

Waushara County Aquatic Invasive Species Plan

A guide for Proactive AIS Management in Waushara County



Zebra mussels attached to a rock in Lake Poygan



Revised December 2018

Anna Cisar, *Regional AIS Coordinator*

Original document created by Amy Thorstenson & Paul Skawinski 2013
Golden Sands Resource Conservation & Development Council, Inc.

In partnership with
Waushara County Land Conservation Department

Acknowledgements

This county-wide AIS Plan was developed using “Aquatic Invasive Species: A Guide to Proactive & Reactive Management, 2006”, written by Carolyn Scholl, Vilas County LWCD.

Many thanks to Carolyn for permission to use her guide as a template.

This AIS Plan was also developed with valuable input from:

- Waushara County Land Conservation Department
- Waushara County Watershed and Lakes Council
- Ted Johnson, Water Resource Management Specialist, DNR

Project Funding

Funding for development and revisions of this plan have been made possible by aquatic invasive species grants from the WDNR Lakes Grant Program (project AEPP-055-07).

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Introduction

Waushara County has 45 public access lakes, many of which have multiple public access points. Year-round residents are approximately one-third of the lake residents, with the remaining two-thirds being seasonal residents.

Lake group development is at various levels, with some groups being active, funded lake districts, some lakes having only loosely-organized lake groups, and some lakes having no organized group at all. Some lakes groups are already quite capable of actively controlling the AIS present in their lakes, some are not that far yet.

The Waushara County Watershed and Lake Council is a cooperative organization made up of representatives from many of the county's lakes. This council has been active since 1998 and according to the Council bylaws, it provides "a network for communication and sharing resources between and amongst lake organizations in Waushara County". The Council gives the lake groups of Waushara County a collective voice to "advocate for regulatory changes, influence public policy discussions, and partner in discussions regarding future growth and change throughout the community".

With more and more lake groups struggling with AIS issues, in 2007, Waushara County Land Conservation Department (LCD) acknowledged the need for aquatic invasive species management on a county-wide level. The LCD collaborated with Portage and Adams counties, and Golden Sands Resource Conservation and Development Council, Inc. (RC&D), to acquire grant funding from the Department of Natural Resources (DNR) to support a Regional AIS Specialist position. Since then the regional program has grown into a larger collaboration between 8 counties: Marquette, Green Lake, Marathon, Portage, Taylor, Waupaca, Waushara and Wood.

Through the Regional AIS Specialist position, information is gathered about the status of AIS infestations in Waushara County, volunteer activity levels, training and education needs, and other information regarding AIS in Waushara County.

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

The Plan is meant to be a dynamic document, to be updated annually and changed as new goals and challenges are identified.

Many lakes...

One county

Proactive Management Steps

It is in the best interest of any lake 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. So it can be said of preventing an AIS invasion in your favorite lake. If efforts can be kept at a “prevention level,” the costs to your group (in time, money, and frustration) will be tremendously lower than having to deal with AIS at a “control level.”

**Take action
today to avoid AIS
problems tomorrow.
Be prepared and
be proactive!**

Step 1: Gather Information About Aquatic Invasive Species

Prior to 2008, individual lakes may have known about the aquatic invasive species within their own waters, but not much was known about AIS distribution in Waushara County. In response to this, visual AIS surveys have been completed by Golden Sands RC&D staff, visual surveys have continued as needed to determine population growth, management effectiveness and to look for new AIS. These surveys are conducted from kayaks or boats. All AIS locations were recorded with GPS and maps were created with the assistance of county staff. Surveys covered the littoral zone and the shoreline for the following species:

- > 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*)
- > Brittle naiad (*Najas minor*)
- > Yellow Floating Heart (*Nymphoides peltata*)



Chris Hamerla

Surveying for AIS

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, Waushara County, and any existing Lake Associations / Districts.

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, EWM (*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. EWM 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).



Paul Skawinski

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.

Deeper or more advanced populations may need scuba divers or the DASH system (Diver Assisted Suction Harvesting). DASH uses a water pump suction device mounted on a boat to transport harvested plants from the diver to a collection basin above water. The process saves time and effort of the diver having to periodically transport removed plants to the lake surface for disposal.

