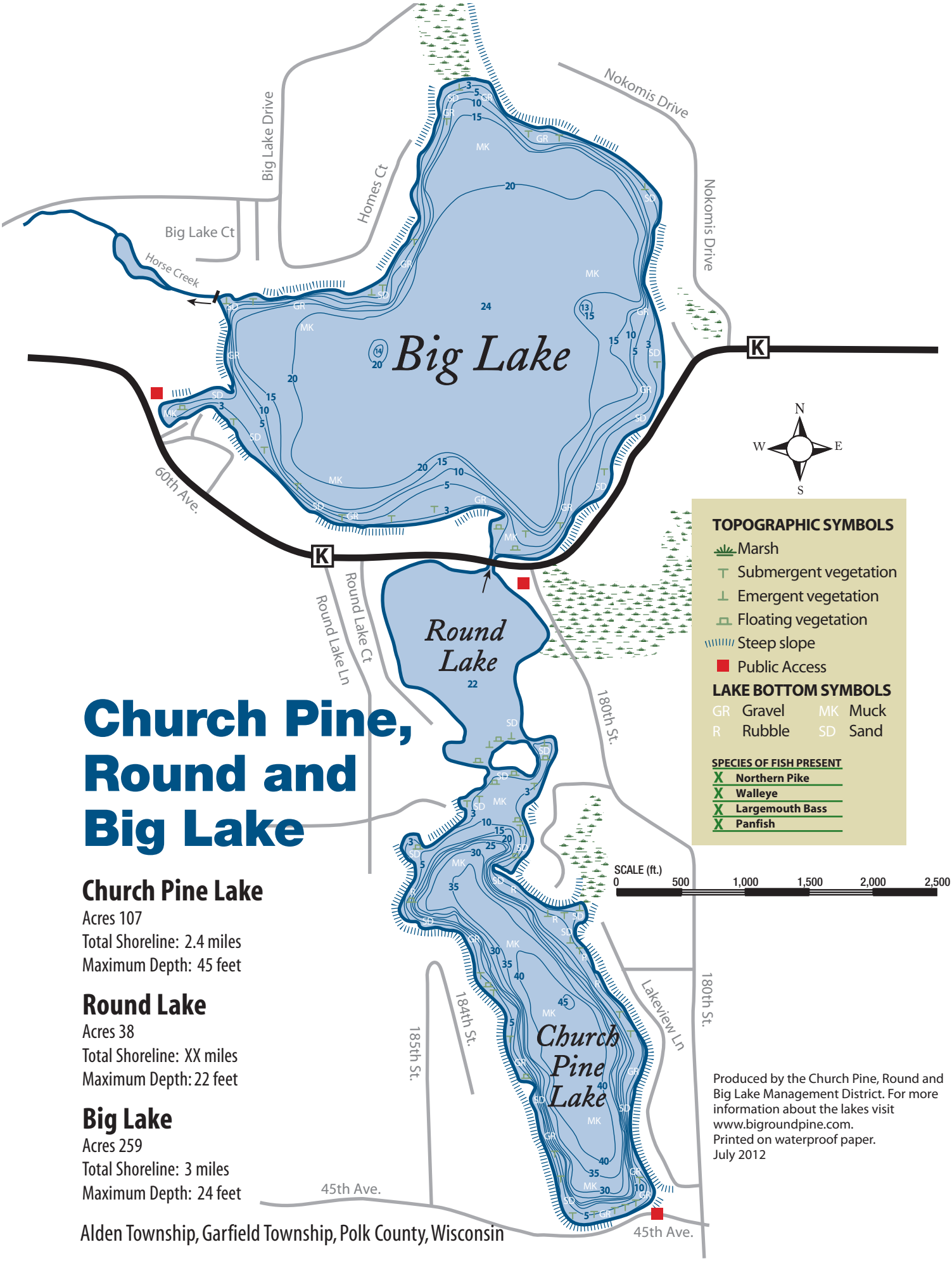
KNOW BEFORE YOU GO

Wisconsin boating laws and regulations are enforced.

Personal Water Craft: **SLOW NO WAKE WITHIN 200 FT. OF ANY SHORELINE.**

Produced by Big Butternut Lake Management District.
Printed on waterproof paper. July, 2012

Church Pine, Round and Big Lake



Church Pine Lake

Acres 107
Total Shoreline: 2.4 miles
Maximum Depth: 45 feet

Round Lake

Acres 38
Total Shoreline: XX miles
Maximum Depth: 22 feet

Big Lake

Acres 259
Total Shoreline: 3 miles
Maximum Depth: 24 feet

Alden Township, Garfield Township, Polk County, Wisconsin

Produced by the Church Pine, Round and Big Lake Management District. For more information about the lakes visit www.bigroundpine.com.
Printed on waterproof paper.
July 2012

