

# Benton County

Aquatic Invasive Species Prevention and Management Plan



**April 2018**

**Written by the Crow River Organization of Water (CROW)**

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**Benton County**  
**Aquatic Invasive Species Prevention and Management Plan**  
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## I. Executive Summary

According to the Minnesota Department of Natural Resources, Aquatic Invasive Species (AIS) are species that are not native to Minnesota and cause harm to economic prosperity, the environment, and human health. Some prevalent examples of these species include common carp, curly-leaf pondweed, Eurasian water milfoil, purple loosestrife, rusty crayfish, New Zealand mud snail, and zebra mussels. The spread of these species has led to habitat alteration, ecosystem degradation, and a loss of bio-diversity due to intensified competition for resources. AIS typically have little-to-no natural predators in their new environment, reproduce very quickly, and are more aggressive than native species. Along with negatively affecting aquatic wildlife, AIS impede recreational opportunities and disrupt industrial use of public waters. Although great efforts are being made to eliminate invasives entirely from a water body, history shows that it is nearly impossible to fully remove a population. As a result, it is illegal to possess, transport, and/or introduce any aquatic plants or animals within Minnesota that are designated as “prohibited and regulated” invasive species by the Minnesota Department of Natural Resources.

On May 20, 2014, Minnesota Governor Mark Dayton authorized the Aquatic Invasive Species Prevention Aid for counties [Chapter 308, HF3167: Omnibus tax bill. Article 1: Property Tax Aids and Credits. Section 11]. In July 2014, \$5 million dollars was distributed to the 87 Minnesota counties. In 2015 and thereafter, that value will increase to \$10 million. The distribution of funds is based 50% on the number of “watercraft trailer launches” and 50% on the number of “watercraft trailer parking spaces.” With 6 “watercraft trailer launches” and 92 “watercraft trailer parking spaces”, Benton County has received **\$37,040** in 2016, **\$35,228** in 2017, and will receive **\$34,892** in 2018.

According to subdivision 3, the intent of these funds is “to prevent the introduction or limit the spread of aquatic invasive species at **all access sites** within the county. Benton County, like all of Minnesota’s 87 counties, must establish, by resolution or through adoption of a plan, guidelines for the use of the proceeds. These guidelines must be submitted to the MN DNR by December 31 of the year the funds are received. The Benton County Board of Commissioners adopted resolution number 2014-56 on December 16, 2014 which was submitted to the Minnesota Department of Natural Resources and fulfills the December 31, 2014 submission deadline. The guidelines set by the Benton County Board may include, but are not limited to, providing for site-level management, countywide awareness, and other procedures that the County finds necessary to achieve compliance”.

In an effort to respect tax payers’ values and insight, a public open house was held in August 22, 20, 2017. Participants learned about water resources, aquatic invasive species, lake ecology, which provide focus and guidance to this plan’s development.

This Benton Aquatic Invasive Species (AIS) Prevention and Management Plan is in accordance with the goals set for in MN Statute 477 A. 19 and shall be adopted by the Benton County Board of Commissioners in April 17, 2018.

## **A. Purpose of AIS Prevention and Management Plan**

- Prepare and adopt an AIS Prevention and Management Plan that justifies the use of legislatively granted AIS prevention funds.
- Guide efforts that prevent the spread of AIS into Benton County's lakes and streams.
- Exercise any and all powers necessary to assure implementation of this plan and its goals in order to preserve economic and environmental viability of Benton County's water bodies.

## **B. Accomplishments to Date**

- (2017) Benton AIS Task Force and Benton County hosted an open house to gather public input on the plan and provide information on aquatic invasive species.
- (2017) Benton AIS Task Force provided AIS education and materials at the 70<sup>th</sup> Annual Minnesota Governor's Fishing Opener.
- (2017) Benton County Board of Commissioners organized a well-rounded task force that includes lake association, local business, and political representation.
- (2018) Benton County Board of Commissioners approved AIS Prevention and Management Plan

## **C. Summary of Benton County's Priority Concerns (in order of importance)**

These priorities were established by the Benton County AIS Committee in March 2017 through a facilitated activity led by the Crow River Organization of Water. Using a brainstorming prioritization activity to help identify individuals' responses, the table below summarizes the top three categories. It is important to take note that some categories of action created more division and broader opinions from the task force than others. These priorities may change in the future dependent upon changing AIS risk assessments.

Education & Outreach	<ul style="list-style-type: none"><li>• Focus on the River</li><li>• Education in Schools</li><li>• Mailings</li><li>• County Fair</li></ul>
Individual Species Program	<ul style="list-style-type: none"><li>• Harvesting Carp (Little Rock)</li><li>• Plants from Little Rock Drawdown</li></ul>
Management & Control	<ul style="list-style-type: none"><li>• Cost Share Granting Program</li></ul>

**Table 1. Benton County's Priority Concerns Summary Table**

### **Activities with Strong Importance:**

1. Individual Species Program
2. Education and Community Outreach
3. Management and Control

### **Activities of Limited to No Interest:**

1. AIS Inspection Program
2. AIS-Specific Enforcement

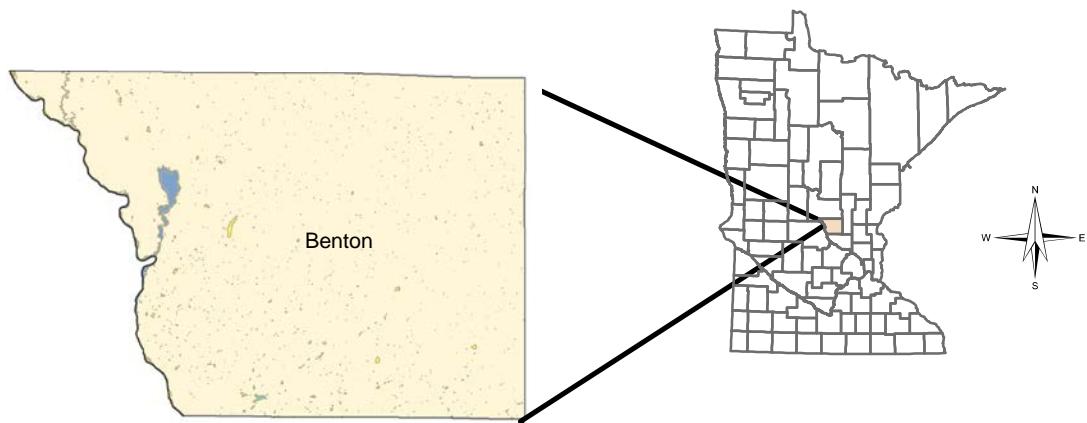
### **D. Relationship to Other Plans**

Numerous completed studies illustrate the potential for economic and environmental harm caused by the infestation of aquatic invasive species. Benton County and Benton County AIS Task Force recognizes this potential will help create “Action Steps” to provide technical and financial assistance, as available, to lake associations and similar groups for the implementation of AIS prevention and control efforts. The current Benton County Water Plan does not address AIS. Efforts and action steps from this plan can be discussed for addition on the next Benton County Water Plan. The Benton County AIS Committee will make certain that current and future AIS prevention activities are consistent with overall water quality objectives.

