

Polk County Wisconsin Department of Natural Resources Aquatic Invasive Species
Countywide Education, Prevention, and Planning Grant (AEPP-545-18) Final
Report, 2018-2019



Polk County Land and Water Resources Department
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Balsam Lake, WI 54810

In 2018, the Polk County Land and Water Resources Department (LWRD) received a two-year Aquatic Invasive Species Education, Prevention, and Planning Grant from the Wisconsin Department of Natural Resources to implement a countywide aquatic invasive species program. The following report details the tasks completed from February 2018 through December 2019.

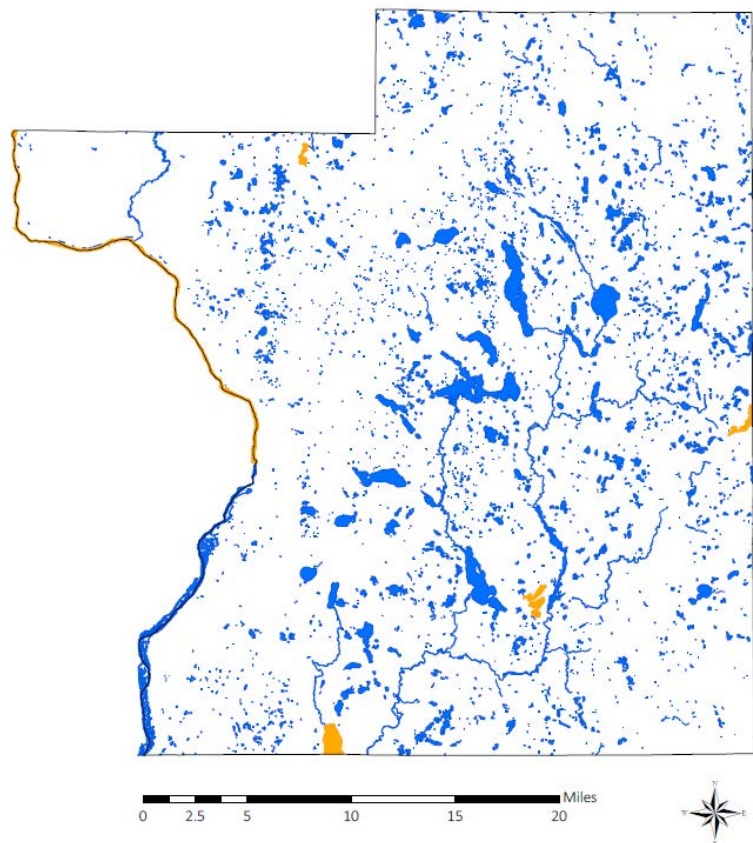
Eurasian Water Milfoil

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

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

Establishment of EWM populations in Polk County has occurred relatively recently with its discovery in Long Trade Lake in 1995. Most recently EWM was found in North Twin Lake in 2018 and South Twin Lake in 2019. LWRD completed a full plant survey in South Twin Lake in 2019 during which EWM was documented and verified. As of December 2019, EWM is documented in seven Polk County waterbodies.

LWRD monitors the St. Croix River for EWM and other aquatic invasive species at least once every grant cycle. During 2019, EWM was not abundant in the St. Croix River, being found in only three distinct locations above the hydroelectric dam in St. Croix Falls.

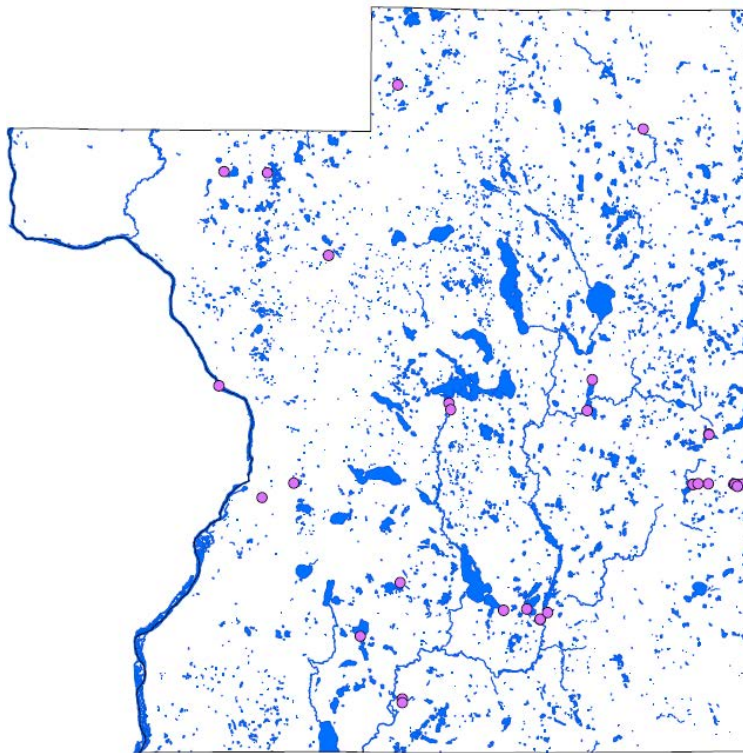
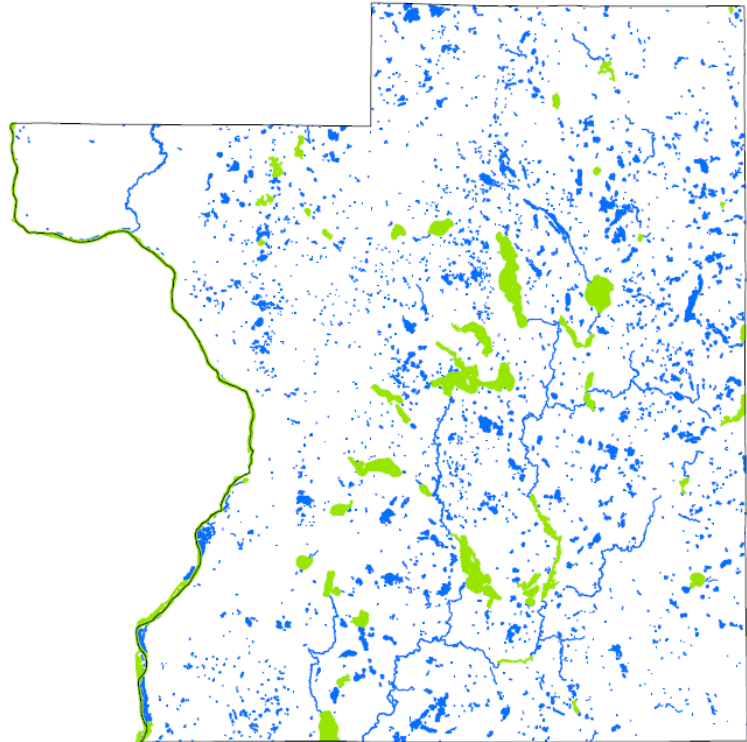