Pipe and North Pipe Lakes

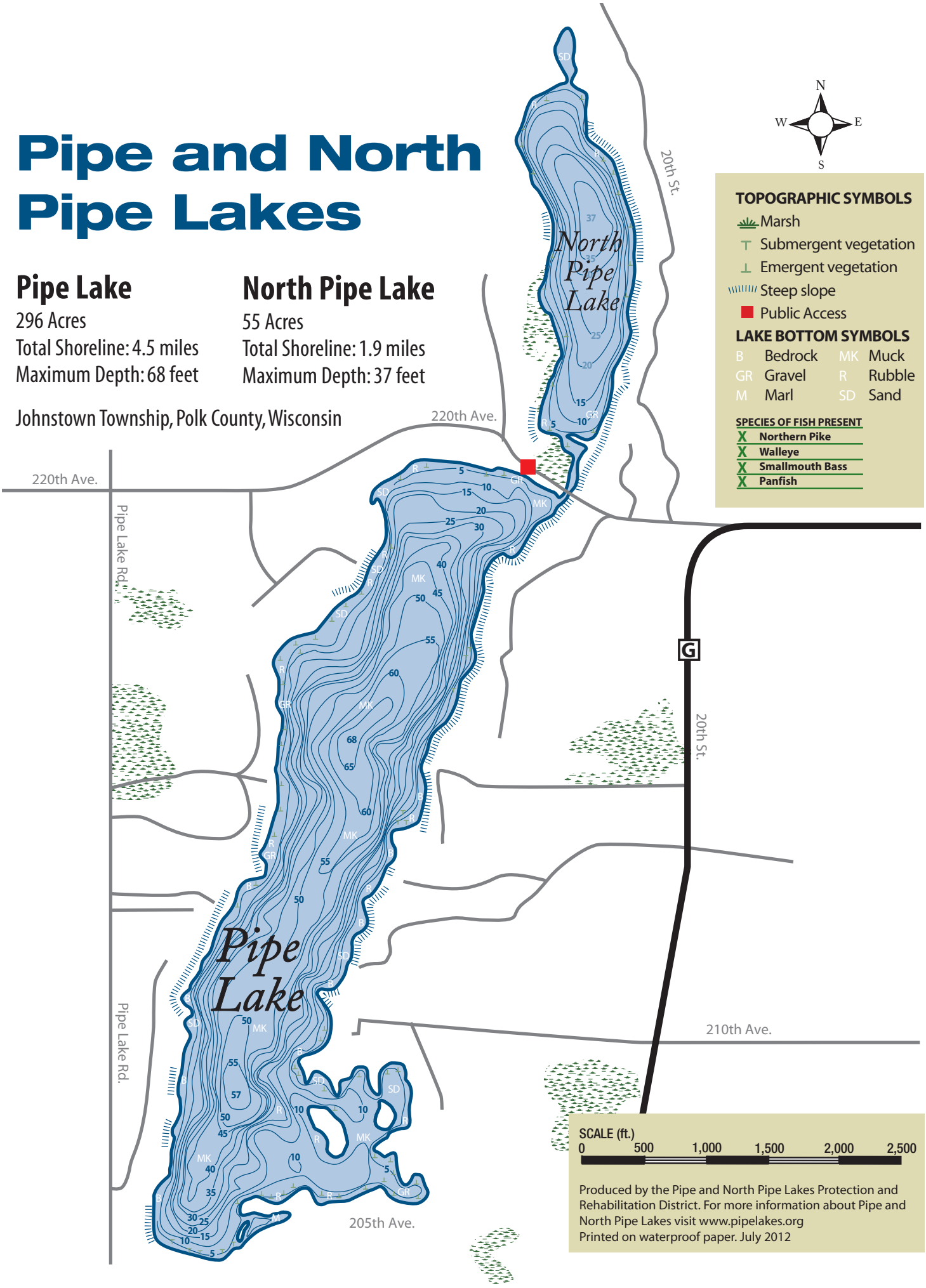
Pipe Lake

296 Acres
Total Shoreline: 4.5 miles
Maximum Depth: 68 feet

North Pipe Lake

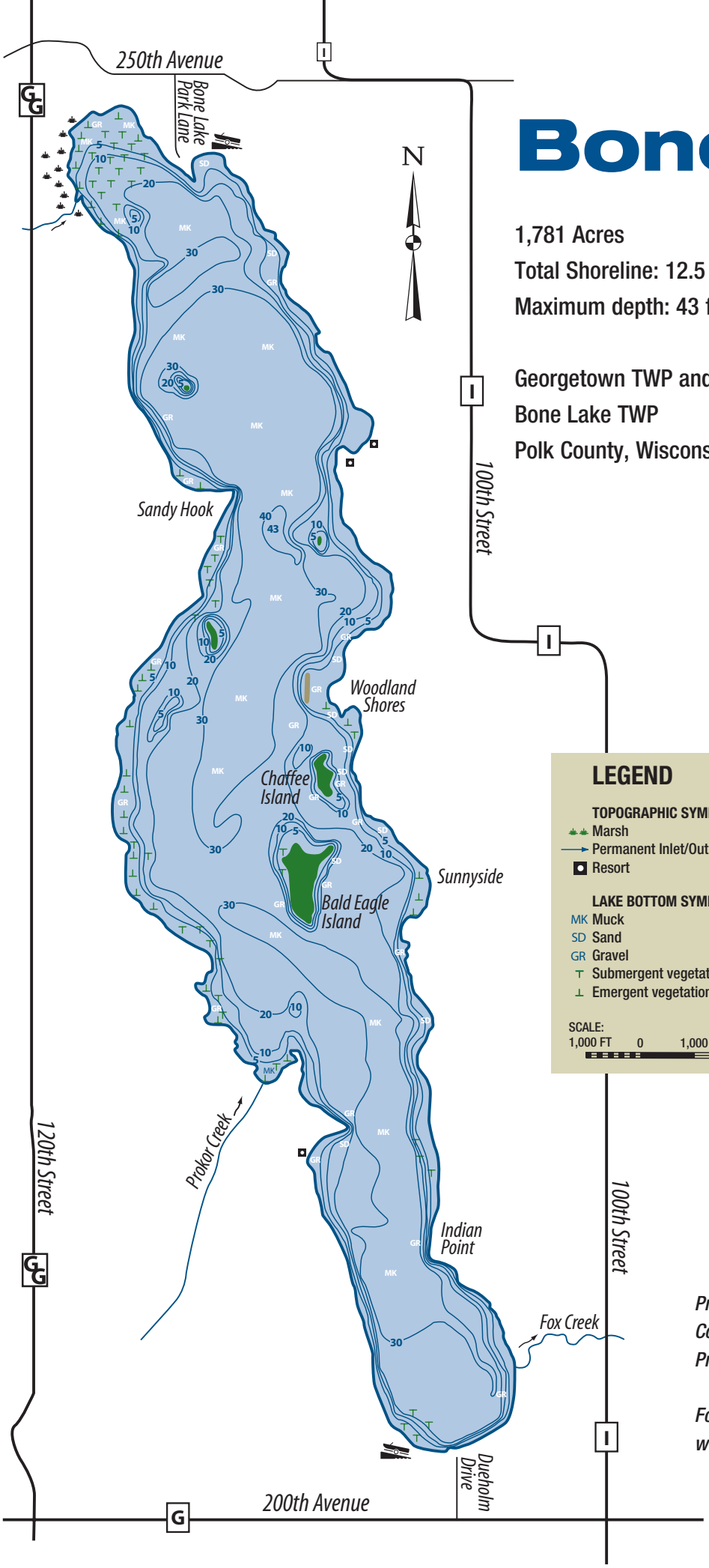
55 Acres
Total Shoreline: 1.9 miles
Maximum Depth: 37 feet

Johnstown Township, Polk County, Wisconsin



Produced by the Pipe and North Pipe Lakes Protection and Rehabilitation District. For more information about Pipe and North Pipe Lakes visit www.pipelakes.org
Printed on waterproof paper. July 2012

Bone Lake



1,781 Acres

Total Shoreline: 12.5 miles

Maximum depth: 43 feet

Georgetown TWP and

Bone Lake TWP

Polk County, Wisconsin

All watercraft:
NO WAKE WITHIN 100 FT. OF ANY SHORELINE

Personal watercraft:
NO WAKE WITHIN 200 FT. OF ANY SHORELINE

KNOW BEFORE YOU GO

Bone Lake water safety patrol in operation. Wisconsin boating laws and regulations are enforced.