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 Wauhsara County lakes (*Myriophyllum sibiricum*, *M. verticillatum*). Only one 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.

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 has been researched, evaluated, and tested in several lakes in Minnesota. This type of control could become an option in the future if it continues to be 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.



*Zebra mussel shell
(actual size)*

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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”).



*The rusty colored spot
gives the crayfish its name*

Paul Skawinski

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

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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Purple loosestrife

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.

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.

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



Flowering rush in bloom

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 stream banks, 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 a showy, yellow flower

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 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

Yellow iris leaves fan out from the base

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.

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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.

It's 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.

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.



Paul Skawinski

Leaves grow to be up to 2 inches wide

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.

Brittle naiad (*Najas minor*)

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Brittle naiad, also known as brittle water nymph or minor naiad, is native to Europe. Brittle naiad was first reported in the U.S. in 1934. It is thought to have been intentionally introduced from an aquarium release but was also favored as waterfowl food. From there it has made its way west to Wisconsin where it was found in Storrs Lake, Rock Co. in 2007. More recently it was found in Lake Puckaway,

Marquette/Green Lake Co. in 2013 and Buffalo Lake, Marquette Co. in 2014.

Brittle naiad is an annual plant that branches often and has recurved leaves with noticeable teeth. Seeds are formed where the leaves join the stem. The plant breaks apart easily allowing it to spread readily. Seeds and fragments can be transported by boats, trailers, waterfowl and animals.

Brittle naiad is difficult to control once it is established. Manual removal of this plant can be difficult because it easily fragments. Any leftover fragments could potentially produce new plants, especially if they contain fruits. Mechanical harvesters have been used to remove brittle naiad biomass, but will likely spread the plant further via fragmentation. Successful chemical control has been achieved with herbicides. These herbicides can have negative impacts on many native aquatic plant species, so proper timing and dosage is crucial. A successful biological control agent is not known at this time.



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Recurved leaves with notable teeth.

There are two other naiads commonly found in Waushara County, slender naiad *Najas flexilis* and southern naiad *Najas guadalupensis*. Neither have the pronounced recurved leaves, the teeth on the leaves are typically only visible under magnification.

Yellow floating heart (*Nymphoides peltata*)

Yellow floating heart, also known as fringed water lily, is native to Europe and Asia. Since 2006 populations in seven locations throughout Wisconsin have been found. The last finding was Gordon Lake in Forest County in 2013. Although the plant population was well established, manual hand removal was successful and no plants have been observed since.



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Yellow floating heart can spread by fragments, rhizomes, and seeds. The seeds are formed in pods formed following flowering. It is a popular water garden plant but prohibited in many states including Wisconsin. Plants can be spread by boats and people transplanting them.

Chemical applications and mechanical harvesting can be successful. Smaller, early populations can be hand pulled using caution to remove as much of the roots as possible to avoid new growth. Either control plan should include monitoring for missed plants.



Chris Hamerla

AIS presence for Waushara 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.

**Why is a lake inventory important
for proactive AIS management?**

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.

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/uwexplakes/ecology/APMguide.asp>

The following aquatic invasive species have been confirmed in Waushara County, as of December 2018:

Waterbody Name	WBIC	Invasive Species
Alpine Lake	245650	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil, Japanese Knotweed, Ornamental water lilies (non-native <i>Nymphaea</i> sp.) , Purple Loosestrife, Yellow Iris
Auroraville Millpond	244800	Curly-Leaf Pondweed, Eurasian Water-Milfoil, Flowering Rush
Bass Lake	150900	Banded Mystery Snail, Curly-Leaf Pondweed
Beans Lake	101300	Banded Mystery Snail
Bruce Creek	245400	Ornamental water lilies (non-native <i>Nymphaea</i> sp.) , Yellow Iris
Bughs Lake	102100	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil
Clarks Millpond	256100	Japanese Knotweed
Curtis Lake	156300	Banded Mystery Snail
Deer Lake	102900	Banded Mystery Snail, Eurasian Water-Milfoil
Deer Lake	980300	Banded Mystery Snail
Emerald Lake	246700	Zebra Mussel
Fish Lake	186100	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil*