Curly Leaf Pondweed

Curly leaf pondweed (CLP) is a submerged aquatic invasive plant. The leaves of CLP are easily distinguished by their rounded tip, prominent mid-vein, and finely toothed edges. In most growing conditions, the leaves appear wavy or crimped. CLP is found in a wide variety of habitats, although it prefers alkaline, 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. CLP 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.

CLP was first discovered in Polk County in the Apple River Flowage in 1977. As of December 2019, CLP is documented in forty-nine waterbodies in Polk County.



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. It 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.

Native to Europe and Asia, purple loosestrife was introduced in North America in the 1800's for beekeeping and as a garden ornamental. It has

been present in Polk County for many years. An elaborate inventory was conducted in 2000 by the Land and Water Resources Department to identify the extent of purple loosestrife in the county and to reduce its spread.

In 2018, LWRD raised and released *Galerucella* beetles as a biological control for purple loosestrife. Beetles were released in the Luck wetland. Due to a late spring and widespread storm damage that included the rootstock site, beetles were not raised in 2019. As of December 2019, purple loosestrife is documented at thirty sites.

Japanese and Giant Knotweed

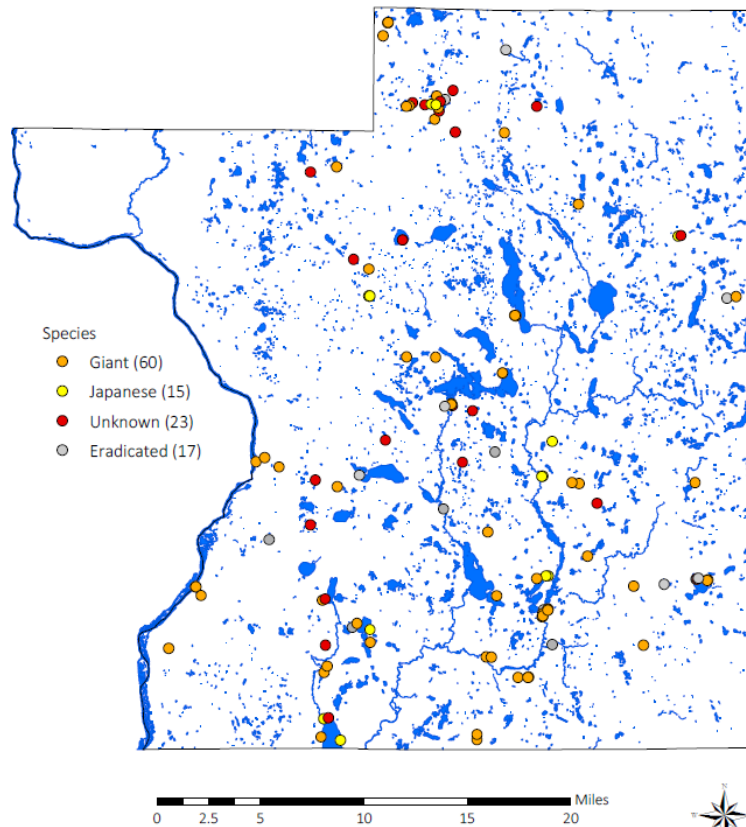
Japanese and giant knotweed are native to Asia and were imported to the United States in the mid 1900's as ornamental plants. These species are becoming more prevalent in the wild. The plant can reach up to fifteen feet and is easily distinguished by hollow bamboo-like stalks.