The Benton County AIS Prevention and Management Plan, according to the AIS Task Force bylaws, can be updated and modified at any time. The Task Force recognized that AIS is a dynamic issue and required a flexible and adaptive management process.

### **E. County Background Information**

Located in central Minnesota, Benton County encompasses twelve townships, seven cities, and with a population of near 40,000 residents. The City of Foley, situated in central Benton County, is the County Seat. The County shares its border with Stearns County to the west, Sherburne to the south, Mille Lacs County to the east, and Morrison County to the north. Based on state records, Benton County has 12 lakes with 6 public trailer launches and 92 trailer parking spots. Recreational lakes in Benton County include Little Rock Lake and Little Rock Channel and Flowage to Mississippi River. Benton County’s Natural Environment lakes include: Mayhew Lake, Donovan Lake, Bible’s Duck Slough, Pularskis Lake, and Vicki Lake. Benton County is unique with its western border the Mississippi River that holds a vast array of fisheries.



**Figure 1. Benton County**

## F. Budget Allocations

The action items in this plan were prioritized, formulated, and revised by the Benton County AIS Task Force. Financial management is facilitated by Benton Department of Development and an up-to-date and accurate recording of deposits and expenses are kept in this office. Funds from 2014 were primarily used for plan development, consulting services, assessment of needs, and coordination of staff, programming, and task force. Funds from 2015 and 2016 were primarily used for AIS management and control, information sharing, and civic engagement. Funds from 2017 and 2018 will be set aside for continuation of locally-led initiatives through a community granting program. Any additional funding requests will be reviewed individually by the task force.

## II. Needs Assessment

Understanding the extent of nearby threats and collecting relevant background information is crucial to broadening efforts in a cohesive and effective manner. For example, this information will tell us where all of the water access points are within the county and who manages the property. This information is necessary when deciding who to contact when increasing signage on an access site.

Action Step	How Action Supports AIS Prevention	Responsible Party	Timeframe
Understand the variety of pathways of introduction	Knowing the common pathways can be spread is essential to effective prevention	County/MN DNR	Continuous
Identify water bodies that currently have AIS	Knowing existing infestations helps adjust prioritization of control and prevention efforts for surrounding surface waters	Lake Assoc./ County/MN DNR	Continuous
Identify private access sites and contact responsible managing parties	Building capacity by promoting AIS education on private water access sites extends the reach of education efforts.	Task Force	Spring 2018
Ensure that local businesses i.e. lake service providers, are reducing the risk of AIS spread in their operation	The day-to-day operations of some businesses, whether regulated or not, can pose a risk of AIS spread	MN DNR/Watercraft Inspectors	Continuous
Collaborate with other counties, watershed groups, etc. to develop a regional approach to AIS prevention	AIS and the individuals who could transport them do not stay inside county borders, coordination is necessary to prevent AIS spread	Watershed Districts/ Lake Assoc./ Regional Counties	Continuous and adaptive

Action Step	How Action Supports AIS Prevention	Responsible Party	Timeframe
Assess ecological and societal vulnerabilities for individual water bodies	Understanding what the habitat and potential equipment movement in and of high value lakes will determine management techniques.	Consultant/ Task Force	Summer 2017 and adaptive

Table 2. Summary of Needs Assessment Action Steps

### AIS Plan and Program Prioritization Strategies

Although natural resource professionals work closely with monitoring and improving the health of water bodies, local residents provide substantially more eyes and ears on the ground. Their perspective and buy-in are necessary for successful implementation of AIS prevention efforts. Striving towards transparency and relevancy, Benton County organized a task force that includes a number of policy makers, lake association representatives, business owners, and natural resource management entities to seek ideas and feedback that are consistent with Benton County's values. The Benton County AIS Task Force will assess current and future needs ensure relevancy and appropriate use of funds and energy. This assessment includes both societal and ecological vulnerabilities that may affect the likelihood that a particular waterbody becomes infested with an individual species and/or how a species will operate within that aquatic system. Common carp provide an excellent example of environmental conditions that affect a population's ability to thrive or grow stagnant.

#### A. Current AIS Infestations

The appendix includes information about all of the lakes in Benton County, the number of public access points, and any infestations. The Minnesota Department of Natural Resources (MN DNR) maintains a list of infested waters throughout the State. *As of 2006 there are two water bodies listed for zebra mussels, Little Rock Lake and Little Rock Lake Channel which connect to the Mississippi River.* Although, Benton County has a limited number of source areas, several neighboring counties have a significant number of water bodies infested with zebra mussels, Eurasian water milfoil, purple loosestrife, starry stonewort, and curly-leaf pondweed. Movement, along with boat traffic, to-and-from these water bodies also needs to be considered in decision-making. Any relevant information about conditions outside and surrounding Benton County will be included to guide the planning and allocation of resources for management, control, and prevention of additional infestations.

### III. Community Engagement and Education

To maximize AIS prevention and management efforts, the County will need to connect with citizens who care deeply about the ecosystem health, quality, aesthetics, and recreational suitability of Minnesota's over 10,000 lakes and streams. Success will require the input, action, feedback, and support of these individuals. Concrete and transparent efforts will continue to be made to include the voices of the community and their goals for the allocation of finances and energy. The Little Rock Lake Association currently provides exemplary leadership through information distribution, program participation, and discussion involvement in regular public AIS Task Force meetings.

As well, it will be necessary to pursue an education campaign that includes a variety of mediums and techniques. People respond to signage, publications, hands-on trainings, volunteer opportunities, etc. differently and the County will continue to accommodate learning styles. The goal is to continuously support a citizen base that is developing a common understanding of the impacts of invasives and a sense of ownership in the future of the Minnesota's water resources.