Fishing Tournaments may require Wisconsin DNR permits. Get info at 715-637-6864. Report violations to 1-800-TIP-WDNR.

LEGEND

TOPOGRAPHIC SYMBOLS

- Marsh
- Permanent Inlet/Outlet
- Resort

LAKE BOTTOM SYMBOLS

- MK Muck
- SD Sand
- GR Gravel
- Submergent vegetation
- Emergent vegetation

SPECIES OF FISH

	Muskie	N Pike	Walleye	L.M. Bass	S.M. Bass	Panfish	Trout
Abundant				X			
Common	X	X				X	
Rare					X		

Boat Launch

SCALE:
1,000 FT 0 1,000 2,000 3,000 4,000 5,000

Produced by the Aquatic Invasive Species Prevention Committee of Bone Lake Management District. Printed on waterproof paper.

For more information about Bone Lake, WI visit www.bonelakewi.com

Reminder for boaters

This month a billboard was installed along Hwy. 87, north of the Lions Park, St. Croix Falls, to remind boaters to "Protect Wisconsin Lakes." The billboard was a collaborative project of the Polk County Land and Water Resources Department, Wisconsin DNR and the Wisconsin Lakes Partnership. Billboards have been used in other Wisconsin counties to remind boaters that state law requires everyone to inspect boats, trailers and equipment; remove all attached aquatic plants, animals and mud before launching/leaving the water access; and to drain water from all equipment before leaving the water access. - *Photo submitted*

Inter-County Leader
August 22, 2012
Page 6, Sec A

New billboard reminds boaters to help protect Wisconsin lakes

This month a billboard was installed along HWY 87, north of the Lions Park, to remind boaters to "Protect Wisconsin Lakes". The billboard was a collaborative project of the Polk County Land and Water Resources Department, Wisconsin DNR, and the Wisconsin Lakes Partnership.

Billboards have been used in other Wisconsin counties to remind boaters that state law requires everyone to inspect boats, trailers, and equipment; remove all attached aquatic plants, animals, and mud before launching / leaving the water access; and to drain water from all equipment before leaving the water access.

Amery Free Press 8/21/12

WI BOATERS PROTECT WI LAKES!
WISCONSIN
DEPT. OF NATURAL RESOURCES
1-800-TIP-WDNR
INSPECT
REMOVE
DRAIN
IT'S THE LAW!

Keeping lakes clean

July 4th, 2012
Inter-County Leader
Section B, page 3

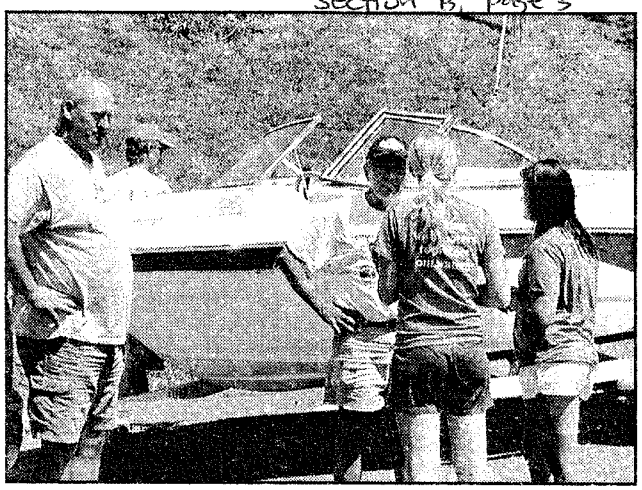
Students patrol for invasive plants and animals

by Gregg Westigard
Leader staff writer

BALSAM LAKE – Lakes are the heart of Polk County, large and clean, an inviting place for residents and visitors to spend leisure time fishing, swimming and boating. But all that could change. The lakes are under threat from unwanted aliens, aquatic plants and invasive animals that are eager to find a home in the lakes. If they move in, the native fish can disappear and the clear shorelines can be overtaken by masses of weeds.

A group of Unity school students are helping fight the invasion. Last weekend, as they have for many weeks, students from the Clean Boats, Clean Water program spent their days at the boat landings on Balsam Lake, greeting all the visitors to the lake and explaining to them how they can help keep the aliens out of the lake.

Anna Ebensperger (foreground), Cole Beckman and Cassandra Hanson are some of the 35 Unity students taking party in the Clean Boats, Clean Waters campaign to protect area lakes.



Volunteers from Unity explain the dangers of transporting invasives to boat owners at Balsam Lake. – *Photos by Gregg Westigard*

People can and must, because it is the law in Wisconsin and Minnesota that everyone moving a boat from lake to lake is required to clean their boats when leaving a lake. All weeds must be removed from boats, motors and boat trailers. The water plug on the boat must be removed so water drains out and is not transported. The inspection and cleaning applies to equipment also, flotation devices, fishing gear and waders. Live bait must be disposed of and not taken to another lake.

It's the law, and if people aren't concerned about damaging the lakes they use and enjoy, they might be concerned about the fines they will pay if they don't follow the law and are caught. The fine is $200 to $500 for each offense plus court costs.

The message is "Keep it clean and enjoy the lakes for years to come."

Clear Lake track squads
ents to State 2,3B

Area Deaths
den, 66
en Baker, 67
Carter, 86
Ellis, 58
"Sam" Leehe, 67
lippery" Olson, 67
7,8B

City Council to meet
ery City Council will meet
5, at 5:00 p.m. Their
is inside. 15B

cal Weather

77/64
ed clouds with the possibil-
n isolated thunderstorm de-

74/61
ed thunderstorms. Potential
ere thunderstorms.

73/55
ed thunderstorms. Potential
ere thunderstorms.

64/46
owers. Highs in the mid 60s
vs in the mid 40s.

62/45

Williamson: 'Common sense' solutions can help keep lakes healthy

By Tom Stangl
Publisher

The arrival of boating weather means that it is once again for Jeremy Williamson, Water Quality Specialist for Polk County, to get wet.

But he doesn't mind, in fact he enjoys studying and analyzing the lakes, streams and rivers in Polk County. The Amery native says that there are a total of 437 lakes in the county, with 220 of them having names. There is 350 miles of river and streams as well.