Knotweed is a perennial that grows extremely fast and forms 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.

The existence of knotweed was confirmed for the first time in Polk County in 2009. Since 2012, knotweed control measures and trainings have been conducted by the Polk County Land and Water Resources Department under early detection and response grants and aquatic invasive species education, prevention, and planning grants. As of December 2019, knotweed has been documented at one hundred fifteen sites in Polk County. Sixteen of these sites have been eradicated.

In 2018 and 2019 LWRD continued to provide knotweed control and control guidance to numerous landowners in Polk County. LWRD also assisted Burnett County with their knotweed program.

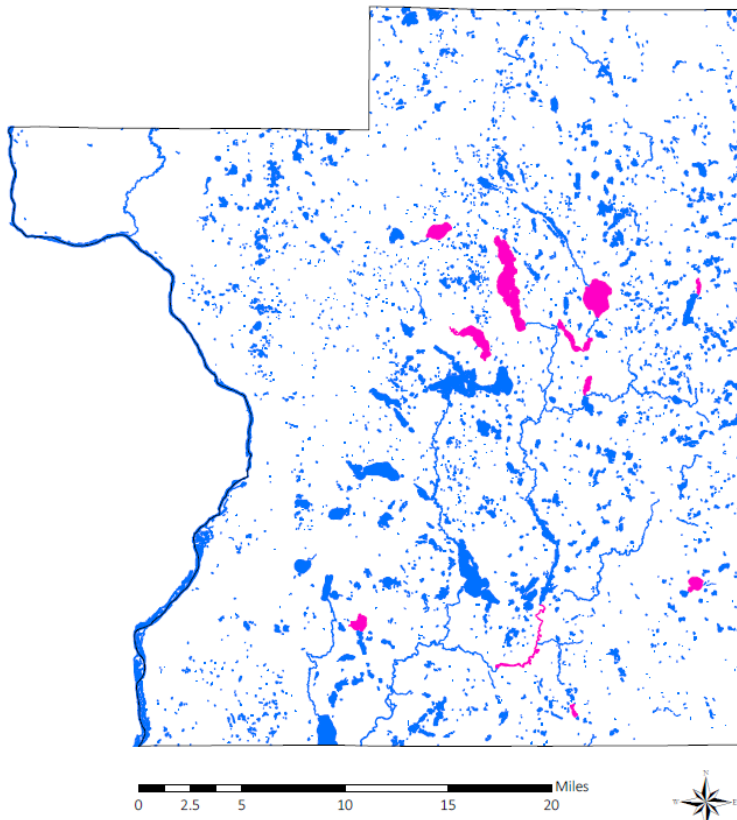
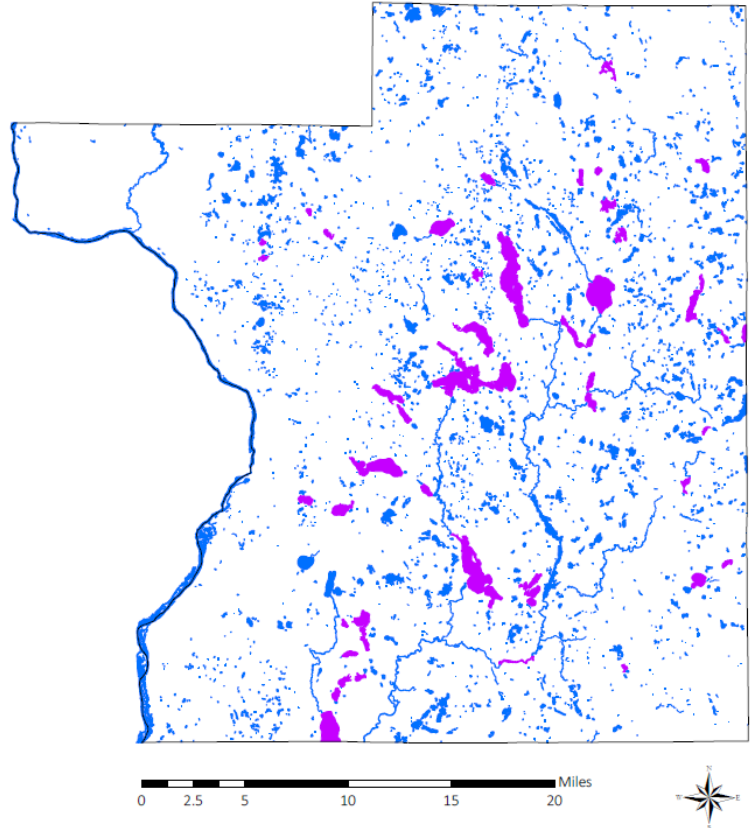
In 2019, LWRD collected and mailed samples from eleven knotweed stands to the Tillery Lab for genetic testing.



Chinese Mystery Snails

Chinese mystery snails (CMS) 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, CMS alter the ecosystem composition, structure, and function by competing with native snails for food and space.

Populations of CMS are established in many Northern Wisconsin lakes. As of December 2019, CMS are documented on fifty-five Polk County waterbodies.