**Figure 2. Community Efforts**

Education Type	Action Step	Targeted Audience & How Action Supports AIS Prevention	Responsible Party	Timeframe
Active	Continue community mini-grant program to support local efforts to prevent the spread of AIS	<u>Community Groups and Lake Associations:</u> By leveraging existing capacity of other local organizations, the county can maximize the effectiveness of its AIS prevention funds	Task Force/ County	Fall 2018 and thereafter
Active	Organize Public Meetings and Events	<u>All Citizens:</u> Recently added funds to the AIS effort as the work of countless citizens working hard to make sure Minnesota's waters are protected. These events will help gain feedback and keep citizens informed.	Task Force/ Lake Assoc./ County/ Interested Community Groups	Winter 2016 and as needed
Active	Share standard operation procedures to reduce the risk of AIS introduction through government and business operations	<u>All Citizens:</u> Will help prevent AIS spread by developing and sharing new risk-reduction methods and operations that could contribute to AIS spread	Task Force/ County/ MN DNR	Winter 2016 and as needed
Active	Coordinate AIS prevention trainings for a range of audiences	<u>All Citizens:</u> Lead trainings and/or provide programming guides and materials to create a well-informed and strengthened community	Interested Community Groups	Spring/ Summer 2018 and thereafter
Active	Perform tasks included in pilot Initiative Foundation grant	<u>Training Participants:</u> Citizen feedback is important	County/ Task Force	Continuous until Fall 2019
Active	Utilize curricula for schools and education material to support youth education about AIS	<u>Youth and Young Adults:</u> Young people can help prevent the spread of AIS through their own actions and by modeling their knowledge and actions to their families	Task Force/ County	Winter 2016 and thereafter
Passive	Expand upon signage efforts on non-motorized access sites	<u>All Citizens:</u> Making basic information very visible and accessible is one approach for reducing spread of AIS	Task Force/ County	Winter 2018, Spring 2019

Education Type	Action Step	Targeted Audience & How Action Supports AIS Prevention	Responsible Party	Timeframe
Passive	Provide up-to-date news content and information through multiple mediums to support citizen groups and individuals.	<u>All Citizens:</u> Ensuring that locals feel confident about AIS prevention and increase efficiency by providing information to partners to share.	Task Force/ County/ Interested Community Groups	Fall 2016 and periodically thereafter
Passive	Develop new and utilize existing publications to inform the public of AIS concerns	<u>All Citizens:</u> A great deal of existing material that has been well developed can be used to inform the public and newer materials can be created to be community specific	Lake Assoc./ County/MN DNR	Spring 2016 and thereafter
Volunteer/ Active	Support a volunteer and ambassador program with MN DNR support	<u>Watercraft Operators and Owners:</u> Using community leaders and groups to help promote a water craft user's sense of personal responsibility to reduce AIS spread through one-on-one education and contact	Task Force/ County/ Volunteers	Winter 2018/ Spring 2019
Volunteer/ Active	Incorporate AIS training into Citizen Stream Monitoring Program (CSMP)	<u>Existing/Interested CSMP Volunteers:</u> This is an efficient way to get more perspective through an already established program	Volunteers	Winter 2018 and thereafter

Table 3. Summary of Community Engagement and Education Action Steps

## A. Active Community Partners

### Lake Associations

Benton County has a well-established and very active Little Rock Lake Association that works with the County to implement water quality improvement projects, aquatic plant treatment, and other AIS related activities. As well, many of the individuals are community leaders that routinely volunteer their own time, money, and energy to protect, treat, and monitor area lakes and streams. As AIS issues continues to move to the forefront, the County, regional partners, and the Benton AIS Task Force will continue to work closely with Little Rock Lake Association in an effort to continue their great work and gain more momentum in stopping the spread.

## B. Local Natural Resource Agencies

### Elk River Watershed Association (ERWA)

The Elk River Watershed Association (ERWA) is a joint powers board of Benton and Sherburne Counties and Soil and Water Conservation Districts in Minnesota. Since its formation, the ERWA has primarily focused on working with landowners to reduce non-point sources of pollution within the watershed.

## **Benton Soil and Water Conservation District**

### **Benton Natural Resource Conservation Service**

Sharing a common mission and an office in Foley, Mn, the Benton Soil and Water Conservation Service (SWCD) and the Benton Natural Resource Conservation Service (NRCS) provide technical and financial assistance for the community on a wide range of natural resource management efforts. Some of these projects include conservation protection, flood prevention measures, farm forestry, wildlife improvement, recreation and rural area development.

## **Sauk River Watershed District**

Established in 1986, The Sauk River Watershed District (SRWD) includes portions of Douglas, Benton, Pope, Stearns, and Todd Counties. The vision of the SRWD is “to protect and enhance natural resources by increasing public awareness and involvement” in the above listed counties through technical and financial assistance. Through close working relationships with partners, the district works to improve water quality for future generations.

## **B. Active Education**

### **Community AIS Training Program and Assessment**

Benton County will continue to support partnerships with organizations, such as CLIMB Theater (in-school presentations and plays) and Blue Water Science (ecological assessments), to provide AIS trainings for lake associations, youth groups, and interested constituents. These opportunities will provide hands-on activities to teach proper water equipment care, AIS identification, general aquatic plant and animal identification, relevant legislation, and build confidence on the topic. These events will be duplicated around the county on various days and times to encourage attendance.

Benton County and active community partners will develop and administer assessment mechanisms during training and educational opportunities to gain insight and track participants' knowledge change. Reporting activities will help with assessment of the plan. The assessment will be utilized as a mechanism to guide actions that are consistent with the community's needs, direct the appropriate use of funds, and promote integrity in the decision-making process.

### **Community Granting Program**

Benton County has shown leadership by supporting grass-root efforts that focus on improving upstream land-use that pollute surface and groundwater and pursue in-lake treatments. They have been investing time, money, and energy into an effort to continue and strengthen their momentum. In 2017, a general outline of a grant program was developed to provide financial support to these partners. A structured application process will be used to record requests and provide transparency. These grant funds will be available for any legal activities that promote the priorities described in this plan. The number of granted projects and total granting amount may vary from year-to-year. In 2018, the granting process was further enhanced, amplified, and structured in an effort to expand the positive community efforts and provide transparency. Individual applicants can apply for up to \$5,000 (with appropriate cash and in-kind matches) to pursue AIS prevention and management practices.

### **Educational Activities and Programming**

The incorporation of AIS programming into festivals, fairs, education days, workshops, conferences, trade shows, etc. can be an effective way to reach people on a more direct basis. In

addition, it connects citizens to AIS experts, which provides a more effective path for information transfer. Some programming can include:

- Focus on the River events with AIS focus
- 5th Grade Poster Contest with Little Rock Lake
- Educational Field Says, County Fairs, Schools, Youth Groups
- Hands-on and interactive activities
- Customized communication i.e. websites, survey, Facebook
- Customized individual AIS giveaways to promote Clean, Drain, Dry
- Q&A panel discussion, poster sessions, and presentations
- Recreational events i.e. paddle day with Sportsman's Club

## **C. Passive Education**

### **Improved and Increased Signage**

The Minnesota DNR and the “Stop Aquatic Hitchhikers” campaign has found signage at access sites, roadways, and public spaces to be an effective way to spread information and communication on the prevention of AIS. Although quite a bit has already been done in this medium, it will still be important to do a regional assessment to get a better understanding of potential communication gaps. Creating uniform messaging on both private and public access may require the Task Force to assess current signage and any possible locations with high exposure. Luckily, this region has not experienced many infestations; therefore the Task Force must be proactive to keep these water bodies protected and venture into areas that may not have been addressed in the past. Currently the DNR public accesses are signed according to the agencies standardization policy; however county, township, and private access sites will need to be contacted.