"We are a very water rich county," Williamson says.

Jeremy's job is to measure water quality and monitor invasive species.

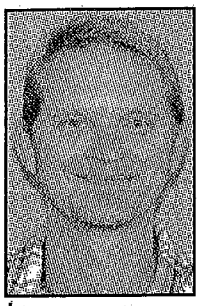
The DNR announced before Memorial Day that people are becoming more aware of their role in spreading invasive weeds, snails and even water fleas.

"Smart prevention" needs to be done by the public on a number of species, Williamson says. "It all comes down to common sense," he says.

Before leaving a body of water, the boater needs to inspect their boat, trailer and equipment. All water needs to be drained from boats, motors and all equipment. Any attached aquatic plants and animals need to be removed from boats, trailers and equipment.

Live fish should never be transported from a body of water. Unwanted bait needs to be disposed of on site, on land. Minnows should be purchased from a Wisconsin bait dealer. Use leftover minnows on the same water, or you may use leftover minnows on other waters only if no lake or river water or other fish were added to their container.

Williamson recommends going a step farther. He carries a spray bottle with a five percent bleach solution that he uses to spray down surfaces that were in the water.



Jeremy Williamson

Why all of the rules? What is the big deal?

Species like the Eurasian Water Milfoil can grow into an entire colony from a single cutting of the plant from a boat. Chinese and Japanese mystery snails, about the size of a quarter, with hard shells, can easily crowd and starve out native snails in lakes, removing a food supply for fish.

Just like the ripple effect of a drop of water on a calm pond, these small actions can magnify as time goes on.

Williamson has first hand knowledge. He's been on over 60 lakes in Polk County in the past four years, raking the native milfoil and looking for signs of invasive species. "Even curly-leaf pondweed is found on lakes that don't really have great boat access," Jeremy said.

Currently, there are three lakes in the county that have Eurasian Water Milfoil: Pike Lake, Long Trade Lake near Atlas and Horseshoe Lake near Turtle Lake, which is shared with Barron County.

The outbreak on Pike Lake was treated initially with herbicides, Williamson says. "At $1,000 an acre, it can get expensive in a hurry."

Following the initial treatment, the weed has been held in check the old fashioned way: by pulling it. Williamson, who is a scuba diver, dives to the floor of the lake, wraps the base of the weed around his hand and arm and then uses the buoyancy of his suit to help extract the weed from the mud. The weeds that are being pulled are from eight to 15 feet long.

After pulling the weed, it is disposed of properly. Jeremy has tilled the weed into his garden. "I've grown some pretty good tomatoes with those weeds," he says with a smile.

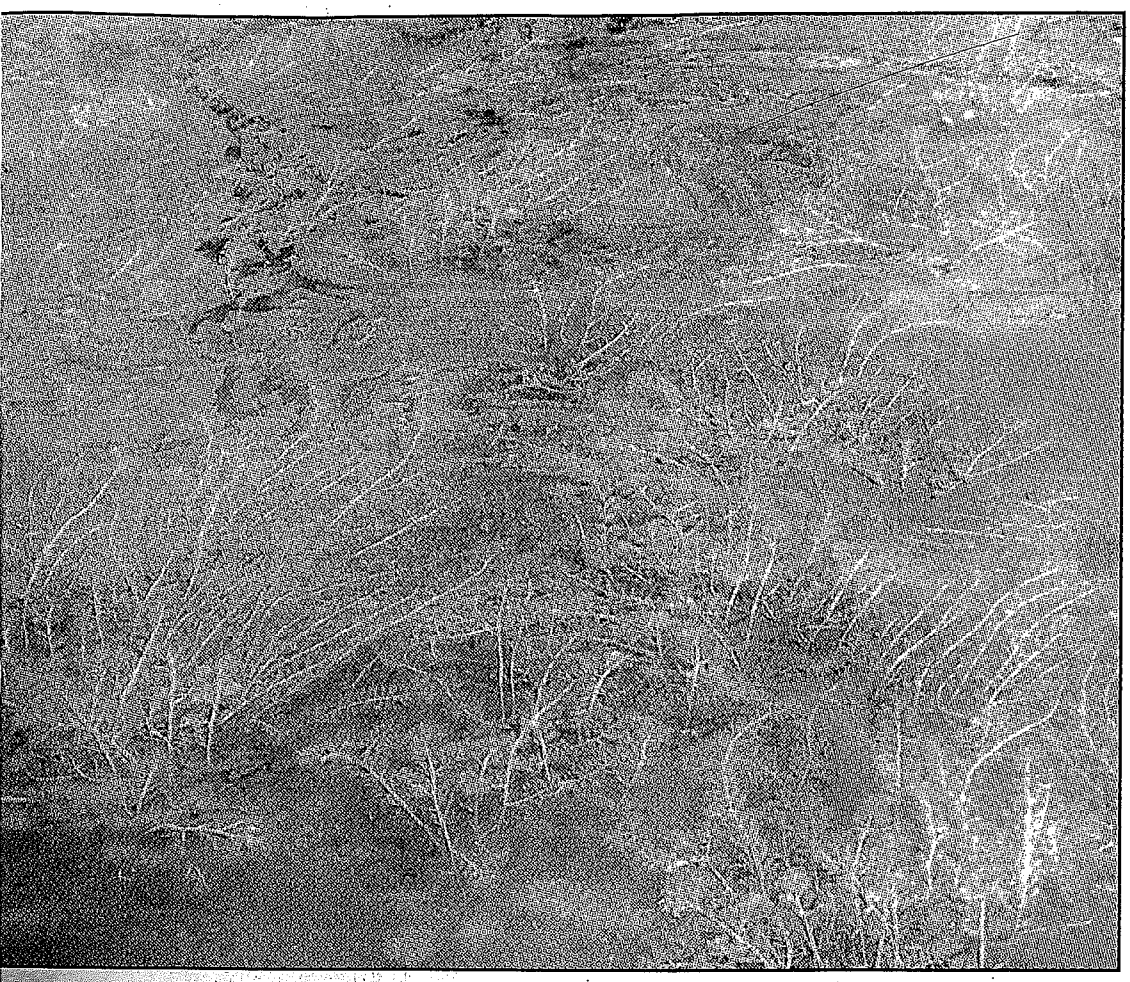
Blake Lake is being used for a unique three-year study by the state that Williamson is involved with on several levels.

