Sheboygan County Aquatic Invasive Species Strategic Plan

Adopted: March, 2018

SHEBOYGAN COUNTY
AQUATIC INVASIVE SPECIES
STRATEGIC PLAN

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Approved by the Sheboygan County Board

March 16, 2018

The preparation of this plan was financed through an Aquatic Invasive Species Control grant and an AIS Education, Prevention and Planning grant from the Wisconsin Department of Natural Resources

Prepared under the Jurisdiction of the
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ACKNOWLEDGEMENTS

A very special thank you to the outstanding individuals of the Aquatic Invasive Species Strategic Plan Advisory Committee for the many volunteer hours in helping create this Aquatic Invasive Species Strategic Plan for the residents and visitors who enjoy the lakes and rivers of Sheboygan County. They are a wonderfully diverse group of individuals who all have a common goal of protecting and enhancing our lakes and rivers for the generations to come.

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ACRONYMS

AIS	Aquatic Invasive Species
AISC	Aquatic Invasive Species Coordinator
CB/CW	Clean Boats/Clean Waters
CL	Coalition of Lakes
CLMN	Citizen Lake Monitoring Network
CLP	Curly-Leaf Pondweed
County P-CD	Sheboygan County Planning & Conservation Department
EWM	Eurasian Water-Milfoil
Lake Assoc.	Lake Associations, Sanitary, & Rehabilitation Districts
SCCA	Sheboygan County Conservation Association
SWIMS	Surface Water Integrated Monitoring System
UW-EX	University Of Wisconsin-Extension
WDNR	Wisconsin Department of Natural Resources

Chapter 1

INTRODUCTION

PART I – BACKGROUND AND PURPOSE

Aquatic invasive species (AIS) are non-native plants, animals or organisms that are likely to cause a negative economic and environmental impact or cause harm to human health.

Human activity is the primary source of invasive species introduction and spread. The Great Lakes ecosystem has been damaged by more than 180 non-native species. Invasive species are the second leading cause of loss of biodiversity while habitat loss and destruction is the major contributing factor. The effects of invasive species are not only ecological but also economical. A 2008 study conducted by the Center for Aquatic Conservation from the University of Notre Dame & the University of Wyoming suggest that aquatic invasive species brought in by ocean going ships may be costing the Great Lakes region over $200 million annually in losses to commercial fishing, sport fishing and area water supplies. Damages from invasive species cost the US over $120 billion annually. A UW-Madison study of northern Wisconsin lake homes showed an 11-17% loss of property values when aquatic invasive species were prevalent in a lake. Problems created by invasive species are crucial and need to be addressed more than ever.

In October 2011, Glacierland Resource Conservation & Development (GRCD) received a Great Lakes Restoration Initiative (GLRI) grant through the Wisconsin Department of Natural Resources (WDNR) to hire an Aquatic Invasive Species Coordinator (AISC) in Sheboygan County. A requirement of the grant was to develop an Aquatic Invasive Species Strategic Plan (Plan) that is to be adopted by the Sheboygan County Board of Supervisors (County). The strategic plan includes strategies to combat AIS in the County, implementation, an overview of Sheboygan County natural resources, and describes key AIS species found in or around the County. The plan identifies suggested entities responsible for each part of the plan implementation. The strategic plan also outlines successful AIS education, public outreach and engagement.

In 2016, GRCD received an AIS Education, Planning, and Prevention grant through the Wisconsin Department of Natural Resources to hire an AISC to continue invasive work within the county. The grant requires the AISC to provide local and statewide AIS education, conduct lake surveys, and support citizen volunteers and partnerships.

The Sheboygan County AIS Strategic Plan will serve as a guide for AIS Coordinators and County partners in dealing with preventing, controlling, and managing aquatic invasive species within the county.

PART II – DESCRIPTION OF AQUATIC INVASIVE SPECIES

By definition, invasive species are non-native plants, animals or pathogens whose introduction may cause economical or environmental harm or harm to human health.

Invasive species threaten the diversity, abundance and stability of native plants and animals in ecosystems. In their native environments, these species typically are controlled by predators, parasites, pathogens and competitors that keep their numbers in check. When these invasive

species move to new areas without those natural controls they can experience large population growth.

AIS are an on-going concern throughout Wisconsin. Non-native plants and animals are typically introduced locally through carelessness or a lack of knowledge. To date, many AIS have entered the Great Lakes in the ballast water of large lake and ocean-going ships via the man-made canals of the St. Lawrence Seaway. The Great Lakes are a constant threat to our inland lakes by AIS potentially hitching rides on boats, trailers and in water left undrained. Another main source of AIS in our rivers, lakes and ponds is from dumping unwanted bait as well as aquarium plants and animals into these waterways. The WDNR believes this is how the aquatic invasive Red Swamp Crayfish got into several ponds in Washington County. This resulted in $750,000 spent to eradicate this invasive before spreading to other lakes and rivers where they could cause major ecological and economic impacts.

Well-coordinated training, education and outreach to our residents and visitors using our local water resources are vital in controlling the spread of AIS to or in the County. Most of the County's lakes and rivers contain at least one type of AIS. The challenge is to educate boaters to prevent spreading invasive species to lakes they are not currently in. Sheboygan County is already actively working to slow the spread of AIS through the Clean Boats/Clean Waters (CB/CW) program. Annual statewide coordinated events such as the 'Landing Blitz' and the "Drain Your Catch' campaign were designed to help educate boaters on ways to prevent the spread of AIS. CB/CW volunteers can be trained year-round to educate the public on AIS issues and how each boater can do their part to prevent spreading AIS. Several lake associations and groups have developed aquatic plant management plans to control Eurasian Water-Milfoil (EWM) and Curly-Leaf Pondweed (CLP) to reduce the negative impacts to their lake. Local lake residents were also recruited and trained to look for AIS in their lakes and make reports to the WDNR. Citizen monitoring efforts can catch and eradicate new invaders as well as keep existing populations in check.

PART III – AIS COORDINATOR ROLE

The role of an Aquatic Invasive Species Coordinator (AISC) is to increase public awareness about aquatic invasive species and encourage residents to take preventative measures so that these AIS will not spread to other lakes and rivers. The AISC is responsible for organizing, coordinating and implementing AIS activities throughout the County.

The goals outlined for the coordinator in the 2016 AIS Education, Planning and Prevention grant were to provide statewide and local AIS education, develop a control plan for Hairy-Willow Herb, conduct early detection monitoring, and prevent the spread of AIS. The actions involved include coordinating and participating in AIS events, conducting workshops, conducting lake surveys, mapping invasive species, implement a CBCW program, install boat cleaning stations, and support citizen volunteers and local conservation partnerships.

The AISC encourages community involvement by offering many volunteer opportunities regarding AIS. Citizen Lake Monitoring Network (CLMN) involves recruiting and training lake property owners and other volunteers to survey the lakes searching for AIS. The AISC is responsible for recruitment and training of volunteers as Clean Boats/Clean Waters (CB/CW) stewards. These volunteers educate boaters on how to prevent spreading aquatic invasive species from lake to lake. Both programs were developed by the WDNR and the UW-Extension. The AISC partners with the River Alliance of Wisconsin to carry out volunteer river monitoring

activities such as Project RED (Riverine Early Detectors) and AIS Bridge Snapshot Day. The information gathered by all the project volunteers is reported to the WDNR for use in the statewide AIS management and tracking system called 'SWIMS' (Surface Water Integrated Management System).

The AISC also works with lake associations and organizations to assist with lake protection, AIS education and control efforts, and to provide a rapid response plan for any new invasive species found in or around the lake. The AISC surveys lakes and rivers and maps the location of aquatic and wetland invasive species. The AISC also raises AIS awareness by utilizing the various media sources available in the County and by giving presentations to schools, civic organizations, conservation groups and other interested parties.

Chapter 2

AIS GOALS AND IMPLEMENTATION

PART I- GOALS AND ACTION PLANS

The Advisory Committee (AC) created six primary goals and corresponding action plans to provide effective ideas and methods to make the public aware of AIS and to prevent the future spread of these harmful non-native plants and animals. The AC addressed the following goals: education, prevention, monitoring, control, legislative and sustained planning. Each goal is explained in detail and the corresponding chart was developed to show an overview of each goal, its represented action plans and the key groups and organizations which should be involved with implementing each action plan. Funding is often the limiting factor in combating AIS so obtaining grant funding is crucial for effective programs.

GOAL 1 – Educate residents and visitors of the County about the existence and impacts of AIS

AIS education and awareness has increased in recent years but many boaters and riparian property owners are still not fully aware of the AIS laws and the potential for AIS to spread. AIS can reduce, or in severe infestations, eliminate recreational opportunities in a lake.

Educating and informing the public can be accomplished through improved signage, publications, news releases, regulations, enforcement and increased volunteer efforts.

Objectives	Planned Actions	Status	Main Agency	Priority
Install educational bulletin boards/kiosks at boat landings	Sign/kiosk design Boat ramp stencil	Completed	County P-CD WDNR Lake Assoc.	High
Educate residents on the economic impacts/issues of AIS	Locate, site and dispense educational information	As opportunity arises	Lake Assoc. County P-CD WDNR	High
Marketing plans	Develop & set time-line for AIS events/programs	As opportunity arises	Lake Assoc. County P-CD	Moderate
Use of various newsletters to reach & educate the public	Create contact list with addresses	As soon as possible	County P-CD Lake Assoc.	Moderate
Use of media to inform and educate the public	Develop list of media sources with addresses	As soon as possible	County P-CD	Moderate
	Supply media with dates of key events for AIS coverage	As opportunity arises	WDNR County P-CD Lake Assoc.	Moderate
Recruit & train CB/CW volunteers	Recruit/train/supply volunteers for increase boat launch presence.	Ongoing	County P-CD WDNR Lake Assoc.	High
	Supervise CB/CW volunteers	Annually: summer months	County P-CD WDNR Lake Assoc.	High
	Complete and submit CB/CW application for Grant funding	Annually: prior to 12/10	Lake Assoc.	High

Work with other government agencies	Supply Towns with AIS informational & educational packets	As opportunity arises	County P-CD WDNR	Moderate
	Provide AIS management resources to Co. Hwy Dept.	As needed	County P-CD WDNR	Moderate
Develop school awareness programs	Develop educational packets and supply schools	As opportunity arises	WDNR County P-CD UW-Sea Grant	Low

GOAL 2 – Prevent the spread of AIS to other lakes and rivers and keep existing AIS populations in check.