Fish Lake	985000	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil
Flynns Quarry	103500	Eurasian Water-Milfoil, Freshwater Jellyfish*
Fox River	117900	Chinese Mystery Snail, Curly-Leaf Pondweed*, Eurasian Water-Milfoil, Eurasian Water-Milfoil*
Gilbert Lake	186400	Banded Mystery Snail, Eurasian Water-Milfoil, Purple Loosestrife
Hills Lake	105200	Banded Mystery Snail, Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil, Phragmites (non-native), Zebra Mussel*
Hills Lake	182100	Banded Mystery Snail, Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil, Zebra Mussel
Irogami Lake	103900	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Zebra Mussel
Johns Lake	245800	Banded Mystery Snail, Eurasian Water-Milfoil
Kristine Lake 2	249300	Eurasian Water-Milfoil
Kusel Lake	189600	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil, Purple Loosestrife
Lake Huron	994900	Banded Mystery Snail, Chinese Mystery Snail, Eurasian Water-Milfoil
Lake Lucerne	104600	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil
Lake Morris	246500	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil, Phragmites (non-native)*, Purple Loosestrife*, Yellow Iris, Zebra Mussel
Lake Napowan	190200	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil
Lake Poygan	242800	Chinese Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Faucet Snail, Flowering Rush, Rusty Crayfish, Viral Hemorrhagic Septicemia, Zebra Mussel
Long Lake	191100	Banded Mystery Snail, Phragmites (non-native)*, Purple Loosestrife
Marl Lake	105800	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil
Mecan Springs	158600	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil
Meilke Lake	105900	Chinese Mystery Snail, Yellow Iris
Neshkoro Millpond	149800	Purple Loosestrife*, Rusty Crayfish*
Pearl Lake	195400	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil
Pine Lake	196100	Banded Mystery Snail, Eurasian Water-Milfoil, Phragmites (non-native)*
Pine Lake	1012000	Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil
Pine River	247800	Aquatic forget-me-not (<i>Myosotis scorpioides</i>)*

Plainfield Lake	1012500	Banded Mystery Snail
Pleasant Lake	106900	Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed*, Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil, Phragmites (non-native)*
Porters Lake	246900	Banded Mystery Snail, Eurasian Water-Milfoil, Purple Loosestrife
Poy Sippi Millpond	248300	Banded Mystery Snail, Curly-Leaf Pondweed, Purple Loosestrife, Rusty Crayfish
Redgranite Quarry	196900	Banded Mystery Snail, Eurasian Water-Milfoil, Freshwater Jellyfish
Round Lake	107100	Banded Mystery Snail*, Curly-Leaf Pondweed, Eurasian Water-Milfoil
Round Lake	197300	Banded Mystery Snail, Eurasian Water-Milfoil
Saxeville Millpond	249600	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Purple Loosestrife
Silver Lake	107900	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil, Zebra Mussel
Silver Lake	247700	Banded Mystery Snail, Curly-Leaf Pondweed, Flowering Rush
Spring Lake	149000	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil
Twin Lake	182300	Banded Mystery Snail, Eurasian Water-Milfoil, Phragmites (non-native), Phragmites (non-native)*, Purple Loosestrife
Unnamed	113500	Phragmites (non-native)*
Unnamed	3000446	Banded Mystery Snail, Eurasian Water-Milfoil
Unnamed	5555404	Phragmites (non-native)*
Wautoma Pond	152700	Curly-Leaf Pondweed
West Branch Mill P.(White River)	152200	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil
White River	148500	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Flowering Rush, Ornamental water lilies (non-native Nymphaea sp.) , Purple Loosestrife, Purple Loosestrife*, Rusty Crayfish*
White River FI (Lower Pond)	151500	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Flowering Rush, Ornamental water lilies (non-native Nymphaea sp.)
Wild Rose Pond	251600	Aquatic forget-me-not (Myosotis scorpioides)*, Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil
Willow Creek	243700	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil
Wilson Lake	250000	Banded Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Hybrid Eurasian / Northern Water-Milfoil, Purple Loosestrife
Witters Lake	117400	Banded Mystery Snail, Phragmites (non-native)

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 protocol.
- 2. Continue to update official AIS occurrences records for all lakes and streams within Waushara 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 Waushara County lakes to implement any AIS-related elements outlined in each lake plan.**
- 5. Expand AIS monitoring and volunteer assistance to streams and rivers.**

Step 2: Gather Information About Lake Ecosystems

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

AIS management is just 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 and Adams counties were able to complete county-wide lake surveys with funding support from DNR Lake Grant Program. These surveys have provided valuable information to lake groups and local governments in those counties.