Williamson reports that Blake Lake has a great deal of curly-leaf pondweed. They have been harvesting the weed since

Continued on page 12

18th Annual
Amery Trail Day
Friday and Saturday, May 31 and Jun
FRIDAY: Community-Wide Garage Sales
SATURDAY:

ıosphorus load helps limit plant growth



water milfoil continues to grow up to the surface, forming a canopy that eventually will kill plant life below off the sun. Three lakes in Polk County have this highly adaptable invasive species. (Contributed photo)

Continued from page one

2006. This summer, Jeremy will be taking core samples of Blake Lake to determine what the plant composition of the lake was like before European settlers arrived and the effect that curly-leaf pondweed has had on the lake's ecosystem.

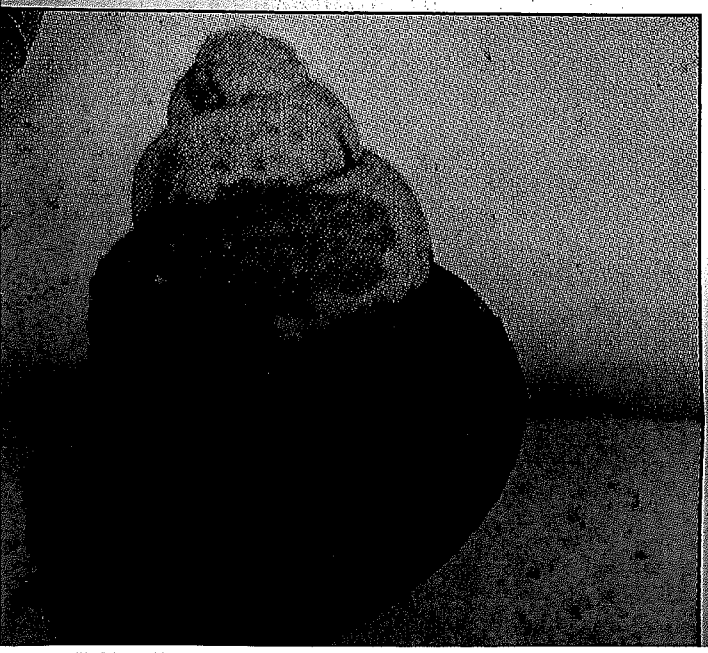
Cutting down the amount of phosphorous in the watershed of rivers and lakes is an ongoing project where landowners can make a huge impact, according to Williamson.

Observing the no-wake areas on lakes will help tremendously, cutting down on the amount of native plants being cut down and contributing to the phosphorus load.

Something simple like not mowing all the way down to the shore helps as well, Jeremy says. "If you don't like to mow, let the grass grow a little bit longer," he said. "It will help keep geese off your property as well."

Cleaning up your fishing gear with some vinegar water will help stop the spread of viral hemorrhagic septicemia (VHS), a disease that kills fish.

He estimates that collectively, a total of $5 million is spent annually combatting invasive species.



Gravel pit: Board was unanimous in vote

Continued from page one

ing property owners had objected to the plan as well.

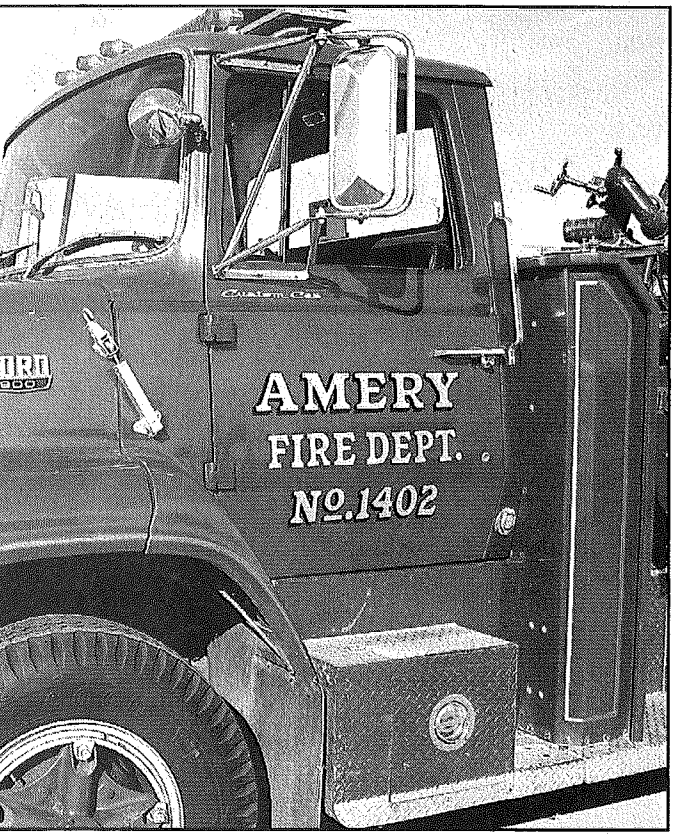
The Apple River Town Board voted 2-1 to support the request.

Polk County Zoning Administrator Gary Spanel reports that there were the two Cemstone representatives testified in favor of granting the permit and six that testified against granting the permit. Letters were read that were against the project.

from Cemstone and asking questions, the board heard testimony and asked questions of the persons giving testimony.

The entire board: Eugene Sollman, Curtis Schmidt, Jeff Peterson, Marilyn Nehring and Art Gillitzer voted to deny the conditional use permit.

Spanel believes the Town and County Comprehensive Plan, which were developed in tandem,



ck using an online auction site devoted to surplus items from

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ite has been in exis- 1999, but has seen rowth in the past five s said. It is set up like e auction sites, where buyers register and s.

ut five percent of our mes from other gov- agencies," Heap ex- e majority of the buy- te parties.

e challenges that mu- face in selling fire e ever-changing rules ion, Heaps said.

en said that many old nd up on ranches in

as well as give more transparency and better reporting. The site provides a free service for that sends notifications to all municipal departments that surplus items are going to be sold at auction online, allowing any interested agencies in the municipalities an opportunity to get the surplus before it is offered to the public.

The website has seen steady growth in the number of municipalities and government agencies using the service, Heaps said. "In government, many don't want to be the first or the last to try a product or service," he commented, adding that their service allows agencies to cut the cost of getting rid of items and generate more revenue.

Fall is best time to look for zebra mussels as boats, piers removed for winter

As temperatures drop and piers, docks and boats are removed from the water, lake residents are reminded to check for any new aquatic invasive species that might have attached themselves to equipment while it was submerged over the summer.