Banded Mystery Snails

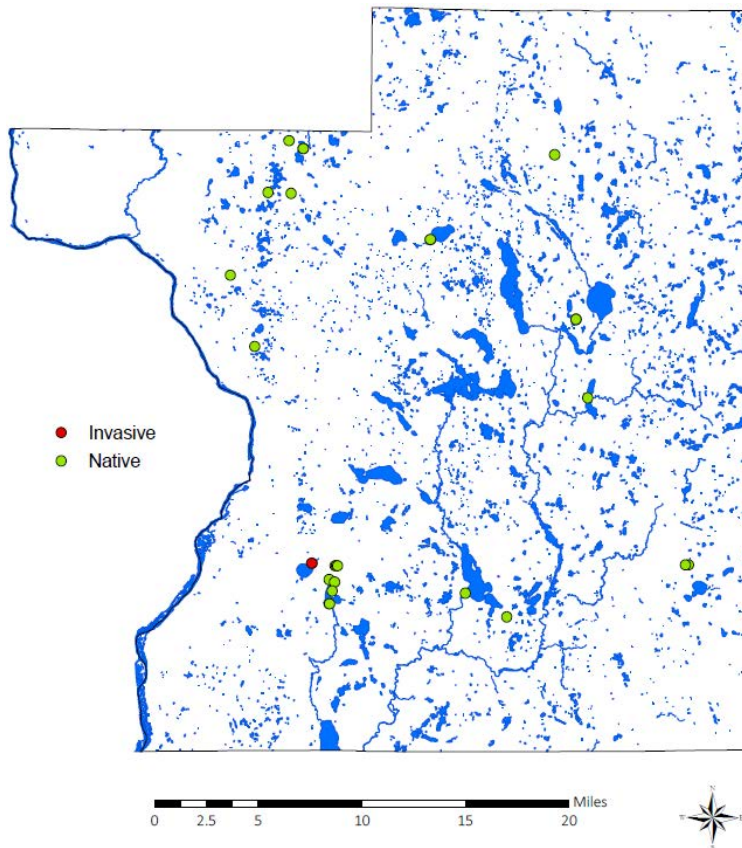
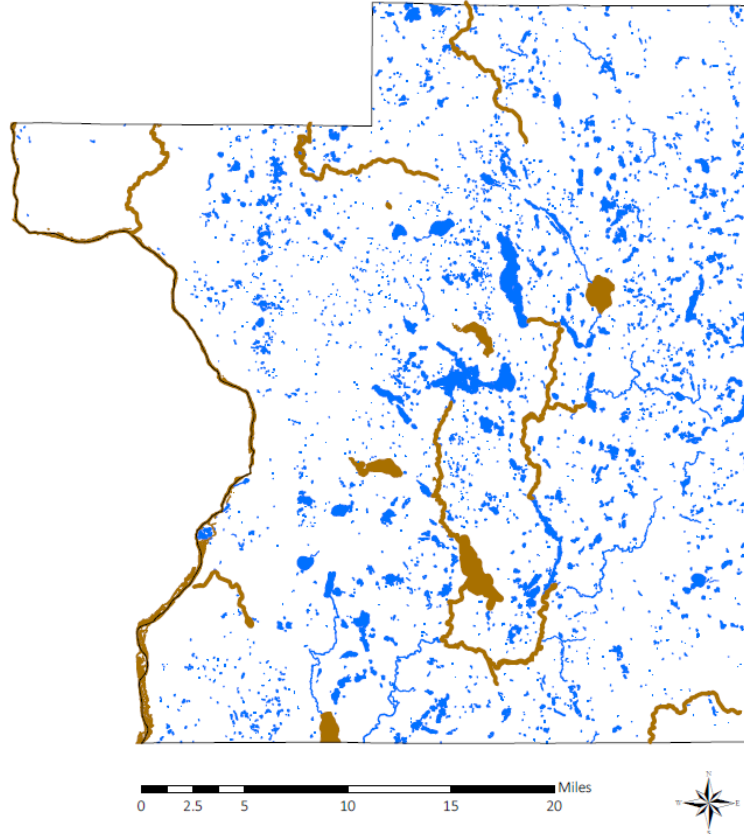
Banded mystery snails (BMS) are native to the southeastern United States, being found primarily in the Mississippi River System up to Illinois. This invasive snail species is popular in the aquarium trade which likely explains its presence outside its native range. Besides causing aesthetic problems, BMS can cause mortality of largemouth bass embryos if nests are invaded.

BMS were first documented in Polk County in 2003 in Half Moon Lake. As of December 2019, BMS have been documented in fourteen Polk County waterbodies.

Rusty Crayfish

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

As of December 2019, rusty crayfish have been documented on eleven Polk County waterbodies.



