

Marathon County Aquatic Invasive Species Plan

A guide for Proactive AIS Management



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Eurasian watermilfoil (*Myriophyllum spicatum*) in Mission Lake



Revised Dec., 2018

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In partnership with

Marathon County Conservation, Planning, and Zoning

Acknowledgements

This county-wide aquatic invasive species (AIS) plan was developed using *Aquatic Invasive Species: A Guide to Proactive and Reactive Management, 2006*, written by Carolyn Scholl, Vilas County Land & Water Conservation Department. Thanks to Carolyn for her permission to use her guide in the development on this AIS plan.

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Project Funding

Funding for this management plan and subsequent revisions has been provided by aquatic invasive species education, planning, and prevention grants from the Wisconsin Department of Natural Resources Lakes Grant Program.

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Introduction

*Take action today to
avoid AIS problems
tomorrow.*

Marathon County has twelve public access lakes, many streams, and several large flowages including Lake Wausau, Lake Dubay, Eau Pleine Flowage, and Eau Claire Flowage.

There are also many small lakes contained within the Mead Wildlife Area. These lakes are used primarily for waterfowl hunting.

A few of the lakes in Marathon County have established lake associations 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. Since 2010, Marathon County Conservation, Planning and Zoning Dept. has collaborated with Portage, Wood, and Waushara 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 Coordinator Program, information was gathered about the status of AIS infestations in Marathon County, volunteer activity levels, training and education needs, and other information regarding AIS in Marathon 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 Marathon 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.

Step 1: Gather Information about Aquatic Invasive Species

In Marathon County, aquatic invasive species data was gathered from Wisconsin DNR files. Prior to 2010, very little information was known about the aquatic invasive species distribution in Marathon County. In response to this, visual AIS surveys were completed in 2010 by Golden Sands RC&D staff. Since that time resurveying has occurred on most of the lakes. 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:

- > 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*)

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, Marathon 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.



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

There are seven native watermilfoils in Wisconsin, and at least five of those occur in Marathon County lakes (*Myriophyllum sibiricum*, *M. verticillatum*, *M. heterophyllum*, *M. tenellum*, *M. farwellii*). Only four 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. Various-leaved watermilfoil (*Myriophyllum heterophyllum*) has whorled leaves as well, but leaves can also come out at random points on the stem, not following a strictly whorled pattern throughout the whole stem. It also has very large floral bracts on the emergent flower spike, which is an easy way to identify it. Farwell's watermilfoil (*Myriophyllum farwellii*) is very limp and produces flowers at leaf axils. Dwarf watermilfoil (*Myriophyllum tenellum*) does not have whorls of leaves and resembles a miniature stalk of asparagus. It only grows a few inches tall and often forms turf-like mats covering the sediment. These mats can become dislodged and float to the water surface.

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.



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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



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Zebra mussel shell
(actual size)

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 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”).

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.



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The rusty colored spot gives the crayfish its name

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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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.



Galerucella beetle on 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.

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 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



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Flowering rush in bloom

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.



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Yellow Iris has a showy, yellow flower



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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 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*)



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Common reed towers over many other wetland plants

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.

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

Table 1: AIS presence in Marathon County, as of December 2018
 (Excerpted from Wisconsin DNR [www.dnr.wi.gov] Dec. 2018)