Most of the lakes in Sheboygan County contain the invasive Eurasian Water-Milfoil (EWM) plant. EWM can be controlled and in some circumstances even eliminated. Most of Sheboygan County's lakes are free of many other AIS of great concern. Prevention is key to keeping any new infestations from being introduced in our lakes. Important preventative measures need to be performed to ensure all equipment, clothes, boats, motors and trailers are free of any AIS before they enter any waterbody. Volunteers are needed to be trained to educate the public on how to prevent spreading AIS. Lake associations and other organizations should be encouraged to establish and maintain CB/CW inspection programs. Communication with other counties to discuss prevention efforts is also important.

Objectives	Planned Action	Status	Main Agency	Priority
Boat cleaning stations	Purchase cleaning tools & supplies to develop cleaning stations at the boat ramps	Completed	Lake Assoc. County P-CD SCCA	High
	Installation and maintenance of facility	As needed	County P-CD SCCA Lake Assoc.	High
Encourage enforcement of AIS laws	Provide Enforcement agencies with 'High Use' dates per lake	Annually	Lake Assoc. WDNR	High
Monitor organisms-in-the-trade	Develop list of sources of potential AIS sales within the County and monitor (WDNR 'Invasive Hub')	Annually	County P-CD WDNR	Moderate
	Provide education & educational materials to these sources	Annually	WDNR UW-Sea Grant County P-CD	Moderate
Seek funding/grants for CB/CW program	Create list of potential funding sources with contact information	As needed	County P-CD Lake Assoc.	Low
Seek CB/CW person as a dedicated staff position	Encourage Lake Associations to apply for granted-funded CB/CW staff	Annually	Lake Assoc. WDNR County P-CD	High
	Encourage County to fund an AISC	As needed	Lake Assoc. SCCA County P-CD	High
Maintain Partnerships with conservation organizations	Coordinate shared resources with local organizations	Ongoing	County P-CD Lake Assoc.	Moderate

GOAL 3 – Monitor and maintain an inventory of existing AIS populations and submit data

Effective monitoring of AIS populations largely depends on education and the involvement of many. The AISC can monitor most of the lakes but long-term countywide monitoring will depend on proactive measures taken by volunteers and landowners. Public interest and knowledge of AIS has increased in recent years but must continue to grow to have effective programs. Concerned volunteers are needed to monitor our lakes and rivers for AIS. Volunteers can submit their reports to the WDNR database SWIMS to ensure an up-to-date inventory of existing AIS.

Objectives	Planned Action	Status	Main Agency	Priority
Recruit volunteers for monitoring programs	Recruit/train/supply/reporting of volunteers	Annually	WDNR County P-CD Lake Assoc.	High
	Establish lake-wide involvement	Annually	Lake Assoc.	High
	Teach riparian owners, lake assoc. and districts how to identify key AIS	Annually	Lake Assoc. WDNR	Moderate
Seek a dedicated CB/CW and Citizen Lake Monitoring Network staff person	Hire and train staff person to apply for grants/treat/monitor lakes and wetlands	As opportunity arises	County P-CD WDNR	High
Encourage help from organizations/groups to: 'Adopt-A-Lake/River/Landing'	Recruit/train/supply	As needed	County P-CD WDNR	High
	Make public aware of reporting AIS	Annually	WDNR	High
Assist Lake Associations with hiring qualified Aquatic Plant Management consultant	Maintain and supply list of active qualified consultants	On needed basis	WDNR County P-CD	Moderate
	Find sources/sponsors/grants to assist with funding	On needed basis	County P-CD WDNR	Moderate
	Coordinate with other Lake Associations	On needed basis	County P-CD Lake Assoc.	Moderate

GOAL 4 – Control the spread of AIS populations within lakes and from lake to lake

Once AIS populations are identified they must then be controlled and if possible eradicated to prevent spreading within the lake or to other lakes. Quick actions are needed via a pre-existing rapid response plan to successfully control new AIS populations. Control efforts become more difficult and much more expensive when populations of AIS are left untreated. It is important to note that each AIS will require different measures and tools to be successfully controlled.

Objectives	Planned Action	Status	Main Agency	Priority
Encourage riparian owners to be proactive with AIS control efforts	Encourage recruitment (include clubs associated with a lake: Crystal Lake; Walleye/Musky/Bass Angler)	Annually	Lake Assoc. County P-CD	High
	Train, supply and assist property owners	Annually	WDNR; County P-CD	High
	Provide list of protocols to include permits, timing and methodology	On needed basis	WDNR	High
Seek dedicated funding for a 'rapid response' program	Develop list of possible funding sources/sponsors	On needed basis	County P-CD Lake Assoc.	Moderate
	Follow WDNR 'rapid response' protocols	On needed basis	County P-CD WDNR	High
Assist Lake Associations with funding/grants/permits	Develop list of potential funding sources	On needed basis	Lake Assoc. WDNR	Moderate
	Complete and submit grant applications	On needed basis	County P-CD Lake Assoc.	Moderate
Enhanced Enforcement of AIS laws	Report NR40 violations to appropriate law enforcers	As needed	WDNR County law officials	Moderate
Partner with organizations that can assist with AIS control efforts	Develop a list of entities that can help with AIS work (UWEX, WDNR, DOT and other government agencies)	On needed basis	County P-CD Lake Assoc.	Moderate

GOAL 5 – Work collaboratively with local, county and state government entities to combat AIS problems

The Advisory Committee realized that to have an effective AIS Strategic Plan would require the support of local, county and especially state government. Lake organizations need to provide input to elected officials so that they can better protect our lakes, provide more funding for education, prevention and control efforts, and encourage more enforcement of all rules and regulations pertaining to AIS. Through legislation, local and county governments can contribute funds, manpower and regulations that would further protect our lakes and rivers.

Objectives	Planned Action	Status	Main Agency	Priority
Support lake organizations to present AIS issues to legislators	Provide groups with resources and information on key AIS issues	As needed	County PC-D	High
	Conservation groups will present issues to policy-makers	As needed	Lake Assoc.	High
Promote county-wide collaborations	Maintain a connection between lake/conservation groups and	Ongoing	County PC-D Lake Assoc.	Moderate

	local government			
	Encourage partnerships of lake and conservation groups within the county	Ongoing	County PC-D Lake Assoc.	Moderate
Provide affected site tours to elected officials	Organize event/recruit boat operators and guides	As needed	Lake Assoc.	Moderate
	Develop speaking points and provide information on AIS effects and efforts	As needed	Lake Assoc.	Moderate
	Provide solutions/protocols with costs if applicable to delegation	As needed	Lake Assoc.	Moderate

GOAL 6 – Sustain the implementation of the AIS Strategic Plan

As action is taken to address the goals and objectives within the plan, the County must be proactive through sustained planning efforts to combat AIS. This would include keeping key policy makers and government officials abreast of AIS laws and issues and communicating, collaborating and coordinating efforts with numerous organizations. Again, funding is the weakest link in the battle with AIS. A sustainable source of funding would be ideal to provide proper programs to combat AIS successfully in Sheboygan County.

Objectives	Planned Action	Status	Main Agency	Priority
Seek funding for AISC position to continue AIS programs	Seek dedicated County staff time to complete & submit grant application	As needed	County P-CD WDNR	High
	Seek funding sources to hire AISC as a County employee	On needed basis	Lake Assoc. County P-CD	High
Educate policy-makers & decision-makers on importance of AIS management	Educate County Board and local government about the economic impacts of AIS to lakes, tourism, business and property values	On needed basis	County P-CD WDNR	High
Collaborate with lake groups on AIS efforts	Maintain communication with lake associations, sanitary districts, rehabilitation districts	ongoing	Lake Assoc. County P-CD WDNR	High
	Leaders of the organization should then update and educate members on AIS issues and efforts.	On needed basis	Lake Assoc. County P-CD WDNR	High
Obtain public support	Keep the public informed of AIS efforts	As needed	County P-CD Lake Assoc.	Moderate
	Get property owners to support the Strategic Plan	As needed	Lake Assoc.	Moderate
Update Plan	Periodically reevaluate the plan for recommendations, new species/infestations, laws, etc.	As needed	County P-CD	Low
	Integrate local lake management plans into the County's AIS Strategic Plan.	As needed	County P-CD Lake Assoc.	Low

PART II- COOPERATING PARTNERS

The Aquatic Invasive Species Coordinator (AISC) has a wealth of cooperating partners within Sheboygan County. The AISC should continue to nurture strong working relationships with these groups as well as establish new partnerships. These groups can each provide unique values to help create and sustain an invasive species program within Sheboygan County. Listed below are several of the key Partners cooperating with the AISC.

Sheboygan County Planning & Conservation Department (County P-CD)
The Sheboygan County Planning & Conservation Department is the most crucial partner to the AISC and the grant which funds the position. The County P-CD is the lead agency for meeting the 'matching' requirements of the grant. This agency contributed a desk, cell phone, computer, office supplies, landing signage and professional staff time to the grant. The AIS program would not have been possible without this County agency and any future partnerships are crucial for a successful AIS program.

