

Portage County Aquatic Invasive Species Plan

A guide for proactive AIS management in Portage County



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Purple loosestrife (*Lythrum salicaria*) along the Wisconsin River



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Introduction

Portage County has 31 public access lakes, and several large impoundments along the Wisconsin River and Plover River. Many streams also exist, which are equally susceptible to harm from invasive species, though the species of primary concern may differ.

Some of the lakes in Portage County have established lake associations or lake districts to help with management of the lakes. Lake districts and lake associations can help to monitor the lakes, disseminate information quickly and efficiently, and create a collaborative effort through hosting meetings and workshops. Many lakes in Portage County do not have organized lake groups, and this can present a challenge in AIS management. Since 2008, Portage County LCD has collaborated with Wood and Waushara Counties (and later, with Waupaca, Marathon and Taylor Counties) and Golden Sands Resource Conservation & Development Council, Inc. (RC&D) to acquire grant funding from the Department of Natural Resources (DNR) to support a Regional AIS program.

Through the Regional AIS Program, information was gathered about the status of AIS infestations in Portage County, volunteer activity levels, training and education needs, and other information regarding AIS in Portage County.

The purpose of this AIS plan is to identify short-term and long-term goals toward establishing a coordinated, county-wide approach to protecting Portage County's lakes.

This AIS plan is meant to be a dynamic document, to be updated annually and changed as new goals and challenges are identified.

Proactive Management Steps

It is in the best interest of any citizen organization or community to initiate actions today in order to avoid AIS problems tomorrow. Take a proactive management approach to lake protection. Proactive management activities need not be costly, but they can make a world of difference.

As the old saying goes—an ounce of prevention is worth a pound of cure. The same is true for preventing an invasion of AIS in your favorite lake. If efforts are kept at a “prevention” level, the costs to your group (in time, money, and frustration) will be far lower than the costs involved with dealing with AIS at a “control” level.

*Take action today to
avoid AIS problems
tomorrow.*

Step 1: Gather Information about Aquatic Invasive Species

In Portage County, aquatic invasive species data was gathered from Wisconsin DNR files. Prior to 2009, very little information was known about the aquatic invasive species distribution in Portage County. In response to this, visual AIS surveys were completed in 2009 by Golden Sands RC&D staff. These surveys were conducted from kayaks or boat, and consisted of a trip around the littoral zone of the lake to look in the water and on the shoreline for the following species. NR40 prohibited giant hogweed was reported in 2018. This population was previously recorded but follow up monitoring and reporting had been nonexistent.

- > Eurasian watermilfoil (*Myriophyllum spicatum*)
- > Curly-leaf pondweed (*Potamogeton crispus*)
- > Zebra mussels (*Dreissena polymorpha*)
- > Rusty crayfish (*Orconectes rusticus*)
- > Banded mystery snail (*Viviparus georgianus*)
- > Chinese mystery snail (*Bellamya chinensis*)
- > Japanese knotweed (*Polygonum cuspidatum*)
- > Purple loosestrife (*Lythrum salicaria*)
- > Flowering rush (*Butomus umbellatus*)
- > Yellow Iris (*Iris pseudacorus*)
- > Common reed (*Phragmites australis*)
- > Giant hogweed (*Heracleum mantegazzianum*)

All AIS detected were mapped, voucher specimens collected and filed to the UWSP Freckmann Herbarium, and recorded with the Wisconsin Department of Natural Resources (WDNR). Appropriate management bodies were notified, including WDNR, Portage County, and any existing Lake Associations / Districts.

Early detection surveys are now used and meet DNR protocols. Data collected during these surveys can be entered into the SWIMS database. Early detection surveys are similar to past

AIS visual surveys but include rake drops and timed monitoring at five specific locations as well as snorkeling where applicable. As of 2017 picture vouchers became acceptable for verifying new populations of restricted species. Physical vouchers are still required for prohibited species.

Early detection of these invasive species is essential to minimize effort and cost associated with management. Well established populations of Eurasian watermilfoil or zebra mussels may never be eradicated, even with years of effort. It is impossible to overemphasize the importance of monitoring for aquatic invasive species, whether on a citizen level or local government level

Eurasian watermilfoil (*Myriophyllum spicatum*)

Introduced to Wisconsin in the 1960s as an aquarium plant, this species has quickly spread around the lakes and streams of the state. Small fragments of the plant can produce adventitious roots, creating new plants wherever the wind or currents take them. The fragments can be caused by boats, paddles, fish, waves, or other sources of disturbance. Eurasian watermilfoil tends to grow earlier in the year than most native plant species, and tends to shade out the native species. In addition to reducing biodiversity in the ecosystem, EWM also reduces the recreational value of the water body by reducing water flow, increasing temperature, and encouraging stunted fish populations (Newroth 1985; Engel 1995).



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Eurasian watermilfoil

Containment and possible control is much more likely, and less expensive, if the population is caught early. Hand-removal with a small garden rake, or via snorkeling and hand-pulling by the roots, can be very effective on small populations of EWM. This is why early detection is so crucial for inexpensive management. If the population is allowed to expand for several seasons before it is detected, management options are reduced, and costs rise sharply.

For larger populations, chemical herbicide applications are typically used. 2,4-D formulations are most common, which are most effective in spring or early summer, when the plant is actively growing. As 2,4-D is a systemic herbicide, it requires the plant to be actively growing in order to absorb enough of the chemical to destroy the plant.

Biological control is an emerging option that may hold some promise for naturally controlling EWM without chemicals. *Euhrychiopsis* weevils are aquatic insects that are native to many Wisconsin lakes, and feed on native northern watermilfoil (*Myriophyllum sibiricum*). The adult weevils feed on the leaves and stems of the plant, while the larvae bore into the stem and feed on the vascular tissues within. These activities often stress the plants enough to kill them, or at least prevent flowering. More research is needed on this topic before it will be employed on a widespread basis.



Eurasian watermilfoil vs Northern watermilfoil
whorl (left) whorl (right)

There are seven native watermilfoils in Wisconsin, and at least two of those occur in Portage County lakes (*Myriophyllum sibiricum* and *M. verticillatum*). Both of those are likely to be confused with EWM.

Northern watermilfoil (*Myriophyllum sibiricum*) typically has whitish stems, whorled leaves with 11 or fewer pairs of leaflets, and a fairly rigid growth form. EWM has pinkish stems, whorled leaves with 12 or more pairs of leaflets, and a very limp growth form. Whorled watermilfoil (*Myriophyllum*

verticillatum) typically has dark green to brown stems, tightly-packed whorls of leaves, and highly divided floral bracts above the water late in the season.

Curly-leaf pondweed (*Potamogeton crispus*)

Curly-leaf pondweed (CLP) arrived in Wisconsin as early as the late 1800s, brought here as an aquarium plant, and possibly introduced accidentally during stocking of the common carp (*Cyprinus carpio*). CLP is still occasionally sold by some internet-based aquarium supply stores.

CLP has an atypical life cycle, growing to peak biomass in mid-June. At this time, most of the plants die back to the rhizome, and the nutrients contained in these plant tissues are released into the water column. This nutrient release often results in an algae bloom, sometimes containing blue-green algae (cyanobacteria) like *Microcystis*. Blue-green algae release a neurotoxin that can harm humans and pets that come in contact with the water.