Recommended Actions

- 1. Conduct county-wide lakes survey:**
 - a. Work with UW-Stevens Point to plan a county-wide lakes survey, similar to that of Portage or Adams counties.

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 off your lake will be in the long run. Treatments for pioneer populations are much more likely to have a successful outcome than if the population is well established. *Know what’s normal for your lake.*
2. In order to receive approval to treat a lake chemically, an aquatic plant management plan (APMP) 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 APMP requirements: <http://www.uwsp.edu/cnr/uwexplakes/ecology/APMguide.asp>

Step 3: Protect & Restore Native Vegetation

Native Terrestrial Vegetation

Terrestrial vegetation that grows on the banks of a water body, the “shoreland buffer”, works indirectly to keep invasive plants from colonizing in a lake in several ways. It protects the lake by reducing soil erosion and diverting nutrients that would otherwise enter the lake and provide fuel for invasive aquatic plant growth. A healthy shoreland buffer also provides biologically diverse and healthy habitats that are important to wildlife, including the native weevils used for biological control of Eurasian water milfoil. Dense vegetative cover also takes up living space that would otherwise be open to colonization of invasive plants, and provides landowners with shoreland privacy.

State law prohibits the cutting of trees and shrubs within 35-feet of the high watermark, with the exception of a “viewing corridor” with a width up to 35% of the lot size.

Local governments can protect shoreland buffers through policy and education. Waushara County LCD protects lake health with good enforcement of shoreland zoning ordinances. In Waushara 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 has a cost-sharing program through a DNR Priority Watershed Project that may help finance a shoreland project.

Think of native vegetation as “the lake’s immune system”. A healthy immune system helps the lake fend off new invaders.

Starting in 2015, the Wisconsin Department of Natural Resources implemented its Healthy Lakes Initiative (<https://healthylakeswi.com/>) which provides technical assistance and information as well as potential funding for rain gardens, shoreline projects, fish sticks, and

other related projects. It is meant to be a tiered approach focusing on various areas including nearshore water, shoreline, and land adjacent to the shoreline.

Educational Tools

Local Ordinances
Interactive Webpage
Newsletters
Info Packets
News Articles

In 2007, a video project by Waushara County documented current shoreland management at some of the public access lakes in the county. These videos can be an excellent educational tool to illustrate to landowners what a healthy shoreland buffer looks like, and how a restoration project can be utilized to accomplish that.

To provide additional education, the County has created an interactive webpage that will allow landowners a chance to develop a basic shoreland restoration protection plan and generate a rough cost estimate for the project. Lake issues are usually included in the annual county newsletter, but the county LCD is considering creating a separate newsletter for lakes, in order to cover the new and evolving issues about lake management.



Photos courtesy of Waushara County Land Conservation Dept. (Tom Littwin)

Educational campaigns can also play a role in promoting healthy shoreland buffers. In Waushara County, the Watershed and Lakes Council provides a packet of information to all new lake property owners.

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 AIS. 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 native 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 are a healthy sport fishery, protection from bank erosion, bottom sediment stabilization, decreased potential for algae blooms, and increased water clarity.

State law prohibits the removal of native aquatic plants beyond a 30-foot access corridor. In the same way that local ordinances and educational campaigns can encourage the protection shoreland buffers, they can also encourage the protection of native aquatic plants.

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. Video of shoreline used to educate lake property owners about shoreland buffers
- e. Promote native vegetation in news articles, annual county newsletter, citizen organization newsletters, and press releases

Step 4: 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 an opportunity to take a front line defense against the spread of aquatic invasive species.

Professional monitoring occurs on some Waushara County lakes however 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 Wisconsin Association of Lakes. Upon completion of the three-hour 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 the collection of pertinent lake management data. The program has historically included the collection of water chemistry and Secchi readings.