Waterbody Name	Waterbody ID Code (WBIC)	Invasive Species
Big Bass Lake	1405200	Banded Mystery Snail
Big Eau Pleine River	1427200	Aquatic forget-me-not (<i>Myosotis scorpioides</i>), Purple Loosestrife
Big Rib River	1451800	Eurasian Water-Milfoil, Rusty Crayfish
Black Creek	1458200	Rusty Crayfish
Eau Claire Flowage	1437800	Banded Mystery Snail, Chinese Mystery Snail, Eurasian Water-Milfoil, Rusty Crayfish
Eau Claire River	1437600	Banded Mystery Snail, Rusty Crayfish
Flume Creek	286600	Rusty Crayfish
Johnson Creek	1424900	Rusty Crayfish
Lake Du Bay	1412200	Aquatic forget-me-not (<i>Myosotis scorpioides</i>), Chinese Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Japanese Knotweed, Purple Loosestrife, Rusty Crayfish
Lake Wausau	1437500	Aquatic forget-me-not (<i>Myosotis scorpioides</i>), Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Japanese Knotweed, Narrow-leaf cattail (<i>Typha angustifolia</i>), Purple Loosestrife, Rusty Crayfish, Yellow Iris
Little Eau Claire River	1423300	Aquatic forget-me-not (<i>Myosotis scorpioides</i>), Purple Loosestrife
Little Eau Pleine River	1412600	Purple Loosestrife*
Little Rib River	1451900	Rusty Crayfish
Little Trappe River	1470800	Rusty Crayfish
Little Wolf River	272400	Rusty Crayfish
Lost Lake	1407000	Chinese Mystery Snail
Mayflower Lake	310500	Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Purple Loosestrife
Mission Lake	1005400	Banded Mystery Snail, Chinese Mystery Snail, Eurasian Water-Milfoil, Purple Loosestrife
Mud Lake	193800	Purple Loosestrife
North Honey Island Flowage	1416200	Chinese Mystery Snail
Pike Lake	1406300	Banded Mystery Snail, Curly-Leaf Pondweed, Rusty Crayfish, Yellow Iris
Plover River	1402800	Banded Mystery Snail, Chinese Mystery Snail, Rusty Crayfish

Rice Lake	1406500	Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Narrow-leaf cattail (<i>Typha angustifolia</i>)
South Branch Embarrass River	305600	Rusty Crayfish
Spring Brook	1440800	Rusty Crayfish
Teal Flowage	1417600	Narrow-leaf cattail (<i>Typha angustifolia</i>)
Trappe River	1470700	Rusty Crayfish
Unnamed	1458400	Rusty Crayfish
Wadley Lake	1177600	Banded Mystery Snail, Chinese Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Rusty Crayfish, Yellow Iris
Wausau Dam Lake	1469700	Eurasian Water-Milfoil
Wisconsin River	1179900	Aquatic forget-me-not (<i>Myosotis scorpioides</i>), Banded Mystery Snail, Chinese Mystery Snail, Eurasian Water-Milfoil, Japanese Knotweed, Narrow-leaf cattail (<i>Typha angustifolia</i>), Purple Loosestrife, Rusty Crayfish, Yellow Iris

Recommended Actions

- 1. All public access lakes in Marathon County were surveyed for AIS in 2010. Perform additional AIS surveys as requested**
 - a. Use CLMN or DNR early detection protocols
- 2. Continue to update official AIS occurrences records for all lakes within Marathon County**
- 3. Update official AIS volunteer activity records – DNR**
 - a. Clean Boats, Clean Waters
 - b. Citizen Lake Monitoring Network
 - c. Develop a visual map of this record

Step 2: Gather Information about Lake Ecosystems

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, Adams, and Waushara Counties have been able to complete county-wide lake studies with funding support from DNR's Lake Grants Program. These surveys have provided valuable information to citizen groups and local governments in those counties.

Recommended Actions

1. Conduct a county-wide lakes survey

a. A county-wide lakes survey is in progress by the UW-Stevens Point Center for Watershed Science & Education, with funding assistance from the WDNR Lakes Grant Program.

**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/uwexplakes/ecology/APMguide.asp>

Step 3: Protect and Restore Native Vegetation

Terrestrial and emergent vegetation that grows along the banks of a water body is known as the shoreline buffer. The shoreline buffer serves as the lake's "immune system," fending off new invaders by:

- 1) Protecting 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) Providing 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) Providing dense vegetative cover in areas that would otherwise be open and available to colonization by invasive species, and provides a degree of privacy to shoreline property owners.

Shoreland Protection Measures

The Marathon County Shoreland, Shoreland-Wetland, and Floodplain Code regulates the use and development on any lot or parcel within 300 feet of a navigable river, stream, or landward side of a floodplain and/or 1,000 feet from a lake, pond, or flowage in unincorporated areas. These regulations are in place to protect water quality and wildlife habitat by reducing sediment/nutrient pollution, erosion, and habitat fragmentation.