### **Publications**

Along with signage and programming, utilizing publications and providing content is another tool the Task Force can utilize to spread the word. National, state, and local efforts started spreading the word about the aquatic invasive species and their spread over a decade ago. In this time, entities including universities, federal initiatives, state agencies, and non-profits have written, developed, and printed hundreds of publications and materials of various mediums. These resources can be access and personalized to stretch funding. In addition, in-house services can be used to design print and electronic items that are appropriate for the community.

Along with using signs, brochures, pamphlets, and display units to inform the public about the negative effects of AIS on the ecosystem and Minnesota economy, the Task Force should collaborate with the County in building an online presence. Communication styles differ among the varying population groups that visit and recreate on the water; thus, a publicity strategy should encompass multiple mediums. Several of the organizations in the area have webpages, Facebook accounts, online newsletters, etc. that can be accessed for this purpose. The messaging shall be consistent, accurate, and constant to keep up within a fast pace news cycle.

## **D. Volunteer Efforts**

### **Volunteer Watercraft Inspection and Education Program**

The DNR created an AIS Volunteer Program to educate the public about invasive species at the water access and at educational events. These individuals will talk to water equipment users

regarding compliance with Minnesota laws and will help people understand the necessary steps to self-inspect their boats, trailers, rafts, etc. Volunteers and ambassadors are trained by the DNR; however, they are not considered watercraft inspectors and are not legally permitted to deny access at state owned and/or operated public water access sites. Watercraft users are not required to speak with these educators and any interaction is voluntary. Benton County will support individuals and community organizations in conjunction with the AIS Task Force by providing assistance, and informational materials. On non-state access sites, volunteers can work with owners to negotiate boundaries, guidelines, and protocols for volunteering.

### **Incorporate AIS into Citizen Stream Monitoring Program**

The already established Citizen Stream and Lake Monitoring Program through the MPCA (supported by local units of government and natural resource entities) is a great place within to establish a volunteer AIS monitoring program. Individuals go out to a site(s) of their choice, sampling for turbidity and weather patterns. Adding an additional parameter to search for any new AIS infestations would be relatively easy. Incorporating AIS may also bolster the CSMP program as well in light of the heightened attention on aquatic ecosystems.

## **IV. AIS Management and Control**

Preventing the spread of aquatic invasive species includes minimizing the ability for a plant or animal to hitchhike onto water-related equipment. Managing and controlling existing AIS populations reduces source areas and decreases AIS contact with boaters, swimmers, fishers, hunters, etc. In addition, to managing any current and/or future invasive vegetation, the AIS Task Force recognizes that animal invaders may also need to be addressed with unique technology, innovation, research, and mechanisms.

Action Step	How Action Supports AIS Prevention	Responsible Party	Timeframe
Provide funding to control populations of aquatic invasive vegetation	Eliminating source areas of invasives is an effective way to reduce spread potential	County/ Lake Assoc.	Spring/Summer 2018 and thereafter
Facilitate and support efforts for systematic monitoring for new AIS populations	Utilizing a stationary device and rakes to monitor boat lift/docks and water bodies systematically can aid in the early detection of new AIS infestations	Task Force/ County/ Lake Assoc.	Spring 2019 and thereafter
Cultivate partnerships with organization interested in AIS prevention to support AIS surveys in water bodies	Leveraging the resources of existing organizations will help to find new AIS infestations more efficiently and to prevent further spread of those AIS	Task Force/ County/ Lake Assoc.	Summer 2018 and thereafter

Action Step	How Action Supports AIS Prevention	Responsible Party	Timeframe
Partner with existing organizations to target waterbodies with limited leadership	Multiple water bodies in Benton County currently have unchecked AIS infestations; however they do not have established leadership to help address the source area. Helping address this gap in effort will help protect other uninfected lakes in the county.	Task Force	Spring 2018 and thereafter

**Table 4. Summary of AIS Management and Control Action Steps**

### **Invasive Treatment Strategies**

Steve McComas and Blue Water Science team assessed the ecological vulnerabilities on two lakes and five river reaches within Benton County. Suitability assessments and management plan for the water bodies that addresses the following AIS: Blue-green algae, Curlyleaf pondweed, Eurasian watermilfoil, Zebra mussel, and Common carp. Mr. McComas has been working on lakes and streams for over 30 years and specializes in lake management and lake restoration projects with an emphasis on comprehensive lake protection programs.

Suitability assessments focus on if the AIS species is found in Benton County. Rankings of potential for growth have been provided in response to both short and long term management actions. Detailed reports are found in Appendix A.

AIS Species	Species of Interest / Species to Watch	Potential for Growth in Benton County Lakes
Blue-green algae	Species of Interest	High
Curlyleaf pondweed	Species of Interest	Low to moderate
Eurasian watermilfoil	Species of Interest	Low to moderate
Zebra mussels	Species of Interest	Low to moderate
Common carp	Species of Interest	Low to high
Flowering rush	Species to Watch	Fair
Purple loosestrife	Species to Watch	Moderate to high
Hydrilla	Species to Watch	Low to moderate
Rusty crayfish	Species to Watch	Fair to moderate

AIS Species	Species of Interest / Species to Watch	Potential for Growth in Benton County Lakes
Chinese and Banded Mystery snail	Species to Watch	Fair
Spiny waterflea	Species to Watch	Moderate to high
Faucet snail	Species to Watch	Moderate to high
Asian carp	Species to Watch	Low
Snakehead	Species to Watch	Moderate

Table 5. Summary of Suitability Assessments

## V. Enforcement and Laws

Minnesota Statute 84D.13 (Enforcement; Penalties) describes the provisions for conservation officers and licensed peace officers to enforce rules and regulations to aid in the prevention of new aquatic invasive species infestations. These laws are listed in the appendix and they detail out information about civil and criminal penalties, prohibitions on transport of aquatic macrophytes and animals, prohibitions and allowed exceptions on the transport of water, Minnesota's drain plug law, and the role of MN Department of Natural Resource (MN DNR) trained inspectors.