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 the state would be an enormous advantage for managing our state's lakes.

One component of the CLMN program trains lake residents to monitor for eleven AIS species. The data collected by volunteers in the CLMN-AIS



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

Monitoring 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 big savings on treatment expenses and a reduction of impacts to the lake.

In Waushara County, Parks Department staff were trained to identify and report AIS, providing valuable assistance with early detection.

Recommended Actions

1. **Promote CLMN-AIS monitoring activity on ALL 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 Monitoring activity on ALL lakes**
 - a. Promote the CLMN Secchi Monitoring Program county-wide with frequent 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 the Regional AIS Program with assistance from CLMN personal.
3. **Encourage watercraft inspectors at ALL landings**
 - 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. Provide CBCW training county-wide.
 - c. Coordinate volunteers with DNR staff to avoid overlap.
4. **Continue to train County parks staff to ID and report AIS sightings**

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

Ted Johnson, DNR Water Resource
Management Specialist
920-424-2104
OR
Golden Sands RC&D
715-343-6215

Step 5: 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.

Outreach to Youth:
Conservation Field Day
Beetle Rearing
More?

In Waushara County, the Land Conservation Department (LCD) hosts an annual Conservation Field Day for area 5th graders. This event gives students exposure to a variety of environmental themes, including soil sciences, wildlife management, forestry, watershed management, and AIS. An AIS curriculum is being developed to take

into 5th grade classrooms.

Students and youth organizations involved in AIS issues through purple loosestrife beetle rearing programs for biological control. The program includes a teachers' manual for utilizing the beetle-rearing project as an educational tool.

What other ways can lake groups get youth involved? Perhaps volunteer EWM pulling-parties, performing watercraft inspections at boat landings, or participating in the CLMN-AIS Monitoring program are ways lake groups can include youth in their AIS activities.

Outreach to Adults:

Workshops & Conferences
Written Materials
News Articles
Signs

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. On July 28th, 2007, Waushara County LCD hosted an AIS Demo Day, where 18 workshop attendees received a

primer on AIS issues and control methods, hands-on species ID practice, training on the Citizen Lake Monitoring Network (CLMN) AIS Monitoring Program, and a guided tour of the Lower White River Flowage EWM treatment areas.

Citizens county-wide are encouraged to attend events like this. Nearby Adams County hosts an annual Lake Fair, and the Wisconsin Association of Lakes hosts an annual state Lakes Conference, with valuable training for both citizens and professionals.

Other methods of public education and outreach may 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 www.uwsp.edu/cnr/uwexplakes/CBCW/pubs.asp, and can be distributed through local bait shops, dive shops, boat rental and sales shops, local chambers of commerce, resorts, restaurants, and other local businesses.

In 2007 and 2010, Waushara County LCD had AIS placemats printed and distributed through local restaurants, which can be a great way to reach many lake users.

News articles in local papers are also a great way to reach lake users. Articles can discuss specific AIS species, laws and ordinances, or volunteer programs.

Signs at the boat landing can be another tool for education and outreach. The DNR has posted all public landings in the state with Exotic Species Advisory signs (if the lake has AIS), or with Prevent The Spread signs (if the lake was AIS-free). In 2010, DNR and RC&D staff have begun to replace the old signs with a single, new AIS sign. In 2007, lake groups surveys reported some signs were damaged or missing. These problems were reported to DNR and should have been



Hands-on practice at identification of invasive species at Demo Day.



AIS Monitoring workshop at Pearl Lake, 2009



Aquatic plant sampling boat tour after Pleasant Lake AIS monitoring workshop, 2009

corrected. If any signs are damaged or missing in the future, it should be reported to DNR.



"Prevent the Spread" sign



"Stop and Remove" sign



"Exotic Species Advisory" sign



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.

A common method for aquatic invasive species to be introduced to water bodies is through water gardening and aquarium practices. Many of the plants that are desirable for water 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. A possible solution to this important issue would be to work with distributors of water garden plants, and encourage them to insert a "Do not release to waterways" stake into each pot. These stakes could also have a website printed on them for the consumer to visit if they wish to learn more about AIS and the dangers of releasing non-native species. WDNR has some of these stakes available at no cost. One species, water hyacinth, has been found numerous times in nearby counties in recent years.