Wisconsin Department of Natural Resources (WDNR) – Plymouth Office
The WDNR has a dedicated staff with ample invasive species expertise. The AIS Specialist has been invaluable by providing materials, information and guidance along with coordinating invasive species lake surveys and 'point-intercept' surveys on Sheboygan County lakes. The WDNR has a strong AIS program to prevent, contain, and control AIS in Wisconsin's waters. It provides resources for AIS campaigns, monitoring and reporting programs, and control projects. The WDNR also awards AIS Prevention and Control Grants to help protect inland lakes, great lakes, rivers and wetlands.

Sheboygan County Conservation Association (SCCA)
The SCCA is made up of 27 individual hunting, fishing, trapping and conservation clubs. This Association has a proven 'achievement' track record, an impressive list of Conservation accomplishments that have been recognized by the DNR and other organizations throughout Wisconsin. Their mission statement reads: "To serve the outdoor community, protect & maintain habitat, educate & provide opportunities for all to enjoy the great outdoors." As the leading conservation organization in Sheboygan County they have the potential to do great things for our lakes and rivers. The SCCA has donated funds to support AIS activities within the county.

Southeastern Wisconsin Invasive Species Consortium (SEWISC)
SEWISC is a non-profit organization that provides an annual forum to share information and resources to cooperatively execute invasive species management activity in Southeastern Wisconsin. Sheboygan County is their most northern county of coverage. SEWISC provides people with valuable information on many of our more common invasive species, including plant identification and control methods. SEWISC has provided guidance along with materials and supplies for invasive species control efforts in Sheboygan County.

Sheboygan River Basin Partnership (SRBP)
Formed in 1998 as the 'Sheboygan Land & Waters Program' it was later renamed the 'Sheboygan River Basin Partnership' in 2002. Its mission is "to protect, restore and improve the natural resources of the Sheboygan River Basin through a cooperative effort of Federal, State and Private Entities." The team is working to get more community and citizen involvement with their

programs. The Basin covers most of the lakes and rivers in Sheboygan County and thus a good partner for the AISC.

Camp Y-Koda
Another current AIS Partner that has provided the use of their resources to assist the current AISC with programs in Sheboygan County is Camp Y-Koda. They have allowed the use of their facility to hold meetings and conduct training workshops. The Camp has assisted the AISC with the purple loosestrife beetle rearing program and is committed to recruitment of volunteers for AIS activities. The Camp has a dedicated staff that provides AIS education to their students.

Maywood Environmental Park
Maywood provides the AISC with educational outreach opportunities as well as allowing the use of their facilities for meetings and training. Maywood has worked cooperatively with the AISC, and control projects should be continued in the future in an effort to manage AIS.

Master Gardeners Organization
The Master Gardeners Organization is a good source of help with educational outreach programs by providing information to their membership as well as to the public. They have been a great source in reporting sightings of aquatic invasive species along roadways, in stores, and nurseries where Prohibitive and Restricted plants are illegal to sell. The AISC has partnered with the Master Gardeners at the Sheboygan County Fair where they hosted an "Invasive Species" booth.

Ozaukee-Washington Land Trust (OWLT)
The AISC partnered with OWLT in 2013 to work cooperatively on mapping and control of four major wetland invasive species. OWLT received a grant to ultimately provide control efforts on Phragmites, Japanese Knotweed, Lyme Grass and Purple Loosestrife on public lands within wetlands and riparian areas. The planning and control of Lyme Grass on both public and private lands along the Lake Michigan shoreline were started in the summer of 2014. Further work on these species is being planned for future growing seasons. OWLT provides the local AISC with equipment, supplies and staff to carry out control efforts on these AIS in Sheboygan County. Both OWLT and the AISC have worked cooperatively with the UW-Madison and UW-Extension research team and their study with Japanese Knotweed control.

Township Governments
There are 15 Towns in Sheboygan County and the AISC met with each Town Board in 2013 to make them aware of invasive species and their impact to their area. The AISC provided handout materials and information about several of the most invasive plants in the County. Great progress was made the first year with several Towns appointing 'weed commissioners' and other Towns offering their newsletters to the AISC to provide awareness and information to their residents. A partnership with each Town should be sought to continue public awareness and to provide control opportunities at the Town level.

Clean Boats/Clean Waters Program (CB/CW)
The Clean Boats/Clean Waters (CB/CW) program was started in Wisconsin by a Middle School class from Minocqua that was concerned about the impact to their lake by aquatic invasive species. This program has now gone statewide. The Aquatic Invasive Species Coordinator (AISC) along with a hired Watercraft Inspector spend about 200 hours each summer at the local boat ramps educating boaters on ways to prevent spreading invasive species to other lakes. The AISC also spends a good deal of time recruiting CB/CW volunteers from local high schools, clubs and

organizations. They are then trained and equipped to conduct a survey of all boaters to insure the public is aware of the aquatic invasive species laws. These laws are posted at every boat ramp in the County and boaters are instructed to 'inspect and remove all plants and animals from their boats, trailer and equipment; drain all water from their boat, trailer and equipment and to never move live fish or crayfish'. The volunteers can take great pride in knowing they are providing a great service to their lakes. A potential benefit from volunteering for CB/CW is they would be much more qualified for the paid Watercraft Inspector positions in the County. The Elkhart Lake-Lake Association hires one person each year to work throughout the summer. The Lake Ellen-Lake Association also funded a CB/CW worker through a DNR grant to work about 200 hours for the summer. The Associations will continue to apply for the grants to ensure coverage at their public boat landings.

Chapter 3

SHEBOYGAN COUTNY AIS AND NATURAL RESOURCES

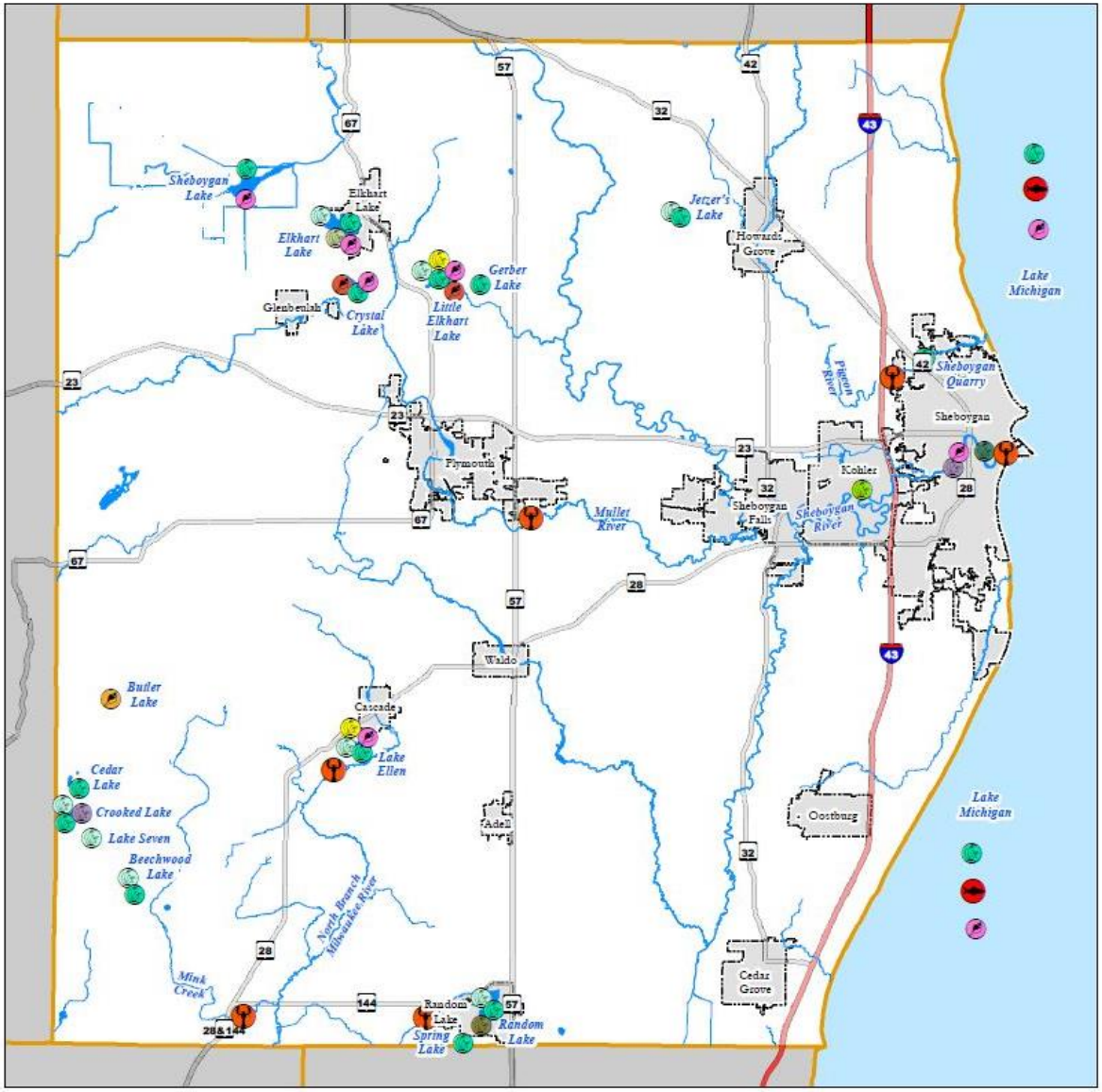
PART I- INVASIVE SPECIES PREVALANT/THREATENING SHEBOYGAN CO.

