

# St. Croix River Basin Aquatic Invasive Species Strategic Plan

(21 October 2016)

*created by*

St. Croix River Association

To protect, restore, and celebrate the St. Croix River and its watershed



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# Executive Summary

**This Strategic Plan’s overarching mission is to “prevent, contain, and control aquatic invasive species (AIS) in the St. Croix River Basin.”** The St. Croix River is a border water between Minnesota and Wisconsin (see background information in Appendix A and map in Appendix B). This River is threatened by invasions of nonindigenous AIS that may permanently change the high quality of this exceptional resource.

**We recommend management goals to accomplish this plan, including:**

1. **Prevent** the introduction and dispersal of AIS into St. Croix River Basin waterbodies;
2. **Contain** AIS infestations through early detection and rapid response, and by fostering good communication and knowledge among partners;
3. **Control** and eradicate AIS infestations already present in the St. Croix River Basin and prevent them from spreading; and
4. **Coordinate and Assess** this AIS Strategic Plan.

This Plan was developed through partnership to prevent future introductions of AIS and to contain or control AIS already present in the St. Croix River Basin. **The intent of this Strategic Plan is to coordinate future efforts of partners and stakeholders in the Basin,** including those of federal, state, county and local governments, non-governmental organizations and citizen conservation, sporting, and recreation groups.

Since 2014, the creation of this Strategic Plan and its ongoing implementation has been supported by a unique partnership of stakeholders with a vested interest in preserving the integrity of the St. Croix River Basin. The St. Croix River Association (SCRA) developed this Strategic Plan and facilitated the contributions of key partners including: lake associations, community AIS groups, the Wisconsin Department of Natural Resources (WI DNR), Minnesota Department of Natural Resources (MN DNR), National Park Service (NPS), and many counties within the watershed.

Many of these partners are already engaged in AIS prevention and management. This plan relies on the continued dedication of those partners, and on their collaboration and assistance in expanding prevention and management efforts.

Over the past two years, St. Croix River Basin partners have made significant progress toward the coordination and mobilization of AIS stakeholders in the Basin. The publication of this Strategic Plan is a continuation of this work. We now move to implement this Strategic Plan with SCRA implementing certain components of the Plan and serving as a catalyst and advocate for remaining components. **The success of this next phase ultimately relies on the involvement and support of all of the partners who have contributed to this effort thus far, as well as partners that will contribute in the future.**

# Introduction

## **Purpose**

The primary purpose of this Plan is to coordinate St. Croix River Basin stakeholders and partners in achieving the broad goal of preventing, containing, and controlling aquatic invasive species (AIS) and their impacts through the strategies outlined below. In coordinating between stakeholders, we hope to raise the profile of AIS issues in the St. Croix River Basin, and build the institutional capacity of stakeholder groups to prepare for and respond to AIS issues.

## **Mission**

The mission of this Plan is to prevent, contain, and control AIS in the St. Croix River Basin.

## **Problem**

AIS are a threat to the overall health of the St. Croix River and its tributaries, and to resource management throughout the watershed. One of the original eight nationally designated Wild and Scenic rivers, the St. Croix is one of the cleanest tributaries to the Mississippi River. It is a high value fishery, and the healthy, diverse ecosystem includes at least 40 species of mussels, several of which are rare or endangered. The introduction of aggressive invasive species into this complex system threatens the ecological integrity of the River as well as the unique cultural resources and our outdoor heritage.

Because they have few natural controls in their new habitats, AIS can spread rapidly. Aggressive AIS can impact the ecology of a water body by degrading water quality, reducing species diversity, and altering the food web resulting in a change in game fish populations. Dense infestations and nuisance growth of AIS can also affect recreational opportunities such as boating, swimming, and fishing. Local economies depend on the pristine nature of the River for the multimillion dollar recreation and tourism business brought to the area by boaters, paddlers, wildlife watchers, cold and warm water anglers, and many others.

## **Scope**

The geographical scope of this Plan is the 7,760 square miles of the St. Croix River Basin. The Basin includes 24 subwatersheds, 60% of which fall in Wisconsin with the remaining 40% in Minnesota. The Basin includes the St. Croix and Namekagon Rivers, as well as all other tributary rivers and streams, floodplain lakes, sloughs, lakes, and wetlands within the watershed. While this Plan is all encompassing of the St. Croix River Basin, there is a significant focus on the St. Croix River itself due to 1) the biotic diversity of the River, 2) its multitude of recreational users and variety of recreational opportunities, and 3) the existence of the St. Croix National Scenic Riverway.

The interconnectedness of river systems presents unique challenges for AIS management not applicable to isolated waterbodies such as lakes. These challenges, coupled with human traffic between waterbodies, make large river systems and their watersheds susceptible to AIS invasion (in Wisconsin, these criteria elevate the St. Croix to "superspreader" status). The St. Croix River Basin is at risk of being deeply and negatively impacted by a suite of harmful AIS, due to 1) its physical connection with the Mississippi River; 2) its proximity to the St. Paul – Minneapolis lakes,

Lake Mille Lacs, and Lake Superior, all of which have a variety of AIS; and 3) its status as a regional recreational destination.

### **Approach**

The St. Croix River Association (SCRA) is a regional 501(c)3 non-profit organization that is the voice of the River and the only organization in the St. Croix River Basin with a watershed-wide scope. As the friends group for the St. Croix National Scenic Riverway, SCRA supports and complements the National Park Service's (NPS) work within the Riverway. SCRA works in partnership with many organizations and seeks to protect, restore, and celebrate the St. Croix River and its watershed. SCRA's role in the region is to collaborate with and empower other organizations and individuals instead of working alone, and to respect, engage, and leverage the passion of local people in their communities.

SCRA used a basin-wide approach in this planning process to address the diversity of waterbodies in the region and the many physical connections between them. This approach also better accounts for connectedness via human movement. Furthermore, a basin-wide approach entails consideration of the myriad stakeholder groups, ecosystem types, and species affected by AIS.

In May of 2014, SCRA received an AIS Planning, Prevention, and Outreach grant from the Wisconsin Department of Natural Resources (WI DNR) to develop a strategic plan for limiting the introduction and spread of AIS in the St. Croix River Basin. Following that initial funding, SCRA received follow-up funding in 2015 through a second AIS Planning, Prevention, and Outreach grant from the WI DNR as well as through AIS prevention funding from Chisago, Pine, and Washington counties in Minnesota. This money funded complete development of this Plan and implementation through 2017.

The Plan itself was developed by a group of stakeholders and partners within the St. Croix River Basin, including key partners from lake associations, community AIS groups, the WI DNR, Minnesota Department of Natural Resources (MN DNR), NPS, and many of the counties from within the watershed. The Plan was further refined by input from community members who attended one of eight public meetings throughout the Basin (see Appendices E and F for locations and participation).

### **Goals**

The goals of this Plan are:

1. **Prevention:** Prevent the introduction and dispersal of AIS into the St. Croix River Basin waterbodies.
2. **Containment:** Contain AIS infestations through early detection and rapid response, and by fostering good communication and knowledge among partners.
3. **Control:** Control and eradicate AIS infestations already present in the St. Croix River Basin and prevent them from spreading.
4. **Coordination and Assessment:** Ensure that this AIS Strategic Plan is implemented and monitored for effectiveness.

# AIS Threats and Impacts

The St. Croix River Basin encompasses a significant portion of northwestern Wisconsin and east-central Minnesota. The watershed is characterized by diverse landscapes and ecosystems. These different terrestrial and aquatic habitats provide ecological niches for an abundance of native and invasive species. Though this Plan addresses “aquatic” invasive species, included in it – and considered “aquatic” for these purposes – are riparian terrestrial species, or species that are found on lands bordering waterways (such as Phragmites).

Below is a table summarizing ongoing activities (descriptions of some of the activities can be found in Appendix C).

	Pierce	St. Croix	Polk	Burnett	Washburn	Sawyer	Bayfield	Douglas	Washington	Chisago	Pine
-	No program										
X	Program										
NA	Not applicable										
Project RED (Riverine Early Detectors)	-	-	X	-	-	-	X	X	NA	NA	NA
AIS Snapshot Day	-	-	X	-	-	-	X	-	NA	NA	NA
Citizen monitoring (CLMN or other)	-	-	X	X	X	X	X	-	X	X	-
Boat inspections (CBCW or other)	X	X	X	X	X	X	X	X	X	X	X
Drain campaign or pull drain plugs	-	-	X	X	X	X	X	X	X	X	X
WI Boat Landing blitz	-	-	X	X	X	X	X	X	NA	NA	NA
General AIS Monitoring	-	X	X	X	X	X	X	X	X	X	X
AIS education in the schools	-	-	X	X	X	X	X	-	-	X	X
Purple loosestrife biocontrol use	-	X	X	X	X	X	X	X	X	X	-
AIS signage – add, replace, etc.	-	-	X	X	X	X	X	-	X	X	X
Japanese knotweed control	-	X	X	X	X	X	X	-	X	-	-
WDNR funding for AIS work	-	-	X	X	X	X	X	-	NA	NA	NA
MN County AIS funding	NA	NA	NA	NA	NA	NA	NA	NA	X	X	X

Most introductions of these species are the result of human activities. There are many ways that people transport AIS. For example: yellow irises were commonly planted along shorelines in the Upper St. Croix region as decorative shoreline plants. Today, those plants have escaped and line parts of the Riverway. Major pathways of introduction include for aesthetic purposes, such as in this example, as well as aquaculture, aquarium trade, and recreational boating and fishing. Some of these pathways are regulated while others have few or no precautions.

Other introductions are more “natural.” For example, while the four Asian carp species were intentionally introduced to the southern United States, they now threaten the St. Croix River Basin through their own natural movement up the Mississippi. Today, bighead carp have been caught



in the St. Croix, and silver carp near the mouth of the St. Croix. Both species have swum upstream through the Mississippi to reach this region.

Regardless of introduction pathway, the potential impacts of these invasive species are significant and widespread ranging from ecological to economic to cultural.

### **Ecological Impacts**

Invasive species compete with native species for habitat and resources. In the absence of natural predators, invasive species can outcompete and displace native species. For example, invasive zebra mussels (*Dreissena polymorpha*) directly compete for habitat with and can displace the 40 or more species of native mussels in the St. Croix, including the federally endangered winged mapleleaf mussel. Additionally, if invasive species invade and dominate an ecosystem, species that relied on the original habitat may suffer. For example, Blanding's turtle (*Emys blandingii*), found in the St. Croix River Basin and designated as threatened in Minnesota and of special concern in Wisconsin, has seen much of its habitat degraded by reed canary grass (*Phalaris arundinacea*).

### **Economic Impacts**

The economic impacts of invasive species can be considerable. According to a 2001 report, the United States spends \$137 billion per year on AIS. Today, that number is likely much higher<sup>1</sup>. Specific industries that may be negatively affected by invasive species include: fisheries, recreation, power generation, agriculture, forestry, trade, and tourism and recreation. In the St. Croix River Basin, the economic impact of recreation is significant – particularly recreational fishing, boating, and hunting. A 2014 NPS report shows that 671,582 visitors to the St. Croix National Scenic Riverway spent \$27,645,600 in communities near the park. That spending supported 439 jobs in the local area and had a cumulative benefit to the local economy of \$37,646,100. This spending depends on a healthy, appealing Riverway.

### **Cultural Impacts**

Harder to quantify, but no less important, are cultural impacts of invasive species. People come to the St. Croix River to live and play, and cherish it for its clean waters, good fishing, and natural and scenic beauty. However, AIS invasions can change all of this. Boating is dangerous with 90 pound jumping silver carp, fishing fun is diminished if fish populations are decimated by viral hemorrhagic septicemia, and trips to the beach require shoes if shorelines are littered with sharp zebra mussel shells. Additionally, species like common carp can directly harm wild rice beds – a resource stretching back through time as central to the Ojibwa culture. The outdoor heritage of water users relies on a healthy and diverse watershed.

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<sup>1</sup> Pimentel, D., S. McNair, J. Janecka, J. Wightman, C. Simmonds, C. O'Connell, E. Wong, L. Russel, J. Zern, T. Aquino and T. Tsomondo. 2001. Economic and environmental threats of alien plant, animal, and microbe invasions. *Agriculture, Ecosystems & Environment* **84(1)**: 1-20.

# Recommended Management Actions

Below are recommended management objectives and actions, associated with the four goals for this Plan. Each Strategy is ranked by its importance as perceived by AIS partners within the St. Croix River Basin. For alignment with existing local AIS Plans within the St. Croix River Basin, see Appendix D.