Recommended Actions

1. **Promote beetle-rearing for biological control of purple loosestrife**
 - a. Promote to schools/4-H/boy and girl scouts
 - b. Promote to citizen groups, volunteers, and other youth groups
 - c. Target lakes and wetlands with reported purple loosestrife infestations Promote lake fairs and conferences to lake residents county-wide
2. **Promote lake fairs, workshops, and conferences to lakeshore residents county-wide**
 - a. Newsletter notices and press releases
 - b. Email notices
 - c. Website – Waushara County and the Watershed Lakes Council or Golden Sands RC&D
3. **Print AIS placemats for distribution in restaurants**
4. **News articles**
 - a. New AIS species to watch for
 - b. AIS prevention
 - c. Updates in AIS laws
 - d. Volunteer programs available
5. **Maintain AIS signage at boat landings**
 - a. Include reporting procedures for damaged boat landing signs in AIS training to Park Dept. staff
6. **Encourage water garden suppliers to insert “Do not release to waterways” stakes into pots containing a known AIS**

Step 6: Distribute the Workload

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

In Waushara County, various tasks are being accomplished by the County LCD, the Watershed Lakes Council, lake groups, and individuals. The Regional AIS Specialist’s role has been to begin to collect information about those activities, and to begin coordinating them together and filling in the gaps. Since the AIS workload is not expected to disappear, this position should be considered a permanent need, and funding secured to keep the position filled. Duties *may* include:

- Review AIS Plan progress and update Plan as needed
- Coordinate county-wide education campaigns
- Provide volunteer training in AIS programs, such as CBCW, CLMN, and the purple loosestrife biocontrol program
- Provide AIS primer to lake groups
- Investigate new AIS reports and report to DNR
- Track AIS occurrences
- Track volunteer activity
- Recruit monitoring volunteers to work towards 100% coverage of lakes in Waushara Co.
- Facilitate a lake visit with DNR and lake group representatives where AIS control

- methods need re-evaluation
- Apply for grant funding to continue working on the county-wide AIS plan

To strengthen the county lake community and the county AIS programs, the AIS Coordinator may want to consider whether the following subcommittees are needed at the County, Watershed and Lakes Council, or Town level:

- Invasive Species Monitoring Committee
- Aquatic Plant Monitoring Committee
- Boat Launch Monitoring Committee
- County Lakes Survey Committee

Recommended Actions

1. **Secure funding to continue the Regional AIS Coordinator in Waushara County**
 - a. Waushara County
 - b. Lake associations and districts
 - c. Local, Regional, and State Grants
 - d. Citizens
2. **Consider developing committees to assist in various AIS needs**

Step 7: 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

Boat Patrols – Town boat patrols are an important resource for volunteers regarding the “Illegal To Launch Law”. CBCW volunteers active in the County may need to submit a violation report forms to the local boat patrol for enforcement. Good cooperation between local boat patrols and CBCW volunteers is important.

Waushara County Watershed Lakes Council– Many town governments in Wisconsin have recognized an increasing need and inherent responsibility to support local lake management efforts. In Waushara County, Town boards can be involved with lake protection by sending a representative to work with the Waushara County Watershed and Lakes Council Working at a municipal level, town government committees may be more effective in some situations than individual lake associations in accomplishing lake management goals.

Grant Sponsorship – Town governments can take an active role in the sponsorship of state lake grants. Because of the grant eligibility status of local governments, local lake associations can work directly with their town boards to support grant applications on AIS focused (or other types of) lake projects. To learn more about the state lake grant programs, log on to <http://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 Specialist position to coordinate AIS activities.

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 to the local law enforcement for follow up. 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 Specialist position 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 (LCD) 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. LCD is a natural home for county-wide lake protection and AIS initiatives, such as supporting an AIS Coordinator position, enforcing and promoting shoreland 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. **Local Police and Sherriff’s Department support**
3. **Town boards send representation to Waushara County Watershed and Lakes Council**
4. **County LCD continue AIS involvement through support of AIS Coordinator position**

Step 8: Plug-In to the Lake 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 “Lake Community” and stay on top of local and state lake stewardship issues.