Curly-leaf pondweed

CLP spreads by rhizomes, seeds, and turions, which makes it very difficult to control. Turions are known to remain viable for more than five years, so herbicide applications need to be re-applied for at least five consecutive years to deplete the storage of turions in the substrate (Johnson et al. 2012). Harvesting of CLP can be done in May, before turion production occurs. This can remove the biomass of the CLP and possibly prevent turion and seed accumulation for that season.

There are over thirty species of pondweeds (*Potamogeton* spp.) in Wisconsin, and two of them are commonly confused with CLP. Claspingleaf pondweed (*Potamogeton richardsonii*) has wavy leaves with a smooth margin. Fern pondweed (*Potamogeton robbinsii*) may have very fine serrations on the leaf margins, but the leaves are typically straight, and the plant tends to be dark green to brown. CLP has very wavy leaves with serrations on the margins.

Zebra mussels (*Dreissena polymorpha*)

Zebra mussels are small mollusks that are native to the Black and Caspian Seas of western Asia. They are filter-feeders, straining tiny plankton out of the water column, and therefore remove the base of the aquatic food web. Large zooplankton and small fishes depend on this same food source, so Dreissenid mussels like zebra mussels and the related quagga mussel (*Dreissena rostriformis*) can have detrimental effects on fish populations and sizes in affected lakes.



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*Zebra mussel shell
(actual size)*

Control of zebra mussels is very difficult and expensive. Power plants and other near-shore businesses often pipe water out of large lakes and rivers to cool their machinery, and these pipes can quickly become clogged with zebra mussels, causing reduced flow and reduced cooling ability. These businesses often inject low doses of chlorine into the pipes to kill the mussels, or they shut off the pumps and send divers into the pipes to manually scrape the walls clean. There is currently no good option to remove zebra mussels on a large scale. A biological control option using a bacterium is currently being researched and evaluated, so this could become an option in the future if it is deemed safe and effective.

Zebra mussels and quagga mussels are usually less than one inch long, with white and black striping across the shell. Zebra mussels tend to be D-shaped, while quaggas are more rounded on both the dorsal and ventral sides. A simple test to differentiate the two species is to stand the entire closed shell on its side—if it can remain standing, it is a zebra mussel. If it falls over, it is a quagga mussel.

Rusty crayfish (*Orconectes rusticus*)

Native to the Ohio River Basin, rusty crayfish were probably introduced here as fishing bait. Rusty crayfish prefer well-oxygenated, flowing water with a rocky substrate for shelter. They are omnivorous, feeding on everything from fish eggs to invertebrates to aquatic plants. When native crayfish are present in the same ecosystem, rusty crayfish will often kill them or simply push them out of the prime habitats, making the native crayfish more susceptible to predation, or less likely to have adequate resources for survival. Rusty crayfish are easily recognized by the rust-colored spot on each side of their carapace ("shell").



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*The rusty colored spot
gives the crayfish its name*

Trapping rusty crayfish can have a localized reduction effect, but nearby rusty crayfish populations in the same body of water are likely to immigrate to the trapping area soon after efforts cease. Natural predation of rusty crayfish occurs by otters, shorebirds, turtles, large fish, raccoons, and other creatures.

Despite substantial natural predation, the rusty crayfish's high reproductive rate and tendency to hide under large rocks enable it to easily establish large populations in many waters.

Chinese mystery snail (*Bellamya chinensis*) and Banded mystery snail (*Viviparus georgianus*)

Chinese mystery snails were brought to the United States in the late 1800s as a food source in Asian food markets. Both snails have also been sold as algae-eating pets for water gardens, aquaria, and backyard ponds. A likely method of introduction to the natural environment is through this ornamental trade vector.

Little research has been done on the impact of these snails. Both banded and Chinese mystery snails are known to compete with native snail populations for resources, and may cause decreases in native snail diversity or abundance. Large die-offs have been observed, which can cause foul-smelling messes along shorelines. Both snails are possible vectors of various parasites and viruses (Harried et al. 2015; David et al. 2017).

Control of mystery snails is currently limited to manual removal with small hand tools. Mystery snails have a tough operculum at the opening of the shell, which is able to create a watertight seal. If a chemical pesticide is applied, the mystery snails can close up their shells and wait for the toxic substance to dissipate. Most native snails do not have this ability, and will be subjected to the chemical.



Above: Banded mystery snail
Left: Chinese mystery snail

Chinese mystery snails can grow up to nearly 7cm tall (2.9 inches), which is larger than any of our native snail species. They are typically dark brown, and may have several vertical ridges on the shell near the opening.

Banded mystery snails are commonly about 2cm long, with dark brown bands running horizontally along the shell.

Unlike most snails, which lay gelatinous egg masses on rocks, logs, or vegetation, mystery snails give birth to live young with complete shells.

Japanese knotweed (*Polygonum cuspidatum*)

Japanese knotweed has been planted as an ornamental shrub for decades, due to its tendency to grow in thick, straight rows about 10ft high. The plants light up with bright white flowers in the mid-summer, which originate from the base of each heart-shaped leaf. It can grow in dry sites, but does exceptionally well in moist soils like riverbanks or roadside ditches. Although sold as Japanese bamboo or Mexican bamboo in garden centers, Japanese knotweed is actually a member of the *Polygonaceae* family, totally unrelated to the true bamboos. A similar species, giant knotweed (*Polygonum sachalinense*), is also invasive and present in Wisconsin.



Japanese knotweed leaves and flowers

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Controlling Japanese knotweed is very difficult once it is established. The rhizome network is very deep and very extensive. Foliar herbicide applications can be effective, but typically require multiple applications to have any measurable effect on the colony. Cutting the stem near to the ground and pouring herbicide into the hollow stem has proved to be effective. The herbicide will be continuously absorbed by the plant over a short period of time, taken up into the root systems. This can be very effective at killing the plant, sometimes with just one or two applications. Cutting back re-growth is vital to management after herbicide treatments, so as to minimize energy acquired by the roots. Since Japanese knotweed often occurs near water, care should be taken to ensure that the herbicide is safe for use in aquatic habitats. Certain herbicides can be toxic to amphibians, and should be avoided.

Purple loosestrife (*Lythrum salicaria*)

Purple loosestrife was imported to the United States as an ornamental species, and continued to be sold until recently. It is a wetland perennial with woody stems, and commonly reaches a height of 6 feet or more. Leaves are generally opposite, but may be in whorls of threes on older plants. Stems are typically square, but may be six-sided on older plants.

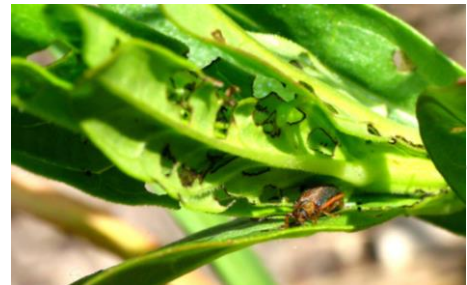


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The Purple Loosestrife Biocontrol Program has been very successful in Wisconsin. This program utilizes volunteers to raise *Galerucella* beetles, which feed on the foliage of purple loosestrife. These beetles often stress the plant enough to stunt them, or even prevent flowering. These beetles are native to the same area of Eurasia as purple loosestrife, and were imported here as a natural predator. Testing results suggest that other plant species will not be affected by the *Galerucella* beetles. The goal of this program is to allow purple loosestrife to live not invasively, but harmoniously with the other native plants that also have their natural predators present.