"Invasive species such as zebra mussels and quagga mussels are the only mussel species capable of attaching to hard surfaces. When piers, docks, and boats are removed from the water, they can be easily inspected for aquatic invasive species, especially invasive zebra and quagga mussels," says Jeremy Williamson, Water Quality Specialist for Polk County.

Aquatic invasive species (AIS) are non-native plants and animals that threaten Wisconsin's lakes and river systems by causing environmental and economic harm. Zebra mussels can clog water intakes and pipes, encrust piers, boats, and motors, and their sharp shells can cut the feet of swimmers.

Zebra mussels have been found in less than 5% of Wisconsin lakes predicted to be suitable for zebra mussels. In Polk County, zebra mussels haven't been reported in any lakes/rivers.

"At the time of this writing, zebra mussels haven't been documented in Polk County lakes and rivers. Bass Lake, in St. Croix County, is the closest lake to Polk County that has an established population of zebra mussels," says Katelin Holm, Aquatic Invasive Species Coordinator for Polk County.

To protect Polk County's lakes and rivers, landowners and contractors are being asked to carefully examine piers, boats, boatlifts, rafts, and any other equipment that has been in the water for a prolonged period of time for signs of zebra mussels during removal.

In addition to a visual inspection, citizens/contractors are encouraged to feel smooth surfaces of equipment to check for juvenile zebra mussels as they may have a "sand-paper like" feel and are often invisible to the human eye. If zebra mussels or other new invasive species are found,

Check that the invasive species has not been previously found on the waterbody by visiting http://dnr.wi.gov/lakes/invasives/AISLists.aspx?species=ZM

Note the exact location where the animal was found.

Take a digital photo of the animal in the setting where it was found (if possible). Then collect up to five specimens of varying sizes. Place in a jar with water; put on ice and transport to refrigerator.

Contact Polk County Land and Water Resources Department at 715-485-8699 and deliver specimens.

Responding quickly to new AIS detections is critical to help curb the spread into other waterbodies.

There are also specific laws lake users must follow to prevent the spread of aquatic invasive species. Prior to removing equipment from the water Wisconsin law requires that you:

INSPECT boats, trailers, boat lifts, piers, rafts and equipment.

REMOVE all attached aquatic plants and animals.

DRAIN all water from boats, vehicles, and equipment.

To learn more about zebra mussels or Wisconsin aquatic invasive species regulations visit: dnr.wi.gov keyword "invasive species".

876 'Jamaica call back'

Eurasian Milfoil found in St. Croix River!

By Lynda Berg Olds

Katelin Holm, of the Polk County Land and Water Resources Department (PCLWRD) gave a presentation to the Board of Supervisors Tuesday night, explaining in detail what she and PCLWRD's Jeremy Williamson do in terms of lake management.

Many of the projects are grant funded and have to do with AIS (Aquatic Invasive Species). She talked about the statewide protocol with regards to AIS and said the county is in the third year of data collection with regards to the program.

"About 200 lakes per year are sampled, so about 600 lakes have been sampled to date. Wisconsin is taking the lead on monitoring lakes. The lakes are randomly picked...and usually we can do a lake a day."

Holm said she and Williamson begin by collecting basic data utilizing a secchi disc – which is simply an eight-inch disc that is lowered into the water until one can't see it – then the clarity is measured by depth. They also measure for conductivity with a probe.

"It is a measure of the ions in the water and gives an indication of calcium. We care about that because zebra mussels, an AIS, need calcium to form their shells. So if the conductivity is low, we don't sample for zebra mussels, which saves a layer of cost.

Next they use nets and drag for mussels. The also use rakes and measure the level of plant life. All their efforts are documented and entered on GPS.

Apparently, the University of LaCrosse is studying snails as any kind of snails brought up are preserved and sent to them for further research and any invasive snails are, of course collected.

The last part of the protocol involves snorkeling, which is done in teams, at any and all boat landings – for 15 minutes.

"And we also snorkel five sites in the lake for five minutes with two of us. We don't always have the best clarity and we are usually in parts of the lake that you wouldn't choose to swim

(River cont. pg 2)

Motorcycle versus deer on Highway 8

By Lynda Berg Olds

"It happened right in front of me, I couldn't believe my eyes," stated Highway Commissioner Steve Warndahl Tuesday morning at the scene of a motorcycle versus deer accident on Highway 8, just west of Highway 46.

Commissioner Warndahl was traveling west on Highway 8 and the motorcycle was headed east, when a deer jumped into the roadway in front of the biker. This was about 9:15 a.m.

The motorcycle driver (unavoidably) crashed into the deer, laying down his bike. He remained conscious and alert on scene, but his name, and the extent of his injuries was unknown at press time.

The deer was very dead. Commissioner Warndahl pulled it off the highway and called in the accident. He commented that the driver was a "very nice guy." He said he was headed to Milwaukee for some type of rally when the deer leaped out in front of him. His bike, somewhat miraculously, did not look to be very damaged at all.

First responders rallied to the side of the motorcyclist down on Highway 8 Tuesday morning after colliding with a deer. Note the bike is barely damaged (the deer was killed however). - *Photos by Lynda Berg Olds*

Supervisor says meeting could have been avoided

By Lynda Berg Olds

some "input" not heard before

River (cont. from pg 1)

in – where the plants are the thickest. This is a way to get in the water and make sure we are not missing anything. The DNR is still developing protocols and they are still kind of deciding if there are things we are seeing with snorkeling not otherwise noted.

"When you get back to the lab, if you find any invasive species you have to take a sample of it and preserve it, send it off and enter your data."

Holm then shared results to date for the 19 lakes that have been chosen for study in the past three years.

"We were out 20 times (Big Blake Lake twice). We only found three lakes with no AIS, but by far the most common is the Chinese mystery snails. This was not surprising to us. We did a study and they were found at two-thirds of the lakes with boat landings. We did find six lakes with curly leaf pondweed, which, again, was not super surprising. Some of the lakes were newly documented sites. We found four lakes with purple loosestrife and one with Eurasian Water Milfoil in Amery – which we also already knew about.

The next news Holm had was dire – the nasty Eurasian Water Milfoil has now been found in the St. Croix River!

"Unfortunately have found this between Spanglers Dam and Lions Park. That is a new stand of milfoil and we will likely spend the winter trying to figure out a rapid response to that species. We have already alerted the DNR and the Park Service. This is an unfortunate update.