Below are suggestions on networking within the Lake Community:

Statewide Lake Organizations

Wisconsin Lakes (formerly Wisconsin Association of Lakes) is a not-for-profit statewide lake group working to protect Wisconsin’s lakes through public policy, education, and local lake group assistance. Through Wisconsin

Being part of the Lake Community means learning opportunities and a collective voice for change

Lakes, the lake community can keep updated on current public policies that may ultimately affect the health of lakes throughout Wisconsin, they can attend annual regional workshops that target key lake issues, and they can gain the support they need for individual lake group projects. For more information about Wisconsin Lakes, log on to their website at <http://www.wisconsinlakes.org>.

Lake managers with the DNR and UW-Extension come together quarterly at 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 the Waushara County AIS Coordinator to stay in touch with.

DNR and UW-Extension AIS coordinators have begun holding biannual meetings for county AIS coordinators, to update AIS coordinators about state initiatives, new resources available, policy changes, and to give coordinators around the state a chance to network. This is another highly recommended network for the Waushara County AIS Coordinator to stay in touch with.

Statewide Lakes Convention

The Wisconsin Lake 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 in lake management. For more information about the annual Wisconsin Lake Convention, log on to the UW-Extension Lakes Program website (<http://www.uwsp.edu/cnr/uwexplakes>). The convention is a highly recommended networking opportunity for the Waushara County AIS Coordinator and representatives of the county LCD, Watershed and Lakes Council, and individual lake groups.

County-wide Lake Organizations: Waushara Co. Watershed Lakes Council

County-wide lake associations provide an excellent opportunity to stay connected with the local Lake Community. The Waushara County Watershed and Lakes Council provides a network for communication and sharing resources between and amongst lakes organizations in the county. Membership in the Watershed and Lakes Council gives a collective voice for advocating for regulatory changes, influencing public policy discussions, and discussions about the future growth of the community. It is highly recommended the Council reach out to lake groups that are not currently represented on the Council to ensure full representation of the county's lakes.

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. Training opportunities like the Lake Leaders Institute, <http://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/programs/lakeleaders/default.aspx>, is another great way for individuals to improve their knowledge, interactions, and involvement with their lakes and other lake residence.

Recommended Actions

1. **Promote attendance at the Wisconsin Lakes Convention**
 - a. AIS Coordinator
 - b. Local governments
 - c. Lake groups
2. **AIS Coordinator networked with the Lake Community**
 - a. Wisconsin Lakes
 - b. State Lake Team
 - c. AIS coordinators' meetings
3. **100% representation of county lakes on the Watershed Lakes Council**
4. **100% inclusive county lake community, with a contact person to disseminate news and information through, even on lakes without organized lake groups**

Step 9: 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 situations.

The important similarity between lake organizations is that they all need to create and follow 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.

If the proactive management section has not spurred any thoughts to fit your unique group situation, sit down with your membership and brainstorm ideas that will work for you. The important thing is that you 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 from Minocqua-Hazlehurst-Lake Tomahawk Middle School, with a start-up grant of just \$25,000.

Their brainstorm evolved into the ‘Clean Boats, Clean Waters’ Program, and is now the statewide protocol for slowing the spread of AIS.