Purple loosestrife

Herbicide application can be effective to manage purple loosestrife. Systemic herbicides work best, as they affect the shoots as well as the roots. Applying herbicide in late summer to fall allows the herbicide to be carried down into the roots along with the general downward flow of nutrients for underground storage.



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Galerucella beetle on purple loosestrife

Flowering Rush (*Butomus umbellatus*)

Flowering rush came to the United States from Europe as an ornamental plant for gardens. It has since spread to shorelines and water bodies, able to become invasive in both places, due to its emergent and submergent forms. Flowering rush can form dense stands, crowding out native plants, and interfering with water uses.



Flowering rush in bloom

It is most easy to identify when in bloom; however, only plants growing in shallow water or along the shoreline produce flowers. Its flower stalks protrude in an umbel formation from a single point on the end of the stem. Each individual flower has three pinkish colored petals and three sepals. When not in bloom, its green stems are easily mistaken for other emergent plants; however, flowering rush stems are triangular in the cross section. The leaves can grow to be about three feet high on shorelines, twisting at the tip on some plants. Submergent plants have no flowering stalks, and long thin leaves.

Their strong, robust root systems can produce new plants when fragmented. The plants spread primarily by their rhizomes, and can be further spread by boaters, or any animals that fragment these rhizomes. Reproductive structures called bulbils form on the roots and inflorescence, and break off to form new plants. Changing water levels can also influence the spread of submergent or emergent flowering rush.

Control methods of flowering rush have proven difficult to implement. The plants can grow in varying water levels, and have strong root systems that grow from fragments, making it difficult to use consistent methods of removal. Flowering rush has also proven to be resistant to herbicides, prompting scientific studies using multiple herbicides, but these methods are still in experimental stages.

Yellow Iris (*Iris pseudacorus*)

Native to Europe and the Mediterranean region, yellow iris came to the U.S. in the 1950s as an ornamental plant.

They now grow along streambanks, wetlands, lake shorelines, and other wet areas. Yellow iris grows to 5 feet tall, with long, flat narrow leaves that overlap at the base, forming a slightly fanned shape. They have bright yellow flowers that bloom from May to June in Wisconsin, making for easy identification. When not in flower, yellow iris resembles the native blue-flag iris, as well as cattails. Yellow iris has numerous thick rhizomes. The sap of the plant is toxic, and can cause skin reactions, and stomach trouble if touched or ingested.



Yellow Iris has a showy, yellow flower

Paul Skawinski



Yellow iris leaves fan out from the base

Yellow iris is harmful, as it displaces native vegetation and reduces habitat needed by waterfowl and fish. It can clog small streams and irrigation systems, and it can dominate shallow wetlands, wet pastures and ditches. Mats formed by the rhizomes can prevent the germination and seedling growth of other plant species.

Mechanical removal of the plants via cutting below the water line to inhibit oxygen intake, thus essentially drowning the plant can be successful, but will most likely have to be repeated. Digging the plants out by the roots can be successful, but it is very labor-intensive; the rhizomes are also able to re-sprout from the fragments, so the plants may survive if any fragments are left behind.

Chemical treatment with herbicide can be effective; however it is necessary to use an herbicide labeled for use in aquatic habitats.

Common Reed (*Phragmites australis*)

Common reed was imported to the United States from Europe. Common reed, commonly called phragmites, is a tall perennial grass that can reach heights of over 15 feet. Its robust, fluffy seed heads normally lean off to one side. It is present in every U.S state, and spreads by both seed dispersal and its underground rhizomatous root system.

Its incredibly strong, deep roots are the primary way this plant spreads, and adds to the difficulty of its removal. Manual removal is labor-intensive because of the root depth and intricate branching. If even a fragment of the root is left behind, it can re-sprout. Chemical spraying has proven a viable option for removal, but requires repeated treatments. Prescribed burning of the plants also can work, but must be repeated.



Common reed towers over many other wetland plants

There is both an invasive and a native common reed in the United States. While invasive common reed is normally more robust than the native, they can easily be mistaken for each other, so any suspected common reed should be verified by an expert. Another grass that could also be mistaken for common reed is reed canary grass. Reed canary grass looks like a smaller version of common reed, but only grows from 3-7 feet tall, and has leaves that grow to half the width of common reed.

Common reed has been spreading across Wisconsin from east to west, and is easily spread in road corridors, as mowing it causes fragments to spread and subsequently re-sprout. Water in ditches can also carry the seeds of these hearty plants. Phragmites has been used for bioremediation, roof thatching, and duck blinds. Some plants are not entirely dead when utilized, thus furthering the spread of the invasive plant to other areas.



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Leaves grow to be up to 2 inches wide

Giant hogweed (*Heracleum mantegazzianum*)



Mature flower heads

Diane Schauer

be over three feet wide. The stems are green with purple speckling and are covered with fine hairs. Great care needs to be taken to avoid sap from broken leaves and stems. Sap that contacts skin and is exposed to sunlight can produce blistering and burns.

Giant hogweed was brought to the United States as an ornamental. First year plants may have a short single stalk with leaf or form a rosette. Second year plants typically mature. Mature plants can reach heights of over 15 feet and produce large umbels of pale white flowers. Smaller flowers may form at the leaf axis. Flowers produce many seeds and the seeds have a high rate of germination. The leaves are deeply lobed, have very pointed tips and can



Chris Hamerla

Stem covered w/ fine hairs and purple color speckling.



Chris Hamerla

Large, pointed, deeply lobed leaves

Plants prefer moist areas. Introduction is done through intentional planting and seed dispersal. Seeds may be transported by birds and mammals or in soil stuck in machinery, ATVs and footwear. Manual removal and chemicals are both effective for controlling giant hogweed. Control should be done before the plant flowers. Any flower heads should be removed and bagged or burned to prevent seeds from spreading.

Giant hogweed is a prohibited species in Wisconsin and is only known to be small populations in six counties according to vouchered DNR reports. Any potential new finds should be reported to the local AIS Coordinator, County or DNR staff.

AIS information for Portage County lakes

Every lake has physical, chemical, and biological characteristics that make it a unique ecosystem. All lakes are different, so it is very important to understand what is “normal” for a particular lake under everyday circumstances.

AIS management is only one component of holistic lake management. Updated background data about the lake ecosystem, such as water chemistry, water clarity, and aquatic plant surveys would be helpful to lake groups and DNR lake managers. Portage County is ahead of the game after completing the Portage County Lakes Study in 2003. A lot of lake water quality data was collected, which is valuable for lake management decisions. The Portage County Lakes study is now going a step further by writing comprehensive lake management plans for each public access lake in the county. These plans will include an AIS prevention and management component.

Why is a lake inventory important for proactive AIS management?