<b>Goal 1. Prevention: prevent the introduction and dispersal of AIS into the St. Croix River Basin waterbodies.</b>					
<b>Strategy 1. Educate waterway users and watershed residents about AIS threats, impacts, identification, and removal.</b>					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Continue current education efforts (i.e., Project RED, AIS Snapshot Day, CLMN AIS trainings, Chisago Children’s Water Festival, etc.).	Counties Lake Assoc. Local WMOs MN DNR	NPS River Alliance of WI SCRA WI DNR	Pierce, St. Croix, Douglas, and Washington counties	ongoing	review annually
<b>Action 2.</b> Increase Project RED events to include all WI counties in the watershed.	Counties Lake Assoc. NPS	River Alliance of WI SCRA WI DNR	Pierce, St. Croix, Burnett, Washburn, and Sawyer counties	ongoing and future	1 county per year
<b>Action 3.</b> Increase AIS Snapshot Day to include all WI counties in the watershed.	Counties Lake Assoc. NPS	River Alliance of WI SCRA WI DNR	Pierce, St. Croix, Burnett, Washburn, and Sawyer counties	ongoing and future	1 county per year
<b>Action 4.</b> Add an AIS component to the NPS Rivers Are Alive program.	NPS SCRA		Entire watershed	ongoing	2016
<b>Action 5.</b> Provide AIS education in K-12 schools throughout the watershed.	Counties Lake Assoc. Local WMOs MN DNR	NPS River Alliance of WI SCRA WI DNR		ongoing	review annually
<b>Action 6.</b> Have AIS educational opportunities available in some form in all MN counties.	Counties Lake Assoc. Local WMOs	MN DNR NPS SCRA	Carlton, Aitkin, and Kanabec counties	ongoing	review annually

<b>Action 7.</b> Distribute educational materials to build relationships with river businesses, marinas, bait shops, lake service providers, etc. (i.e. WI Bait Shop Initiative).	Counties Lake Assoc. Local WMOs MN DNR	NPS River Alliance of WI SCRA WI DNR	Washington, Chisago, Pine, Carlton, Aitkin, and Kanabec counties	ongoing	review annually
<b>Action 8.</b> Participate in additional statewide AIS outreach events as they arise or are developed.	Counties Lake Assoc. Local WMOs MN DNR	NPS River Alliance of WI SCRA WI DNR		ongoing and future	review annually
<b>Strategy 2.</b> Identify locations within the St. Croix River Basin that may act as a conduit for spread or introductions of AIS.					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Protect native species and habitat quality as a means of creating communities resistant and resilient to AIS.	Counties Lake Assoc. Local WMOs MN DNR	NPS River Alliance of WI SCRA WI DNR		ongoing	as needed
<b>Action 2.</b> Assess present and upcoming AIS threats to the Basin. List and rank AIS to help prioritize management.	Counties MAISRC MISAC MN DNR	NPS SCRA UWEX WI DNR		existing	complete by end of 2017
<b>Action 3.</b> Use the list of ranked AIS to identify the most common pathways for the highest priority species. Reduce or control those pathways.	Counties Lake Assoc. Local WMOs MN DNR	NPS River Alliance of WI SCRA WI DNR		ongoing	as needed
<b>Strategy 3.</b> Increase enforcement and compliance of AIS laws and regulations.					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Continue ongoing relationships with local law enforcement and build capacity in counties without those relationships. Add trainings on AIS threats, impacts, and regulations in counties where there are no such programs.	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA WI DNR		future (\$10,500)	2018
<b>Action 2.</b> Include reference to AIS rules and regulations in AIS youth education (i.e., in K-12 programs and more).	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA WI DNR		future (\$3600)	2017

<b>Strategy 4. Increase boat inspections on high traffic waterbodies in the St. Croix River Basin.</b>					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Continue current boat inspection programs.	Counties Lake Assoc. Local WMOs	MN DNR SCRA WI DNR		ongoing	as needed
<b>Action 2.</b> Increase boat inspection program coverage to areas without programs, especially areas with high priority AIS or high boat traffic (i.e., the lower St. Croix and other areas as the need arises).	Counties Lake Assoc. Local WMOs	MN DNR SCRA WI DNR	Pierce, St. Croix, and Douglas counties	ongoing	as needed
<b>Action 3.</b> Have an annual “blitz” weekend each summer for decontamination unit coverage along the Lower St. Croix.	Counties Lake Assoc. Local WMOs	MN DNR SCRA WI DNR		ongoing	as needed
<b>Action 4.</b> Encourage boaters to drain their boats and equipment (in MN promote adherence to drain laws, in WI participate in the Drain Campaign).	Counties Lake Assoc. Local WMOs	MN DNR SCRA WI DNR	Pierce, St. Croix, and Douglas counties	ongoing	as needed
<b>Strategy 5. Ensure current AIS signage at waterbody public access points in the St. Croix River Basin and eliminate signage repetition.</b>					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Add AIS signs to landings that do not already have AIS signs. Make sure signs are allowed and meet any sign regulations.	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA WI DNR	Pierce, St. Croix, and Douglas counties	existing	complete by end of 2017
<b>Action 2.</b> Eliminate sign repetition and/ or consolidate signs to avoid an over-abundance of signs.	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA WI DNR	Pierce, St. Croix, and Douglas counties	existing	complete by end of 2017

<b>Action 3.</b> Replace outdated signs with current signs.	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA WI DNR	Pierce, St. Croix, and Douglas counties	ongoing	review annually
<b>Action 4.</b> Work collaboratively to make signs more effective at communicating AIS messaging.	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA WI DNR	Entire watershed	ongoing	as needed
<b>Strategy 6.</b> Prevent the introduction of AIS from movement of large equipment or construction.					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Identify laws for construction practices with respect to AIS prevention and containment throughout the St. Croix Basin.	SCRA Xcel Energy Others TBD			future (\$2500)	2017
<b>Action 2.</b> Determine if businesses are aware of AIS laws and regulations for construction equipment and best practices by contacting different construction businesses throughout the watershed.	SCRA Xcel Energy Others TBD			future (\$7200)	2019
<b>Action 3.</b> If general awareness regarding AIS prevention and containment is low among construction businesses, host a training for businesses to learn best management practices and gain ownership over the issue.	SCRA Xcel Energy Others TBD			future (\$7200)	2019
<b>Strategy 7.</b> Examine the mouth of the St. Croix River as a potential site for a carp deterrent mechanism.					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Produce site-specific blueprints for deterrence mechanisms.	MN DNR NPS SCRA	Univ. of MN WI DNR		existing	finished in early 2016
<b>Action 2.</b> Host organized discussions on Asian carp and the possibility of a deterrent mechanism.	MN DNR NPS SCRA	Univ. of MN WI DNR USGS		existing	spring of 2016

<b>Action 3.</b> If determined to be feasible, implement a deterrent mechanism.	MN DNR NPS SCRA	Univ. of MN WI DNR		future; TBD	end of 2017
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**Goal 2. Containment: contain AIS infestations through early detection and rapid response, and through fostering good communication and knowledge among partners.**

**Strategy 1.** Increase monitoring and early detection of AIS.

	<i>Partners</i>	<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>	
<b>Action 1.</b> Continue ongoing volunteer and citizen monitoring trainings and programs. Add programs in counties without programs.	Counties Lake Assoc. Local WMOs MAISRC	MISAC MN DNR NPS SCRA WI DNR	Pierce, St. Croix, Douglas, and Pine counties	ongoing and future	as needed
<b>Action 2.</b> Develop a guide for management actions that can be location- and species-specific.	Counties Lake Assoc. Local WMOs MAISRC	MISAC MN DNR NPS SCRA WI DNR	TBD by priority list	future (\$15,000) as needed	2018
<b>Action 3.</b> Monitor for zebra mussel and other high priority AIS presence and abundance on the Lower St. Croix.	MN DNR NPS SCRA WI DNR			ongoing and future	as needed
<b>Action 4.</b> Participate in statewide early detection efforts or campaigns.	Counties Lake Assoc. Local WMOs MAISRC	MISAC MN DNR NPS SCRA WI DNR	Pierce, St. Croix, Douglas counties; MN counties as statewide trainings are developed	ongoing and future	as needed

**Strategy 2.** Build partnerships and develop a communications network between natural resources managers and AIS researchers.

	<i>Partners</i>	<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>	
<b>Action 1.</b> Sustain and build an AIS Workgroup that meets regularly and hold twice annual AIS Workgroup meetings open to all partners and the public.	Counties Lake Assoc. Local WMOs MAISRC	MISAC MN DNR NPS SCRA WI DNR		ongoing	bi-annually

<b>Action 2.</b> Invite guest speakers to the AIS Workgroup meetings to share their work and knowledge.	Counties Lake Assoc. Local WMOs MAISRC	MISAC MN DNR NPS SCRA WI DNR		ongoing	bi-annually
<b>Strategy 3.</b> Support development and expansion of new early detection tools and strategies.					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Identify existing rapid response plans in the St. Croix River Basin.	Counties Lake Assoc. Local WMOs	MN DNR NPS SCRA WI DNR		future (\$3000)	2019
<b>Action 2.</b> Develop an organizational flow chart that directs partners and the public to the appropriate rapid response plan for their location and needs. Ensure that the flow chart includes regional and cross-state communication.	Counties Lake Assoc. Local WMOs	MN DNR NPS SCRA WI DNR		future (\$1200)	2019
<b>Action 3.</b> Develop a MOU between partners where they commit to helping each other conduct AIS rapid response whenever possible.	Counties Lake Assoc. Local WMOs	MN DNR NPS SCRA WI DNR		future (\$1200)	2019
<b>Strategy 4.</b> Develop a clearinghouse for AIS inventory data and AIS-related information for the St. Croix River Basin.					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Hire a website manager to design an online clearinghouse for AIS-related information. This clearinghouse will draw information from existing databases (i.e., SWIMS, county records) and will cover the entire watershed (MN and WI) and provide an interactive component to share problems and practices.	Counties MAISRC MISAC	MN DNR NPS SCRA WI DNR		future (\$30,000 -\$60,000)	2021

<b>Action 2.</b> Have an invasive species coordinator inventory regional information to include in the online clearinghouse.	Counties Lake Assoc. Local WMOs MAISRC	MISAC MN DNR NPS SCRA WI DNR		future (\$9000)	2021
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**Goal 3. Control: control, manage, or eradicate AIS infestations already present in the St. Croix River Basin and prevent them from spreading.**

**Strategy 1.** Encourage citizens to be active in controlling AIS.

	<i>Partners</i>	<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Help organizations make sure they have any required permits and assist with control grant applications and letters of support.	Counties Lake Assoc. Local WMOs	MN DNR NPS SCRA WI DNR		ongoing  as needed
<b>Action 2.</b> Develop a protocol for AIS control and management that builds in appropriate citizen participation (i.e., hand-pulling, using biocontrol).	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA SCRC CWMA WI DNR		future (\$10,500)  2019

**Strategy 2.** Coordinate AIS control efforts throughout the St. Croix River Basin.

	<i>Partners</i>	<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Hold 1-2 regional AIS coordinators' meetings per year for all AIS staff within the St. Croix River Basin to discuss ongoing AIS work, upcoming AIS projects, and share AIS successes and failures.	Counties MN DNR NPS SCRA WI DNR		ongoing	bi-annually
<b>Action 2.</b> Ensure management actions are coordinated between partners; include discussions about ongoing control work at AIS Workgroup meetings, and at regional coordinators' meetings.	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA WI DNR		future (\$9000)  2019



<b>Strategy 3.</b> Support integrated pest management as a strategy to manage AIS.					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Use current research, best management practices, and best technologies to minimize AIS threats, control and manage infestations, and restore biodiversity of native communities.	Counties Lake Assoc. Local WMOs	MN DNR NPS SCRA WI DNR		ongoing	as needed
<b>Action 2.</b> Use biological control methods, as appropriate (i.e., for purple loosestrife, Eurasian water milfoil).	Counties Lake Assoc. Local WMOs	MN DNR NPS SCRA WI DNR	Pierce, Washington, Pine counties	ongoing	as needed
<b>Action 3.</b> Implement ecological restoration projects to restore native species diversity and richness as well as resiliency to AIS impacts and invasions.	Counties Lake Assoc. Local WMOs	MN DNR NPS SCRA WI DNR		ongoing	as needed
<b>Goal 4. Coordination and Assessment: ensure that this AIS Strategic Plan is implemented and monitored for effectiveness.</b>					
<b>Strategy 1.</b> Seek sustainable funding for AIS activities.					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Support a regional invasive species coordinator position to coordinate work to fulfill this Strategic Plan.	Counties MN DNR NPS	SCRA WI DNR		ongoing	as needed
<b>Action 2.</b> Have the regional invasive species coordinator identify and pursue sustainable funding sources and seek partners and sponsors to ensure actions in this Strategic Plan are accomplished.	Counties MN DNR NPS SCRA WI DNR			ongoing	as needed
<b>Action 3.</b> Support county and local level invasive species coordinator work and positions.	Counties MN DNR NPS	SCRA WI DNR	Pierce, St. Croix, and Douglas counties	ongoing	as needed

<b>Action 4.</b> Work collaboratively with partners to seek funding and leverage resources.	Counties MN DNR NPS	SCRA WI DNR	Pierce, St. Croix, and Douglas counties	ongoing	as needed
<b>Strategy 2.</b> Increase community involvement and support for AIS prevention and management in the St. Croix River Basin.					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Identify and define a critical area in the Basin with a community disengaged from AIS issues.	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA WI DNR		future (\$6000)	2020
<b>Action 2.</b> In the defined critical area, identify: 1) ongoing efforts and practices to prevent, contain, and control AIS; 2) key community supporters and advocates; and 3) strategies for building community support and action around AIS issues.	Counties Lake Assoc. Local WMOs MN DNR NPS SCRA WI DNR			future (\$7500)	2020
<b>Action 3.</b> Collaboratively begin to implement the strategies above.	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA WI DNR		future (\$9000)	2021
<b>Action 4.</b> Continue or add AIS education into lake and river groups' annual meetings, and other community forums.	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA WI DNR		future (\$9000)	2021
<b>Action 5.</b> Encourage partners to target opinion leaders and engage them in AIS issues.	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA WI DNR		future (\$6000)	2021
<b>Action 6.</b> Focus the attention of the AIS Workgroup on advising and leading efforts to increase community involvement and buy-in on AIS issues. Consider developing a subcommittee to oversee this work if needed or desired.	Counties Lake Assoc. Local WMOs MN DNR	NPS SCRA WI DNR		future (\$15,000)	2021

<b>Strategy 3.</b> Periodically monitor the effectiveness of this Strategic Plan.					
	<i>Partners</i>		<i>Gaps</i>	<i>Funding</i>	<i>Timeline</i>
<b>Action 1.</b> Hold AIS Steering Committee meetings at least twice per year. The AIS Steering Committee will consist of core members from the AIS Workgroup.	Counties MN DNR NPS	SCRA WI DNR		ongoing	Bi-annually
<b>Action 2.</b> At these meetings, assess the progress towards the actions of this Strategic Plan and identify next steps if deliverables are not or are unsuccessfully produced.	Counties GLIFWC Lake Assoc. Local WMOs	MN DNR NPS SCRA WI DNR		ongoing	Bi-annually

## AIS of Concern for the St. Croix River Basin

The St. Croix River Association and its partners identified AIS of concern in the St. Croix River Basin using Wisconsin's NR-40 list of prohibited and restricted species as well as Minnesota's list of noxious weeds and AIS. Partners within the St. Croix River Basin identified 54 species of concern to the Basin: 14 invertebrates, 16 fish and fish pathogens, and 24 plants and algae. These species are of different levels of concern in different parts of the watershed, and in different types of waterbodies. Species are listed below (see Appendix K for species that were considered but did not make this list).