Phragmites

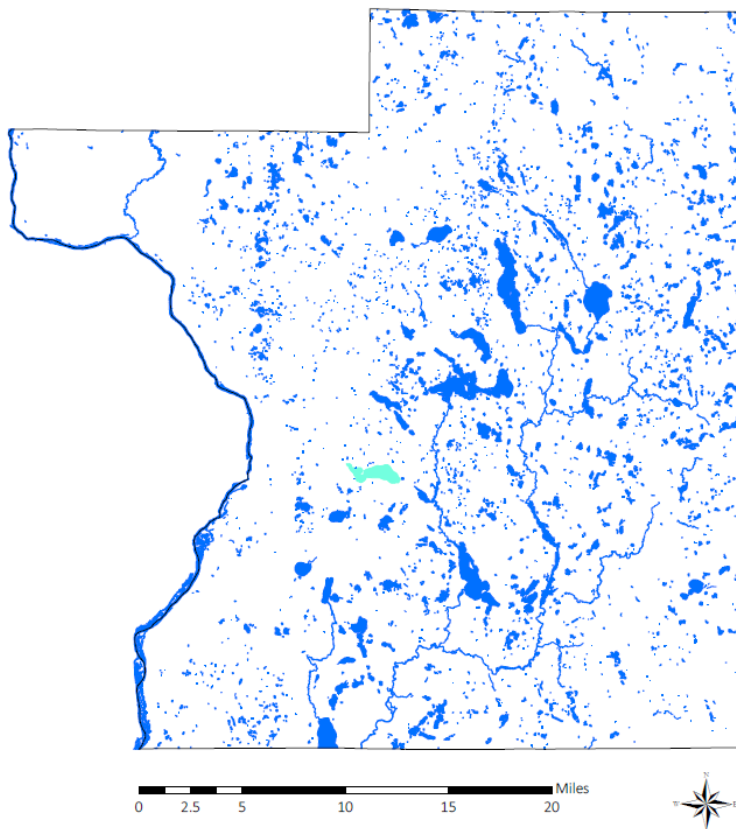
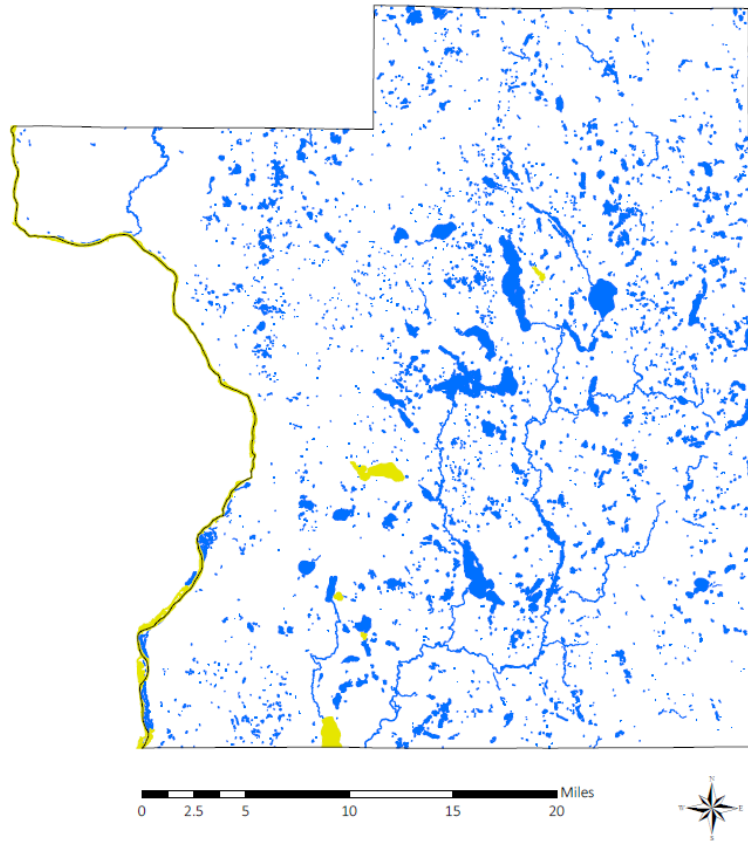
Phragmites is a wetland grass that invades moist habitats, although it can tolerate dry conditions. It can grow from 3-20 feet in height and has dull, rigid, hollow stems.

In 2017, the first stand of invasive phragmites was identified in Polk County. In partnership with the Town of Osceola, Osceola Rod and Gun Club, and Polk-Burnett Electric Cooperative, the site was treated in 2018 by a private contractor. LWRD conducted follow up site visits in 2018 and 2019 to evaluate treatment effectiveness. As of December 2019, the site is eradicated. LWRD will continue to monitor the site in the future.

Yellow Iris

Yellow iris is a perennial plant that can grow under a variety of conditions. The leaves and flowers of yellow iris resemble ornamental or native iris species. The leaves of yellow iris have a slight blue-grey tint and a thicker more pronounced midrib. Flowers are yellow and between 3-4 inches wide and bloom from April to June. The flowers are produced on a stem that can grow 3-4 feet tall among leaves that are usually as tall or taller. Yellow iris is native to Eurasia.

Yellow iris was first documented in Polk County in 2011 in Cedar Lake and Lake Wapogasset. As of December 2019, yellow iris has been documented in six Polk County waterbodies.



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 waterbodies are infested with zebra mussels, their shorelines can become littered with sharp shells that impede 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. In September 2016, a single adult zebra mussel was found on the northeast side of Deer Lake by a citizen.