Action Step	How Action Supports AIS Prevention	Responsible Party	Timeframe
<b>Utilize existing Sheriff's Department activities to promote AIS statute compliance and enforce laws</b>	The county sheriff department has a great deal of exposure with the public and is an excellent resource for educating the public through personal contact and addressing violators	Sheriff's Department	Continuing effort

Table 6. Enforcement and Laws Actions Steps

## VI. AIS Inspection Program

The 2012 Minnesota State Statutes 84D.105 Inspection of Water-related Equipment allows Benton County to conduct inspections on public access sites with MN DNR support and training. Benton County and/or assigned local unit of government may seek a Delegation Agreement for Tribal and Local Government Inspection Programs with the MN DNR and would have the ability to be trained by MN DNR Watercraft Inspection Program and authorize those individuals to

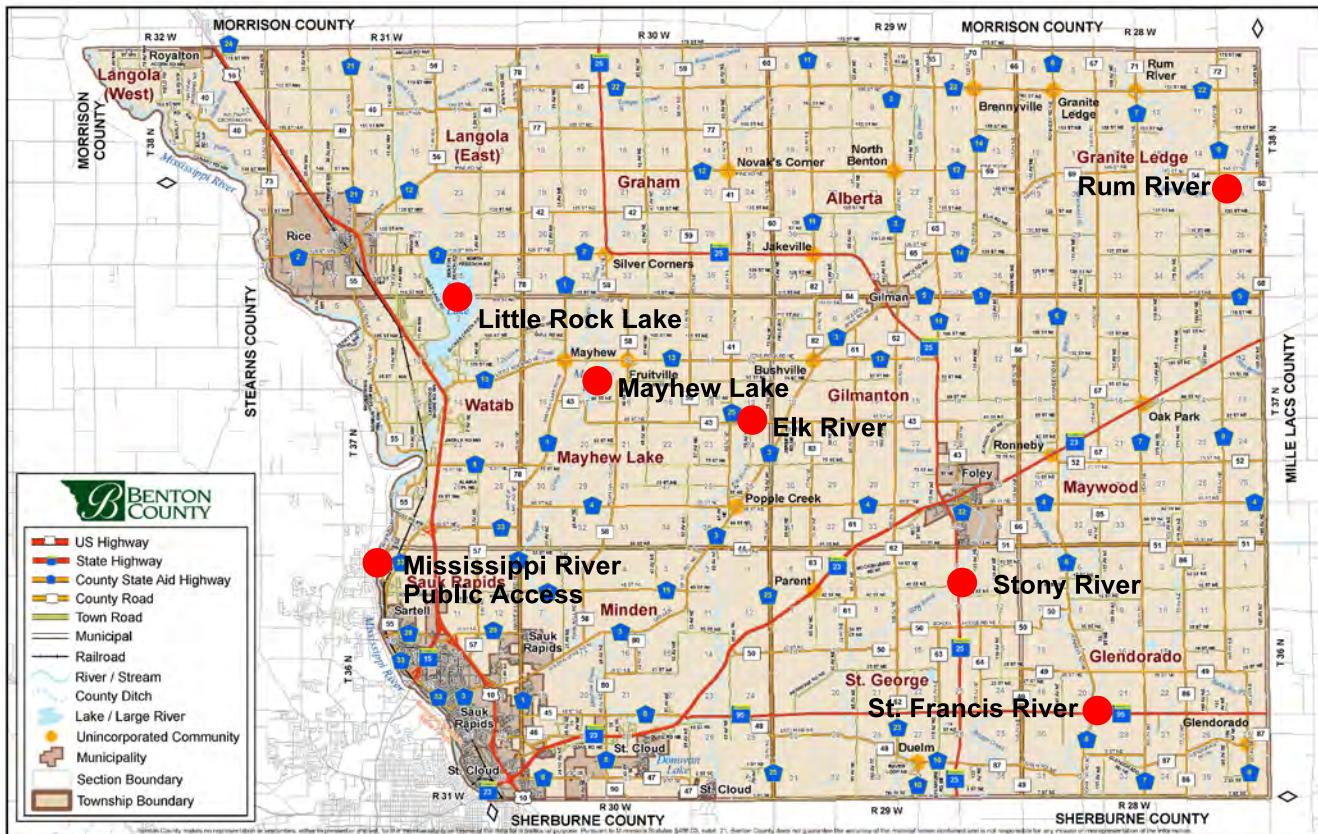
inspect water-related equipment for aquatic macrophytes, aquatic invasive species, and water. If delegated, Benton County will manage scheduling, logistical support, assurance of accountability with the public, data collection/submission, and following all guidelines listed in the MN DNR delegation agreement. If any of these things are present on the water-related equipment, the approved and trained inspector, who is not a licensed peace officer, shall refer the violation to a conservation officer or other licensed peace officer.

The Benton County AIS Task Force recognized that there may be potential for exploring this activity (with Benton County Board of Commissioners approval).

### AIS Inspection Program

Action Step	How Action Supports AIS Prevention	Responsible Party	Timeframe
<b>Provide financial, logistical, and scheduling support for community groups interested in a site and season specific programs</b>	Utilizing one-on-one interactions to inspect potentially infested boats at accesses are a useful way to educate the public	Task Force/ County/ Lake Associations	TBD
<b>Appoint an entity to be the delegated unit for the MN DNR Inspection Program</b>	A delegated entity serves as a contracted point person that works with the MN DNR to manage survey equipment, data, and inspectors at public access sites	County/Task Force	TBD
<b>Train county field staff on practices to avoid spreading AIS</b>	County staff can take steps to prevent AIS spread and serve as an example for local citizens and business	County	TBD

Table 7. Summary for AIS Inspection Program Action Steps



## Aquatic Invasive Species Review for Little Rock Lake, Mayhew Lake, Elk River, Mississippi River, Rum River, Stony Brook, and St. Francis River, Benton County, Minnesota

Prepared for:  
Benton County, Minnesota



Prepared by:  
Steve McComas,  
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March 21, 2018

# Aquatic Invasive Species Review for Little Rock Lake, Mayhew Lake, Elk River, Mississippi River, Rum River, Stony Brook, and St. Francis River, Benton County, Minnesota

## Summary

Overview of aquatic invasive species that could impact Little Rock Lake, Mayhew Lake, Elk River, Mississippi River, Rum River, Stony Brook, and St. Francis River are listed below. As of 2017, curlyleaf pondweed, zebra mussels and common carp were the only non-native species known to be present in Benton County lakes and rivers.