These species are not ranked. The AIS Workgroup discussed ranking species according to their threats and impacts within the watershed, with respect to prevention and control options, and decided against offering up rankings in this Plan.

Common name	Scientific name	MN Status (see Appendix I and J for definitions and statuses)	WI Status (see Appendix H and G for definitions and statuses)	Presence in subwatershed (X=present)			
				Lower St. Croix	Upper St. Croix	Kettle River	Snake River
<b>Invertebrates</b>							
Asian clam	<i>Corbicula fluminea</i>	Unregulated	Prohibited	X	-	-	-
Banded mystery snail	<i>Viviparus georgianus</i>	Regulated	Restricted	X	X	X	X
Bloody shrimp	<i>Hemimysis anomala</i>	Unregulated	Prohibited	-	-	-	-
Chinese mystery snail	<i>Cipangopaludina chinensis</i>	Regulated	Restricted	X	X	X	X
Faucet snail	<i>Bithynia tentaculata</i>	Proposed prohibited	Prohibited	-	-	-	-
Fishhook water flea	<i>Cercopagis pengoi</i>	Unregulated	Prohibited	-	-	-	-
Japanese mystery snail	<i>Cipangopaludina japonica</i>	Regulated	Restricted	-	X	-	-
New Zealand mud snail	<i>Potamopyrgus antipodarum</i>	Proposed prohibited	Prohibited	-	-	-	-
Quagga mussel	<i>Dreissena bugensis</i>	Prohibited	Prohibited	-	-	-	-
Red swamp crayfish	<i>Procambarus clarkii</i>	Prohibited	Prohibited	-	-	-	-
Rusty crayfish	<i>Orconectes rusticus</i>	Regulated	Restricted	X	X	X	X
Spiny waterflea	<i>Bythotrephes cederstroemi</i>	Regulated	Prohibited	-	X	-	-
Water flea	<i>Daphnia lumholtzi</i>	Unregulated	Prohibited	X	X	X	X
Zebra mussel	<i>Dreissena polymorpha</i>	Prohibited	Restricted	X	-	-	-

Fish and fish pathogens							
Bighead carp	<i>Hypophthalmichthys nobilis</i>	Prohibited	Prohibited	X	-	-	-
Black carp	<i>Mylopharyngodon piceus</i>	Prohibited	Prohibited	-	-	-	-
Common carp	<i>Cyprinus carpio</i>	Regulated	Restricted	X	X	-	-
Eastern mosquitofish	<i>Gambusia holbrooki</i>	Unregulated	Restricted	-	-	-	-
Grass carp	<i>Ctenopharyngodon idella</i>	Prohibited	Prohibited	-	-	-	-
Heterosporis	Heterosporis parasite	Unregulated	Unregulated	-	-	-	-
Round Goby	<i>Neogobius melanostomus</i>	Prohibited	Restricted	-	-	-	-
Rudd	<i>Scardinius erythrophthalmus</i>	Prohibited	Prohibited	-	-	-	-
Ruffe	<i>Gymnocephalus cernuus</i>	Prohibited	Restricted	-	-	-	-
Silver carp	<i>Hypophthalmichthys molitrix</i>	Prohibited	Prohibited	-	-	-	-
Snakehead	<i>Channidae</i>	Prohibited	Prohibited	-	-	-	-
Tench	<i>Tinca tinca</i>	Unregulated	Prohibited	-	-	-	-
VHS	<i>Viral hemorrhagic septicemia</i>	Unregulated	Unregulated	-	-	-	-
Western mosquitofish	<i>Gambusia affinis</i>	Prohibited	Restricted	-	-	-	-
White Perch	<i>Morone americana</i>	Prohibited	Restricted	-	-	-	-
Zander	<i>Sander lucioperca</i>	Prohibited	Prohibited	-	-	-	-
Plants and algae							
Bohemian knotweed	<i>Fallopia x bohemica</i>	Unregulated	Prohibited	-	-	-	-
Brazilian waterweed	<i>Egeria densa</i>	Regulated	Prohibited	-	-	-	-
Curlyleaf pondweed	<i>Potamogeton crispus</i>	Prohibited	Restricted	X	X	X	X
Didymo or rock snot	<i>Didymosphenia geminata</i>	Unregulated	Prohibited	-	-	-	-
Eurasian water milfoil	<i>Myriophyllum spicatum</i>	Prohibited	Restricted	X	X	X	X
European frogbit	<i>Hydrocharis morsus-ranae</i>	Prohibited	Prohibited	-	-	-	-
Flowering rush	<i>Butomus umbellatus</i>	Prohibited	Restricted	X	-	-	-
Garlic mustard	<i>Alliaria petiolata</i>	Restricted	Restricted	X	X	X	X
Giant knotweed	<i>Fallopia sachalinensis</i>	Specially regulated	Prohibited	X	X	-	-
Hybrid cattail	<i>Typha x glauca</i>	Unregulated	Restricted	X	X	X	X
Hydrilla	<i>Hydrilla verticillata</i>	Prohibited	Prohibited	-	-	-	-
Japanese hops	<i>Humulus japonicus</i>	Prohibited: Eradicate	Prohibited/ Restricted	-	-	-	-
Japanese knotweed	<i>Fallopia japonica</i> var. <i>japonica</i>	Specially regulated	Restricted	X	X	X	X
Narrow-leaf cattail	<i>Typha angustifolia</i>	Unregulated	Restricted	X	X	X	X
Oriental bittersweet	<i>Celastrus orbiculatus</i>	Prohibited: Eradicate	Restricted	X	-	-	-
Parrot feather	<i>Myriophyllum aquaticum</i>	Regulated	Prohibited	-	-	-	-
Phragmites	<i>Phragmites australis</i>	Prohibited: Restricted	Prohibited/ Restricted	X	X	X	X
Purple loosestrife	<i>Lythrum salicaria</i>	Prohibited	Restricted	X	X	X	X
Starry stonewort	<i>Nitellopsis obtusa</i>	Unregulated	Prohibited	-	-	-	-
Toxin-producing cyanobacteria	i.e., <i>Cylindrospermopsis raciborskii</i>	Unregulated	Prohibited	-	-	-	-
Water hyacinth	<i>Eichhornia crassipes</i>	Regulated	Prohibited	-	-	-	-
Water lettuce	<i>Pistia stratiotes</i>	Unregulated	Prohibited	-	-	-	-
Watercress	<i>Nasturtium officinale</i>	Unregulated	Unregulated	X	X	X	X
Yellow Iris	<i>Iris pseudocorus</i>	Regulated	Restricted	X	X	X	X

# Appendix A: St. Croix River Basin Background Information

*Background information on the St. Croix River Basin is compiled and summarized largely from the 2009 Conservation Action Plans produced by The Nature Conservancy for the Upper St. Croix River, Lower St. Croix River, Snake River, and Kettle River. For more information, please refer to those reports. Content on other sub-watersheds has been assembled by partners with expertise in those areas.*

The St. Croix River of Minnesota and Wisconsin is one of the last undisturbed, large floodplain rivers in the upper Mississippi River System. The St. Croix River originates at Upper St. Croix Lake in northwestern Wisconsin and flows approximately 165 miles until it reaches the Mississippi River at Prescott, WI. The upper 25 miles of the St. Croix River lie solely within Wisconsin. The remaining 140 miles delineate the boundary between Wisconsin and Minnesota. Much of the St. Croix River was designated a National Scenic Riverway by Congress in 1968 (upper) and 1972 (lower). The entire St. Croix River watershed comprises 7,760 square miles, and falls within 10 counties in Minnesota and 9 in Wisconsin. The St. Croix River Basin lies approximately 60% in Wisconsin and 40% in Minnesota.

## **Upper St. Croix River**

The Upper St. Croix River begins at Upper St. Croix Lake in northwestern Wisconsin and flows through a diverse landscape down to a hydroelectric dam at St. Croix Falls, WI. The Upper St. Croix River watershed covers over 1 million acres in Wisconsin and 350,000 acres in Minnesota. The watershed includes the St. Croix River and its tributaries upstream of the mouth of the Yellow River, as well as the Tamarack, Moose, Eau Claire, Namekagon, and Totagatic Rivers. The Upper St. Croix River is one of the original eight rivers designated as a Wild and Scenic River by federal legislation in 1964. Additionally, large segments of the Upper St. Croix River watershed are classified as Outstanding Resource Waters (ORW) by the state of Wisconsin, qualifying for a higher level of state water quality standards.

Overall, water quality of the Upper St. Croix watershed is among the best in the St. Croix River Basin. Additionally, this part of the Basin contains high quality natural ecosystems, including northern hardwoods with patchy wetlands, pine barrens, marshes, various mixed conifer-hardwood forests and swamps, sedge meadows, bog complexes, and major barrens. Aquatic systems range from low to moderate gradient headwaters to small rivers. Coldwater reaches are widespread and support wild trout and other coldwater species. Important aquatic species conservation targets include lake sturgeon, native brook trout, greater and river redhorse, gilt darter, and southern brook lamprey, as well as several mussel species listed as species of concern in Wisconsin and/or Minnesota.

## **Namekagon River**

The Namekagon River watershed covers 1,018 square miles in portions of Bayfield, Douglas, Sawyer, Washburn, and Burnett counties. The Totagatic River, in the northern part of the watershed, is a major tributary. The watershed contains numerous lakes, and supports a strong fishing and water sports culture.

The Namekagon River begins at Lake Namekagon in Bayfield county, and winds 98 miles to its confluence with the St. Croix River near Danbury, WI. The entire river is classified as Outstanding Resource Waters by the WI DNR, and is a National Wild and Scenic River and managed by the National Park Service. Approximately 65% of the watershed is forested, and 15% is wetland.

### **Lower St. Croix River**

The Lower St. Croix River is the section of the mainstem that begins at the hydroelectric dam at St. Croix Falls, WI, and travels all the way to Prescott, WI, to join the Mississippi River. The Lower St. Croix River is one of the most biologically diverse rivers in the Upper Mississippi River Basin and is especially notable for aquatic species diversity. Furthermore, this stretch is one of the premiere rivers for mussels in North America, and is an important refuge for endemic mussel communities. At least 40 species of mussel are known from the Lower St. Croix River, including Higgins' eye mussels and one of the only remaining viable populations of the endangered winged mapleleaf mussel.

The primary threat to the Lower St. Croix River comes from the significant development pressures it has been subject to over the past 20-30 years. While the St. Croix River's upper watersheds are relatively undeveloped and contain large parcels of public land, the Lower St. Croix River sits on the edge of the Minneapolis-St. Paul metropolitan area and is within easy commuting distance. The rapid population growth that has occurred over the past several decades has generated hundreds of acres of new construction each year. This development has led to a myriad of effects on both aquatic and terrestrial native ecosystems. Furthermore, water levels are dependent on releases through the hydroelectric dam, which supplies electricity to the surrounding area and new developments and puts additional stress on the river.

Two sub-watersheds within the Lower St. Croix include the Sunrise and Apple River watersheds.

### **Sunrise River**

The Sunrise River watershed covers 383 square miles in portions of Chisago, Washington, Anoka and Isanti counties in Minnesota. Major tributaries include the North Branch, West Branch and South Branch Sunrise Rivers, along with the Chisago Lakes Chain of Lakes. The watershed contains some of the premier recreational lakes in the northeast Twin Cities metro area including Forest Lake, Coon Lake and Chisago Lakes.

The watershed contains an abundance of water resources including lakes, wetlands, streams and rivers. These surface waters are important to the area providing not only ecological value, but social, recreational and economic value. Many local communities are centered on these aquatic resources. Recreational use of the watershed is high and brings in dollars through tourism. Land in the area, particularly water front property, is highly desirable and is an important source of revenue (via property taxes) for local governments. The vast majority of waterfront property is for permanent, year-round residency. The development within the area, including extensive development adjacent to water resources, puts great stress on water and habitat quality.

Unfortunately, degradation has occurred in many areas of the watershed. This has likely occurred due to several factors, including broad land use changes, development and point-

source pollution. Moreover, this area has the potential for extensive future development given its close proximity to the Twin Cities metropolitan area. Degradation of water quality will continue in the future with additional development, particularly if development progresses without careful management. This degradation will not only impact local water resources, but also the downstream St. Croix River.

The St. Croix River, downstream of the watershed, includes reaches with the endangered Higgins' eye and winged mapleleaf mussel. Early studies have identified the Sunrise watershed as having high loading yields for both phosphorus and total suspended solids. Substantial planning has been performed by State and local agencies to address nutrient and sediment concerns in areas of the St. Croix River downstream of the watershed. As such, addressing water quality problems in the watershed appears paramount to improving water quality in the St. Croix River.

### **Apple River**

The Apple River watershed covers 398 square miles in portions of Polk, Barron, and St. Croix counties in Wisconsin. The watershed is heavily impacted by nonpoint source pollution from agricultural and rural residential development. The landscape is dominated by forest in the north, and agriculture and grasslands in the south. The river itself is a warm water stream with a large recreational industry centered on tubing trips.

### **Kettle River**

The Kettle River originates in east central Minnesota and flows south 100 miles to its confluence with the St. Croix River in St. Croix State Park near Pine City, MN. Tributaries include the West Branch Kettle, Dead Moose, Split Rock, Moose Horn, Willow, Pine, and Grindstone Rivers. The entire watershed drains approximately 1,050 square miles. Overall, the Kettle River is an exceptional Minnesota tributary to the St. Croix River, boasting high biodiversity as well as some of the most impressive whitewater rapids in Minnesota and relatively good water quality.

Important systems in the watershed include headwater creeks and tributaries, small and medium river systems, inland deep lakes, shallow lakes, marshes, wet forests, wet meadows, and fire dependent, northern, and mesic hardwood forest system types. Aquatic systems range from perennial, low to moderate gradient coolwater streams to relatively high gradient small river systems. Some coldwater segments can be found in the extreme upper and lower Kettle River system. Additionally, some sections of the river are extremely deep, with pools (or "kettles") greater than 100 feet deep.