Prohibited and Restricted AIS in Sheboygan County

The Invasive Species Rule (Chapter NR40) divides invasive species into 2 categories, "**Prohibited**" and "**Restricted**," with different regulations and control requirements. Chapter NR40 covers over 128 species, including plants, animals, and microorganisms.

Prohibited species are classified as not yet being in the state or only in a few places. These species are likely to cause environmental and/or economic harm. It is still possible to eradicated these species and prevent their spread statewide. Control of NR40 prohibitive species is required.

Restricted species are already widely established in the state, and environmental and/or economic impacts are evident with these species. Complete eradication of these species is unlikely. However, control of NR40 restricted species is encouraged.



Invasive Species on County Waters
Sheboygan County WI

- Curly-Leaf Pondweed
- Eurasian Water-Milfoil
- Hairy Willow Herb
- Hybrid Eurasian/Northern Water-Milfoil
- Japanese Knotweed
- Ornamental Water Lilies
- Purple Loosestrife
- Spiny Naiad
- Yellow Iris
- Banded Mystery Snail
- Chinese Mystery Snail
- Zebra Mussel
- Rusty Crayfish
- Viral Hemorrhagic Septicemia

Sheboygan County, Wisconsin

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Source: Sheboygan County Planning & Conservation Department
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Hairy Willow-Herb *(Epilobuim Hersutum)*

Hairy Willow-Herb is a semi-aquatic perennial herb that grows 3-6' tall and can form dense monotypic stands in moist soils along streams, ditches and wetlands. Showy ¾" rose-colored flowers have 4 notched petals along with a distinctive 4-lobed white stigma. The leaves are opposite and stalkless with a prominent central vein. Each flat seed has a thistle-like tuft of silky hairs that aids in wind dispersal. Seeds can also be dispersed by water, humans and animals. Hairy Willow-Herb was first documented in Sheboygan County in 2012. It is a NR40 'Prohibitive' listed species in Sheboygan County which requires control actions to be taken. The Hairy Willow-Herb sites will require further monitoring and spot treatments. Total eradication should be an obtainable goal within Sheboygan County because the Hairy Willow-Herb has not become well established.

Purple Loosestrife *(Lythrum salicaria)*

Purple loosestrife is likely one of our first aquatic invasive species to enter the United States. Originally from Europe, loosestrife was hand delivered to the East Coast as a medicinal plant as well as a possible release from ship ballast waters.

Loosestrife is a wetland perennial that can grow up to 7' tall. As the plant ages, it can produce many branches and take on the appearance of a shrub. These large plants can produce well over 1 million seeds per year that can easily be spread throughout wetlands. Loosestrife will out-compete most native wetland plants and thus create dense monotypic stands that provide little value to native animals. Purple loosestrife is a huge concern for wetland biodiversity.

There are several herbicides that can be used but often a permit is required to apply an herbicide in a wetland. Consult with your local DNR staff before applying any herbicides. A safe and effective control measure for large stands of loosestrife is the Galerucella beetle. This is an inexpensive and proven biocontrol method. Individuals can easily raise Galerucella beetles and the AISC or the local DNR are willing to help with providing equipment and adult beetles.

Japanese Knotweed *(Polygonum cuspidatum)*

Japanese Knotweed (JK) is a perennial invasive plant that can form large monotypic colonies with bamboo-like stalks that can grow over 10' tall. Taproots can grow 6' deep and rhizomes can spread over 65' from the parent plant. JK is capable of penetrating blacktop and even concrete foundations. Green plant fragments can start a new population.

JK can be found sporadically throughout Sheboygan County. Populations along rivers and roads are of highest concern due to ease of starting new populations. These pictures were taken along the Black River in the Town of Wilson.

Eurasian Water-Milfoil *(Myriophyllum spicatum)*

Eurasian Water-Milfoil (EWM) is one of the most widely distributed aquatic invasive species in Sheboygan County and arguably throughout Wisconsin. EWM has been documented in just over 700 of our 15,080 inland lakes as of April 2014. EWM regenerates from rhizomes, axillary buds as well as from stem fragments that come in contact with mud. Small fragments of EWM can easily spread by humans and establish populations in new locations. This fragmentation can also make control challenging because fragments can re-colonize an area where EWM was removed.

EWM leaves appear a more greyish-green than most other aquatic plants. Finely-divided pairs of leaflets give the plant a very 'feathery' appearance. Leaves are arranged in whorls of 3-6 (typically 4) around pink to reddish-colored stems. Terminal leaves can turn a showy magenta red in the summer. A leaf will have 14 or more pairs of leaflets but identification can become even more difficult when EWM crosses with our native Northern Milfoil to form a new hybrid which can display intermediate characteristics between the two original parent plants.

EWM has been documented in most of Sheboygan county's lakes.

Curly-Leaf Pondweed *(Potamogeton crispus)*

Curly-Leaf Pondweed (CLP) is a perennial aquatic plant native to Eurasia. CLP can invade lakes, rivers, streams and ponds where it can become dominant and out-compete many native aquatic plants.

The finely toothed leaves are wavy giving it a distinctive 'lasagna-noodle' shape. CLP has a unique growing season which begins in the fall and ends typically in July. CLP can also regenerate from small 'pine cone' shaped turions that break off of old plants. Turions can float in the water column until they eventually sink and start a new plant away from the parent plant. Plants will remain alive under the ice and can grow to dense mats by spring. In mid-summer the plants die off resulting in an increase of nutrients which can contribute to algal blooms.

CLP has been found in 8 of our 12 major inland lakes.

Phragmites *(Phragmites australis)*

Phragmites is a perennial wetland grass that can grow over 19' tall. Some call it common reed grass or giant reed grass. Phragmites is recognized by the large brownish-purple seed heads that persist through the winter months. This invasive plant came to the US in the late 1700s or early 1800s and originates from Europe.

New populations can start from root fragments, above ground runners (stolons), wind-blown seed or cut stem fragments. Extensive rhizomes can survive cutting, grazing, burning, flooding and dry conditions. Control of smaller stands has been accomplished by cutting the stems 1-2 times when they reach about 5' tall and then applying an approved herbicide in late summer-early fall when the stems are about 4' tall. A special DNR permit is required to apply an aquatically approved herbicide to the plants if they are in standing water.

There is a native phragmites found in Sheboygan County but it can usually be distinguished from the invasive species because it is generally shorter, has less dense stands, lighter green leaves, smaller and less dense seed heads and reddish stems. Young stands of the invasive grass are more likely to be confused with the native phragmites.

Chinese Mystery Snail *(Cipangopaludina chinensis)*

The Chinese Mystery Snail (CMS) is native to East Asia and was imported to California in the late 1800's as a food source. The CMS is by far the largest snail in our local lakes reaching over 2 inches. Populations of CMS in many lakes were likely the results of aquarium dumping. The name 'mystery' was given to this snail when baby snails suddenly appeared and it was a mystery where they came from. It was unknown to many that the adult females gave live birth. Females can live up to 5 years and produce over 100 young per year. Researchers in northern Wisconsin found little negative impact on native snails. However, they have the potential to clog intake pipes and are hosts for parasites and diseases. The snails prefer slow-moving freshwater rivers, streams, and lakes with soft, muddy or silty bottoms. They can survive days out of the water by closing their operculum (trapdoor).

The CMS is common in Crystal Lake and Little Elkhart Lake.

Banded Mystery Snail (*Viviparus georgianus*)

Another invasive snail is the Banded Mystery Snail which can be identified by the reddish-brown bands that are parallel to the whorl of its shell.

The banded mystery snail is native to the southeastern part of the United States, from Florida and the Gulf of Mexico to the Mississippi River to Illinois. Some banded mystery snails are released from home aquariums, and others are transported by boats and equipment.

The banded mystery snail can serve as a host for parasites that can be transmitted to fish and other wildlife. They also invade largemouth bass nests and significantly increase the mortality rate of the eggs.

Butler Lake is the only documented lake in the county with banded mystery snails.

Zebra Mussel *(Dreissena polymorpha)*

The zebra mussel is a freshwater bivalve that originated in Russia and the Caspian Sea area. The mussels got a free ride in the ballast waters of ocean going vessels. When these waters were dumped into Lake St. Clair, they had an uninterrupted route to all the other Great Lakes and the Mississippi River. From these waters, smaller boats have moved them to our inland lakes. Each female can lay well over 100,000 eggs each year. These mussels can filter a

quart of water each day filtering out phytoplankton, zooplankton and algae from the water. This leaves the water clearer but it removes the bulk of the food source for native zooplankton, invertebrates and larval fish. Zebra mussels attach to almost any firm surface, consequently costing power plants and other facilities hundreds of millions of dollars to have them removed. Zebra mussels can attach in such large densities as to cause major mortality to native clams. Zebra mussels also release phosphorus that can trigger dense growths of cladophora and other algal blooms that can wash to shore and cause beach closings.

Zebra mussels have been documented in 5 of our 12 major lakes with boat landings in Sheboygan County. A continued Clean Boats/Clean Waters program is still needed to educate the boaters about ways to prevent spreading zebra mussels to non-infested lakes. The larvae are microscopic and can potentially be in undrained water from boats and equipment.

Rusty Crayfish *(Orconectes rusticus)*

The Rusty Crayfish (RC) is native to the Ohio River Basin states and was likely transported into Wisconsin via bait buckets by anglers using them for bait. The RC is now listed as an NR40 'restricted' species which makes it illegal to transport these crayfish alive.

One way you can identify a rusty crayfish is by the dark, rust-colored spot on each side of the carapace

Due to their large size, aggressive behavior and their ability to dominate a river or lake, RC have a detrimental effect on native crayfish populations, under water habitat and even fish populations. Native crayfish are 'pushed' out of their home ranges and thus become more vulnerable to fish predation. Large populations of RC can decimate the aquatic plants in a river that provide food and cover for many species of fish and invertebrates. Females can lay well over 500 eggs a season and they can quickly dominate a river or lake.