Species	Lake or Stream Status	Potential for Growth in Benton County lakes	Management Action	
			Short Term	Long Term
<b>Species of Interest</b>				
1. Cylindro (blue-green algae)	Blue-green algae are present, cylindro has not been tested.	High	Phytoplankton Monitoring	Implement lower phosphorus loading
2. Curlyleaf pondweed	Present in Little Rock and Mayhew lakes	Low to moderate	Annual delineations or surveys to check curlyleaf growth	Selective treatment for heavy growth conditions
3. Eurasian watermilfoil	Not present in Benton County	Low to moderate	Annual surveys or delineations if detected	Selective treatment for heavy growth conditions
4. Zebra mussels	Little Rock Lake, Little Rock Lake channel, Mississippi at Sartell, and Rum R. are listed	Low to moderate	Mussel monitoring devices for early detection	Small-scale removal techniques if needed
5. Common carp	Present in Little Rock and Mayhew lakes, Mississippi River, and Elk River	Low to high	Determine carp densities	Implement carp management tasks if funding is available
<b>Species to Watch</b>				
Flowering rush	Not present	Fair	Annual observations or surveys	Selective treatment
Purple loosestrife	Present in Benton Co	Fair	Annual surveys or observations	Spot control and use of beetles for large area control
Hydrilla	Not present in Benton Co	Low to moderate	MnDNR sponsored treatments	Ongoing control
Rusty crayfish	Not present in Benton Co	Fair to moderate	Crayfish traps for early detection	Use fish to control rusty crayfish
Chinese and Banded Mystery snail	Unknown	Fair	Inform and educate	Small-scale removal techniques, if needed
Spiny waterflea	Not present in Benton Co	Moderate to high	Inform and educate	Natural fish predation
Faucet snail	Not present in Benton Co	Moderate to high	Inform and educate	
Asian carp	Not present in Benton Co	Low	Inform and educate	Removal if practical
Snakehead	Not present in Benton Co	Moderate	Inform and educate	



Curlyleaf Pondweed



Eurasian Watermilfoil



Zebra Mussel

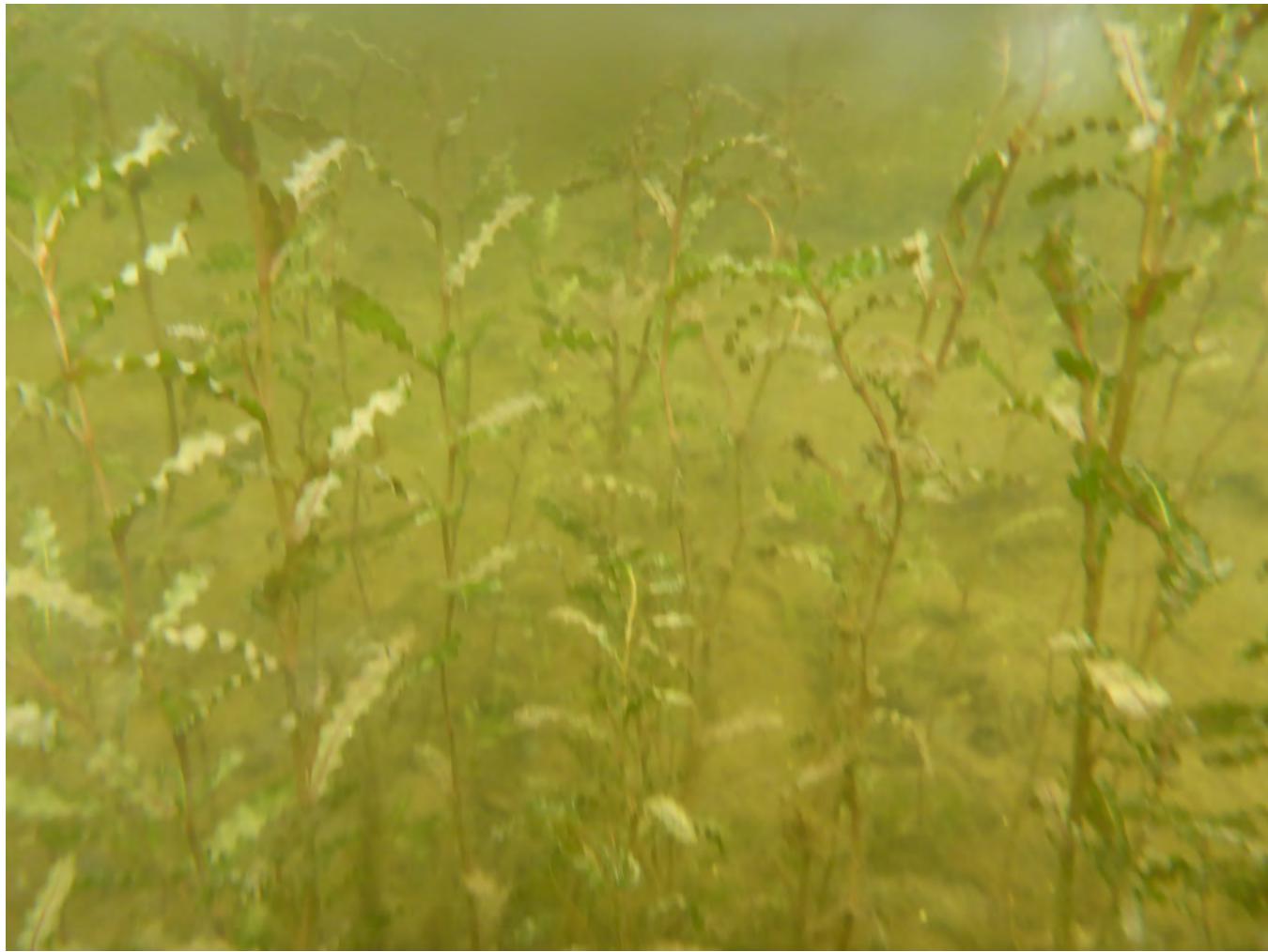
# Five Aquatic Invasive Species of Interest



## 1. Blue-green Algae (Cylindro)

An invasive blue-green algae, *Cylindrospermopsis sp*, referred to as Cylindro, is spreading around the United States since it was observed in the early 2000s. Cylindro is typically found in lakes with low Secchi disc transparencies and high phosphorus concentrations. Benton County lakes currently have these characteristics but the streams do not. At this time Cylindro has not been identified in Benton County lakes. Cylindro is known to produce toxins that at high concentrations could be harmful to other aquatic life.

**Action Plan:** At high lake phosphorus concentrations, conditions are favorable for Cylindro growth. Two sources of phosphorus to Benton County lakes come from watershed loading and internal phosphorus loading. A variety of factors contribute to internal phosphorus loading in lakes. For Little Rock and Mayhew lakes, carp may be contributing to internal phosphorus loading. If watershed phosphorus contributions continue to be low Cylindro should not be a problem in Benton County lakes and rivers.



## 2. Curlyleaf Pondweed

Curlyleaf pondweed is present in Benton County lakes. Research has found curlyleaf is limited or enhanced based on lake sediment characteristics. Curlyleaf does best in sediments with a high pH and low iron content (McComas, unpublished).

Lake sediment surveys could help predict where curlyleaf will grow in Benton County lakes. Currently growth is mostly light to moderate abundance. However, even moderate abundance can be considered a recreational problem. In addition, some areas may produce heavy growth in some years.

**Action Plan:** Because curlyleaf pondweed is already established in Benton County lakes, it is past the point of eradication. Ongoing activities will concentrate on curlyleaf management. The use of herbicides produce annual control, but long-term control (where treatments could be discontinued in the future) has not been observed (McComas et al 2015). Therefore annual treatments for curlyleaf control may have to be considered.