Most shallow lakes and marshes in the Kettle River watershed remain in natural condition with low levels of development. Inland deep lakes, however, are in great demand for recreation and seasonal and year-round housing and experience development pressures, fishing pressures, eutrophication and water quality degradation, and AIS infestations.

The diversity of habitat types make the river suitable habitat for many sport and nongame fish species, including many that are relatively intolerant of pollution and habitat degradation. The Kettle is home to a viable population of lake sturgeon, southern brook lamprey, gilt darter, beaver, muskrat, river otters, eagles, osprey, great blue herons, ducks, cerulean warblers, red-



shouldered hawks, Blanding's turtle, wood turtles, 17 species of mussels, and hundreds of other species.

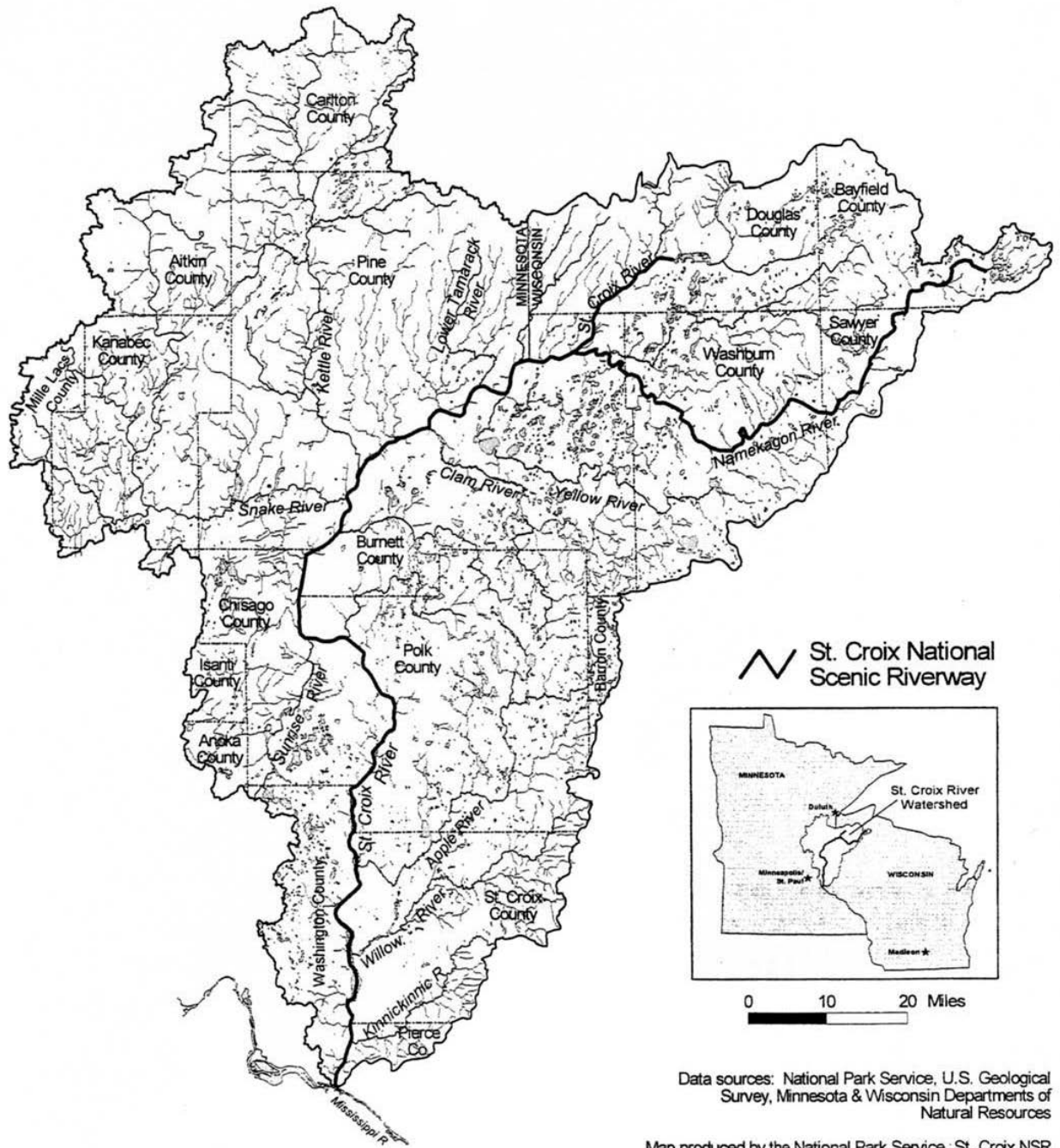
### **Snake River**

The Snake River is a small to medium size tributary river to the St. Croix River that covers just over 1,000 square miles in east-central Minnesota. Important systems in the watershed include headwater creeks, small and medium river systems, inland deep lakes, shallow lakes and marshes, wet forest and wet meadow systems, large intact wetlands (including rich and poor fens, sedge meadows, and swamps), and extensive peatlands, as well as fire dependent, northern, and mesic hardwood forest system types. Aquatic systems range from low to moderate gradient coolwater streams to relatively high gradient small river systems.

Most shallow lakes and marshes in the Snake River watershed are in relatively natural condition, while inland deep lakes are in great demand for recreation and seasonal and year-round housing. As a result, those deeper lakes are subject to development pressures, fishing pressures, and AIS infestations.

The Snake River is home to relatively intact and regionally significant mussel and fish faunas. The river has as many as 65 fish species, including lake sturgeon and gilt darter. It is also home to at least 15 species of freshwater mussels, including abundant and viable populations of several species listed in Minnesota and Wisconsin as state species of concern. Other species in the river include southern brook lamprey, cerulean warblers, red-shouldered hawks, and coolwater and warmwater fish assemblages.

# Appendix B: Map of the St. Croix River Basin



# Appendix C: Past and Current AIS Management Practices in the St. Croix River Basin

The management of AIS issues and concerns in the St. Croix River Basin occurs at varying levels, from national to statewide to local, and consists of preventive policy framework supported by local monitoring/surveying efforts to contain known AIS populations. Below are descriptions of some of the ongoing management practices.

## **Project RED & AIS Snapshot Day**

Project RED (Riverine Early Detectors) and AIS Snapshot Day are volunteer programs for citizen groups to learn AIS identification and become early detectors.

In Project RED, citizens learn which invasive species threaten local rivers, how to differentiate them from native look-alikes, and how to keep an eye out for them by canoe, kayak, or on foot. Participants attend a training session to learn how to identify 21 AIS and commit to monitoring different parts of the river throughout the summer.

During AIS Snapshot Day, volunteers learn to identify and search for invasive species including released aquarium and garden plants that could choke out our rivers and streams if undetected.

## **Surveying and Monitoring**

Many partners within the St. Croix River Basin are engaged in active surveying and monitoring efforts for AIS detection. In Wisconsin, state and county staff follow the Early Detection Smart Prevention Protocol. The protocol is an extensive effort to monitor for AIS involving meandering the shoreline, throwing rakes to examine the aquatic plant community, using an Ekman dredge to determine presence or absence of spiny water fleas, using zooplankton tows to determine presence or absence of zebra mussels, and snorkeling.

### *NPS zebra mussel monitoring*

The National Park Service monitors zebra mussel populations in the Lower St. Croix from year to year. Populations are monitored through several means:

- 1) Placing caged cinderblocks at 10 different locations along the length of the river from Stillwater to Prescott in the spring and retrieving them in early fall. This indicates zebra mussel presence, and zebra mussel numbers can be compared to indicate relative abundance.
- 2) Checking dry docked boats in marinas along the lower St. Croix during the fall for zebra mussels to determine year-to-year and location-related population trends.
- 3) Monitoring of 15 nearby inland lakes in the river basin for presence or absence of zebra mussels using a plankton net.
- 4) Quantitative measurement of veliger presence at 7 locations from Prescott to the Snake River on the St. Croix, and one location on the Mississippi in partnership with the Corps of Engineers.

- 5) Sampling at 5-6 locations in the lower St. Croix to determine the concentration of veligers and observe their size class distribution in partnership with the Minnesota Aquatic Invasive Species Research Center (MAISRC).

#### *Algae Alert Network*

In the past five years, reports of large blue-green algae blooms have increased along the St. Croix River. Resource managers are concerned that these algae, also known as cyanobacteria, have the capacity to threaten public health and significantly impact recreational opportunities through the formation of toxic algal blooms. Several strains of cyanobacteria already found in the St. Croix River and Lake St. Croix are linked to the production of toxins. Contact with these bacteria can result in contact dermatitis, flu-like symptoms, and even neurotoxicity in people, pets, and livestock.

To monitor these blooms, SCRA has teamed up with) NPS managers and U.S. Geological Survey (USGS) scientists to train, recruit, and rely on citizen scientists in the Algae Alert Network. Citizen scientists in the Algae Alert Network collect water samples that allow scientists to understand when and where algae blooms happen and how and under what conditions harmful blooms develop. This information allows resource managers to respond to the harmful blooms, and get information out to the public.

#### *Citizen Lake Monitoring Network*

The Citizen Lake Monitoring Network (CLMN) is a partnership between the WI DNR and volunteers to collect information on Wisconsin's water bodies. Included in the program is a module on AIS. Volunteers learn how to identify and report AIS, and are crucial for early detection of AIS throughout the state.

#### **Boat Inspection Programs**

With growing concern over the spread of AIS throughout the upper Midwest, many communities are looking for ways to protect their waters. Boat inspection programs are one opportunity to actively prevent the spread of AIS.

In Minnesota, inspections are done through the Watercraft Inspection Program. The Watercraft Inspection Program dates back to 1992 and aims to prevent the spread of invasive species through boater education, watercraft inspections, and watercraft decontaminations at public water accesses. Inspectors are DNR authorized and can prohibit the launching or operation of water-related equipment if a person refuses to allow an inspection or does not remove water or AIS. There are two tiers of inspectors: Level I inspectors inspect watercraft visually and tactilely and can deny access, and Level II inspectors have those authorizations and are also trained to use decontamination equipment. Citizens who are interested in informing the public about AIS and how to slow their spread can receive volunteer training from the Watercraft Inspection Program staff.

In Wisconsin, inspections are done through the "Clean Boats, Clean Waters" (CBCW) Watercraft Inspection Program. CBCW was created in 2003, and promotes water resource stewardship by actively involving individuals in preventing the spread of harmful AIS. To accomplish this goal, the program sponsors statewide training workshops and has developed resource handbooks, tool

kits, and educational information. Inspectors are trained volunteers who provide information to watercraft operators and can assist in watercraft inspections if requested. In Wisconsin, many lake organizations, associations, and districts have both paid and unpaid CBCW inspectors.

#### *Landing Blitz and Drain Campaign*

Many Wisconsin boat inspectors participate in the Landing Blitz and Drain Campaign. The Landing Blitz occurs over the Fourth of July weekend, and involves a big push for inspectors to staff their landings. In addition to covering as many landings as possible, inspectors hand out *Stop Aquatic Hitchhikers* towels to boaters. The Drain Campaign occurs during the second weekend in June. During the Drain Campaign, boat inspectors encourage boaters to drain all water from their boats, trailers, vehicles, livewells, and any other equipment. Inspectors encourage boaters to put their fish on ice and distribute ice packs to anglers.

# Appendix D: Agreement with other AIS Strategic Plans that Exist in the St. Croix River Basin

## GOAL 1

### Strategy 1

#### Bayfield County, WI

- Goal A, Objective 2: Develop training for use of new DNR and other technology based tools to track and prevent AIS.
- Goal A, Objective 3: Develop and incorporate AIS Educational displays at public places.
- Goal A, Objective 4: Expand AIS outreach to include more field activities with more diverse groups.
- Goal A, Objective 5: Continue participation with schools within county and expand successful school programs to other schools in county.

#### Burnett County, WI

- Objective A/ B/ C, Activity: Invasive species education

#### Douglas County, WI

- Goal 2, Objective 2a: Promote and support AIS education to raise awareness about AIS issues in the county with all audiences.

#### Minnesota, State of

- Element I, Strategy 8, Action a: Use existing or develop specific messages and actions (e.g., guidelines) for priority audiences (e.g., commercial horticultural trade, recreational boaters, construction companies that use barges, biological supply houses, the pet trade especially in aquatic organisms, firewood sales, and logging industries).
- Element I, Strategy 8, Action b: Participate in state, regional, national evaluation efforts of priority audiences to determine the effectiveness of outreach efforts (e.g., boater survey). Use the survey information to improve outreach plans and actions.
- Element I (Prevention), Strategy 8 (Public Awareness), Action d: Observe Invasive Species Month with proclamations and visibility events.
- Element I, Strategy 8, Action e: Develop and distribute invasive species identification informational materials (e.g. TNC's invasive plant card, MNSGP wallet cards).
- Element I, Strategy 8, Action g: Support K-12, non-formal, and informal youth education through development and use of lesson plans and curricula, as well as through special events (e.g., county fairs, water festivals).
- Element II, Strategy 1, Action b: Raise awareness of priority species of concern as well as "watch" species by developing and distributing information about how to recognize, collect, and report various invasive species (e.g., reporting card, hot list of priority species, ID cards) to people identified in Action a.
- Element II, Strategy 8, Action b: Provide presentations, training, and assistance to lake associations and other organizations interested in setting up access awareness and other events.
- Element II, Strategy 8, Action c: Encourage /use /support local awareness events and private access awareness activity throughout the state.
- Element II, Strategy 8, Action d: Develop annual communication plans and prepare, distribute, and use various media (e.g., radio and TV ads, brochures) and signs according to the plans.
- Element II, Strategy 8, Action e: Inform buyers and sellers of plants and wild animals of how they can help prevent the release or escape of invasive species and comply with state and federal laws.
- Element II, Strategy 8, Action f: Inform appropriate business (e.g., home builders associations, developers) and government staff (e.g., county planners and Soil and Water Conservation Districts) of how they can help prevent the spread of invasive species.
- Element II, Strategy 8, Action g: Publicize new infestations to raise awareness aimed at preventing and containing spread.
- Element IV, Strategy 2, Action c: Communicate with and use the Minnesota Environmental Education Board and the Minnesota Science Teachers Association to assist in education program development for K-12, non-formal and informal learning about invasive species.