Rusty Crayfish can be found throughout the county primarily in rivers and creeks.

Prohibited and Restricted AIS Threatening Sheboygan County

Lake Michigan Invaders

Many invasive species have entered the Great Lakes in the ballast waters of large lake and ocean-going ships via the man-made canals of the St. Lawrence Seaway. As a result, the Great Lakes have become a pathway for these species to spread to inland lakes. The species listed below have not been found in Sheboygan County's inland lakes, but have been identified in Lake Michigan. Thus, the county's lakes are at a greater risk of acquiring these invasive species.

Round Goby *(Neogobius melanostomus)*

The Round Goby is native to the Black and Caspian Seas. They were first discovered in the Great Lakes at Lake St. Clair in 1990. They have since invaded all of the Great Lakes, the Mississippi, and most likely all tributaries that lead to Lake Michigan up to the first dam.

This invader is a bottom dwelling fish with a large head, resembling a tadpole. It can grow to be 10 inches long but is usually five or six- inches-long. They resemble our native sculpin, but can be distinguished by their unique bottom fins that form a suction disk for holding onto rocks in fast moving water.

Round gobies are aggressive fish that eat the eggs and young of native fish and outcompetes our natives for food, shelter and nesting sites.

Quagga Mussel *(Dreissena rostriformes bugensis)*

The quagga mussel is a freshwater bivalve mussel native to the Ukraine. The quagga can be slightly larger than the zebra mussel, about eight tenths of an inch. One method to distinguish these 2 species is that the zebra mussel can stand on its ventral side whereas the quagga will tip over. The quagga mussel was first collected in Lake Erie in 1989 at Port Colborne, Ontario and in 1998 from Lake Michigan. By 2013 it was estimated that there were 950 trillion or 500 million tons of quagga mussels in Lake Michigan. This is 4 times the total weight of all the forage fish combined.

Adult female quagga mussels can produce up to a million eggs per year. These eggs hatch within several days into microscopic larvae, called ‘veligers’. Veligers drift with the currents for 3-4 weeks as the bivalve shell forms. When the veligers become too heavy to drift they will sink and attach to objects by their strong byssal threads. On average their life cycle is 3-5 years. Being able to out compete the zebra mussel, over 95% of the mussels in Lake Michigan are now quagga mussels.

The quagga, like the zebra mussels are filter feeders that filter out phytoplankton, zooplankton and algae from over a liter of water per day. They can survive in mucky lake beds as well as deeper and colder waters. There is great concern about the negative impacts the quagga mussel will cause in our inland lakes.

Spiny Water-flea *(Bythotrephes cederstroemi)*

The spiny water-flea entered the Great Lakes in ship ballast water arriving from the Black Sea areas in the 1980s. They were first documented in Lake Michigan in 1986. Spiny water-fleas have a translucent body

about 1/2” that make them difficult to detect unless they gather in large numbers on fishing lines, downrigger cables and rods.

These invasive water-fleas are a type of zooplankton that compete directly with native juvenile fish for food. Spiny water-fleas will eat smaller native zooplankton including Daphnia. Juvenile fish have trouble eating the spiny water-flea due to their spiny tails. Adults can produce up to 10 young every two weeks. Populations multiply quickly because they can reproduce asexually and they have no predators.

Alewife *(Alosa pseudoharengus)*

The alewife found its way into Lake Michigan through the St. Lawrence Seaway and the Welland Canal that bypasses Niagara Falls.

The alewife caused the decline of many native Great Lakes species through competition and predation. The DNR began stocking of Coho salmon and then later, Chinook salmon to control the alewife populations as well as provide sport and food to anglers.

They reached their peak abundance by the 1950s and 1980s. Alewives often exhibit seasonal die-offs because they cannot adjust to sudden water temperature changes. Many wash up on the shorelines of the Great Lakes when they come near the shore to spawn in the spring.

Rainbow Smelt *(Osmerus mordax)*

The Rainbow Smelt is a slender fish that escaped into the Great Lakes from an inland lake in Michigan. Smelt moved into numerous inland lakes by intentional and perhaps some accidental stocking. They were most likely used for bait and then released.

Adult smelt eat young walleye, and the young of both fish compete for the same food. They contributed to the extinction of blue pike, and are responsible for the decline of other native Great Lakes fish.

Viral Hemorrhagic Septicemia (VHS)

Viral Hemorrhagic Septicemia is a deadly infectious fish disease caused by viral hemorrhagic septicemia virus (VHSV). VHS was found in European freshwater trout dating back to the 1930s. The fish virus was diagnosed for the first time ever in Great Lakes freshwater fish in 2005.

There are more than 25 fish species that it can kill, but there is no danger to humans who handle or eat fish with VHS. No one is sure how the virus arrived in WI. Although, it is thought to have been introduced by fish migrating from the Atlantic Coast or in the ballast water of ocean-going ships.

Fish infected with VHS shed the virus in their urine and ovarian fluids. Once in the water, the virus can survive for at least 14 days. Virus particles affect the gill tissue first, then move to the organs and blood vessels. Fish can become infected by eating a fish with VHS.

AIS Present in Neighboring Counties

There are aquatic invasive species that have been identified in nearby counties that are not yet in Sheboygan County. Sheboygan County is surrounded by Manitowoc, Calumet, Fond du Lac, Washington, and Ozaukee counties. The species listed below are prohibited, therefore a greater threat and of higher concern for keeping them out of Sheboygan County.

Starry Stonewart (*Nitellopsis obtusa*)

Starry Stonewart is large, submerged plant-like algae that can quickly form dense mats in lakes and ponds. These mats can reduce fish spawning habitats, outcompete other vegetation, and fragments can foul watercraft motors.

It is native to Europe and Asia and was first observed in the St. Lawrence River in 1978. Star shaped growths called bulbils are produced, and these bulbils or fragments can spread the starry stonewort to new locations. It is nearly impossible to eradicate once established.

Faucet Snail *(Bithynia tentaculate)*

Faucet snails are native to Europe and were first found in the Great Lakes in the 1870s. It was probably brought to North America unintentionally with the solid ballast of large timber transport ships or perhaps with vegetation used in packing crates.

The snail is an intermediate host for three intestinal flukes that cause mortality in ducks and coots. They have caused the deaths of tens of thousands of diving ducks in Minnesota and Wisconsin.

Faucet snails also compete with native snails, and may clog water intake pipes and other submerged equipment. They can spread by attaching to aquatic plants and boating equipment. They can close their shells allowing them to survive out of water for days.

Water Lettuce *(Pistia stratiotes)*

Water lettuce is an auatic plant that resembles a floating head of lettuce. It forms thick mats that can clog boat propellers, hang on trailers, and leads to the exclusion of native plants and wildlife.

It is believed to be native to tropical lakes in Africa and South America, and was likely introduced to the region by escaped or released water gardens or aquariums.

PART II- SHEBOYGAN COUNTY NATURAL AREAS

Sheboygan County is immersed in natural resources. The county rests on the shores of Lake Michigan to the east, and it contains the rolling hills of the northern section of the Kettle Moraine State Forest to the west. There is an abundant mix of rural agricultural lands and wildlife areas including parks, forests, lakes and streams. The Planning and Conservation Department's mission statement regarding its natural resources is:

"The Planning & Conservation Department is committed to providing sound information and knowledge on environmental issues that affect our community, protecting our county's natural resources, and, first and foremost, working with the public which we serve in a straightforward, honest approach."

Sheboygan County maintains a variety of trails, parks, boat landings, and a campground. These natural areas are a high priority for keeping aquatic and wetland invasive species in check because of their popularity with visitors and outdoor recreation.

Sheboygan County maintains six public access areas on various inland lakes. They include Crystal Lake, Elkhart Lake, Gerber Lake, Jetzer's Lake, Little Elkhart Lake, and Sheboygan Marsh Lake.

The county maintains several parks and natural areas: Broughton Sheboygan Marsh Park & Campground, Taylor Park, Esslingen Park, Roy Sebald Sheboygan River Natural Area, Gerber Lake Wildlife Area, and Amsterdam Dunes Preservation Area. Many of these parks are located on waterways that are threatened by AIS. These wildlife areas have significant natural communities and a rich diversity of plants and animals. It is important to inform and educate the public about preventing the spread of AIS so these natural areas can be preserved and enjoyed for years to come.

Sheboygan Marsh Park is the county's most popular park. The Sheboygan Marsh Wildlife Area includes over 13,000 acres and attracts hunters, fishers, and wildlife/natural observers. The most recent addition to the county's natural areas is the Amsterdam Dunes Preservation Area. The 328-acre property establishes a Wetland Mitigation Bank and Preservation Area, and is one of the few remaining undeveloped beach shorelines between Sheboygan and Chicago. The land is comprised of rare sand dunes, forest and wetlands of various types, bluffs, farmland, streams and diverse plants and wildlife.

There are 17 other State Natural and Wildlife Areas owned by the WDNR within Sheboygan County.

PART III- SHEBOYGAN CO. LAKES AND RIVERS AND THEIR INVASIVE SPECIES STATUS

Wisconsin lays claim to 15,081 lakes and here in Sheboygan County the WDNR lists 88 lakes and ponds. Many are unnamed with no public access, and 23 of our lakes are larger than 10 acres. The largest inland water-body is Sheboygan Lake, better known as the Sheboygan Marsh, which covers 674 acres.

The Sheboygan River Basin drains 619 square miles, encompassing all of Sheboygan County and portions of Ozaukee, Fond du Lac, Calumet, and Manitowoc counties. There are over 45,000 acres of mapped wetlands within the Sheboygan River Basin. Predominant land uses are agricultural or rural and include pasture land, cropland and vacant fields. Natural Areas, including open water, woodlands, wetlands, parklands and undisturbed non-agricultural lands are the second most abundant land use (WDNR 1995).