1. A lake inventory tells you what is “normal” for a given lake system, and makes it easier to detect changes, such as new AIS infestations, early. The earlier the detection and response, the better your chances of controlling the problem. Treatments for pioneer populations are much more likely to have a successful outcome than if the population is well-established.
2. In order to receive approval to treat a lake chemically, an aquatic plant management plan (APM plan) is normally required. If a baseline aquatic plant inventory has already been completed as part of a lake inventory, management options to control invasive species may move forward more quickly. Consult the “Guide to an Aquatic Plant Management Plan” for complete information about Wisconsin’s APM plan requirements.
<http://www.uwsp.edu/cnr/uwexlakes/ecology/APMguide.asp>

Table 1: AIS confirmed in Portage County, as of Dec. 2018:

Waterbody Name	Waterbody ID Code (WBIC)	Invasive Species
Adams Lake	267800	Banded Mystery Snail, Narrow-leaf cattail (<i>Typha angustifolia</i>), Rusty Crayfish*, Yellow Iris
Amherst Millpond	268200	Banded Mystery Snail, Curly-Leaf Pondweed, Japanese Knotweed, Purple Loosestrife, Rusty Crayfish
Bear Creek	267400	Curly-Leaf Pondweed, Rusty Crayfish
Bear Lake	181900	Chinese Mystery Snail, Eurasian Water-Milfoil

Bentley Pond (Dana Pond)	1404500	Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Flowering Rush
Big Eau Pleine River	1427200	Aquatic forget-me-not (<i>Myosotis scorpioides</i>), Purple Loosestrife
Biron Flowage	1396900	Eurasian Water-Milfoil, Yellow Iris
Collins Lake	270200	Banded Mystery Snail, Chinese Mystery Snail, Eurasian Water-Milfoil
Ebert Lake	267700	Banded Mystery Snail
Flume Creek	286600	Rusty Crayfish
Fountain Lake	262200	Banded Mystery Snail, Hybrid Cattail
Jordan Pond	1403600	Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Purple Loosestrife, Rusty Crayfish
Lake Du Bay	1412200	Aquatic forget-me-not (<i>Myosotis scorpioides</i>), Chinese Mystery Snail, Curly-Leaf Pondweed, Purple Loosestrife, Rusty Crayfish
Lake Emily	189800	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Flowering Rush, Hybrid Eurasian / Northern Water-Milfoil, Purple Loosestrife, Rusty Crayfish
Lake Helen	287200	Banded Mystery Snail, Eurasian Water-Milfoil
Lake Joanis	3000096	Chinese Mystery Snail, Curly-Leaf Pondweed*, Eurasian Water- Milfoil, Freshwater Jellyfish
Lake Lime	190100	Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil
Lake Pacawa	1036400	Hybrid Eurasian / Northern Water-Milfoil
Lake Susan	996300	Eurasian Water-Milfoil
Little Eau Claire River	1423300	Aquatic forget-me-not (<i>Myosotis scorpioides</i>), Purple Loosestrife
Little Plover River	1402100	Ornamental water lilies (non-native <i>Nymphaea</i> sp.)
Little Wolf River	272400	Rusty Crayfish
McDill Pond	1403200	Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil, Japanese Knotweed, Phragmites (non-native), Rusty Crayfish
Mill Creek	1398600	Rusty Crayfish
Mosquito Creek	1396600	Rusty Crayfish
Onland Lake	195100	Banded Mystery Snail, Chinese Mystery Snail
Pac-A-Wa Lake	1009300	Eurasian Water-Milfoil
Pickerel Lake	195900	Banded Mystery Snail, Chinese Mystery Snail, Eurasian Water- Milfoil, Phragmites (non-native)
Plover River	1402800	Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Flowering Rush, Hybrid Eurasian / Northern Water-Milfoil, Purple Loosestrife, Rusty Crayfish
Plover River Flowage	1403000	Chinese Mystery Snail*, Curly-Leaf Pondweed, Eurasian Water- Milfoil, Hybrid Eurasian / Northern Water-Milfoil, Purple Loosestrife
Rinehart Lake	278600	Banded Mystery Snail, Purple Loosestrife
Spring Creek	266800	Rusty Crayfish

Spring Lake	267200	Banded Mystery Snail, Curly-Leaf Pondweed, Purple Loosestrife*
Springville Pond	1402300	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Japanese Knotweed, Ornamental water lilies (non-native <i>Nymphaea</i> sp.) , Phragmites (non-native), Rusty Crayfish
Stoltenburg Lake	199400	Banded Mystery Snail
Sunset Lake	199700	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Yellow Iris*
Thomas Lake	200300	Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Phragmites (non-native)
Tomorrow River	270400	Aquatic forget-me-not (<i>Myosotis scorpioides</i>), Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Narrow-leaf cattail (<i>Typha angustifolia</i>), Purple Loosestrife, Rusty Crayfish, Yellow Iris
Tree Lake	289400	Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed
Unnamed	267500	Rusty Crayfish
Unnamed	267600	Banded Mystery Snail
Unnamed	270100	Banded Mystery Snail
Unnamed	5548247	Rusty Crayfish
Washburn Lake	1177900	Chinese Mystery Snail
Waupaca River	257400	Aquatic forget-me-not (<i>Myosotis scorpioides</i>), Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Narrow-leaf cattail (<i>Typha angustifolia</i>), Purple Loosestrife, Rusty Crayfish, Yellow Iris
Wazeecha Lake	1391200	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Narrow-leaf cattail (<i>Typha angustifolia</i>), Rusty Crayfish, Zebra Mussel
Wisconsin R Fl C3-Stevens Pt	1409400	Curly-Leaf Pondweed, Eurasian Water-Milfoil
Wisconsin River	1179900	Aquatic forget-me-not (<i>Myosotis scorpioides</i>), Eurasian Water-Milfoil, Purple Loosestrife, Yellow Iris
Wisconsin River Flowage Number 1 51	1402700	Curly-Leaf Pondweed
Wolf Lake	241100	Banded Mystery Snail, Eurasian Water-Milfoil, Phragmites (non-native), Purple Loosestrife

Two other prohibited invasive species have been reported in Portage County: Brazilian waterweed (*Egeria densa*), and water lettuce (*Pistia stratiotes*).

Brazilian waterweed was found during the summer of 2009. Scott Provost (WDNR) and Paul Skawinski (Golden Sands RC&D) visited the private pond near Almond to confirm this species. Brazilian waterweed is an NR40-prohibited species that is native to South America. It was brought into the Portage County pond as a contaminant plant in an order of water lilies that the

owner placed on the Internet. Herbicide application has been completed on the pond, and the Brazilian waterweed population is believed to have been eradicated.

Water lettuce was discovered on Springville Pond by a student at UW-Stevens Point in 2010. The plants were removed, and the AIS Education Specialist (Paul Skawinski) was contacted. Paul visited the pond the next day and confirmed that no water lettuce plants remained. He also returned about a week later to check once more. Water lettuce was of particular concern to Springville Pond, because as a floating plant, it could easily float down to the dam and be spilled into the Wisconsin River system. Further monitoring in 2011 and 2012 also did not find any water lettuce.

Flowering rush was also reported on Springville Pond, but no samples were collected and submitted in an herbarium for verification. It is an emergent species that forms dense monocultures along the shoreline. It is a common ornamental species for water gardens. Flowering rush is a restricted species under NR40. During surveys by Golden Sands RC&D in 2010, Paul Skawinski paddled along the shoreline with a kayak to search for flowering rush during its typical blooming period, and no plants were discovered. Further monitoring in 2011 and 2012 still did not discover any flowering rush plants.