#### Polk County, WI

- Goal 1, Objective 1, Action 2: Assist in set up and maintenance of statewide prevention programs – Clean Boats, Clean Waters, Landing Blitz, Bait Dealer Initiative, and Drain Campaign.
- Goal 3, Objective 1, Action 1: Organize and conduct Citizen Lake Monitoring Network AIS Workshops.
- Goal 3, Objective 1, Action 2: Organize and conduct Project RED Workshops.
- Goal 3, Objective 1, Action 3: Organize and conduct the AIS Bridge Snapshot Day Training.
- Goal 3, Objective 1, Action 4: Promote opportunities for engagement on websites (Polk County, PCALR, WDNR, Wisconsin Lakes, SCRA).
- Goal 4, Objective 1, Action 1: Distribute press releases, information, and articles to local papers/radios, PCALR, and county lake organizations.
- Goal 4, Objective 1, Action 2: Distribute AIS brochures at local businesses, bait stores, and public spaces.
- Goal 4, Objective 1, Action 3: Work with partner groups to develop a high quality, eye catching, portable AIS traveling display that can be checked out by local groups.
- Goal 4, Objective 1, Action 4: Install a billboard with AIS messaging on major travel routes into Polk County.
- Goal 4, Objective 1, Action 5: Consider the inclusion of AIS information in the Polk County Tourism Guide and other county publications and mailings.
- Goal 4, Objective 1, Action 6: Provide up-to-date AIS information on the Polk County website.
- Goal 4, Objective 1, Action 7: Use social media such as Facebook, PCALR email and news list serves, and websites to expand messaging.
- Goal 4, Objective 1, Action 8: Explore additional ways to expand messaging and highlight efforts such as geo-fencing (ads that pop up based on proximity to an infested waterbody, Washington County, MN).
- Goal 4, Objective 1, Action 9: Provide AIS information as a featured guest on local radio programs.
- Goal 4, Objective 2, Action 1: Present an AIS display at county events (County Fair, local festivals, fishing tournaments, local radio stations, etc.).
- Goal 4, Objective 2, Action 2: Provide education to Polk County schools, libraries, civic groups, camps, bait stores, etc.
- Goal 4, Objective 2, Action 3: Provide lake organizations with an AIS display for meetings and/or attend lake organization annual meetings as a presenter.
- Goal 4, Objective 2, Action 4: Provide trainings to assist volunteers in identifying aquatic invasive species and their native look-alikes.
- Goal 4, Objective 2, Action 5: Explore opportunities for providing education for fishing tournaments, focusing on when tournaments are registered.
- Goal 4, Objective 3, Action 2: Support local efforts to install or update kiosks with AIS information.
- Goal 4, Objective 3, Action 3: Assist local efforts to create, print, and distribute individualized waterproof lake maps with AIS information.
- Goal 4, Objective 3, Action 4: Support statewide programs with educational components: Clean Boats, Clean Waters, the Landing Blitz, and the Drain Campaign.

#### Washburn County, WI

- Goal 1, Objective A: Conduct a mass media campaign to inform and educate residents, businesses, and visitors about AIS.
- Goal 1, Objective B: Undertake a targeted educational effort on AIS in order to reach specific key audience.
- Goal 1, Objective C: Provide information regarding grant funding opportunities available.

#### **Strategy 2**

##### Minnesota, State of

- Element I, Strategy 1, Action c: Identify known and additional pathways of introduction, evaluate their level of risk, and rank the relative level of risk of pathways on a continuing basis.

#### **Strategy 3**

##### Burnett County, WI

- Objective A/B/C, Action: Do Not Transport Ordinance

##### Minnesota, State of

- Element I, Strategy 5, Action h: Train federal, tribal, and state enforcement officers on federal, tribal, state invasive species regulations to facilitate cooperative enforcement efforts.

#### Polk County, WI

- Goal 1, Objective 1, Action 4: Partner with local law enforcement to provide augmented enforcement of AIS laws and ordinances.
- Goal 1, Objective 1, Action 5: Increase presence of WDNR Water Guard.

#### **Strategy 4**

##### Bayfield County, WI

- Goal A, Objective 1: Expand CBCW watercraft inspection efforts.

##### Burnett County, WI

- Objective A/B, Action: Clean Boats, Clean Waters and Landing Cameras.

##### Douglas County, WI

- Goal 1, Objective 1a: Support and encourage watercraft inspection programs at landings in the county.
- Goal 1, Objective 1b: Provide AIS education at boat landings.

##### Minnesota, State of

- Element I, Strategy 8, Action c: Use enforcement according to the MN DNR statewide Invasive Species Enforcement Plan and watercraft inspectors to inform boaters entering state waters about invasive species, state regulations, and precautions for boaters.
- Element II, Strategy 8, Action a: Conduct watercraft inspections at public water accesses with priority given to infested waters, waters with high boater activity, proximity to existing infestations, and where there are local sponsors.

#### Polk County, WI

- Goal 1, Objective 1, Action 1: Organize and conduct Clean Boats, Clean Waters trainings.
- Goal 1, Objective 1, Action 2: Assist set up and maintenance of statewide prevention programs: Clean Boats, Clean Waters, Landing Blitz, Bait Dealer Initiative, and Drain Campaign.
- Goal 1, Objective 1, Action 3: Support local efforts to install electronic monitoring and information devices, such as ILIDS cameras and motion-activated recorded messages at public boat landings to monitor and educate about AIS.
- Goal 1, Objective 1, Action 5: Increase presence of WI DNR Water Guard.
- Goal 1, Objective 1, Action 6: Determine the feasibility of watercraft washing sites, especially along the county border.

#### Washburn County, WI

- Goal 2, Objective A: Encourage watercraft inspection programs at boat landings within the county.
- Goal 4, Objective C: Implement a watercraft inspection program at boat landings with AIS infested waters.

#### **Strategy 5**

##### Douglas County, WI

- Goal 1, Objective 1b: Provide AIS education at boat landings.

##### Polk County, WI

- Goal 1, Objective 1, Action 7: Create an inventory of public boat landing AIS signs and install signs when necessary.
- Goal 1, Objective 1, Action 8: Consider developing infestation indication signs to alert users that AIS are present in specific waterbodies.
- Goal 4, Objective 3, Action 1: Install AIS signs at public boat landings.

##### Washburn County, WI

- Goal 2, Objective B: Report inventory of inadequate AIS signage at boat landings to the WI DNR.

## **GOAL 2**

#### **Strategy 1**

##### Bayfield County, WI

- Goal B, Objective 1: Survey target lakes.
- Goal B, Objective 2: Survey target water ways.



- Goal B, Objective 4: Survey state and county natural areas for AIS presence and coordinate control with land managers.
- Goal B, Objective 5: Coordinate surveys and management of waterbodies that contain AIS.
- Goal C, Objective 1: Map locations of invasive species.
- Goal C, Objective 2: Track progress of control, spread, or possible elimination of AIS.
- Goal C, Objective 3: Encourage Citizen Reporting of AIS using new online tools.

#### Burnett County, WI

- Objective A/B/C, Action: Plant inventories and APM plans.
- Objective A/B, Action: Monitor aquatic invasive species.
- Objective A/B/C, Action: Track invasive species infestations.

#### Douglas County, WI

- Goal 1, Objective 1c: Promote citizen action and assistance to detect, control, or, where possible, eradicate known AIS infestations. Promote and support early detection and rapid response.

#### Minnesota, State of

- Element II, Strategy 1, Action g: Conduct field surveys for priority invasive species and monitor invasive species populations.
- Element II, Strategy 1, Action j: Establish new or use existing citizen volunteer monitoring networks for early detection of terrestrial and aquatic invasive species.
- Element II, Strategy 13: Monitor spread - Monitor the spread of invasive species within Minnesota.

#### Polk County, WI

- Goal 3, Objective 2, Action 1: Implement statewide monitoring protocols on Polk County lakes, rivers, and streams.
- Goal 3, Objective 2, Action 2: Adapt the Early Detection Smart Prevention Protocol to monitor the St. Croix River, an AIS Source Water.
- Goal 3, Objective 3, Action 1: Monitor for Eurasian water milfoil near where this species occurs: the Upper Apple River, Beaver Brook, Trade River, and Wolf Creek Watersheds.
- Goal 3, Objective 3, Action 2: Monitor for zebra mussels near where this species already occurs: the Horse Creek Watershed.
- Goal 3, Objective 3, Action 3: Respond to any new AIS reaching Polk County by monitoring nearby waterbodies.
- Goal 3, Objective 4, Action 1: Ensure citizens are knowledgeable in using the WI DNR statewide database, SWIMS.
- Goal 3, Objective 4, Action 2: Voucher undocumented specimens according to WI DNR procedures.

#### Washburn County, WI

- Goal 2, Objective C: Encourage AIS monitoring and prevention for special events held on lakes.
- Goal 3, Objective A: Encourage and support local efforts to monitor waters for the presence of AIS.
- Goal 3, Objective B: Establish programs and/or protocol for county departments and municipalities who work on or near lakes to assist in monitoring and reporting AIS.
- Goal 3, Objective C: Maintain an inventory of AIS within the LWCD.

### **Strategy 2**

#### Bayfield County, WI

- Goal A, Objective 6: Provide public and partners AIS updates to stay apprised of the latest AIS threats, management being done, and success stories.
- Goal D, Objective 5: Create new meaningful partnerships with other groups focused on conservation.

#### Minnesota, State of

- Element III, Strategy 2, Action b: Technical experts will maintain contact with other researchers and managers working on management of invasive species.
- Element III, Strategy 2, Action c: Continue to monitor findings of national and international research on invasive species control through research conferences, publications, and other venues.
- Element IV, Strategy 3, Action a: Seek input from local entities to determine what will work best for them in developing local partnerships.
- Element IV, Strategy 4: Regional entities – Participate in regional invasive species panels, boards, workshops, meetings, and events to facilitate interstate cooperation and coordination (e.g., Mississippi River Basin Panel on ANS, Great Lakes Panel on ANS, Great Lakes Sea Grant Network, Midwest Invasive Plant Network).

- Element IV, Strategy 5: Neighboring states and provinces - Maintain ongoing communication and collaboration with entities in neighboring states and provinces that are involved with invasive species prevention and management.
- Element IV, Strategy 6: National entities – Participate in national invasive species panels, boards, workshops, and events to facilitate national cooperation and coordination (e.g., National Invasive Species Council, FICMNEW, Aquatic Nuisance Species Task Force).
- Element IV, Strategy 7: International entities - Work with appropriate entities to coordinate with international entities (e.g., State Department, IJC, USDA-APHIS-PPQ).

Polk County, WI

- Goal 5, Objective 3, Action 1: Consider the formation of an AIS Steering Committee, either at the county, watershed, or regional level, including Minnesota.

Washburn County, WI

- Goal 2, Objective D: Maintain a communication line between the county, state, and federal agencies.

**Strategy 3**

Minnesota, State of

- Element II, Strategy 6, Action b: Evaluate and implement the use of chemical, biological and/or mechanical methods to eradicate recently detected and isolated invasive species populations.

**Strategy 4**

Polk County

- Goal 3, Objective 4, Action 4: Explore the need for a Polk County AIS database.

## GOAL 3

**Strategy 1**

Bayfield County, WI

- Goal B, Objective 6: Contact riparian property owners and work with them to manage prohibited species.
- Goal D, Objective 2: Assist citizen organizations in management of AIS.

Douglas County, WI

- Goal 1, Objective 1c: Promote citizen action and assistance to detect, control, or, where possible, eradicate known AIS infestations. Promote and support early detection and rapid response.

Polk County, WI

- Goal 2, Objective 1, Action 1: Support individual waterbody group actions to accomplish control efforts.
- Goal 2, Objective 3, Action 1: Implement the statewide purple loosestrife biocontrol project, involving citizens whenever possible.
- Goal 2, Objective 3, Action 2: Provide training and equipment to citizens for giant and Japanese knotweed control.

**Strategy 2**

Minnesota, State of

- Element III, Strategy 4, Action a: Consult with and listen to the needs of local units of government to foster two-way communication regarding local concerns about invasive species.
- Element III, Strategy 4, Action b: Provide technical advice to federal, state, and local units of government, and non-governmental organizations who are controlling invasive species. (e.g., presenting lectures for various groups, attending meetings at different agencies, producing articles, newsletters, and other literature about effective management of invasive species.)
- Element III, Strategy 4, Action d: Consult national management plans for strategies, actions and information that would be useful in developing effective management plans and activities in the state.

### Strategy 3

#### Douglas County, WI

- Goal 1, Objective 1e: Use current research, best management practices, and best technologies to minimize AIS threats, control and manage infestations, and restore biodiversity in aquatic communities.

#### Minnesota, State of

- Element III, Strategy 2, Action a: Develop and revise IPM plans for individual high priority invasive species and when available refer to national invasive species management plans for strategies and actions.
- Element III, Strategy 3, Action a: Use integrated pest management to control populations of high priority invasive species (as identified in the species management /IPM plans, if they have been written).

#### Polk County, WI

- Goal 2, Objective 2, Action 1: Respond to new AIS populations using best practices, including the WI DNR Rapid Response Framework.
- Goal 2, Objective 2, Action 2: Conduct initial monitoring in response to new infestations, including bed mapping and aquatic plant point intercept surveys.
- Goal 2, Objective 2, Action 3: Eradicate new and pioneer AIS populations, if possible.
- Goal 2, Objective 3, Action 1: Implement the statewide purple loosestrife biocontrol project, involving citizens whenever possible.

#### Washburn County, WI

- Goal 4, Objective B: Provide expertise on the available AIS management options and funding via website or information at easily accessible locations.

## GOAL 4

### Strategy 1

#### Douglas County, WI

- Goal 4, Objective 4a: Pursue potential funding sources and partners to implement and meet the goals and objectives in the Strategic Plan.
- Goal 4, Objective 4b: County participation improves the likelihood of getting AIS funding.