These regulations require a 35 foot buffer zone in which vegetation cannot be removed unless it is dead/dying, diseased, invasive, or causing an imminent safety hazard. Within this zone, 35 feet or 35% of the frontage (whichever is largest), is the only area in which native vegetation can be removed. This area is referred to as the "viewing and access corridor," since it often runs from a house to the water and is the area where the pathway to the water and pier are located. The remaining buffer serves to screen human activity, prevent runoff and erosion, and provide wildlife habitat.

Encouraging landowners to follow this ordinance, or even go beyond the requirement, would be beneficial to the health of Marathon County's lakes. Marathon County CPZ protects lake health through information, education, technical assistance and implementation of the ordinance. CPZ leads a strong effort towards educating shoreland owners about the rules and regulations, as well as protection practices such as shoreland buffer restoration, stormwater management, and septic system maintenance.



Mission Lake County Park, Marathon Co.

Figure 1. Shoreline in need of restoration



Mission Lake County Park, Marathon Co.

Figure 2. Same location after restoration

Educating shoreland owners about the importance of shoreland resources plays an important role in maintaining healthy buffers. Marathon County CPZ works to educate shoreland owners through: new shoreland owner information packets, newsletters, social media, grant projects, and by attending and/or presenting at lake events and meetings. These educational efforts cover all shoreland related topics, such as invasive species, native plants, stormwater practices, erosion control practices, shoreland zoning regulations, and ways to improve wildlife habitat. Lake management planning is another important avenue for engaging and educating shoreland owners. Most of the lakes in Marathon County have Lake Management Plans, including the Eastern Lakes (Big Bass, Mayflower, Pike, Mission, etc.), Lake Wausau, and the Big Eau Pleine Reservoir.

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

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 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

- a. County-wide promotion of native vegetation
- b. Implement and enforce shoreland regulations
- c. Provide technical assistance to shoreland owners for native shoreland buffers and invasive species removal
- d. Apply for grants to fund lake protection projects
- e. Annual review of funding for cost-sharing incentive programs
- f. Continue to distribute informational packets to new lakeshore property owners
- g. Continue to promote native vegetation through: news articles, social media, educational handouts/resources, citizen organization newsletters, Lake District and Lake Association meetings, and press releases

For more information and updates, please contact Marathon County Conservation, Planning & Zoning Department (CPZ) at (715) 261-6000.

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 opportunities to take a front-line defense against the spread of AIS.

There are currently citizen volunteer groups on Big Bass Lake, Pike Lake, Mayflower Lake, Norrie Lake, Lake Dubay, Big Eau Pleine Flowage, and Lake Wausau. 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.

Clean Boats, Clean Waters



Clean Boats, Clean Waters (CBCW) is a watercraft inspection volunteer training program sponsored by DNR, UW-Extension, and the Wisconsin Association of Lakes (WAL). 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

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 has historically included the collection of water chemistry and Secchi readings, a measure of water clarity.

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

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



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

can result in huge savings in treatment expenses and a reduction of impacts to the lake. Ideally, every lake would have trained AIS monitors.

The Marathon County Parks Department is also a valuable group that could serve as monitors. Parks staff work throughout the county, frequently at waterfront locations. These staff have been trained to identify and report new AIS sightings, and they could provide valuable assistance with early detection. Annual “refresher” training is recommended for Parks Dept staff.

Recommended Actions

1. **Promote CLMN-AIS monitoring activity on all Marathon 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
2. **Promote CLMN-Secchi monitoring activity on all Marathon County 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 training workshops county-wide
3. **Encourage watercraft inspections on all Marathon 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
4. **Train County Parks staff to identify and report AIS sightings**
 - a. Periodic AIS training sessions would be beneficial for the Parks Department and the health of Marathon County lakes.

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.

To Report an Infestation

- 1) **Collect a sample, if possible**
 - a. If it is a plant, grab as much of the plant as possible (roots, leaves, flowers, etc.)
 - b. Place in plastic bag with water
 - c. Keep it in the refrigerator

- 2) **Contact WDNR**

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

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 Marathon County Conservation, Planning and Zoning 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.

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 the Wisconsin Association of Lakes (WAL) hosts an annual statewide Lakes Convention, which provides valuable training for both citizens and professionals alike.



Figure 4. Volunteers collecting plant samples for a plant ID workshop



Figure 5. Identifying each plant species that the volunteers collected

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 for 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 and sales shops, local chambers of commerce, resorts, restaurants, and other local 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 to distribute to restaurants near water bodies.