LWRD has continued to offer support to Deer Lake since the discovery. In both 2018 and 2019 LWRD partnered with the St. Croix River Association, National Park Service, Deer Lake, Balsam Lake, and Bone Lake to conduct zebra mussel veliger tows on Deer Lake, Balsam Lake, and Bone Lake. The 2019 veliger tow samples for Deer Lake contained a single zebra mussel veliger. This was the first year that the tow samples came back positive for zebra mussels in Deer Lake. In partnership with Deer Lake and Bone Lake, LWRD assisted the WDNR in completing eDNA sampling on Deer Lake and Bone Lake in 2019. The Deer Lake protocol also included SCUBA transects. LWRD has distributed plate samplers to 12 Polk County waterbodies and assists volunteer monitors with identification.

Aquatic Invasive Species Early Detection Smart Prevention Protocol

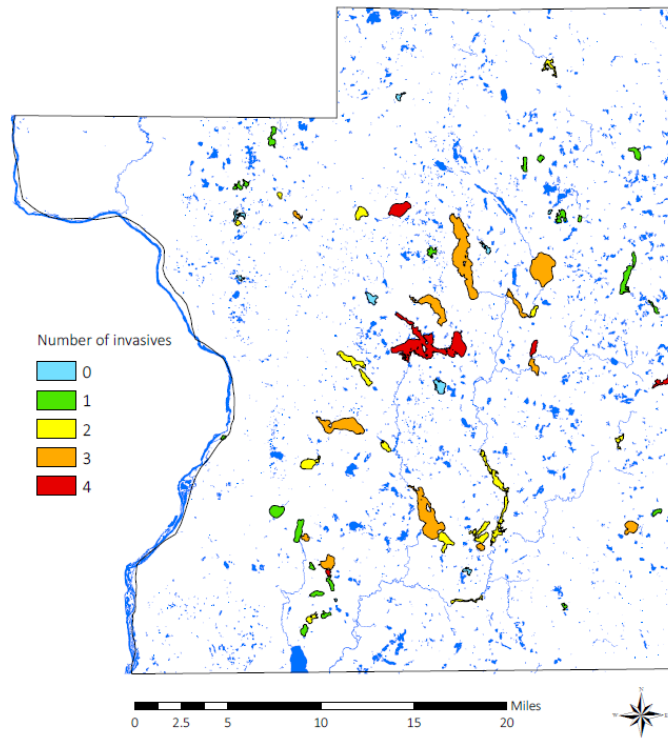
The Polk County Land and Water Resources Department partnered with the Wisconsin Department of Natural Resources to implement the statewide aquatic invasive species early detection smart prevention protocol on Polk County Lakes. This study began in 2011 and concluded in 2015. LWRD has continued using this protocol to monitor Polk County waterbodies since 2016.

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

- ✓ Thirty minute searches at all boat landings
- ✓ Ten minute searches at five sites
- ✓ Spiny water flea dredge at the deep hole
- ✓ Zebra mussel veliger tows at three sites
- ✓ Rake throws and D-nets while completing a shoreline meander

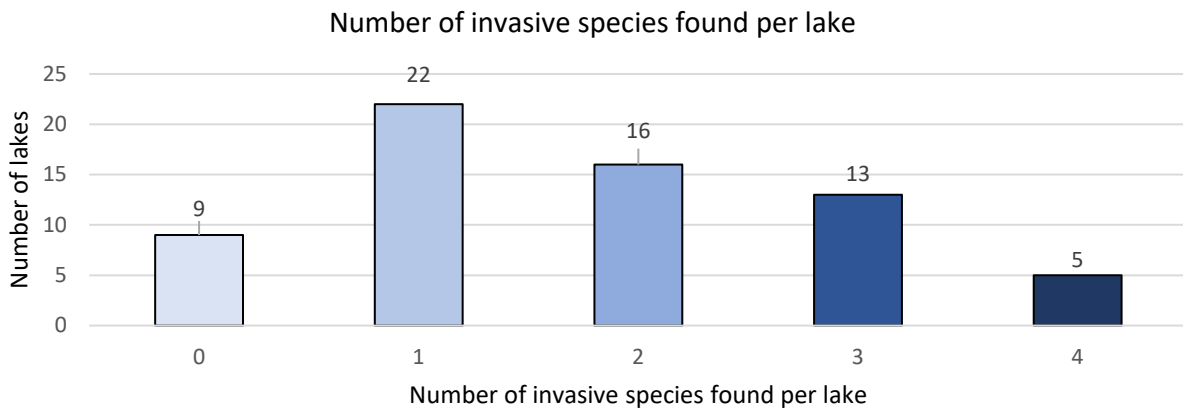
Lakes monitored in 2018 include: Herby, McKeith, Long, Rice, Bridget, Bear Trap, and Long Trade.

Lakes monitored in 2019 include: Staples, Horse, South Twin, Black Brook Flowage, Clarey, Bridget, White Ash, North White Ash, Clam Falls Flowage, Big Blake, Mud, Camelia, and Clear.