#### Minnesota, State of

- Element I, Strategy 11, Action a: Seek or provide additional funds to implement unfunded actions in the Statewide Management Plan for Invasive Species.
- Element I, Strategy 11, Action b: Maintain partnerships with agencies, academic institutions, non-government organizations, local communities, and others to seek and leverage funds from appropriate sources.
- Element II, Strategy 1, Action h: Provide and seek funding for survey, outreach, and monitoring when appropriate.
- Element II, Strategy 11, Action a: Seek additional funds to implement unfunded actions in the Statewide Management Plan for Invasive Species (for example request Federal funds as authorized by the National Invasive Species Act).
- Element II, Strategy 11, Action b: Maintain partnerships with agencies, academic institutions, non-governmental organizations, and others to seek funds from appropriate sources.
- Element II, Strategy 17, Action a: Seek funding to design, conduct, and implement evaluation using qualitative and quantitative assessment instruments (e.g., questionnaires, surveys).
- Element II, Strategy 17, Action b: Collaborate with agencies, academic institutions, non-governmental organizations, business and industry, and others to provide access to those audience pathways.
- Element III, Strategy 5, Action c: Conduct, fund, and support experiments to test the efficacy of existing and develop new potential control methods, and preferably selective so they minimize harm to native species.
- Element III, Strategy 5, Action d: Provide funding for research on high priority species per species plans (e.g., population genetics work, reproductive ecology of flowering rush).
- Element III, Strategy 5, Action e: Seek and leverage funding for research related to management of priority invasive species (e.g., biocontrol of buckthorn and garlic mustard; studies of impacts).
- Element III, Strategy 7, Action a: Identify appropriate sources and seek funding and cooperation for management work.
- Element III, Strategy 7, Action b: Seek perpetual funding for management projects.

- Element III, Strategy 7, Action c: Work with local, conservation, environmental, and non-governmental organizations that may be willing and able to assist in seeking funding invasive species prevention and eradication efforts.
- Element IV, Strategy 3, Action c: Provide grants that encourage involvement in prevention and management of invasive species at local levels.

#### Polk County, WI

- Goal 5, Objective 1, Action 1: Apply for WI DNR AIS Education, Prevention, and Planning Grants to continue a county program.
- Goal 5, Objective 1, Action 2: Apply for WI DNR AIS Early Detection and Response and Maintenance and Containment Grants.
- Goal 5, Objective 1, Action 3: Leverage current partner efforts to strengthen grant applications.
- Goal 5, Objective 1, Action 4: Identify additional funding sources and partners to expand opportunities for action.
- Goal 5, Objective 2, Action 1: Provide grant reminders and information to local organizations.
- Goal 5, Objective 2, Action 2: Support local AIS Control Grant applications.
- Goal 5, Objective 2, Action 3: Provide template Rapid Response Plans on the PCALR website to assist Control Grant applications.

#### Washburn County, WI

- Goal 1, Objective D: Provide information regarding grant funding opportunities available.
- Goal 4, Objective B: Provide expertise on the available AIS management options and funding via website or information at easily accessible locations.
- Goal 6, Objective A: Continue to seek funding for staff and AIS activities.

## Appendix E: AIS Strategic Planning Workgroup Meetings

September 17, 2014  
2 – 4 pm  
St. Croix Falls, WI  
Total attendance: 6

March 4, 2015  
9:30 am – 12 pm  
St. Croix Falls, WI  
Total attendance: 21

February 24, 2016  
10 am – 12 pm  
St. Croix Falls, WI  
Total attendance: 10

October 30, 2014  
10 am – 12 pm  
St. Croix Falls, WI  
Total attendance: 17

April 9, 2015  
9:30 am – 12 pm  
St. Croix Falls, WI  
Total attendance: 16

June 8, 2016  
9 am – 12 pm  
Grantsburg, WI  
Total attendance: 15

December 5, 2014  
9 am – 3:30 pm  
Grantsburg, WI  
Total attendance: 28

June 26, 2015  
10 am – 12 pm  
St. Croix Falls, WI  
Total attendance: 15

September 21, 2016  
10 am – 12 pm  
St. Croix Falls, WI  
Total attendance: 9

January 28, 2015  
10 am – 12 pm  
St. Croix Falls, WI  
Total attendance: 17

December 2, 2015  
10 am – 12 pm  
St. Croix Falls, WI  
Total attendance: 17

## Appendix F: AIS Strategic Planning Public Discussions

### **Washington County**

Thursday, July 9, 2015  
4 – 6 pm  
Washington County Government  
Center  
Lower Level Room 16  
14949 62<sup>nd</sup> St. N.  
Stillwater, MN 55082  
Total attendance: 10

### **Chisago County**

Monday, July 20, 2015  
7 – 9 pm  
North Branch Public Library  
Conference Room  
6355 379<sup>th</sup> St.  
North Branch, MN 55056  
Total attendance: 14

### **Washburn County**

Tuesday, August 4, 2015  
5 – 7 pm  
Spooner Agricultural Research  
Station  
Meeting Room  
W6646 WI-70  
Spooner, WI 54801  
Total attendance: 7

### **Pine County**

Thursday, August 13, 2015  
4 – 6 pm  
Sandstone Public Health Building  
1610 Highway 23  
Sandstone, MN  
Total attendance: 11

### **St. Croix County**

Thursday, August 20, 2015  
5:30 – 7:30 pm  
Hudson Area Library  
Meeting room 219  
700 First Street  
Hudson, WI 54016  
Total attendance: 5

### **Burnett County**

Thursday, August 27, 2015  
5 – 7 pm  
Burnett County Government  
Center  
Room 165  
7410 Co. Hwy K  
Siren, WI 54872  
Total attendance: 3

### **Polk County**

Thursday, September 10, 2015  
6 – 8 pm  
Polk County Justice Center  
1005 W Main St.  
Balsam Lake, WI 54810  
Total attendance: 3

### **Bayfield County**

Monday, September 14, 2015  
5 – 7 pm  
Barnes Town Hall  
Barnes, WI 54873  
Total attendance: 10

# Appendix G: AIS in Wisconsin

## INVASIVE SPECIES DEFINITION

**Invasive species** are species that the Department of Natural Resources has listed under s. NR 40.04 (2) as likely to survive and spread if introduced into the state of Wisconsin, potentially causing economic or environmental harm or harm to human health.

**Prohibited invasive species** are invasive species which are not found in the state or in that part of the state where listed as "Prohibited." This excludes small stands, isolated individuals, or isolated watersheds. Statewide or regional eradication may be feasible for prohibited species.

**Restricted invasive species** are already established in the state or in that part of the state where listed as "Restricted." Statewide or regional eradication or containment may not be feasible for restricted species.

## WISCONSIN LAW

### Transportation

- It is unlawful to transport, possess, transfer, or introduce a prohibited or restricted invasive species.
- It is unlawful to transport any material identified as having the potential for carrying an invasive species from a DNR infestation control zone, a DATCP quarantine area, or a USDA APHIS quarantine area.
- It is unlawful to introduce a nonnative algae or cyanobacteria species in any water in the state.

### Water and Aquatic Plant Transfer

- A person leaving state waters must remove all aquatic plants or animals attached to any vehicle or equipment immediately after removal from the water, and before leaving a boat launch or associated parking area.
- A person leaving state waters must drain all water from any vehicle or equipment (i.e., live well, boat motor) immediately after removal from the water, and before leaving a boat launch or associated parking area.
- A person transporting any vehicle or equipment for use on state waters must first remove all attached aquatic plants and aquatic animals and drain all water.
- It is unlawful to operate a vehicle, watercraft, or other object of any kind in any wetland or non-navigable state waters if the vehicle, watercraft, or other object, has an aquatic plant or aquatic animal attached to the exterior.

### Fish and Crayfish

- It is unlawful to fail to notify the DNR of the escape of a restricted invasive fish species within 24 hours.
- It is unlawful to use a live prohibited fish invasive species as fishing bait.
- It is unlawful to use live non-native crayfish for bait on inland or outlying waters.
- It is unlawful to move live fish away from a waterbody.

# Appendix H Wisconsin Ch. NR 40 Invasive Species List

## EFFECTIVE LISTING DATE

September 1, 2009

June 1, 2011

May 1, 2015

## Algae and Cyanobacteria

### *Prohibited category*

1. *Caulerpa taxifolia* (Killer algae)
2. *Cylindrospermopsis raciborskii* (Cylindro, cyanobacteria)
3. *Didymosphenia geminata* (Didymo or rock snot) (except in Lake Superior)
4. *Nitellopsis obtusa* (Starry stonewort, alga)
5. *Prymnesium parvum* (Golden alga)
6. *Stigonematales* spp. (Novel cyanobacterial epiphyte of the order Stigonematales linked with avian vacuolar)
7. *Ulva* species (including species previously known as *Enteromorpha* species)

### *Restricted category*

None.

## Plants

### *Prohibited category*

1. *Achyranthes japonica* (Japanese chaff flower)
2. *Akebia quinata* (Fiveleaf akebia or Chocolate vine)
3. *Ampelopsis brevipedunculata* (Porcelain berry) (including the variegated cultivar)
4. *Arundo donax* (Giant reed)
5. *Azolla pinnata* (Mosquito fern)
6. *Berberis vulgaris* (Common barberry)
7. *Cabomba caroliniana* (Fanwort, Carolina fanwort)
8. *Cardamine impatiens* (Narrow leaf bittercress)
9. *Celastrus loeseneri* (Asian loeseneri bittersweet)
10. *Centaurea diffusa* (Diffuse knapweed)
11. *Centaurea repens* (Russian knapweed)
12. *Centaurea solstitialis* (Yellow star thistle)
13. *Crassula helmsii* (Australian swamp crop or New Zealand pygmyweed)
14. *Cytisus scoparius* (Scotch broom)
15. *Digitalis lanata* (Grecian foxglove)
16. *Dioscorea batatas* or *Dioscorea polystacha* (Chinese yam)
17. *Dioscorea oppositifolia* (Indian yam)
18. *Egeria densa* (Brazilian waterweed or wide-leaf anacharis)
19. *Eichhornia azurea* (Anchored water hyacinth)
20. *Eichhornia crassipes* (Water hyacinth, floating)
21. *Fallopia sachalinensis* or *Polygonum sachalinense* (Giant knotweed)



22. *Fallopia x bohemicum* or *F. x bohémica* or *Polygonum x bohemicum* (Bohemian knotweed)
23. *Glossostigma cleistanthum* (Mudmat)
24. *Heracleum mantegazzianum* (Giant hogweed)
25. *Hydrilla verticillata* (Hydrilla)
26. *Hydrocharis morsus-ranae* (European frogbit)
27. *Hydrocotyle ranunculoides* (Floating marsh pennywort)
28. *Hygrophila polysperma* (Indian Swampweed)
29. *Impatiens glandulifera* (Policeman's helmet)
30. *Ipomoea aquatica* (Water spinach, swamp morning-glory)
31. *Lagarosiphon major* (Oxygen-weed, African elodea or African waterweed)
32. *Lepidium latifolium* (Perennial or broadleaved pepperweed)
33. *Lespedeza cuneata* or *Lespedeza sericea* (Sericea or Chinese lespedeza)
34. *Limnophila sessiliflora* (Asian marshweed)
35. *Lonicera japonica* (Japanese honeysuckle)
36. *Lythrum virgatum* (Wanded loosestrife)
37. *Microstegium vimineum* (Japanese stilt grass)
38. *Myriophyllum aquaticum* (Parrot feather)
39. *Najas minor* (Brittle naiad, or lesser, bushy, slender, spiny or minor naiad or waternymph)
40. *Nelumbo nucifera* (Sacred Lotus)
41. *Nymphoides peltata* (Yellow floating heart)
42. *Oenanthe javanica* (Java waterdropwort or Vietnamese parsley)
43. *Oplismenus hirtellus* ssp. *undulatifolius* (Wavy leaf basket grass)
44. *Ottelia alismoides* (Ducklettuce)
45. *Paulownia tomentosa* (Princess tree)
46. *Petasites hybridus* (Butterfly dock)
47. *Phellodendron amurense* (Amur Cork Tree) (except male cultivars and seedling rootstock)
48. *Pistia stratiotes* (Water lettuce)
49. *Polygonum perfoliatum* or *Persicaria perfoliata* (Mile-a-minute vine)
50. *Pueraria montana* or *P. lobata* (Kudzu)
51. *Quercus acutissima* (Sawtooth oak)
52. *Ranunculus ficaria* (Lesser celandine)
53. *Rubus armeniacus* (Himalayan blackberry)
54. *Rubus phoenicolasius* (Wineberry or wine raspberry)
55. *Sagittaria sagittifolia* (Hawaii arrowhead)
56. *Salvinia herzogii* (Giant Salvinia)
57. *Salvinia molesta* (Giant salvinia)
58. *Sorghum halepense* (Johnsongrass)
59. *Stratiotes aloides* (Water Soldiers)
60. *Taeniatherum caput-medusae* (Medusahead)
61. *Torilis arvensis* (Spreading hedgeparsley)
62. *Trapa natans* (Water chestnut)
63. *Tussilago farfara* (Colt's foot)
64. *Typha domingensis* (Southern cattail)
65. *Typha laxmannii* (Graceful cattail)

66. *Vincetoxicum rossicum* or *Cynanchum rossicum* (Pale or European swallow-wort)
67. *Wisteria floribunda* (Japanese wisteria)
68. *Wisteria sinensis* (Chinese wisteria)