Areas of moderate or heavy growth could potentially be treated either with an endothall herbicide or by harvesting.

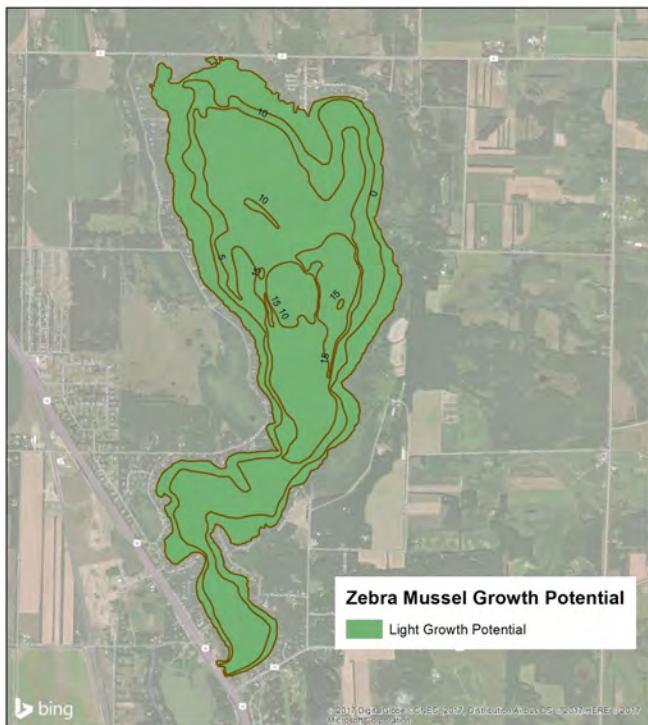


### 3. Eurasian Watermilfoil

Eurasian watermilfoil (EWM) has not been observed in Benton County lakes or streams. Heavy milfoil growth has been correlated with high sediment nitrogen conditions and Benton County lakes have not been tested for sediment nitrogen conditions. The potential for future milfoil growth, based on lake sediment sampling, could predict light or moderate growth with a few areas having the potential to support heavy growth. For Benton County lakes, it is estimated the plants have the potential to grow down to about 6 feet of water depth based on Secchi transparencies.

**Action Plan:** Eurasian watermilfoil is not present in Benton County lakes. Ongoing activities should continue to observe any Eurasian watermilfoil growth and manage when the growth becomes a recreational nuisance.

Little Rock Lake Zebra Mussel Growth Potential



Mayhew Lake Zebra Mussel Growth Potential



## 4. Zebra Mussel

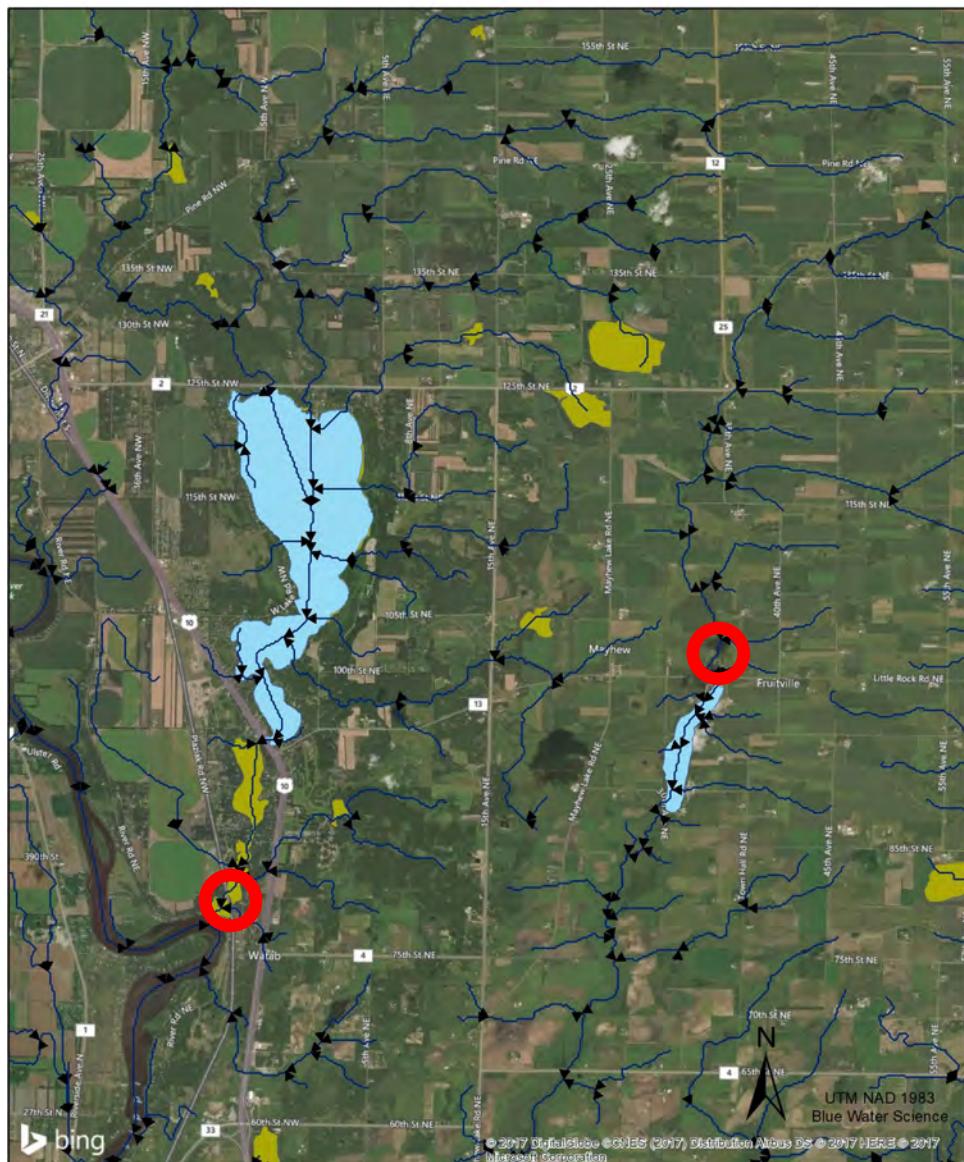
Zebra mussels have been listed for Little Rock Lake, the Mississippi and Rum rivers in Benton County. A review of water chemistry and substrate characteristics was used to evaluate the potential for zebra mussel growth. It appears that zebra mussel growth is suitable to a depth of 15 feet (based on dissolved oxygen concentrations) for Little Rock Lake and to 12 feet for Mayhew Lake. Zebra mussel growth would be light in areas where it is not limited by dissolved oxygen. Although dissolved oxygen conditions are suitable for optimal to moderate growth down to water depths of about 15 feet and calcium concentrations are optimal for shell production, existing blue-green algae concentration would likely limit zebra mussel growth. A close cousin to the zebra mussel, the quagga mussel, has similar growth requirements and may be able to survive and propagate under more harsh conditions than zebra mussels. No quagga mussels have been reported in Benton County.