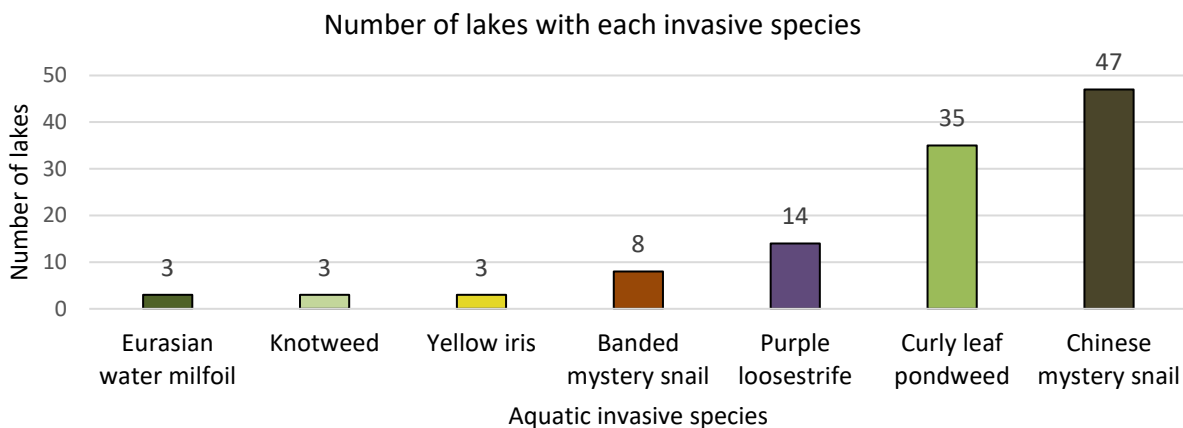


Data for secchi depth, conductivity, and GIS location of aquatic invasive species populations were entered into the Surface Water Integrated Monitoring System (SWIMS). Waterflea and veliger samples were sent to the Wisconsin Department of Natural Resources.

In total since 2011, sixty-five Polk County lakes have been monitored for aquatic invasive species with the early detection smart prevention protocol. Additionally, some lakes were chosen as revisit lakes and monitored twice. The number of invasive species per lake ranged from zero to four. Fourteen percent of lakes sampled (n=9) had zero invasive species present, 34% of lakes (n=22) had one invasive species present, 25% of lakes (n=16) had two invasive species present, 20% of lakes (n=13) had three invasive species present, and 8% of lakes (n=5) had four invasive species present.



Species detected through the protocol include: Eurasian water milfoil, knotweed, yellow iris, banded mystery snail, purple loosestrife, curly leaf pondweed, and Chinese mystery snail. Eurasian water milfoil, knotweed, and yellow iris were detected in only 4% of the lakes sampled (n=3). Banded mystery snails were detected in only 12% of lakes sampled (n=8). Purple loosestrife was detected in a quarter of lakes sampled (22%, n=14), curly leaf pondweed was found in half of the lakes sampled (52%, n=35) and Chinese mystery snails were found in three-quarters of lakes sampled (72%, n=47).



St. Croix River Monitoring

LWRD monitored the St. Croix River for aquatic invasive species in 2018 and 2019. Populations of Eurasian water milfoil, curly leaf pondweed, and purple loosestrife were found. Staff monitored from County Road O Landing to Osceola Landing.

Bait Dealer Initiative

The Polk County Land and Water Resources Department visited six locations that sell fishing licenses in Polk County in 2018 and 2019 as part of the statewide Bait Dealer Initiative. At each location, AIS messaging was shared and educational brochures and key chains were made available.

Landing Blitz

In 2018 and 2019, the Polk County Land and Water Resources Department assisted in organizing the Landing Blitz by providing information to all lake organizations in Polk County. Both years, LWRD wrote a press release promoting the event. Sixteen waterbodies participated in the Landing Blitz in 2018 and nineteen participated in 2019.

Drain Campaign

In 2018 and 2019, the Polk County Land and Water Resources Department promoted the Drain Campaign to local lake organizations and signed lakes up for this statewide initiative. LWRD authored a press release to promote the event, served as a pick up site for ice packs, and ordered the free flyers and educational brochures for each participating lake. In total, eighteen waterbodies participated in the Drain Campaign in 2018 and twenty-two waterbodies participated in 2019.

Clean Boats, Clean Waters

The Polk County Land and Water Resources Department provided countywide Clean Boats, Clean Waters trainings in 2018 and 2019. Eleven participants attended a training on April 12th, 2018 and forty-three participants attended one of two training held on April 25th, 2019 and June 14th, 2019. Template presentations were edited to include local aquatic invasive species locations and concerns.

Aquatic Invasive Species Citizen Lake Monitoring Network

Aquatic invasive species Citizen Lake Monitoring Network trainings were offered by the Polk County Land and Water Resources Department in 2018 and 2019. The 2018 training was held on August 9th and attended by fifteen volunteers. In 2019 the training was held on July 12th and attended by twenty-five volunteers. Individual trainings were held for seven volunteers with Long Lake on May 10th, 2019 and for three volunteers with Big Blake and White Ash Lakes on September 3rd, 2019. All trainings included a hands-on session to view specimens of aquatic invasive species, with a focus on native and invasive plants. Template presentations were edited to include local aquatic invasive species locations and concerns.