Signs at the boat landings 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 confirmed AIS), or with “Prevent the Spread” signs (if the lake has no confirmed AIS). New AIS signs are being posted at all Marathon County public boat landings, which are intended to replace the old signs with one comprehensive sign. AIS signs have also been designed and placed at stream and hunting access points. If any signs are seen to be damaged or missing, this should be reported to DNR, Marathon County CPZ or Golden Sands RC&D immediately.



Figure 6. “Prevent the Spread” sign



“Stop and Remove” sign



“Exotic Species Advisory” sign

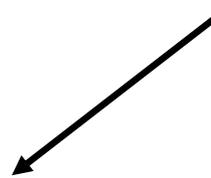
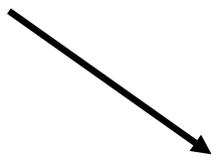


Figure 7. New AIS sign in 2011

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 Grant Program.

A common method for aquatic invasive species to be introduced is through water gardening and aquarium practices. Many of the plants that are desirable for water gardens 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 might 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 these stakes available at no cost.

Recommended Actions

1. **Promote beetle-rearing projects for biological control of purple loosestrife**
 - a. Promote to schools
 - b. Promote to citizen groups to partner with 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
3. **Print AIS placemats 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 pet stores, nurseries, and garden centers to offer outreach materials on regulated aquatic plants and animals that may be for sale in their stores.**

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 per individual interest, a great deal can be accomplished.

In Marathon County, various tasks are being accomplished by the County Conservation, Planning and Zoning Dept. and individuals. The Regional AIS Coordinator'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.

Marathon County has many streams in addition to its lakes, so it would be in the best interest of the County to involve local stream volunteers and groups in their AIS efforts. Rivers can be a major source of AIS just as lakes can. The River Alliance of Wisconsin can be a great source of information and assistance for citizen stream organizations.

Recommended Actions

- 1. Secure funding to continue the AIS coordinator position in Marathon County**
- 2. Involve local volunteer stream groups or "river alliances" in AIS activities.**
 - a. Conduct stream AIS monitoring training as requested

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

Law Enforcement— local Conservation Wardens and boat patrols are important resources for volunteers regarding the "Illegal to Transport" law. 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—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. Because of their grant eligibility status of local governments, local lake or stream associations can work directly with their town boards to support grant applications on AIS-focused lake projects or other lake projects. To learn more about the state lake grant programs, log on to <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 Coordinator position to coordinate AIS activities within the county.

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 Coordinator 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 (LCDs) are directed by elected county board supervisors. LCD (Conservation, Planning and Zoning Dept. in Marathon County) 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 Coordinator position, 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 volunteer activities coordinated by AIS Coordinator**
- 2. County Conservation, Planning and Zoning Dept. continue AIS involvement through support of AIS Coordinator position**

Step 8: 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 nonprofit 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 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 onto 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 Marathon County’s AIS Coordinator 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 Marathon County AIS Coordinator 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 Marathon County AIS Coordinator and representatives of the County Conservation, Planning and Zoning Dept. or individual lake groups.

County-wide Citizen Organizations

County-wide citizen organizations provide an excellent opportunity to stay connected with the local lakes community. These organizations provide a network for communication and sharing resources between and amongst 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. Marathon County lake groups might want to consider forming one of these organizations in the future to discuss lake issues such as AIS prevention and management.