The Natural Heritage Inventory (WDNR, 2000) has documented 10 endangered, 20 threatened and 37 special concern plant and animal species, and 24 rare aquatic and terrestrial communities within the Basin.

Sheboygan County has 6 named rivers and 18 named Creeks. The major river is the Sheboygan River which is 81 miles long and runs throughout the county. Its two largest tributaries are the Mullet River (40 miles long) and the Onion River (37 miles long). Many organizations have collaborated to restore the Onion River since 1990, and it is now regarded as a Class 1 Trout Stream. The Onion River Fishery Area and Stream Bank Protection Area (SBPA) is the premier trout fishing property in the region.

The area rivers and streams not only provide recreation in the form of hunting and fishing. There are several river access points in Sheboygan county for launching canoes and kayaks.

Lake Descriptions of the 12 Lakes in the County with Boat Landings

Note that WDNR aquatic invasive species (AIS) records are assigned statuses of “verified”, “observed”, or “no longer observed” based on AIS Status Guidance. In general, “verified” populations are established and have been verified by a taxonomic expert. Populations with the “observed” status have not been verified by a taxonomic expert or do not have established populations.

Beechwood Lake

Acres: 22
Max. Depth: 20'
Type: Seepage Lake
Water Clarity: Low
Lake Bottom: Muck
Boat Landing: (Owned by Town of Scott); 1 launch; lighted; 5 trailer stalls.
Restrooms: None
Fish: Large-mouth bass, Northern pike, panfish.
Invasive Species: Curly-leaf pondweed; Eurasian water-milfoil

Beechwood Lake has no motor restrictions. Documented aquatic invasive species include Eurasian water-milfoil and Curly-leaf pondweed. The lake is aerated throughout the winter months to prevent fish winter-kill.

Butler Lake

Acres: 5
Max. Depth: 13'
Type: Drainage Lake
Water Clarity: Moderate
Lake Bottom: Muck
Boat Landing: (DNR owned); 1 launch; not lighted; 5 trailer stalls; park sticker required.
Rest rooms: None
Fish: Large-mouth bass, Northern pike, panfish, trout
Invasive Species: Banded Mystery Snail

Butler Lake is a small lake nestled away in the Kettle Moraine State Forest-Northern Unit with minimal human impacts. There is no development around the lake and only electric trolling motors are allowed. Flynn's Spring State Natural Area and the world-wide known Parnell Esker are located adjacent to Butler Lake. Aquatic invasive species have not been documented in Butler Lake prior to 2014 when the Banded Mystery Snail was discovered there.

Crooked Lake

Acres: 94
Max. Depth: 32'
Type: Seepage Lake
Water Clarity: Low
Lake Bottom: 90% muck; 10% sand

Boat Landing: (State owned) 1 launch; 5 trailer stalls; no lighting; State Park sticker required to park
Rest Rooms: None
Fish: Bluegill; crappie; large-mouth bass; Northern pike
Invasive Species: Curly-leaf pondweed; Eurasian water-milfoil; purple loosestrife
Not Verified: Banded Mystery Snail, Chinese Mystery Snail, Zebra Mussels.

The 'Crooked Lake Wetlands State Natural Area' (designated in 1992 as a State Natural Area) lies just north of the lake and it is a diverse complex of communities including northern wet forest, southern dry-mesic forest, southern sedge meadow, shrub-carr and open bog. Two resorts on the northeast side of the lake provide camping, swimming and boat rentals.

Crystal Lake

Acres: 114 (129)
Max. Depth: 61'
Type: Seepage Lake
Water Clarity: Very Clear
Lake Bottom: Gravel
Boat Landing: (County owned); 1 launch; lighted; 15 trailer stalls; County sticker required to use launch.
Rest Rooms: Portable
Fish: Large-mouth bass; Northern pike; Walleye; panfish.
Invasive Species: Eurasian Water-milfoil; Zebra mussel; Chinese mystery snail
Not Verified: Banded Mystery Snail, Curly-Leaf Pondweed

Crystal Lake could very well be the number 1 fished inland lake in the county. This seepage lake with a gravel and sand bottom provides lake users with 'crystal' clear waters to enjoy.

Documented aquatic invasive species include Eurasian water-milfoil (EWH) and Zebra mussels (ZM) both which are very plentiful. The Crystal Lake Advancement Association and the Crystal Lake Sanitary District have had Aquatic Plant Management (APM) surveys and hire consulting firms to chemically treat Eurasian water-milfoil.

Elkhart Lake

Acres: 291
Max. Depth: 119'
Type: Spring Lake
Water Clarity: Very clear
Lake Bottom: Sand & Gravel
Boat Landing: (County owned); 2 launches; lighted; 20 trailer stalls; County sticker required for launch use.
Rest Rooms: Vault
Fish: Bass; Muskies; Walleye; panfish.
Invasive Species: Eurasian water-milfoil; Curly-Leaf Pondweed; Zebra Mussels, Ornamental Water Lilies.

Elkhart Lake, often referred to as 'Big' Elkhart Lake so it's not confused with the Village of Elkhart Lake or Little Elkhart Lake, is the busiest inland lake in the county. At 119' deep, Elkhart Lake is the 4th deepest natural lake in Wisconsin drawing many vacationers and lake-users to the area. Fishermen, jet skiers, recreational boaters, water skiers, kayakers and pontoon boat owners vie for time on this busy lake during the summer months.

Eurasian water-milfoil has been found to be common in the shallow bays including the boat landing area. The Elkhart Lake Improvement Association hires a private consulting firm to do herbicide treatments to several of the bays in an effort to control EWM.

Gerbers Lake

Acres: Big Gerber: 15 Little Gerber: 7
Max. Depth: Big Gerber: 37' Little Gerber: 21'
Type: Spring Lake
Water Clarity: Big: Moderate Little: Low
Lake Bottom: 80% Muck: 20% Gravel
Boat Landing: (County owned); 1 launch; no lights; 5 trailer stalls; County sticker required for launch use; electric trolling motors only
Rest Rooms: None
Fish: Large-mouth bass; panfish; Northern pike
Invasive Species: Eurasian water-milfoil
Not Verified: Banded Mystery Snail, Chinese Mystery Snail, Curly Leaf-Pondweed, Zebra Mussels

Gerbers Lake consists of 2 individual lakes (Big & Little Gerber) that are connected by a narrow strip of navigable-water. The boat landing is located on Little Gerber.

Other than the boat landing there is no development along these 2 lakes which arguably qualifies them as our two most pristine lakes in the County with a boat landing.

As of 2013 the only documented aquatic invasive species is the Eurasian water-milfoil. A Point-Intercept survey was completed by the Plymouth DNR and the county AIS Coordinator in 2016. Limited lake usage, due to the electric trolling motors rule, may be linked to the absence of other invasive species such as curly-leaf pondweed and zebra mussels.

Jetzers Lake

Acres: 16
Max. Depth: 42'
Type: Seepage Lake
Water Clarity: Low
Lake Bottom: 80% Sand, 20% Muck
Boat Landing: (County owned); 1 launch; no lighting; 5 trailer stalls; County sticker required for launch use; Electric trolling motors only
Rest Rooms: Vault
Fish: panfish; large-mouth bass; Northern pike
Invasive Species: Eurasian water-milfoil; Curly-Leaf Pondweed

Jetzers Lake has a very impressive fishing dock that was built by the local Howards Grove Rod and Gun club. Only electric trolling motors are allowed on this small lake.

Eurasian water-milfoil had been the only documented AIS in the lake prior to a DNR lake survey in 2012 when Curly-Leaf Pondweed was found.

Lake Ellen

Acres: 112
Max. Depth: 42'
Type: Drainage Lake
Water Clarity: Clear
Lake Bottom: 75% Sand & Gravel, 25% Muck
Boat Landing: (State owned) 1 launch; lighted; 5 trailer stalls; Township boating ordinances (posted at the landing)
Rest Rooms: Portable
Fish: panfish; large-mouth bass; Northern pike; walleye
Invasive Species: Eurasian water-milfoil; Curly-Leaf Pondweed; Zebra mussels, Yellow Iris.

The Lake Association has been very involved with the health and safety of Lake Ellen. Several volunteers spend many hours hand pulling invasive plants every year. Both populations of EWM and CLP are small and can be controlled without the use of herbicides. Properly timed hand-pulling by a diligent group of volunteers can provide control or perhaps even eradication of the EWM and CLP. The Association applies for and a DNR grant that allows the Association to provide a 'boat inspector' for the boating season to raise awareness of aquatic invasive species and educate boaters on how to prevent the spreading of invasive species from lake to lake.

Lake Ellen has a public boat landing, a privately-owned campground and a privately-owned resort.

Lake Seven

Acres: 26
Max. Depth: 25'
Type: Seepage Lake
Water Clarity: Low
Lake Bottom: 90% muck; 10% sand
Boat Landing: (State owned) 1 launch; 5 trailer stalls; no lighting; State Park sticker required to park
Rest Rooms: None
Fish: Bluegill; large-mouth bass; Northern pike
Invasive Species: Curly-Leaf Pondweed
Not Verified: Banded Mystery Snail, Chinese Mystery Snail, Eurasian Water-milfoil, Purple Loosestrife, Zebra Mussels

Most of Lake Seven's shoreline remains wild and undeveloped.

The only verified invasive species is Curly-leaf pondweed. Further monitoring is needed to confirm if other observed species are in fact in the lake.