Twenty waterbodies have kits to monitor for AIS on their waterbody. LWRD assisted lakes with identification of specimens following the training and data entry into SWIMS.

Fall Snapshot Day

On August 18th, 2018 the Polk County Land and Water Resources Department partnered with the St. Croix River Association to offer the Fall Snapshot Day in Polk County. Seven volunteers monitored six sites in the St. Croix Falls and Osceola area. Yellow iris was found at three of the six sites. Due to lack of interest, the Fall Snapshot Day was cancelled in 2019.



Project RED

LWRD partnered with the St. Croix River Association, the National Park Service, and the River Alliance of Wisconsin to offer Project RED trainings in 2018 and 2019. Six volunteers attended the training on August 2nd, 2018 and fifteen volunteers attended the training on July 19th, 2019. Two datasheets were returned in 2018 and data was entered into SWIMS. Template presentations were edited to include local AIS locations and concerns.

Education and Outreach

LWRD delivered or provided AIS education and outreach at numerous events and meetings for a variety of audiences including lake groups, school groups, libraries, and the local radio station.

Lake Maps

In 2019, the Polk County Land and Water Resources Department assisted the Polk County Association of Lakes and Rivers with a reprint of customized waterproof aquatic invasive species lake maps. LWRD reviewed the aquatic invasive species information on the maps for updates and sought input from WDNR.

Augmented Enforcement

LWRD discussed an all staff training on the Do Not Transport Ordinance with the Sheriff's Department but due to staff changes the training was postponed to a later date. Additional Do Not Transport Ordinance signs were purchased for installation at boat landings.

Aquatic Invasive Species Signs

Lakes that were visited in 2018 and 2019 were checked for WDNR and Polk County Ordinance aquatic invasive species signs at the boat landings. LWRD also entered all data into SWIMS. The majority of Polk County landings have AIS signs.

Waterfowl Hunter AIS Outreach

In 2019, LWRD submitted a press release pertaining to the Waterfowl Hunter AIS Outreach Campaign. A heavy access point for inspectors/education does not exist in Polk County.

SWIMS Verification

LWRD worked with DNR to update over 40 observed records to a status of verified.

AIS Story Map

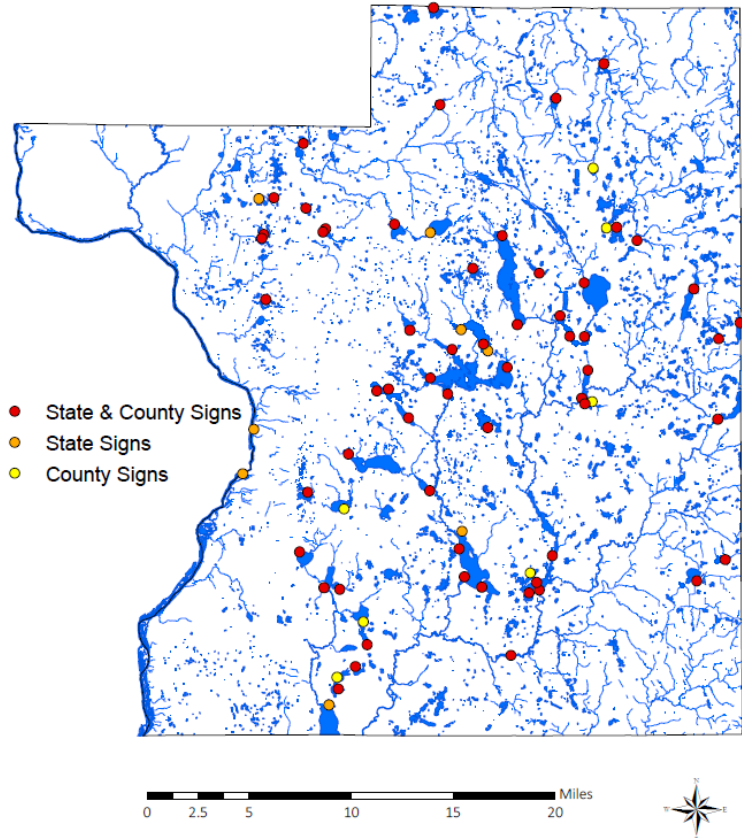
The Polk County Land and Water Resources Department developed an aquatic invasive species story map. The map can be accessed [online](#).¹

AIS Trainings

LWRD attended all Wisconsin Department of Natural Resources aquatic invasive species trainings in 2019. Staff also attended train-the-trainer workshops for programs such as Project RED, Snapshot Day, Aquatic Invasive Species Citizen Lake Monitoring Network, and Clean Boats, Clean Waters. LWRD staff passed the WDNR AIS verification test.

Aquatic Invasive Species Strategic Plans

Polk County has an Aquatic Invasive Species Strategic Plan and Response to Early Detection Aquatic Invasive Species document that are used to direct the work of the department. LWRD also participates in the meetings for the St. Croix Basin Aquatic Invasive Species Strategic Plan.



¹ <https://polkcowi.maps.arcgis.com/apps/MapJournal/index.html?appid=6d13059f634f4b01bb661684517e1a15>