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 Coordinator 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 Coordinator
 - b. Local governments
 - c. Lake groups or other citizen groups
- 3. 100% inclusive county lake and stream network, with a contact person to disseminate news and information through, even on lakes/streams without organized citizen 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 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, and 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 Coord. with support of CP&Z, Parks	Letters, emails, phone calls, site visits	ongoing	√+
	Update official AIS records in SWIMS	AIS Coord.	Confirm reports with vouchers, enter into WDNR's SWIMS database	ongoing	√+
	Update AIS volunteer activity record	AIS Coord.	Confirm activity from database, add volunteers as needed into SWIMS	ongoing	√+
2) Gather info about lake ecosystems	Conduct county-wide lakes survey	UWSP, CP&Z	CP&Z work with UWSP under DNR Lakes Planning Grant	ongoing	√
3) Protect and Restore Native Vegetation	Enforce shoreline zoning ordinances, annual review of zoning ordinances	CP&Z	Established process	ongoing	√+
	Annual review of cost-sharing funding	CP&Z	Established review process	annually	√+
	Create/distrib. Info to property owners	CP&Z	Emails, mailings	2011	
	Promote native veg. in County newsletter	CP&Z, AIS Coord.	AIS Coord will write articles, CP&Z produces newsletter	ongoing	√+
	Promote native veg. in articles and press rel.	AIS Coord.	Write and submit press releases	ongoing	√+
4) Conduct AIS Monitoring	CLMN-AIS monitoring activity on ALL lakes	Citizen groups	AIS Coord. will train volunteers	2011+	IP
	CLMN-Secchi monitoring activity on ALL lakes	Citizen groups	AIS Coord. will train volunteers	2011+	IP
	Watercraft inspectors at boat landings	AIS Coord., citizen groups	AIS Coord. will train/hire regional inspectors seasonally	2010+	√+
	Train County Parks staff to identify and report AIS sightings	AIS Coordinator	AIS Coord. will train Parks staff	2010+	√+
5) Spread the word about AIS	Promote beetle-rearing projects for biological control of purple loosestrife	CP&Z, AIS Coord.	Contact schools and groups, and offer supplies	2011+	√+
	Promote lake fairs, workshops, and conferences to County lakeshore residents	AIS Coord.	Emails through network maintained by UWSP – CWSE	ongoing	√+
	Print AIS information	Citizen groups	AIS Coord. can assist with text/photos	2011+	√+

	Assist local schools with AIS-related curriculum	AIS Coord.	Take AIS lesson plan into classrooms upon request	2011+	IP
	News articles	CP&Z, AIS Coord.	Write and distribute press releases	ongoing	√+
	Maintain AIS signage at boat landings	AIS Coord.	Record boat landing signs in SWIMS, train others to collect sign info	2011+	√+
	Staff AIS education table at public outreach venues	AIS Coord.	Staff table and offer information to public	2011+	√+
6) Distribute the workload	Secure funding to continue the AIS Coordinator position in Marathon County	AIS Coord.	Apply for DNR grant to continue program	2011+	√+
	Involve local volunteer stream groups in AIS activities	CP&Z	Encourage creation of "Friends" groups to assist with local AIS activities	2011+	
	Local Warden support of AIS program boat inspectors and volunteers	AIS Coord.	Coordinate with DNR Conservation Wardens to enforce AIS violations	2011+	√+
7) Involve local government	County CP&Z continue AIS involvement through support of AIS Coordinator position	CP&Z	Continue to place AIS in high priority, and provide County match on AIS grant	2011+	√+
8) Plug into the lakes community network	Keep AIS Coordinator networked with the lakes community	AIS Coord.	Attend WI Lakes Convention, Lake Team meetings, and AIS Coordinator meetings	2011+	√+
	Promote attendance at the Wisconsin Lakes Convention	AIS Coord.	Email notices to contacts, word of mouth and on websites	2011+	√+
	100% inclusive county lake/stream network	AIS Coord.	Send emails through distribution list & work to create county lakes assoc.	2011+	IP

Symbol Key

√ Complete

√+ Complete and ongoing

IP In Progress

Appendix A – Contacts List

County

Marathon County Conservation, Planning & Zoning 210 River Dr. Wausau, WI 54403 715-261-6000	Marathon Co Parks 212 River Dr. Wausau, WI 715-261-1550	Marathon Co Sheriff's Dept. Courthouse, 500 Forest St. Wausau, WI 715-261-1200
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Region

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

Chris Hamerla, Regional AIS Coordinator
Golden Sands Resource Conservation & Development Council, Inc
1100 Main St., Suite 150, Stevens Point, WI 54481
Chris.Hamerla@goldensandsrccd.org 715-346-6215

(Original draft of AIS plan personnel) Paul Skawinski and Kaycie Stushek, Regional AIS Specialists
Golden Sands Resource Conservation & Development Council, Inc
1100 Main St., 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/uwexlakes>

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 Resources Specialist.

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