Recommended Actions

- 1. Continue to support AIS monitoring county-wide, and complete AIS surveys for any lakes that have not yet had AIS surveys completed**
 - a. Use CLMN-AIS monitoring and DNR early detection protocols.
- 2. Continue to update official AIS occurrences records for all lakes within Portage County**
- 3. Continue to update official AIS volunteer activity records**
 - a. Clean Boats, Clean Waters
 - b. Citizen Lake Monitoring Network
- 4. Continue to network with the Portage County Lakes Study to implement the AIS-related elements outlined in each lake plan.**

Step 2: Protect and Restore Native Vegetation

Terrestrial and emergent vegetation that grows along the banks of a water body is also known as the “shoreline buffer”. In many ways, this buffer indirectly helps to prevent invasive plant establishment in a lake:

- 1) The buffer protects the lake by reducing soil erosion and diverting nutrients that would otherwise enter the lake and provide fuel for nuisance-level aquatic plant growth.

- 2) A healthy shoreline buffer also provides biologically diverse and healthy habitats that are important to wildlife, including the native *Euhrychiopsis* weevils that are used for biological control of Eurasian watermilfoil.
- 3) Dense vegetative cover occupies areas that would otherwise be open and available to colonization by invasive species, and provides a degree of privacy to shoreline property owners.

Native vegetation is the lake's "immune system"

Portage County regulations are the same as the state standard. These regulations require a 35-foot shoreline buffer zone above the ordinary highwater mark. Within this 35-foot line, no more than 35 feet per 100 feet of frontage can be clear-cut. This is often referred to the "viewing corridor" or "access corridor", since it often runs from a house to the water. The remaining 70% serves to screen human activity, runoff, and erosion. These regulations are in place to protect water quality by reducing sedimentation and erosion.

Counties have the option to create local ordinances that go beyond the state standard if they choose. The shoreline buffer serves as the lake's "immune system", fending off new invaders. Encouraging landowners to follow this ordinance, or even go beyond the requirement, would be beneficial to the health of Portage County's lakes.

Local government can protect shoreline buffers through policy and education. Portage County Planning and Zoning can protect lake health with strong enforcement of shoreland zoning ordinances. In Portage County, the shoreland zoning ordinance is routinely enforced, and with enforcement comes education. The county LCD also provides technical assistance with shoreland restoration or enhancement, and can assist landowners in locating cost-sharing options.

Use of newsletters, informational packets, news articles, and videos can be valuable tools to introduce the concept of shoreland restoration to landowners in Portage County. These tools can help to illustrate what a healthy shoreline looks like, why it's beneficial to their property and the lake, and how a restoration project can be utilized to produce a healthy shoreline.



Tom Littwin, Waushara Co. LCD)

Figure 1: Shoreline in need of restoration



Tom Littwin, Waushara Co. LCD)

Figure 2: Same location after restoration

Educational campaigns can also play a role in promoting healthy shoreline buffers. It would be in the best interest of the County to provide a packet of information to new lakeshore property owners regarding aquatic invasive species and the importance of healthy shoreline buffers. The costs associated with producing this type of informational packet may be eligible for grant funding from the WDNR's Lakes Grant Program. The Lake Helen Protection & Rehabilitation District has created and distributed these packets for landowners on their lake. It is an easy way to ensure that new landowners are informed of pertinent regulations and ways to protect their lakeshore investment.

Volunteers and lake organizations are essential for early detection of AIS and maintenance of healthy lake

Native Aquatic Vegetation

Although aquatic plants are commonly thought of as “weeds”, a healthy and diverse population of native aquatic plants is a *vital* component in the prevention of aquatic invasive species. Research has shown that the abundance of EWM in a lake is inversely related to cumulative native plant cover (Madsen, 1998). For this reason, it is important to maintain healthy and diverse stands of vegetation. A thriving native plant population will compete for nutrients and living space, making it difficult for invasive species to become established.

Other benefits to maintaining native plant populations include:

- Improved health of the sport fishery
- Protection against bank erosion
- Stabilization of the bottom sediment
- Decreased likelihood of algae blooms
- Increased water clarity
- Increased value to desirable wildlife species

Recommended Actions

1. **County-wide promotion of native vegetation**
 - a. Enforce shoreland zoning ordinances
 - b. Annual review of shoreland zoning ordinances
 - c. Annual review of funding for cost-sharing incentive programs
 - d. Create and distribute informational packets to new lakeshore property owners

- e. Promote native vegetation in news articles, citizen organization newsletters, and press releases

Step 3: Conduct AIS Monitoring

With the growing concern over the spread of aquatic invasive species to Wisconsin's inland lakes, many concerned citizens are looking for ways to get involved. AIS monitoring and volunteer boat inspection programs are opportunities to take a front-line defense against the spread of AIS.

There are currently established citizen volunteer groups on Lake Dubay, Lake Emily, Lake Helen, Lake Jacqueline, McDill Pond and Sunset Lake. A Portage County Lakes and Rivers Association is being formed as well. Volunteer monitors are extremely beneficial to the lakes of the county. These volunteers are often lake residents, or just interested citizens of the county. **Free** training workshops are available to train volunteers on protocols of the Clean Boats, Clean Waters program, and also the Citizen Lake Monitoring Network program. Golden Sands RC&D can provide these trainings by request.

Clean Boats, Clean Waters



Clean Boats, Clean Waters (CBCW) is a watercraft inspection volunteer training program sponsored by DNR, UW-Extension, and the Wisconsin Lakes (formerly WI Association of Lakes, WAL). Upon completion of the workshop, CBCW participants are equipped with the tools, knowledge, and confidence needed to educate lake users and perform watercraft inspections at boat landings, potentially preventing a new infestation from coming into their lake. An additional benefit of the CBCW program is that the data collected by volunteers is used to support requests for more funding and legislative support for AIS issues.

Citizen Lake Monitoring Network

The Citizen Lake Monitoring Network is a well-established program designed to involve citizens in collection of pertinent lake management data. The program includes the collection of water chemistry, aquatic invasive species, and water clarity data.



Recent research has developed solid correlations between Secchi readings and many other water quality parameters. Therefore, this one inexpensive, easy-to-operate sampling tool can tell our lake managers a great deal about a lake's condition. To have Secchi monitors on every lake in Wisconsin would be a terrific advantage for managing our state's lakes.

A component of the CLMN program trains volunteers to monitor for ten aquatic invasive species. The data collected by volunteers in the CLMN-AIS program is used to support requests for more funding and legislative support for AIS issues. Citizens can monitor for any or all of the species included in the program. Monitoring means early detection of new AIS infestations, and can result in huge savings in treatment expenses and a reduction of impacts to the lake. Ideally, every lake would have trained AIS monitors.



Figure 3: A Secchi disc, which is lowered into the water to measure water clarity

The Portage County Parks Department is also a valuable group that could serve as monitors. Parks staff work throughout the county, frequently at waterfront locations. The Portage County Parks Department manages lands adjacent to Amherst Mill Pond, Bear Lake, Becker Lake, Collins Lake, Lake Dubay, Lake Emily, Lake Helen, Lake Jacqueline, Jordan Pond, Meyers Lake, Mill Creek, Rinehart Lake, Rocky Run Wetland, Sunset Lake, Tree Lake, Wolf Lake, the Plover River, the Tomorrow River, and the Wisconsin River. Parks staff should be trained to identify and report new AIS sightings, and they could provide valuable assistance with early detection. An annual “refresher” training on AIS is recommended for Parks Department staff each year.