Summary Table: Recommended Actions

Proactive Step	Recommended Action	Who	How	When	Progress
1) Gather info about AIS	Continue AIS monitoring county-wide, assist lakes without recent AIS surveys	AIS Coordinator w/ support of LCD	Letters, emails, phone calls, meetings	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, create table in SWIMS	ongoing	√+
2) Gather info about lake ecosystems	Conduct county-wide lakes survey	UWSP, LCD	LCD apply for a DNR Lake Planning Grant, UWSP supplies technical support	2010 – 2012	√
3) Protect and Restore Native Vegetation	Enforce shoreland zoning ordinances	Zoning	Established process	ongoing	√+
	Annual review of shoreland zoning ordinances	Zoning	Established process	ongoing	√+
	Annual review of funding for cost-sharing incentive programs	Zoning	Established review process	annually	√+
	Video of shoreline used to educate lake property owners about shoreland buffers	LCD	Present at lake group meetings	2020+	IP
	Promote native vegetation in news articles, annual county newsletter, citizen organization newsletters, and press releases	AIS Program	Write and submit articles and press releases	ongoing	√+
4) Conduct AIS monitoring	CLMN-AIS Monitoring on ALL lakes	lake/citizen groups	AIS program will train volunteers	ongoing	√+
	CLMN-Secchi Monitoring on ALL lakes	lake/citizen groups	UWSP-CLMN will train volunteers	ongoing	√+
	Watercraft inspectors at landings	AIS program, lake/citizen groups	AIS program will train volunteers and hire some inspectors	ongoing	√+
	Train County staff to ID and report AIS sightings	AIS Program	AIS Program will train county staff	Annually	√+
	Promote beetle-rearing for biological control of purple loosestrife	LCD, AIS Program	Contact schools and groups, and offer supplies, and training	ongoing	√+
	Promote lake fairs and conferences to lake residents county-wide	LCD, AIS Program	Emails through network maintained by county or RC&D, and websites	ongoing	√+
	Print AIS placemats for distribution in restaurants	LCD, lake groups	LCD coordinate printing. Lake groups assist in distribution	2008 +	√
	News articles	LCD, AIS Program	Write and distribute press releases	ongoing	√+

	Maintain AIS signage at boat landings	AIS Program	Keep record of boat landing signage, train others to collect signage info	ongoing	√+
	Work with water garden suppliers	AIS Program	Offer AIS posters, stakes to suppliers	ongoing	√+
5) Distribute the workload	Secure funding for a full-time AIS Coordinator in Waushara County	AIS Program	Apply for AIS Grant with DNR to continue AIS program	ongoing	√+
	Consider developing committees to assist in various AIS needs	AIS Program	Evaluate AIS Plan annually, and discuss needs for committees in the county lake community	2009 +	IP
6) Involve Local Government	Conservation Warden and local boat patrol support of AIS program boat inspectors and volunteers	AIS Program	Coordinate with DNR Conservation Warden and boat patrols to enforce AIS violations	ongoing	√+
	Town boards send representation to Watershed Lakes Council	Watershed Lakes Council	Council solicits town representatives to attend meetings to stay in touch with the lake community	ongoing	√+
	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-in to the lake community network	Promote attendance at the Wisconsin Lakes Convention	AIS Program, LCD	Email notices to lake contacts. LCD add to website.	ongoing	√+
	Keep AIS Program staff networked with the lakes community	AIS Program	Attend WI Lakes Convention, state Lake Team and AIS coordinators' meetings.	ongoing	√+
	100% inclusive county lake community	AIS Program, LCD, WCWLC	Work with WCWLC to maintain fully-inclusive contact list. Make overtures to non-participant lakes. Send emails through distribution list	ongoing	√+

Symbol Key

LCD = Land Conservation Department

IP = In Progress

√ = Complete

√+ = Complete and ongoing

Appendix A

Contact List

County

Waushara County Land Conservation Department
209 S. Saint Marie St.
Wautoma, WI 54982
920-787-0453

Region

Anna Cisar, Regional AIS Coordinator
Golden Sands Resource Conservation & Development Council, Inc.
1100 Main Street, Suite 150, Stevens Point, WI 54481
715-343-6215 Anna.Cisar@goldensandsrccd.org

State

Ted Johnson, DNR Lakes Biologist
Wisconsin Department of Natural Resources
625 E County RD Y, Suite 700, Oshkosh, WI 54901
920-424-2104 Tedm.johnson@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
715-346-4853 Paul.Skawinski@uwsp.edu

Erin McFarlane
Clean Boats, Clean Waters Volunteer Coordinator
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 the State

Activities	Water Bodies					
	Wetlands (non-navigable) ¹	Streams (navigable)	Flowages	Lakes <10 acres entirely confined on one property	Lakes	Fish farms (s. 95.96) w/ controllable outflow
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 ²	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 ³	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 ⁴	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.

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

²No native plants may be removed during the process

³Use stocking permit for Eurasian watermilfoil weevils, form 9400-60, pursuant to s. 29.753 and NR 19.05.

⁴Must 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 based on 2017 comments received from Scott Provost, then WDNR Water Resource Specialist.*

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