Little Elkhart Lake

Acres: 52
Max. Depth: 25'
Type: Seepage Lake
Water Clarity: Clear
Lake Bottom: 25% gravel, 75% muck
Boat Landing: (County owned); 1-launch; lighted; 5 trailer stalls; County sticker required for launch use.
Rest Rooms: Vault
Fish: Large-mouth bass; panfish **(Winter 2013-14 fish kill)
Invasive Species: Eurasian water-milfoil, Hybrid Eurasian/Northern Milfoil, Curly-Leaf Pondweed, Chinese mystery snail, Zebra Mussel, Yellow Iris.
Not Verified: Banded Mystery Snail, Purple Loosestrife, Rusty Crayfish

The Little Elkhart Lake Rehabilitation District has been involved in the control of nuisance and invasive plants for over 40 years. They have also been active in applying for and receiving numerous DNR grants that have been used to survey the lake and for invasive plant control efforts.

Random Lake

Acres: 212
Max. Depth: 21'
Type: Drainage Lake
Water Clarity: Moderate
Lake Bottom: Muck
Boat Landing: (Village owned); 2-launches; lighted; 25 trailer stalls; Village charges launching fee
Rest Rooms: Yes
Fish: Muskies; panfish; walleye; large-mouth bass; northern pike.
Invasive Species: Eurasian water-milfoil, Curly-leaf pondweed, Spiny Naiad
Not Verified: Narrow Leaf Cattail

Random Lake has been a destination lake by musky fishermen for years and recreational boaters seek Random Lake on Sundays because the larger lakes in the county have Sunday motor restrictions. The Village owned and operated landing is part of a wonderful Village Park that has a sandy beach and a grassy picnic area perfect for kids and families.

The Village and Lake Association members have been very involved in keeping Random Lake as clean and safe as possible. They have received numerous grants for lake surveys and nuisance weed control. The invasive plant of biggest concern in Random Lake is Eurasian water-milfoil. Shallow lakes like Random Lake provide prime conditions for Eurasian water-milfoil to form dense monocultures so continued lake monitoring and control efforts will be needed to keep this highly invasive plant in check.

Sheboygan Lake

Acres: 646
Max. Depth: 4 feet
Type: Drainage Lake
Water Clarity: Murky
Lake Bottom: Muck
Boat Landing: (County owned); 4-launches; lighted; 25 trailer stalls; County sticker required for launch use.
Rest Rooms: Yes (at the Lodge)
Fish: Large-mouth bass; Northern pike; panfish.
Invasive Species: Eurasian water-milfoil; zebra mussel;
Not Verified: Curly-Leaf Pondweed

If bigger is better, then Sheboygan Lake at 1 square mile in size, is one of our best lakes. Due to ease of shore and dock fishing along with all of the amenities of the Park, Sheboygan Lake, better known as 'the Sheboygan Marsh' has much to offer. The County owned Park has camping sites, picnic areas, restaurant, an observation tower and ample parking. The Marsh is very popular with hunters as well as wildlife lovers looking for a chance to observe an osprey, otter, yellow-headed blackbird or a white-tailed deer.

As of 2013 no in-depth aquatic invasive species survey has been conducted but Eurasian water-milfoil and zebra mussels have been documented in the lake. Neither of these species appear to be causing any obvious impacts. The mucky lake bottom likely limits zebra mussels from forming dense populations. Although, it appears Eurasian water-milfoil is increasing, it has been kept in check by very dense populations of native flora. Large 'island' or masses of hybrid cattails, common to the marsh, can cause significant removal expenses when large mats break off and float downstream and clog the dam. To prevent the costly removal of cattails, the DNR conducts occasional lake-wide drawdowns along with herbicide treatments. Coontail (horntail), which is a native species, can become so dense in this nutrient rich watershed, that it can prevent boat motor travel during the summer months.

Sheboygan County Rivers and Streams with AIS

Note that WDNR aquatic invasive species (AIS) records are assigned statuses of "verified", "observed", or "no longer observed" based on AIS Status Guidance. In general, "verified" populations are established and have been verified by a taxonomic expert. Populations with the "observed" status have not been verified by a taxonomic expert or do not have established populations.

La Budde Creek: Not verified- Purple Loosestrife

Mink River: Rusty Crayfish

Mullet River: Rusty Crayfish

North Branch Milwaukee River: Rusty Crayfish

Pigeon River: Rusty Crayfish

Sevenmile Creek: Not verified- Curly-leaf Pondweed

Sheboygan River: Eurasian Water-Milfoil, Hairy Willow-Herb, Japanese Knotweed, Purple Loosestrife, Rusty Crayfish, Zebra Mussels; Not verified- Non-native Phragmites, Round Goby and Quagga Mussel

Silver Creek: Rusty Crayfish

APPENDIX

NR40 – Invasive Species Rule

The Invasive Species Rule (Chapter NR40) went into effect on September 1, 2009. The rule establishes a comprehensive, science-based way to classify and regulate invasive species in Wisconsin. The rule divides species into 2 categories, "**Prohibited**" and "**Restricted**," with different regulations and control requirements. Chapter NR40 covers over 128 species, including plants, animals, and microorganisms.

Prohibited species are classified as not yet being in the state or only in a few places. These species are likely to cause environmental and/or economic harm. It is still possible to eradicated these species and prevent their spread statewide. Control of NR40 prohibitive species is required.

Restricted species are already widely established in the state, and environmental and/or economic impacts are evident with these species. Complete eradication of these species is unlikely. However, control of NR40 restricted species is encouraged.

The primary goal of NR40 is to slow the spread of invasive species in Wisconsin. The Department is using a "stepped enforcement" protocol, which emphasizes education and voluntary compliance. However, citations may be issued for aquatic invasive species violations.

Regulations differ slightly for certain species. Please go to the WDNR website to see listed exemptions for NR40, as well as the rule's implications for aquatic invertebrates, fish, and terrestrial species. (DNR PUB-WT-925-2012)

To prevent boaters from moving aquatic invasive species from one waterbody to another, NR40 also includes preventative measures that complement existing state statutes. These laws are posted at most boat landing/ramps.

Transport laws for boaters and anglers:

- Inspect your boat, trailer and equipment
- Remove any attached aquatic plants or animals (before launching, after launching and before transporting on a public highway).
- Drain all water from boats, motors and all equipment
- Never move live fish away from a waterbody
- Dispose of unwanted bait in the trash
- Buy minnows from a Wisconsin bait dealer. Use leftover minnows only under certain conditions. (You may take leftover minnows away from any state water and use them again on that **same** water. You may use leftover minnows on other waters only if no lake or river water or other fish were added to their container.

Citations and fines associated with AIS (minimum fines):

- NR 19.05(3): Transport live fish away from waters ($343.50).
- NR.19.055(1) & (2): Fail to drain water from a boat, trailer, equipment ($243.00).
- NR 19.27(4)(a)1: Illegally possess, use or release live crayfish ($222.90).
- NR 20.08(3): Release any unused bait into any waters ($645.00).
- NR 23.24(3)(a)1: Unlawfully introduce nonnative aquatic plants into water of state ($389.50).

- NR 30.07(2)(a): Launching or placing vehicle, boat…with an aquatic plant or animal attached ($295.00).
- NR 30.07(2)(b): Transporting a vehicle/boat on a public highway which has an aquatic plant or animal attached ($232.00).
- NR 30.07(6): Fail to comply with a law enforcement officer's order to remove all aquatic plants or animals ($358.00).
- NR 40.04(3): Transport, possess or transfer a prohibited invasive species ($292.00).
- NR40.07(2): Failure to remove all aquatic plants or aquatic animals attached to, or drain all water form, any vehicle or equipment before leaving a boat launch ($200.05).

Note: This is not a complete list of all AIS statutes.

NR198 – Aquatic Invasive Species Control Grants

NR 198 Aquatic Invasive Species (AIS) Control Grants were designed to implement Wisconsin State Statutes Chapter 23.22 Invasive Species, sub (2) (c)which directs the WDNR to establish procedures to award cost-sharing grants to public and private entities for up to 75 percent of the costs of projects to control invasive species. The budget for this grant program is about $4 million per year. These funds are available to control aquatic invasive species. The grant projects are broken down into three major categories:

1) Education, Prevention and Planning
2) Early Detection
3) Controlling Established Infestations

AIS grants can assist local efforts in providing the following:

- Information and education on the types of existing and potential aquatic invasive species in Wisconsin.
- Information on the threats they pose for the State's aquatic resources.
- Information on the techniques available for their control.
- Planning and conducting projects that will prevent the introduction of aquatic invasive species into waters where they currently are not present.
- Controlling and reducing the risk of spread from waters where they are present.
- Restoring native aquatic communities.

Rapid Response Process Overview

Early Detection & Reporting – Emphasizes the importance of a local AISC and lake monitors.