Recommended Actions

1. **Promote CLMN-AIS monitoring activity on all Portage County lakes**
 - a. Promote the CLMN-AIS monitoring program county-wide, with frequent news articles to promote awareness of the program and the importance of it.
 - b. Offer CLMN-AIS training workshops county-wide through the Regional AIS Program.
2. **Promote CLMN-Secchi and CLMN-Chemistry monitoring activity on all Portage County lakes**
 - a. Promote the CLMN-Secchi and CLMN-Chemistry monitoring programs county-wide, with news articles to promote awareness of the program and the importance of it.
 - b. Offer CLMN-Secchi and CLMN-Chemistry training workshops county-wide through UWSP- CWSE.
3. **Encourage watercraft inspections on all Portage County lakes**
 - a. Promote the Clean Boats, Clean Waters program county-wide, with frequent news articles to promote awareness of the program and the importance of it.
 - b. Offer CBCW training workshops county-wide through Regional AIS Program.

To Report an Infestation

1) Collect a sample, if possible

- a. Roots, stems, flowers
- b. Place in plastic bag with water
- c. Keep it in the freezer

2) Contact DNR

Jodi Lepsch, Water Resource
Management Specialist
715-838-8385
OR
Golden Sands RC&D
715-343-6215

4. Train County Parks staff to identify and report AIS sightings

Step 4: Spread the Word about AIS

Increasing public awareness of AIS is an important strategy in minimizing their spread. To facilitate proactive efforts from the general public regarding AIS prevention, people need to be made aware of the problems that AIS can cause.

Youth involvement in AIS management

Students and youth organizations can get involved in AIS issues through purple loosestrife beetle rearing programs for biological control. This program includes an instructional manual for utilizing the beetle-rearing project as an educational tool. Interested individuals can contact Portage County LCD or Golden Sands RC&D for information.

How else can youth get involved? Kids have a great time at volunteer EWM “pulling parties”, performing watercraft inspections at boat landings, helping with purple loosestrife rearing projects, or participating in the CLMN-AIS monitoring program. These are all great ways for lake groups to include youth in their AIS activities.

Citizen Involvement

Attending workshops and conferences on lake issues and AIS issues is a great way for lake residents to learn about protecting the health of their lake.

Citizens county-wide are encouraged to attend events like this. Nearby Adams County hosts an annual Lake Fair, and Wisconsin Lakes hosts an annual statewide Lakes Convention, which provides valuable training for both citizens and professionals alike.



Figure 4: Volunteers collecting aquatic plant samples for a plant ID workshop at Lake



5: Identifying each plant species that the Lake Helen volunteers collected

Outreach materials

Other methods of public education and outreach include the distribution of written materials, such as AIS pamphlets, videos, brochures, and “watchcards” developed by DNR and UW-Extension. These can be ordered free or at a minimal cost at

<http://dnr.wi.gov/invasives/aquatic/pdfs/PubCatalogue.pdf>

These publications can be distributed through local bait shops, dive shops, boat rental dealers, chambers of commerce, resorts, restaurants, and other businesses.

News articles in local papers can also be very effective ways to reach lake users. Articles can discuss specific AIS species, laws and ordinances, or volunteer programs. Some counties have also printed AIS placemats or bar coasters to distribute to restaurants near water bodies.



Figure 6: "Prevent the Spread" sign

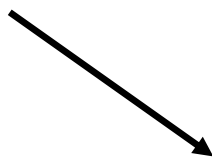


Figure 7: The three previous DNR boat landing signs relating to AIS are being replaced with one comprehensive sign.

Some citizen groups have created additional boat landing signage to reinforce the AIS message to lake users. These projects are eligible for funding assistance from the DNR AIS Grants Program. Portage County has posted large AIS billboards at the public access lakes across the county.



gardens and aquaria are fast growers, can tolerate a wide range of conditions, and are extremely strong competitors. These are exactly the characteristics that describe an invasive species. If these plants are released, they can quickly destroy the balance of our native ecosystems. Possible solutions to this important issue are to make period visits to retail locations and offer AIS information while monitoring for NR 40 restricted and prohibited species. Work with distributors of water garden plants, and encourage them to insert a “Do not release to waterways” stake into each pot. Report findings of NR 40 listed species through appropriate DATCAP and state channels. To report an invasive species violation or a Prohibited species population: Contact the regional AIS coordinator or follow the reporting instructions at: <http://dnr.wi.gov/topic/Invasives/report.html> or send a report to invasive.species@wi.gov.

Recommended Actions

1. **Promote beetle-rearing projects for biological control of purple loosestrife**
 - a. Promote to schools
 - b. Promote to citizen groups and youth groups
 - c. Target lakes with reported purple loosestrife infestations
2. **Promote lake fairs, workshops, and conferences to lakeshore residents county-wide**
 - a. Newsletter notices
 - b. Email notices
 - c. Website – Portage County or Golden Sands RC&D
3. **Print AIS placemats or coasters for distribution in restaurants that are near lakes**
4. **Submit news articles**
 - a. New AIS species to watch for
 - b. AIS prevention
 - c. Updates in AIS laws
 - d. Volunteer programs available
5. **Offer to assist local schools with AIS-related curriculum projects**
6. **Maintain AIS signage at boat landings**
 - a. Include reporting procedures for damaged boat landing signs in AIS training to Parks Department staff
7. **Staff AIS education table at public outreach events**
8. **Encourage water garden suppliers to insert “Do not release to waterways” stakes into pots containing a known AIS**

Step 5: Distribute the Workload

Managing invasive species, even on a proactive level, can be a tremendous workload. By distributing the workload and allocating tasks per individual interest, a great deal can be accomplished.

In Portage County, various tasks are being accomplished by the County LCD and individuals. The Regional AIS Program's role has been to collect information about those activities, to coordinate them, and fill in the gaps. Since the AIS workload is not expected to disappear, this program should be considered a permanent need, and funding secured to keep the position filled.

Recommended Actions

1. Secure funding to continue the Regional AIS Program in Portage County

Step 6: Involve Local Government

Local town or county governments can be wonderful resources to tap into for AIS matters. Below are a few creative ways that local government actions have been beneficial in community AIS efforts.

Town Government

Grant sponsorship—many town governments in Wisconsin have recognized an increasing need and inherent responsibility to support local lake and stream management efforts. Town governments can take an active role in the sponsorship of state lake grants. Lake or stream associations can work directly with their town boards to support grant applications on AIS-focused projects or other lake management projects. To learn more about the state lake grant programs, visit <http://www.dnr.wi.gov/lakes/grants> .

County Government

Community AIS partnerships—County governments can offer a unique community support system pertaining to AIS efforts. Counties can coordinate and encourage townships to work together in unified lake protection efforts. One method of accomplishing this is by supporting an AIS program to coordinate AIS activities within the county.