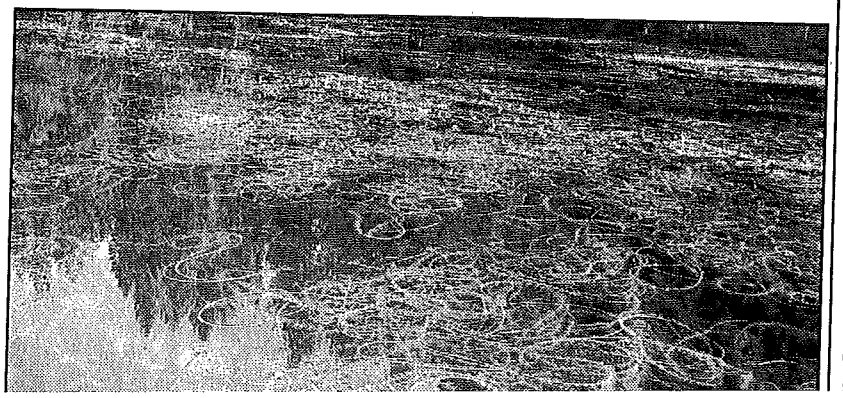
Holm also talked about public education projects her department is involved in – getting citizens, by canoe, out in the water to give them hands on experience with what to look for in terms of water health.

They also work with the Polk County Association of Lakes and Rivers and help organizations put together lake management plans, which, Holm said, the DNR "has another pot of money for."

Grant applications are critical for the work the Land and Water Resources Department does. Recently, Holm noted a grant have been approved for a very interesting sediment core study on Bone Lake – which will provide 150 years of data!

By far and away, the most critical thing at Tuesday's meeting of the county board was this discovery of Eurasian Milfoil in the St. Croix River. The huge fear is how this could massively spread – after all, the seeds are nearly microscopic... and the river, she flows...beware downstream!

Polk County Land and Water Resource's Katelin Holm. - *Photo by Lynda Berg Olds*



Govern

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Cooperative, said, "Our

Shoreland ordinance to be interpreted "in favor of the property owner"

by Mary Stirrat
Leader staff writer

BALSAM LAKE — Polk County Supervisor Russell Arcand summed up his feelings about the Tuesday, Sept. 17, county board meeting during his opportunity to comment at the end of the meeting.

The amount of business conducted, he said, was minimal. It could have waited until next month, and the meeting could probably have been canceled. Supervisors are paid for each meeting they attend, and Tuesday's meeting cost in the neighborhood of $2,400.

The main item on the agenda was a resolution encouraging a broader interpretation of the county's shoreland zoning ordinance, to make it easier for property owners and contractors to make improvements along the lakes and rivers in Polk County.

This resolution was discussed last month and referred to the land information committee for recommendations. This month, with nominal changes, the resolution was approved by a vote of 14 to 5.

Supervisor Tom Magnafici, prompted by Balsam Lake contractor Chris Nelson and Amery area attorney Adam Jarchow, submitted the original resolution last month. Nelson and Jarchow spoke out at both meetings against what they felt were unfair practices by the zoning office and zoning board of appeals. They said that permits for property improvements were too often improperly denied, which hindered area contractors in their business, affected local retailers and inhibited improvements that would increase property values.

Polk County Supervisor Kim O'Connell, chair of the land information committee.

After review by the land information committee earlier this month, committee Chair Kim O'Connell presented the board with a proposed change in the original resolution. The change removed the clause stating that "interpretive ques-

as recommended by the committee, but replaced it with one saying that policy will be to "favor the free and unrestricted use of private property," resulting in economic development and job creation.

Adam Jarchow of the Town of Apple River. *Photos by Mary Stirrat*

A second amendment is the addition of language stating that the county favors "the free and unrestricted use of private property," and that anything that might lead to restrictions must be clearly outlined.

The final amendment states that the resolution is to be considered a statement of the principles that govern land use ordinances and not as an addition to or replacement for the shoreland protection ordinance.

During discussion of Magnafici's amendments, Nelson pointed out that, with or without the resolution, the zoning office or the zoning board of appeals makes the final decision. Magnafici agreed, but then indicated that behind the problem was a lack of good customer service in county offices.

The resolution with its amendments, said Magnafici, gives guidance by clearly stating what course the zoning office should take. He said that the zoning board of appeals should be a "last resort," and should not be hearing 50 to 60 cases a year.

A short time later Supervisor Patricia Schmidt provided a summary of decision by the board of appeals over the past three years, clearly indicating that far more variances to the zoning ordinance are granted than denied.

In 2011, she said, 5 percent of the requests were granted with no conditions, 80 percent were granted with conditions, and 15 percent were denied.

In 2012, 19 percent were granted without conditions, 50 percent were granted with conditions, and 31 percent were denied.

So far this year, 14 of 17 variances were granted, one was tabled, and two were denied.

issues and should be brought to him to deal with rather than being discussed at a public meeting.

Herschel, favoring the resolution, said that the amendments just add direction for commonsense decision-making. "It's written so it doesn't cause any harm to the lakes," he added.

On the other hand, Supervisor Dean Johansen argued that the resolution just reiterates current policy. "If it's already there," he said, "why do this now? I don't think this is helping anything."

When board Chair William Johnson asked if any other members of the land information committee wanted to comment, Moriak said that the resolution and the amendments just reinforce the actual shoreland protection ordinance. "It just tells the guys to do their job," he said.

Katelin Holm, information and education coordinator/water quality specialist with Polk County.

Both the proposed amendments and the resolution were approved by a vote of 14 to 5.

Opposed were supervisors Dean Johansen, Schmidt, Harry Johansen, Marvin Caspersen and Nelson. Opposed were Brown, Edgell, Brian Masters, Moriak, Jay Luke, George Stroebel, Magnafici, Kristine Kremer-Hartung, Larry Jepsen, O'Connell, Gary Bergstrom, Russell Arcand, Jared Cockroft and William Johnson IV.

Absent were Kathryn Kienholz, Tom Engel and Rick Scoglio.

Lake management

Tying in with discussion on shoreland zoning was a presentation on lake management by Katelin Holm of the Polk County Land and Water Resource Department.

Holm provided an overview of 2013 projects, including monitoring of invasive species.

For the first time, she said, Eurasian milfoil has been found in the St. Croix River, and various agencies are working on a "rapid response."

"It's an unfortunate update," Holm said.

Other projects include training of interested people in the identification of invasive species and plant surveys on Big Blake and Big Round lakes.

Holm also discussed lake grants secured through the Department of Natural Resources. These grants allow data to be collected on the water quality, shoreline health and land use and biological communities of the lake. This data is used to offer educational programs and facilitate meetings that encourage lake residents to help develop a lake management plan.