*Prohibited/ Restricted category*

1. *Anthriscus sylvestris* (Wild chervil) restricted in Adams, Barron, Chippewa, Crawford, Columbia, Dane, Dodge, Dunn, Fond du Lac, Grant, Green, Green Lake, Iowa, Jefferson, Juneau, Kenosha, Lacrosse, Lafayette, Marquette, Milwaukee, Monroe, Ozaukee, Polk, Racine, Richland, Rock, Sauk, Sheboygan, Taylor, Vernon, Walworth, Waukesha, and Washington counties; prohibited elsewhere – Updated county list in 2015
2. *Bunias orientalis* (Hill mustard)A restricted in Dane, Grant, Green, Iowa, Lafayette, and Rock counties; prohibited elsewhere – Updated county list in 2015
3. *Cirsium palustre* (European marsh thistle)A restricted in Ashland, Bayfield, Chippewa, Clark, Door, Florence, Forest, Iron, Langlade, Lincoln, Marathon, Marinette, Menominee, Oconto, Oneida, Price, Rusk, Sawyer, Shawano, Taylor and Vilas counties; prohibited elsewhere – Updated county list in 2015
4. *Conium maculatum* (Poison hemlock)A restricted in Buffalo, Crawford, Dane, Grant, Green, Iowa, Jefferson, Kenosha, La Crosse, Lafayette, Milwaukee, Monroe, Ozaukee, Racine, Richland, Rock, Sauk, Sheboygan, Trempealeau, Vernon, Walworth, and Waukesha counties; prohibited elsewhere – Updated county list in 2015
5. *Epilobium hirsutum* (Hairy willow herb)A restricted in Brown, Calumet, Door, Kenosha, Kewaunee, and Manitowoc counties; prohibited elsewhere – Updated county list in 2015
6. *Glyceria maxima* (Tall or reed mannagrass)A restricted in Brown, Calumet, Columbia, Dane, Dodge, Door, Fond du Lac, Green, Jefferson, Kenosha, Kewaunee, Manitowoc, Milwaukee, Outagamie, Ozaukee, Racine, Rock, Sheboygan, Walworth, Washington, Waukesha and Winnebago counties; prohibited elsewhere – Updated county list in 2015
7. *Humulus japonicus* (Japanese hops)A restricted in Buffalo, Crawford, Dane, Grant, Green, Iowa, Jackson, La Crosse, Lafayette, Monroe, Pepin, Richland, Sauk, Trempealeau, and Vernon counties; prohibited elsewhere – Updated county list in 2015
8. *Leymus arenarius* or *Elymus arenarius* (Lyme grass or sand ryegrass)A restricted in Door, Kenosha, Kewaunee, Manitowoc, Milwaukee, Ozaukee, Racine, and Sheboygan counties; prohibited elsewhere – Updated county list in 2015
9. *Linaria dalmatica* (Dalmatian toadflax)C restricted in Juneau and Bayfield counties; prohibited elsewhere
10. *Lonicera maackii* (Amur honeysuckle)A restricted in Adams, Brown, Buffalo, Calumet, Columbia, Crawford, Dane, Dodge, Fond du Lac, Grant, Green, Green Lake, Iowa, Jefferson, Juneau, Kenosha, Kewaunee, La Crosse, Lafayette, Manitowoc, Marquette, Milwaukee, Monroe, Outagamie, Ozaukee, Racine, Richland, Rock, Sauk, Sheboygan, Vernon, Walworth, Washington, Waukesha, Waupaca, Waushara and Winnebago counties; prohibited elsewhere – Updated county list in 2015
11. *Phragmites australis* non-native ecotype (Phragmites or Common reed non-native ecotype)A restricted in Brown, Calumet, Columbia, Dane, Dodge, Door, Florence, Fond du Lac, Forest, Green Lake, Jefferson, Kenosha, Kewaunee, Langlade, Manitowoc, Marathon, Marinette, Marquette, Menominee, Milwaukee, Oconto, Outagamie, Ozaukee, Portage, Racine, Rock, Shawano, Sheboygan, Walworth, Washington,

Waukesha, Waupaca, Waushara, and Winnebago counties; prohibited elsewhere -  
Moved to Prohibited/Restricted from Restricted in 2015

12. *Solidago sempervirens* (Seaside goldenrod)C restricted in Kenosha, Milwaukee and Racine counties; prohibited elsewhere
13. *Torilis japonica* (Japanese hedgeparsley or erect hedgeparsley)A restricted in Adams, Brown, Calumet, Columbia, Crawford, Dane, Dodge, Door, Fond du Lac, Grant, Green, Green Lake, Iowa, Jefferson, Juneau, Kenosha, Kewaunee, La Crosse, Lafayette, Langlade, Manitowoc, Marathon, Marinette, Marquette, Menominee, Milwaukee, Monroe, Oconto, Outagamie, Ozaukee, Portage, Racine, Richland, Rock, Sauk, Shawano, Sheboygan, Vernon, Walworth, Washington, Waukesha, Waupaca, Waushara, and Winnebago counties; prohibited elsewhere – Updated county list in 2015
14. *Vincetoxicum nigrum* or *Cynanchum louiseae* (Black or Louise's swallow-wort)A restricted in Columbia, Crawford, Dane, Grant, Green, Iowa, Jefferson, Juneau, Kenosha, La Crosse, Lafayette, Milwaukee, Monroe, Racine, Richland, Rock, Sauk, Vernon, Walworth and Waukesha counties; prohibited elsewhere

#### Restricted category

1. *Acer tataricum* subsp. *ginnala* (Amur maple) \*except all cultivars
2. *Aegopodium podagraria* (Bishop's goutweed)
3. *Ailanthus altissima* (Tree of heaven)
4. *Alliaria petiolata* (Garlic mustard)
5. *Alnus glutinosa* (Black alder) \*except all cultivars and hybrids
6. *Artemisia absinthium* (Wormwood)
7. *Berberis thunbergii* (Japanese barberry) \*This restriction only applies to the parent type, the variety *atropurpurea*, the hybrid of *B. thunbergii* x *B. Koreana*, and the following cultivars. *Berberis thunbergii* cultivars: Sparkle, 'Anderson' Lustre Green™, Erecta, 'Bailgreen' Jade Carousel®, Angel Wings, Painter's Palette, Inermis ('Thornless'), Pow Wow, Golden Ring, Kelleriis, Kobold, 'JN Variegated' Stardust™ and Antares. Variety *atropurpurea* cultivars: Marshall Upright ('Erecta'), Crimson Velvet, 'Bailtwo' Burgundy Carousel®, Red Rocket, 'Monomb' Cherry Bomb™, 'Bailone' Ruby Carousel®, JN Redleaf, Rose Glow and Silver Mile. Hybrid of *B. thunbergii* x *B. koreana* cultivars: Tara and 'Bailsel' Golden Carousel®
8. *Butomus umbellatus* (Flowering rush)
9. *Campanula rapunculoides* (Creeping bellflower)
10. *Caragana arborescens* (Siberian peashrub) \*except the cultivars *Lorbergii*, *Pendula*, and *Walkerii*
11. *Carduus acanthoides* (Plumeless thistle)
12. *Carduus nutans* (Musk thistle or Nodding thistle)
13. *Celastrus orbiculatus* (Oriental bittersweet)
14. *Centaurea biebersteinii*, *Centaurea maculosa* or *Centaurea stoebe* (Spotted knapweed)
15. *Centaurea jacea* (Brown knapweed)
16. *Centaurea nigra* (Black knapweed)
17. *Centaurea nigrescens* (Tyrol knapweed)
18. *Chelidonium majus* (Celandine)A - Moved to Restricted from Prohibited/Restricted in 2015

19. *Cirsium arvense* (Canada thistle)
20. *Coronilla varia* (Crown vetch)
21. *Cynoglossum officinale* (Hound's tongue)
22. *Dipsacus laciniatus* (Cut-leaved teasel)
23. *Dipsacus sylvestris* or *Dipsacus fullonum* (Common teasel)
24. *Elaeagnus angustifolia* (Russian olive)
25. *Elaeagnus umbellata* (Autumn olive)
26. *Epipactis helleborine* (Helleborine orchid)
27. *Euonymus alatus* (Burning bush) \*including the cultivar 'Nordine' and excluding all other cultivars
28. *Euphorbia cyparissias* (Cypress spurge)
29. *Euphorbia esula* (Leafy spurge)
30. *Fallopia japonica* or *Polygonum cuspidatum* (Japanese knotweed)
31. *Filipendula ulmaria* (Queen of the meadow)
32. *Galeopsis tetrahit* (Hemp nettle, brittlestem hemp nettle)
33. *Galium mollugo* (White bedstraw)
34. *Hesperis matronalis* (Dame's rocket)
35. *Impatiens balfourii* (Balfour's touch-me-not)
36. *Iris pseudacorus* (Yellow iris)
37. *Knautia arvensis* (Field scabiosa)
38. *Lonicera morrowii* (Morrow's honeysuckle)
39. *Lonicera tatarica* (Tartarian honeysuckle)
40. *Lonicera x bella* (Bell's or showy bush honeysuckle)
41. *Lysimachia nummularia* or *L. nummelaria* (Moneywort) \*except the cultivar Aurea and yellow and gold leaf forms
42. *Lysimachia vulgaris* (Garden yellow loosestrife)
43. *Lythrum salicaria* (Purple loosestrife)
44. *Morus alba* (White mulberry) \*except male cultivars
45. *Myosotis scorpioides* (Aquatic forget-me-not)
46. *Myosotis sylvatica* or *M. sylvaticum* (Woodland forget-me-not)
47. *Myriophyllum spicatum* (Eurasian watermilfoil)
48. *Najas marina* (Spiny naiad)
49. *Pastinaca sativa* (Wild parsnip) \*except for the garden vegetable form
50. *Phalaris arundinacea* var. *picta* (ribbon grass or gardener's garters and other ornamental variegated varieties and cultivars) \*this restriction does not include the parent type - reed canary grass.
51. *Pimpinella saxifraga* (Scarlet pimpinella or Burnet saxifrage)
52. *Populus alba* (White poplar)
53. *Potamogeton crispus* (Curly-leaf pondweed)
54. *Rhamnus cathartica* (Common buckthorn)
55. *Rhamnus frangula* or *Frangula alnus* (Glossy buckthorn) \*including the *Columnaris* (tall hedge) cultivar but excluding the cultivars *Asplenifolia* and *Fineline* (Ron Williams)
56. *Robinia hispida* (Rose acacia or Bristly locust)
57. *Robinia pseudoacacia* (Black locust) \*except all cultivars
58. *Rosa multiflora* (Multiflora rose)
59. *Tanacetum vulgare* (Tansy) \*except the cultivars *Aureum* and *Crispum*

60. *Typha angustifolia* (Narrow-leaf cattail)
61. *Typha x glauca* (Hybrid cattail)
62. *Ulmus pumila* (Siberian elm) \*except hybrids and individuals used as rootstock
63. *Valeriana officinalis* (Garden heliotrope or Valerian)

Phase-out: Restricted only plants located in Wisconsin prior to their effective listing date may be transported, transferred, and introduced without a permit for a period not to exceed 3 years for herbaceous plants and woody vines, or 5 years for trees and shrubs, from their effective listing date.

## Fish and Crayfish

### Prohibited category

1. Channidae (Snakehead family) including *Channa argus* (Northern snakehead) , *Channa bleheri* (Rainbow snakehead), *Channa gachua* (Dwarf snakehead), *Channa maculata* (Blotched snakehead), *Channa marulius* (Bullseye snakehead), *Channa punctata* (Spotted snakehead), and *Channa striata* (Chevron snakehead)
2. *Ctenopharyngodon idella* (Grass carp)
3. *Cyprinella lutrensis* (Red shiner)
4. *Hypophthalmichthys molitrix* (Silver carp)
5. *Hypophthalmichthys nobilis* (Bighead carp)
6. *Mylopharyngodon piceus* (Black carp)
7. *Sander lucioperca* (Zander)
8. *Scardinius erythrophthalmus* (Rudd)
9. *Tinca tinca* (Tench)
10. All other nonnative fish and nonnative crayfish except:
  - a. Established nonnative fish species and established nonnative crayfish species
  - b. Nonnative viable fish species in the aquarium trade
  - c. Nonnative fish species in the aquaculture industry
  - d. Nonviable fish species
  - e. Genetically modified fish species

### Restricted category

1. Established nonnative fish species and established nonnative crayfish species
  - a. *Alosa pseudoharengus* (Alewife)
  - b. *Cyprinus carpio* (Common carp)
  - c. *Gambusia affinis* (Western mosquitofish) - Moved to Restricted from Prohibited in 2015
  - d. *Gambusia holbrooki* (Eastern mosquitofish) - Moved to Restricted from Prohibited in 2015
  - e. *Gasterosteus aculeatus* (Three-spine stickleback)
  - f. *Gymnocephalus cernuus* (Ruffe)
  - g. *Morone americana* (White perch)
  - h. *Neogobius melanostomus* (Round goby)
  - i. *Orconectes rusticus* (Rusty crayfish)
  - j. *Osmerus mordax* (Rainbow smelt)
  - k. *Petromyzon marinus* (Sea lamprey)
  - l. *Proterorhinus marmoratus* (Tubenose Goby)

2. Nonnative viable fish species in the aquarium trade
  - a. *Acipenser ruthenus* (Sterlet)
  - b. *Carassius auratus* (Goldfish)
  - c. *Cyprinus carpio* (Koi carp)
  - d. *Leuciscus idus* (Ide)
  - e. *Misgurnus anguillicaudatus* (Weather loach)
  - f. *Myxocyprinus asiaticus* (Chinese hi-fin banded shark)
  - g. *Rhodeus* spp. (Bitterling)
3. Nonnative fish species in the aquaculture industry
  - a. *Lepomis microlophus* (Redear sunfish)
  - b. *Oncorhynchus gorbuscha* (Pink salmon)
  - c. *Oncorhynchus kisutch* (Coho salmon)
  - d. *Oncorhynchus mykiss* (Rainbow trout)
  - e. *Oncorhynchus tshawytscha* (Chinook salmon)
  - f. *Salmo salar* (Atlantic salmon)
  - g. *Salmo trutta* (Brown trout)
  - h. *Salvelinus alpinus* (Arctic char)
  - i. *Salvelinus fontinalis* x *Salmo trutta* (Tiger trout)
  - j. *Tilapia* spp. (Tilapia)
4. Nonviable fish species
5. Viable genetically modified native and nonnative fish species.