Verification – Local AISC
WDNR AIS Specialist
UW – Extension

Notification – WDNR Plymouth
1155 Pilgrim Road
Plymouth WI 53073
(920) 892-8756

Rapid Risk Assessment – 'Prohibitive' species versus 'Restricted' species

Planning – Collaboration of various government agencies and partner groups

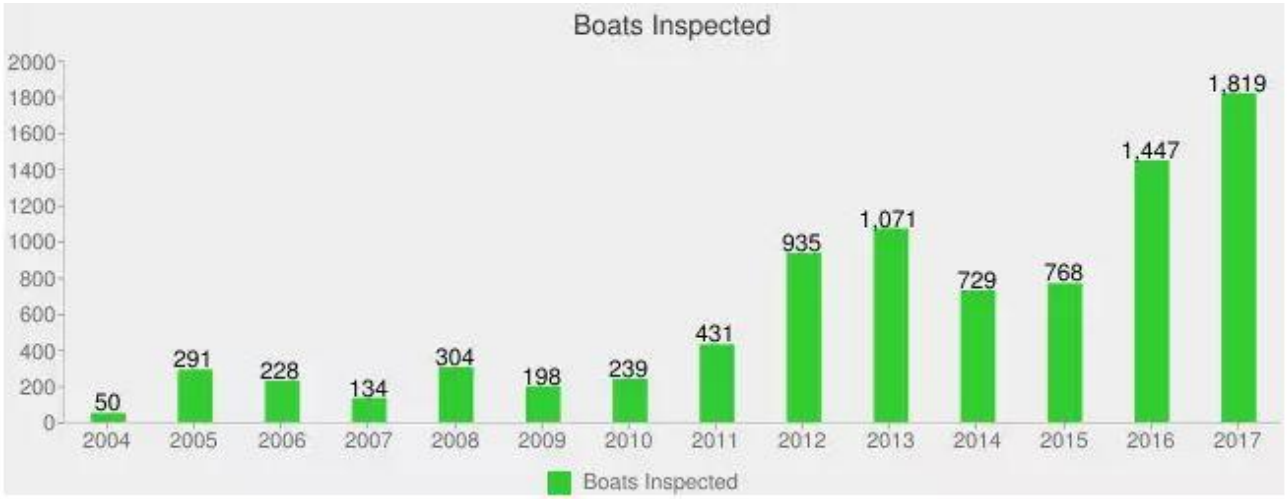
Rapid Response – WDNR take the lead

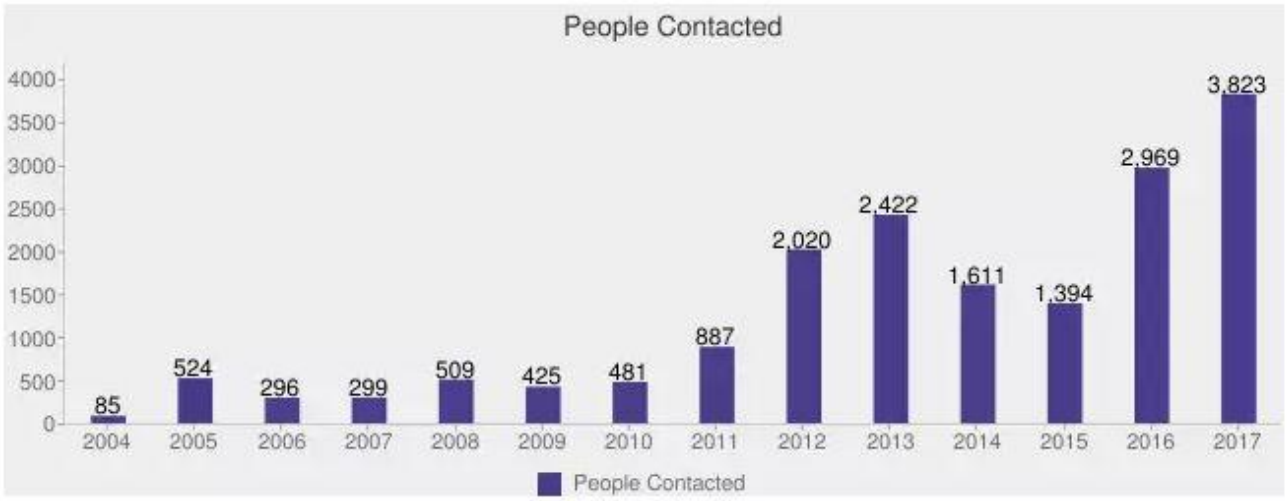
Monitoring & Evaluation – Lake monitors
Local AISC
WDNR AIS Specialist

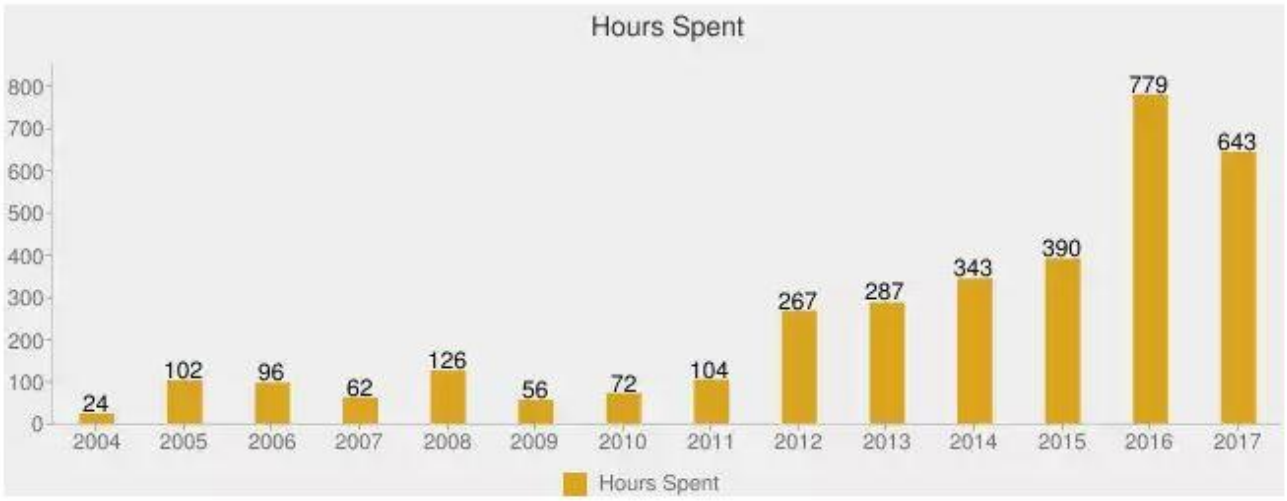
Restoration – WDNR and local AISC take the lead, work with partner groups

For more information, reference Wisconsin's Rapid Response Framework for Aquatic Invasive Species at *http://dnr.wi.gov/lakes/invasives/WIAISRapidResponseFramework2012.pdf*

Watercraft Inspection Efforts in Sheboygan County







Projects That Have Been Active in Sheboygan County from 2014-2017:

Projects	Boats Inspected 2014	Boats Inspected 2015	Boats Inspected 2016	Boats Inspected 2017
Clean Boats, Clean Waters-Glacierland RC&D	2	0	211	308
Clean Boats, Clean Waters-Sea Grant Michigan Team	434	32	369	0
DNR Watercraft Inspections-Sheboygan County	63	0	0	0
Elkhart Lake Improvement Association: Clean Boats, Clean Water Project	0	391	524	1243
Lake Ellen Association: Clean Boats, Clean Waters Project	230	345	343	258
Clean Boats, Clean Waters: Waterfowl Hunters	0	0	0	10

Sheboygan County Bait Shops

Local bait shops can be a very important partner in the battle to help educate boaters about aquatic invasive species (AIS) and how to prevent their spread from lake to lake. Bait shop owners can be a big AIS prevention advocate by being a source of information and an outlet for brochures and other educational materials. It is recommended that the AISC stop into every bait shop several times during the season to fill AIS supplies and to continue good working relationships. Information and opinions from bait shop owners are held in fairly high esteem by local fishermen. The AISC needs to continue to use bait shops as an educational tool to stop the spread if AIS.

Angler's Avenue Bait Shop 510 South Pier Dr. Sheboygan, WI (920) 395-2406 (Russell)	Terry's Bait Bucket County Road J & 57 Plymouth, WI (920) 838-0850 (Terry)	The Wharf 733 Riverfront Dr. Sheboygan, WI (920) 458-4406 (Grace)

Sheboygan County Garden Centers/Nurseries/Box Stores

NR40 went into effect in 2009 which categorized invasive species as either 'Restricted' or 'Prohibitive. Local nurseries, garden centers and box stores selling plants should be visited each spring to make sure they are in compliance with NR40. Currently over fifty new species are under consideration to be added to the NR40 list. As of the end of June, these species have passed through the 'Review' stage of the process.

Caan Floral & Greenhouse 4422 S. 12th St. Sheboygan, WI (920) 395-3069	The Mustard Seed Garden Center 601 N Main St. Sheboygan Falls, WI (920) 627-6134	Pleasant View Tree Farm W1418 Van Ess Rd. Oostburg, WI (920) 564-2834
Kohler Gardener 765 Woodlake Rd. Kohler, WI (920) 458-5570	Land Steward Enhancements & Willow Wood Acres N5947 Willow Rd. Plymouth, WI (920) 893-9908	Superior Lawn & Garden Center 6510 Superior Ave Kohler, WI (920) 467-2031
Restoration Gardens W4429 Co. Rd JM Sheboygan Falls, WI (920) 467-8370	Scotty's Landscape Supply 3823 Enterprise Dr. Sheboygan, WI (920) 452-1925	Rathjen Greenhouses W2509 County Rd A S Oostburg, WI 53070 (920 564-2775
Millhome Nursery & Greenhouses N9469 Rhine Rd. Elkhart Lake, WI (920) 894-7877	Moraine Gardens W4930 Sumac Rd. Plymouth, WI (920) 893-0843	
Windmill Gardens 236 Commerce St. Cedar Grove, WI (920) 668-6668	Wreath Factory & Otter Creek Landscape and Garden Center N6625 State Rd. 57 Plymouth, WI (920) 893-8700	
Home Depot 4025 Highway 28 Sheboygan Falls, WI (920) 451-0624	Menards 4825 Vanguard Dr. Sheboygan, WI (920) 565-3334	Mills Fleet Farm 3110 Eastern Ave. Plymouth, WI (920) 893-5115
Wal-Mart 428 Walton Dr. Plymouth, WI (920) 892-7523	Wal-Mart 3711 S. Taylor Dr. Sheboygan, WI (920) 459-9300	Wal-Mart 4433 Vanguard Dr. Sheboygan, WI (920) 459-9410