Other business

- Frey reported on the phasing out of Polk County Home Care, saying that the program now has 59 clients. Referral information has been sent out to 36 of these to begin the process of absorption into private home-care companies. He said that the target date to have all clients placed with other providers is Oct. 31, although there may still be a few individuals under county care.
- Chair William Johnson IV reported that the seat left vacant with the Sept. 6 death of board Supervisor Neil Johnson, District 21, will be filled next month. In the southwest corner of Polk County, District 21 consists of most of the Town of Alden and, at the recommendation of town officials, Johnson will recommend Joe Demulling as a replacement for Johnson.
- Frey applauded county employees as he told the board that workers' compensation is down, absenteeism is down, and health-care costs are seeing a relatively small increase compared with other sectors. "I am really struck by how all the indicators we have about how our employees are doing are positive," he said. "I think that speaks volumes about the quality of the employees we have here at Polk County."
- The 2014 proposed budget will be brought to the October county board meeting to be approved for publication in this

it leads to damage of property or natural resources."

There was no discussion on the recommendation of the committee, which consists of supervisors O'Connell, Craig Moriak, James Edgell, Herschel Brown and Warren Nelson, allowing Magnafici to present three different amendments.

One amendment removed the same clause comparing them to the "pea soup" green that she sees in them now. She blamed the decline of the lakes on development, saying she would not support anything that encourages development.

As the discussion turned to customer services issues within county offices, county Administrator Dana Frey stepped in and said that employee issues are management

nese mystery snails have been found in 11 of them, curly-leaf pondweed in six, purple loosestrife in four and Eurasion milfoil in one.

Both curly-leaf pondweed and Eurasian milfoil form dense mats of vegetation on the surface of water, interfering with recreational activities and forming a breeding ground for mosquitos.

budget.

Luck School annual meeting Sept. 23

Public invited to wellness fair and tour of building improvements prior to meeting

LUCK — Residents of the Luck School community are invited to the annual school district meeting Monday, Sept. 23, at 8 p.m. in the small gym.

Items on the agenda include a presentation of the 2013-14 budget, after which voters in the district have the opportunity to approve the tax levy and budget. Salaries of the school board members and a report from community are also part of the agenda.

Open house/wellness fair

Prior to the annual meeting, from 5:30 to 7:30 p.m., the school will host an open house to give district residents a chance to see the improvements made this past summer. Van Meter's hot dogs will be served, along with chips and other goodies.

New flooring, painting and plumbing fixtures are among the more visible improvements, but behind-the-scenes projects include upgrades to the electrical, HVAC and plumbing systems. The fire alarm system has been replaced, and the school has a new security entrance system at the main doors.

Besides seeing the improvements, visitors can attend the school's wellness fair. Luck Clinic will be there to do blood pressure screening, chair massages will be available and there will be informational booths on everything from financial wellness to healthy foods and drinking water. — *Mary Stirrat with information from Luck Schools*

Miss Congeniality

Madison Young was crowned Osceola's Miss Congeniality 2013 Sept. 8. We erroneously reported Miss Young's last name in last week's Leader. We apologize for the error. *- Photo by Greg Marsten*

Menomonie woman faces felony drug charge, possible hit and run

Suspicious activity leads to drug find, other charges

by Greg Marsten
Leader staff writer

AMERY – A suspicious driver led a Wisconsin State Trooper to stop a vehicle off Hwy. 46 near Amery on the afternoon of Saturday, Sept. 14, and eventually led to a methamphetamine possession charge and possible felony hit-and-run charges from a recent incident in Chippewa Falls.

The latest incident began during an unrelated stop for speeding on Hwy. 46, when the trooper spotted a suspected vehicle leaving a rural address and driving suspiciously. When the trooper tracked the vehicle, it made a several unusual detours, leading to a stop.

The vehicle was full of clothing in the back, and the trooper noted the smell of marijuana. When quizzing the passenger, she hesitated on giving her name and, instead, gave her sister's information. She eventually gave her real name as Hannah Chamberlin, 25, Menomonie.

The driver was identified as Cory Vetterkind, 24, Chippewa Falls. He later told the officer where to find a packet of methamphetamine that belonged to the passenger, Chamberlin. The search led to the discovery of a gem pack of nine grams of meth, as well as paraphernalia. Chamberlin then had medical issues and was transported to Amery Regional Medical Center.

She was later medically cleared and was taken into custody and charged with felony meth possession. She appeared before Judge Jeffery Anderson on Monday, Sept. 16, who set a $1,000 cash bond and a Thursday, Sept. 19, preliminary hearing. The trooper noted in the probable cause report that Chamberlin may also face charges of a hit-and-run, causing bodily harm from an incident that may have occurred in Chippewa Falls the previous week. Details were unclear at press time.

Vetterkind is facing a felony charge of meth possession and misdemeanor operation after revocation. He appeared before Judge Anderson on Monday, Sept. 16, who set a $500 cash bond and a Thursday, Sept. 19, hearing.

Amery man flees police

by Greg Marsten
Leader staff writer

AMERY – Charges are pending against a 21-year-old Amery man, Mitchell Fenske, after he is alleged to have done wild burnouts on Keller Avenue in downtown Amery on the early morning hours of Saturday, Sept. 14, as police watched.

Police first heard the loud exhaust on Fenske's pickup truck, and watched as he smoked his tires on the street. When police attempted to pull him over with their marked squad car, Fenske fled the scene at speeds of up to 90 mph through the city, running stop signs and heading out of town.

The truck eventually pulled over at an apartment, where Fenske is alleged to have fled on foot, ignoring the police calls to stop. He was tracked to an apartment in the building, and when police called on his door, he slammed it in their faces and began yelling profanities.

He was eventually taken into custody and, according to the probable cause report, had a blood alcohol concentration of twice the legal limit. He may be facing DUI charges on top of the recommended charges of fleeing police and disorderly conduct.

Fenske had yet to be charged at press time.

Luck visioning session set for Sept. 28

LUCK — Luck Community Action Committee is inviting the Luck community to discuss and share ideas regarding the future of Luck at a visioning session that will be held Saturday, Sept. 28, from 8 a.m. to noon at Luck Lutheran Church.

Formed several months ago with the task of seeking input regarding the desired future of Luck, the committee is seeking thoughts, ideas and vision from all community members.

The future of the community, according to the committee, depends on members coming together to dialogue and uniting behind common goals.

Everyone is invited to attend. – *submitted*