### **Aquatic Invertebrates except Crayfish**

#### *Prohibited category*

1. *Bithynia tentaculata* (Faucet snail)
2. *Bythotrephes cederstroemi* (Spiny water flea)
3. *Cercopagis pengoi* (Fishhook water flea)
4. *Corbicula fluminea* (Asian clam)
5. *Daphnia lumholtzi* (Water flea)
6. *Dikerogammarus villosus* (Killer Shrimp)
7. *Dreissena rostriformis* (Quagga mussel)
8. *Eriocheir sinensi* (Chinese mitten crabs)
9. *Hemimysis anomala* (Bloody shrimp)
10. *Limnoperna fortunei* (Golden mussel)
11. *Melanoides tuberculata* (Malaysian trumpet snail)
12. *Potamopyrgus antipodarum* (New Zealand mud snail)

#### *Restricted category*

1. *Cipangopaludina chinensis* (Chinese mystery snail)
2. *Cipangopaludina japonica* (Japanese trapdoor snail or Japanese mystery snail)
3. *Dreissena polymorpha* (Zebra mussel)
4. *Valvata piscinalis* (European valve snail)
5. *Viviparus georgianus* (Banded mystery snail)

## Terrestrial Invertebrates and Plant Disease-Causing Microorganisms

### Prohibited category

1. *Adelges tsugae* (Hemlock woolly adelgid)
2. *Anoplophora glabripennis* (Asian longhorned beetle)
3. *Dendroctonus ponderosae* (Mountain Pine Beetle)
4. *Geosmithia morbida* (Thousand cankers disease of walnut)
5. *Lymantria dispar* (Asian race)A (Asian Gypsy moth)
6. *Phytophthora ramorum* (Sudden oak death pathogen)
7. *Pityophthorus juglandis* (Walnut twig beetle)

### Restricted category

1. *Agrilus planipennis* (Emerald ash borer) - Moved to Restricted from Prohibited in 2015
2. *Amyntas* or *Amyntus* species (Jumping worm) - Moved to Restricted from Prohibited in 2015
3. *Lymantria dispar* (European Gypsy moth)

*Cryptococcus fagisuga* (Scale associated with beech bark disease) - removed from ch. NR 40 on May 1, 2015

## Terrestrial and Aquatic Vertebrates except Fish

### Prohibited category

1. *Myiopsitta monachus* (Monk or Quaker parakeet or parrot)
2. *Myocastor coypus* (Nutria)
3. *Sus domestica* (Feral domestic swine)
4. *Sus scrofa* (Russian boar & other wild swine)

### Restricted category

None.

*Trachemys scripta elegans* (Red-eared slider with a carapace (top shell) length of less than 4 inches) - removed from ch. NR 40 on May 1, 2015

## Fungus

### Prohibited category

1. *Pseudogymnoascus destructans* (White-nose syndrome fungal pathogen)

### Restricted category

None.

# Appendix I: AIS in Minnesota

## INVASIVE SPECIES DEFINITION

**Invasive species** are species that are known to be detrimental to human or animal health, the environment, public roads, crops, livestock or other property. The Minnesota Department of Natural Resources has regulatory authority over aquatic plants and animals, and terrestrial vertebrates. The Minnesota Department of Agriculture has regulatory authority over terrestrial plants (noxious weeds) and plant pests. Invasive species are classified as prohibited, regulated, unregulated nonnative species, or are unclassified and remain as unlisted nonnative species.

**Prohibited invasive species** are designated as species to eradicate or control. Plants on the **Prohibited: Eradicate** list are plants that are not currently known to be present in Minnesota or are not widely established. These plants must be eradicated. Plants on the **Prohibited: Control** list are plants that are established throughout Minnesota or regions of the state. Species on this list must be controlled.

**Regulated invasive species** are legal to possess sell, buy, and transport, but may not be introduced into a free-living state, such as being released or planted in public waters.

## MINNESOTA LAW

### Transportation

- It is unlawful to possess, import, purchase, transport, or introduce prohibited invasive species except under a permit.
- It is unlawful to introduce regulated invasive species into a free-living state.
- It is unlawful to place boats, seaplanes, or trailers that have aquatic plants or prohibited invasive species attached into state waters.
- Boat lifts, docks, and swim rafts may not be placed in another body of water until at least 21 days have passed.

### Water transport

- A person leaving state waters must drain all water before leaving the access point.
- Drain plugs must be removed or opened while transporting watercraft.
- Emergency response vehicles may be transported with the drain plug replaced after all water has been drained from the equipment.

### Infested waters

- Infested waters must be posted with Invasive Species Alert signs at public water accesses and listed in the annual DNR Fishing Regulations booklet.
- Taking wild animals from infested waters for bait or aquatic farms is prohibited.
- All nets and other equipment used for commercial fishing or harvesting in infested waters may not be used in any other waters.



- Equipment used for commercial fishing in infested waters that are designated solely because they contain Eurasian watermilfoil must be dried or frozen before being used in non-infested waters.
- Water from infested waters may not be used to transport fish except by permit.
- Water from infested waters may not be transported except in emergencies or under permit.

#### **Crayfish**

- The transportation of live native and invasive crayfish from one waterbody to another within the state is prohibited, except by permit.
- Live crayfish or crayfish eggs may not be imported without a permit.
- Live crayfish may not be sold for live bait or for use in aquariums.
- Live crayfish taken from a waterbody can only be used as bait in that same waterbody.

# Appendix J: Invasive Species Laws in Minnesota

## Prohibited invasive species

Certain invasive species that can threaten natural resources and their use have been designated as prohibited invasive species in Minnesota. It is unlawful (a misdemeanor) to possess, import, purchase, transport, or introduce these species except under a permit for disposal, control, research, or education.

## Regulated invasive species

It is legal to possess, sell, buy, and transport regulated invasive species, but they may not be introduced into a free-living state, such as being released or planted in public waters.

## Unregulated nonnative species

Nonnative species that are not subject to regulation under Minnesota Statutes.

## Unlisted nonnative species

Unlisted nonnative species are those that are not prohibited, regulated, or unregulated. Several steps must occur before an unlisted nonnative species may be legally released into a free-living state:

- The individual proposing to release the species must file an application and supporting information with the Minnesota DNR
- The DNR must conduct a thorough evaluation
- The species must be designated into an appropriate classification

## Aquatic Plants

### Prohibited category

1. African oxygen weed (*Lagarosiphon major*)
2. Aquarium watermoss or giant salvinia (*Salvinia molesta*)
3. Australian stone crop (*Crassula helmsii*)
4. Brittle naiad (*Najas minor*)\*
5. Curly-leaf pondweed (*Potamogeton crispus*)\*
6. Eurasian watermilfoil (*Myriophyllum spicatum*)\*
7. European frog-bit (*Hydrocharis morsus-ranae*)
8. Flowering rush (*Butomus umbellatus*)\*
9. Hydrilla (*Hydrilla verticillata*)
10. Indian swampweed (*Hygrophila polysperma*)
11. Purple loosestrife (*Lythrum salicaria*, *Lythrum virgatum*, or any variety, hybrid, or cultivar thereof)\*
12. Water aloe or water soldiers (*Stratiotes aloides*)
13. Water chestnut (*Trapa natans*)
14. The aquatic plants listed in Code of Federal Regulations, title 7, section 360.200, are also designated as prohibited invasive species except for Chinese water spinach (*Ipomoea aquatica*)

*Regulated category*

1. Brazilian waterweed (*Egeria densa*)
2. Carolina fanwort or fanwort (*Cabomba caroliniana*)
3. Chinese water spinach (*Ipomoea aquatica*)
4. Nonnative waterlilies (*Nymphaea spp.*)\*
5. Parrot's feather (*Myriophyllum aquaticum*)
6. Water hyacinth (*Eichhornia crassipes*)
7. Yellow iris or yellow flag (*Iris pseudacoris*)\*

*Unregulated category*

None.

**Fish**

*Prohibited category*

1. Amur sleeper (*Perccottus glenii*)
2. Bighead carp (*Hypophthalmichthys nobilis*)\*
3. Black carp (*Mylopharyngodon piceus*)
4. Crucian carp (*Carassius carassius*)
5. Eurasian minnow (*Phoxinus phoxinus*)
6. European perch (*Perca fluviatilis*)
7. Grass carp (*Ctenopharyngodon idella*)\*
8. Largescale silver carp (*Hypophthalmichthys harmandi*)
9. Northern snakehead fish (*Channa argus*)
10. Oriental weatherfish (*Misgurnus anguillicaudatus*)
11. Prussian carp (*Carassius gibelio*)
12. Roach (*Rutilus rutilus*)
13. Round goby (*Neogobius melanostomus*)\*
14. Rudd (*Scardinius erythrophthalmus*)
15. Ruffe (*Gymnocephalus cernuus*)\*
16. Sea lamprey (*Petromyzon marinus*)\*
17. Silver carp (*Hypophthalmichthys molitrix*)\*
18. Stone moroko (*Pseudorasbora parva*)
19. Tubenose goby (*Proterorhinus marmoratus*)\*
20. Wels catfish (*Siluris glanis*)
21. Western mosquitofish (*Gambusia affinis*)
22. White perch (*Morone americana*)\*
23. Zander (*Stizostedion lucioperca*)

*Regulated category*

1. Alewife (*Alosa pseudoharengus*)\*
2. Common carp, koi (*Cyprinus carpio*)\*
3. Goldfish (*Carassius auratus*)\*
4. Rainbow smelt (*Osmerus mordax*)\*
5. Tilapia (*Oreochromis, Sartheradon, and Tilapia spp.*)

*Unregulated category*

1. Atlantic salmon (*Salmo salar*)
2. Brown trout (*Salmo trutta*)
3. Coho salmon (*Oncorhynchus kisutch*)
4. Chinook salmon (*Oncorhynchus tshawytscha*)
5. Pink salmon (*Oncorhynchus gorbuscha*)
6. Rainbow trout (*Oncorhynchus mykiss*)
7. Subtropical, tropical, and saltwater fish, except anadromous species

**Invertebrates**

*Prohibited category*

1. Faucet snail (*Bithynia tentaculata*)\*
2. New Zealand mud snail (*Potamopyrgus antipodarum*)\*
3. Quagga mussel (*Dreissena bugensis*)\*
4. Red swamp crayfish (*Procambarus clarkii*)
5. Yabby (*Cherax destructor*)
6. Zebra mussel (*Dreissena spp.*)\*

*Regulated category*

1. Banded mystery snail (*Viviparus georgianus*)\*
2. Chinese mystery snail, Japanese trap door snail (*Cipangopaludina spp.*)\*
3. Rusty crayfish (*Orconectes rusticus*)\*
4. Spiny waterflea (*Bythotrephes longimanus*)\*

*Unregulated category*

1. Subtropical, tropical, and saltwater invertebrates.

**Mammals**

*Prohibited category*

1. Asian raccoon dog (*Nyctereutes procyonoides*)
2. European rabbit (*Oryctolagus cuniculus*)
3. European wild boar (*Sus scrofa scrofa*)
4. Nutria (*Myocastor coypu*)

*Regulated category*

None.

*Unregulated category*

1. Rat (*Rattus norvegicus* and *Rattus rattus*).

**Birds**

*Prohibited category*

None.

*Regulated category*

1. Egyptian goose (*Alopochen aegyptia*)

2. Mute swan (*Cygnus olor*)\*
3. Sichuan pheasant (*Phasianus colchicus strachi*)

*Unregulated category*

1. Chukar partridge (*Alectoris chukar*)
2. Helmeted Guinea fowl (*Numida meleagris*)
3. House sparrow (*Passer domesticus domesticus*)
4. Hungarian partridge, gray partridge (*Perdix perdix*)
5. Peafowl (*Pavo cristatus*)
6. Pigeon or rock dove (*Columba livia*)
7. Ring-necked pheasant (*Phasianus colchicus*)
8. Starling (*Sturnus vulgaris vulgaris*)

**Reptiles**

*Prohibited category*

None.

*Regulated category*

1. Red-eared slider (*Trachemys scripta elegans*)\*

*Unregulated category*

None.

\* *These species are known to be in Minnesota waters.*

## Appendix K: Species Not Included in this Plan but Acknowledged to be Threats

Common name	Scientific name	Reason not included in plan
-	<i>Chelicorophium curvispinum</i>	Invasive microbe, hard to manage
-	<i>Dikerogammarus villosus</i>	Invasive microbe, hard to manage
-	<i>Echinogammarus ischnus</i>	Invasive microbe, hard to manage
-	<i>Piscirickettsia salmonis</i>	Invasive microbe, hard to manage
Spring viremia of carp virus (SVCV)		Invasive microbe, hard to manage
Japanese chaff flower	<i>Achuranthes japonica</i>	Managed as a terrestrial invasive species
Narrowleaf bittercress	<i>Cardamine impatiens</i>	Managed as a terrestrial invasive species
Grecian foxglove	<i>Digitalis lanata</i>	Managed as a terrestrial invasive species
Leafy spurge	<i>Euphorbia esula</i>	Managed as a terrestrial invasive species
Asian bush honeysuckles	<i>Lonicera spp.</i>	Managed as a terrestrial invasive species
Japanese stilt grass	<i>Microstegium vimineum</i>	Managed as a terrestrial invasive species
Wild parsnip	<i>Pastinaca sativa</i>	Managed as a terrestrial invasive species
Common buckthorn	<i>Rhamnus cathartica</i>	Managed as a terrestrial invasive species
Glossy buckthorn	<i>Rhamnus frangula</i>	Managed as a terrestrial invasive species
Common tansy	<i>Tanacetum vulgare</i>	Managed as a terrestrial invasive species
Fanwort	<i>Cabomba caroliniana</i>	Not here, not an imminent threat
Australian swamp crop	<i>Crassula helmsii</i>	Not here, not an imminent threat
African waterweed	<i>Lagarosiphon major</i>	Not here, not an imminent threat
Brittle naiad	<i>Najas minor</i>	Not here, not an imminent threat
Yellow floating heart	<i>Nymphoides peltata</i>	Not here, not an imminent threat
Water soldier	<i>Stratiotes aloides</i>	Not here, not an imminent threat
Water chestnut	<i>Trapa natans</i>	Not here, not an imminent threat
Reed canary grass	<i>Phalaris arundinacea</i>	Ubiquitous