Law Enforcement—local Conservation Wardens and boat patrols are an important resource for volunteers regarding the “Illegal to Transport” law. This law makes it illegal for anyone to transport aquatic vegetation or animals like zebra mussels on a watercraft or associated equipment. CBCW volunteers active in the county may need to submit violation report forms for enforcement. Good cooperation between local law enforcement and CBCW volunteers is important.

Grant sponsorship—County government can take an active role in the sponsorship of state-administered AIS grants. Counties can help local lake associations seek grants for many types of lake protection projects, including projects focused on AIS issues. County governments can also initiate AIS projects to be completed by County personnel. The AIS program can be funded through the AIS grant program with the DNR to accomplish such projects as AIS partnership coordination, volunteer monitoring support, educational campaigns, and more.

Conservation departments—the actions of Land Conservation Departments (LCDs) are directed by elected county board supervisors. LCD personnel are natural resource management professionals and are often well-versed in all aspects of AIS matters. The LCD is a natural home for county-wide lake protection and AIS initiatives, such as supporting an AIS program, enforcing and promoting shoreline buffers, and assisting with shoreland restoration or enhancement projects.

Recommended Actions

- 1. DNR Conservation Warden and local boat patrol support of AIS program boat inspectors and volunteer boat inspectors**
- 2. County LCD continue AIS involvement through support of AIS program**

Step 7: Plug in to the Lakes Community Network

Wisconsin is proud of its lake-rich heritage, and is host to hundreds of lake organizations. It is important for lake groups and lake managers to stay well connected with the “lakes community” and to stay up-to-date on local and state lake stewardship issues.

Below are suggestions on networking within the lakes community.

Statewide Lake Organizations

Wisconsin Lakes (formerly Wisconsin Association of Lakes) is a non-profit statewide lake group working to protect Wisconsin’s lakes through public policy, education, and local lake group assistance. Through Wisconsin Lakes, the lakes community can stay updated on current public policies that may ultimately affect the health of lakes throughout Wisconsin. They can also attend annual regional workshops that target key lake issues, and gain the support they need for individual lake group projects. For more information about Wisconsin Lakes, log onto their website at <http://www.wisconsinlakes.org>.

Lake managers with the DNR and UW-Extension come together at monthly Lake Team meetings to keep up-to-date with emerging lake issues, policies, and science. County AIS Coordinators have been invited to join this circle to stay in tune with DNR and UW-Extension initiatives. This is a highly recommended network for Portage County’s AIS program staff to stay in touch with.

DNR and UW-Extension AIS staff have begun holding semi-annual meetings for county AIS Coordinators, to update coordinators with regard to state initiatives, new available resources, policy changes, and to give coordinators around the state a chance to network. This is another highly recommended network for the Portage County AIS program staff to stay in touch with.

Statewide Lakes Convention

The Wisconsin Lakes Convention is an outstanding educational event that has brought hundreds of lake groups, state leaders, and natural resource professionals together in a celebration of Wisconsin's lakes. The convention is an excellent opportunity for learning, sharing, and discussing issues important to lake management. For more information about the annual Wisconsin Lakes Convention, log onto the UW-Extension Lakes Program website at <http://www.uwsp.edu/cnr/uwexlakes>. This convention is a highly recommended opportunity for the Portage County AIS Coordinator and representatives of the County LCD or individual lake groups.

County-wide Citizen Organizations

County-wide citizen organizations provide an excellent opportunity to stay connected with the local lakes community, and share resources between citizen organizations in the county. Membership in a county-wide citizen organization offers a collective voice for advocating for regulatory changes, influencing public policy discussions, and discussions regarding the future growth of the community. Portage County lake groups might want to consider forming one of these organizations in the future.

Individual Citizen Organizations

Citizen groups range from informal social groups to formalized lake associations or districts. An organized, functional citizen group can make a big difference in lake health protection. Citizen groups can be twice as effective when networking with other lake organizations who have struggled with similar issues—lack of funding, lack of volunteer interest or commitment, or lack of information, to give a few examples.

Recommended Actions

1. Keep AIS program staff networked with the “lakes community”

- a. Wisconsin Lakes
- b. Statewide Lake Team
- c. AIS Coordinators' meetings

2. Promote attendance at the Wisconsin Lakes Convention

- a. AIS program staff
- b. Local governments

- c. Lake groups or other citizen groups
3. **100% inclusive county lakes network, with a contact person to disseminate news and information through, even on lakes/streams without organized citizen groups**

Step 8: Be Creative!

Just as each lake is unique, so are the individuals that make up lake organizations. There is no “one size fits all” management criteria made to fit all lake or county situations.

The important similarity between lakes is that they all need a plan of action that is conducive to a healthy lake ecosystem and is realistic in time, money, and commitment. Consider using several of the proactive management steps for the best results.

This plan’s proactive management steps are ideas to help spur thoughts that fit Portage County’s lake management situation, but sitting down with lake residents to brainstorm ideas can be very valuable. The important thing is that the County and the residents DO talk about it. Wisconsin waterways will always be vulnerable to invasions of aquatic invasive plants and animals. Proactive management is the best way of avoiding future AIS infestations.

Creative Kids

“Milfoil Masters” was a creative school project that kids from Minocqua-Hazelhurst-Lake Tomahawk Middle School came up with. Working off of a \$25,000 start-up grant, their idea evolved into the Clean Boats, Clean Waters program, which is now the statewide protocol for slowing the spread of AIS.

<i>Implementation Schedule: Recommended Actions</i>					
<u>Proactive Step</u>	<u>Recommended Action</u>	<u>Who</u>	<u>How</u>	<u>When</u>	<u>Progress</u>
1) Gather info about AIS	Continue AIS monitoring county-wide, assist lakes without recent AIS surveys	AIS program with support of LCD, Parks	Letters, emails, phone calls	ongoing	√+
	Update official AIS records in SWIMS	AIS Program	Confirm reports with vouchers, enter into WDNR's SWIMS database	ongoing	√+
	Update AIS volunteer activity record	AIS Program	Confirm activity from database, add volunteers as needed in SWIMS	ongoing	√+
2) Protect and Restore Native Vegetation	Enforce shoreline zoning ordinances	P&Z	Established process	ongoing	√+
	Annual review of zoning ordinances	P&Z	Established process	ongoing	√+
	Annual review of cost-sharing funding	P&Z	Established review process	annually	√+
	Create/distrib. Info to property owners	LCD, citizen groups	Emails, mailings, hand-deliver to lake residents (citizen groups)	2011+	
	Promote native veg. in articles and press rel.	AIS Program	Write and submit press releases	ongoing	√+
3) Conduct AIS Monitoring	CLMN-AIS monitoring activity on lakes	Citizen groups	AIS Program will train volunteers	2011+	IP
	CLMN-Secchi monitoring activity on lakes	Citizen groups	UWSP-CWSE will train volunteers	2011+	IP
	Watercraft inspectors at landings	AIS Program, citizen groups	AIS Program will train volunteers and hire inspectors	2011+	IP
	Train County Parks staff to identify and report AIS sightings	AIS Program	AIS Program will train Parks staff	annually	√+
4) Spread the word about AIS	Promote beetle-rearing projects for biological control of purple loosestrife	LCD, AIS Program	Contact schools and groups, and offer supplies and training	2011+	√+
	Promote lake fairs, workshops, and conferences to County lakeshore residents	AIS Program, LCD	Emails through network maintained by UWSP – CWSE, county or RC&D website	ongoing	√+
	Print AIS information	AIS Program, Citizen groups	AIS Program can assist with text/photos	2011+	
	News articles	LCD, AIS Program	Write and distribute press releases	ongoing	√+
	Assist local schools with AIS-related curriculum	AIS Program	Take AIS lesson plan into classrooms upon request, assist with projects as requested	2011	√+

	Maintain AIS signage at boat landings	AIS Program	Record boat landing signs in SWIMS, train others to collect signage info	ongoing	√+
	Work with water garden suppliers	AIS Program	Offer AIS info to suppliers, NR40 species store checks-report to DNR	ongoing	√+
	Participate in Statewide outreach events	AIS Program, citizen groups	Landing Blitz, Drain Campaign, Snapshot Day, Waterfowl outreach	ongoing	√+
	Staff AIS education table at public outreach venues	AIS Program	Staff table and offer information to public	ongoing	√+
5) Distribute the workload	Secure funding to continue the AIS Program in Portage County	AIS Program	Apply for DNR grant to continue program	ongoing	√+
	Local Warden support of AIS program boat inspectors and volunteers	AIS Program	Coordinate with DNR Conservation Wardens to enforce AIS violations	ongoing	√+
6) Involve local government	County LCD continue AIS involvement through support of AIS Program	LCD	Continue to place AIS in high priority, and provide County match on AIS grant	ongoing	√+
7) Plug into the lakes community network	Keep AIS Program staff networked with the lakes community	AIS Program	Attend WI Lakes Convention, Lake Team meetings, and AIS Coordinator meetings	ongoing	√+
	Promote attendance at the Wisconsin Lakes Convention	AIS Program	Email notices to contacts through distribution list	ongoing	√+
	100% inclusive county lakes network	AIS Program	Send emails through distribution list	ongoing	√+

Symbol Key

√ Complete

√+ Complete and ongoing

IP In Progress **LCD** Land Conservation Department

P&Z Planning and Zoning Dept.

Appendix A – Contacts List

County

Portage County Land Conservation Dept. 1462 Strongs Avenue Stevens Point, WI 54481 715-346-1216	Portage Co Parks 1903 Cty. Hwy Y Stevens Point, WI 54482 715-346-1433
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Region

Amy Thorstenson, Regional AIS Coordinator
Golden Sands Resource Conservation & Development Council, Inc
1100 Main Street, Suite 150, Stevens Point, WI 54481
Amy.Thorstenson@goldensandsrccd.org 715-346-1264

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Original draft developers Paul Skawinski and Kaycie Stushek, Regional AIS Specialist
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1100 Main Street, Suite 150, Stevens Point, WI 54481

State

Jody Lepsch, DNR Water Resources Management Specialist Senior
Wisconsin Department of Natural Resources
1300 West Clairemont Ave., Eau Claire, WI 54701
(715) 838-8385 Jodi.Lepsch@wisconsin.gov

University of Wisconsin Extension – Lakes Program
College of Natural Resources, University of WI – Stevens Point
800 Reserve St., Stevens Point, WI 54481
715-346-2116 <http://www.uwsp.edu/cnr/uwexplakes>

Paul Skawinski
Citizen Lake Monitoring Network Coordinator, Stevens Point, WI 54481
715-346-4853 Paul.Skawinski@uwsp.edu

Erin McFarlane
Clean Boats, Clean Waters Volunteer Coordinator, Stevens Point, WI 54481
715-346-4978 Erin.McFarlane@uwsp.edu

Wisconsin Lakes
One Point Place, Suite 101, Madison, WI 53719
608-662-0923 or toll-free (WI only) 800-542-5253 <http://www.wisconsinlakes.org>

Appendix B – Aquatic Plant Management Laws & Regulations

Regulated and Unregulated Aquatic Plant Management Activities in Waters of Wisconsin

Activities	Water Bodies					
	Wetlands (non-navigable) ¹	Streams (navigable)	Flowages	Lakes <10 acres entirely confined on one property	Lakes	Fish farms w/controllable outflow (s. 95.96)
Manual removal of native plants	No Permit	109 Permit required	109 Permit required if > 30ft wide	No Permit	109 Permit required if > 30ft wide	No Permit
Manual removal of exotic plants*	No Permit	No Permit	No Permit	No Permit	No Permit	No Permit
Mechanical harvesting	No Permit	109 Permit required	109 Permit required	No Permit	109 Permit required	No Permit
Chemical control	107 Permit required	107 Permit required	107 Permit required	107 Permit required	107 Permit required	No Permit
Biological control ²	Stocking permit required	Stocking permit required	Stocking permit required	Stocking permit required	Stocking permit required	No Permit
Burning	No Permit	Permit required	Permit required	Permit required	Permit required	No Permit
Purple loosestrife control ³	107 Permit required	107 Permit required	107 Permit required	107 Permit required	107 Permit required	No Permit
Native planting/stocking	No Permit	No Permit	No Permit	No Permit	Approval of Project	No Permit
Non-native planting/stocking	109 Permit required	109 Permit required	109 Permit required	109 Permit required	109 Permit required	No Permit
Incidental or scientific removal	No Permit	No Permit	No Permit	No Permit	No Permit	No Permit

- All activities must be conducted in an environmentally sound manner.
- All activities on privately owned land or land adjacent to privately owned lakefront property, or lakes confined on the property of one person must have the permission of that property owner.
- * No native plants may be removed during the process.

¹Confirm with DNR Water Management Specialist that wetland is non-navigable to be exempt of permit.

²Use stocking permit for Eurasian watermilfoil weevils, form 9400-60, pursuant to s. 29.753 and NR 19.05.

³Must be a state cooperator if using purple loosestrife beetles for biocontrol.

Excerpted from "Aquatic Invasive Species: A Guide to Proactive and Reactive Management", Carolyn Scholl, Vilas County LWCD, May 2006. Edits made 2017 based on comments received from Scott Provost, then WDNR Water Resource Specialist.

References

- David, A. A., Zhou, H., Lewis, A., Yhann, A., Verra, S., 2017. DNA Barcoding of the Banded Mystery Snail, *Viviparus georgianus* in the Adirondacks with quantification of parasitic infection in the species. American Malacological Bulletin 35(2):175-180.
- Engel, S. 1995. Eurasian watermilfoil as a fishery management tool. Fisheries, 20:20–25.
- Harried, B., Fischer, K., Perez, K. E., Sandlord, G. J., 2015. Assessing infection patterns in Chinese mystery snails from Wisconsin, USA using field and laboratory approaches. Aquatic Invasions. 10:169-175.
- Johnson, J. A., Jones, A. R., Newman, R. M., 2012. Evaluation of lakewide, early season herbicide treatments for controlling invasive curlyleaf pondweed (*Potamogeton crispus*) in Minnesota lakes. Lake and Reservoir Management 28:346-363.
- Newroth, P.R. 1985. A review of Eurasian watermilfoil impacts and management in British Columbia. Pages 139-153 in L. W. J. Anderson, editor, Proceedings of the First International Symposium on the watermilfoil (*Myriophyllum spicatum*) and related Haloragaceae species. Aquat. Plant Manage. Soc., Washington D. C.