**Action Plan:** Zebra mussels have been listed in Little Rock Lake since 2006 due to its connection to the infested Mississippi River. Early detection activities are recommended through the growing season. If zebra mussels are detected, a rapid response plan includes a rapid response assessment. Because zebra mussel growth would likely be light, a rapid response treatment action isn't a high priority. However, because Little Rock Lake is connected to the Mississippi River reintroduction is likely. An action plan includes contact information and procedures that should be outlined to prepare for future actions, if needed.

Under the right circumstances and depending on volunteer participation, costs would range from \$5,000 to \$50,000 if an eradication attempt was considered. Discussions with the MnDNR should be held prior to zebra mussel detection in Benton County lakes to outline control activities and the need for potential permits.

MnDNR Infested Waters October 4, 2017 Water body name	County	Listed for aquatic invasive species	Year listed as infested	Year species was first confirmed, or connected water body	DOW number
Little Rock	Benton	zebra mussel	2006	connected to Mississippi River	05-0013
Little Rock Lake Channel	Benton	zebra mussel	2006	connected to Mississippi River	05-0012

## Benton County



**Potential areas of carp immigration into Little Rock and Mayhew lakes are shown with red circles.**

## 5. Common Carp

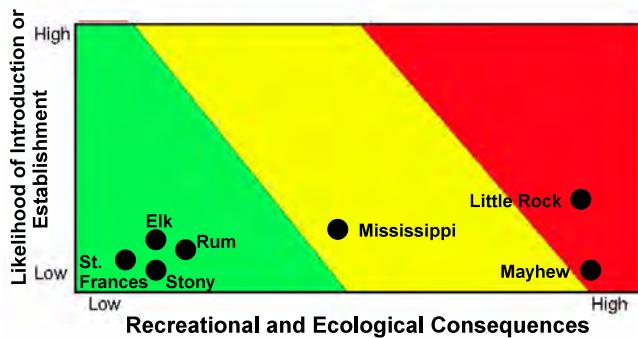
Common carp have been observed in MNDNR fish surveys conducted in Little Rock Lake, Mayhew Lake, the Mississippi River, and the Elk River. Benton County lakes suitability for future carp growth is high due to the potential for ongoing carp immigration. It appears that Benton County lakes like Little Rock and Mayhew are open to immigrating carp which will sustain carp populations.

**Action Plan:** Carp are present in Benton County lakes. For Little Rock and Mayhew lakes, to significantly reduce carp densities immigration should be curtailed. In addition, surveys are needed to determine if successful spawning is occurring in satellite ponds or wetlands adjacent to the main waterbody. The last step is to contract with commercial fishermen to remove in-lake carp.

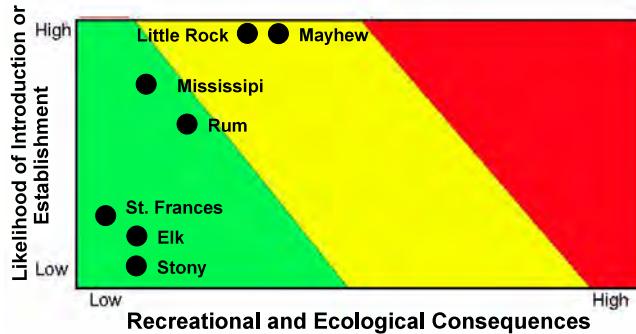
# Summary of Environmental Risk Assessments for Five Aquatic Invasive Species for Little Rock Lake, Mayhew Lake, Elk River, Mississippi River, Rum River, Stony Brook, and St. Francis River, Benton County, Minnesota

Two primary factors are used to define environmental risk assessment for aquatic invasive species: 1) the likelihood of establishment and 2) the consequences if it does become established. The likelihood of introduction and establishment is based on the distance to the nearest AIS population, the activity at the public access, and the suitability of Benton County lakes and streams for supporting a new AIS population. Typically if an AIS has the potential for heavy growth, the recreational and ecological consequences could be significant.

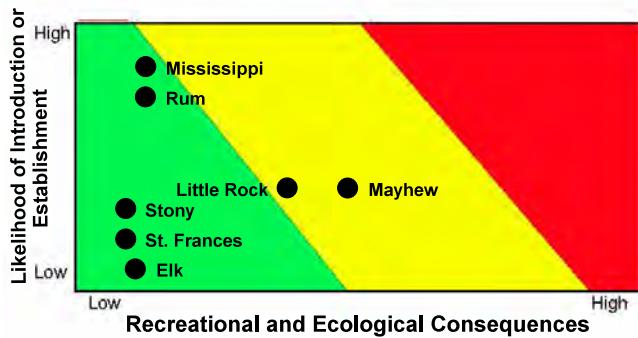
## Blue-Green Algae



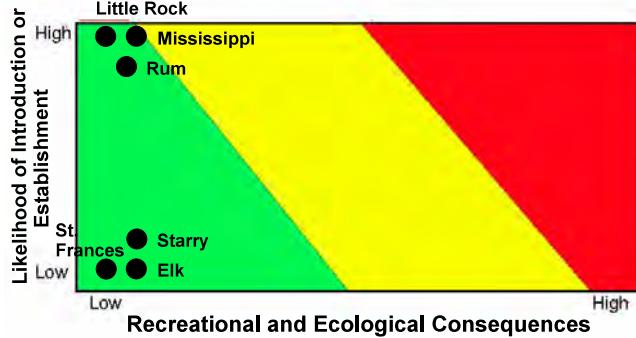
## Curlyleaf Pondweed



## EWM



## Zebra Mussel



## Carp

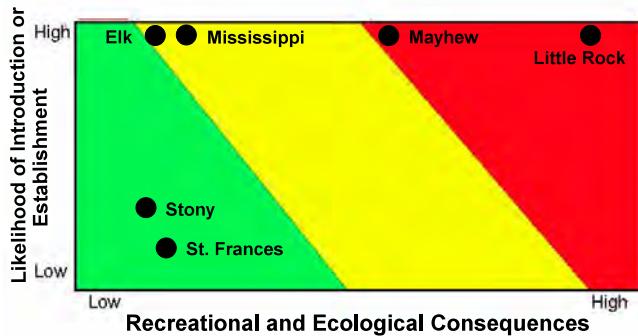


Figure S1. Based on available information, an environmental risk assessment (ERA) chart was prepared for 5 aquatic invasive species of interest for Little Rock Lake, Mayhew Lake, Elk River, Mississippi River, Rum River, Stony Brook, and St. Frances River, Benton County.

# **Aquatic Invasive Species Action Plan for Little Rock Lake, Mayhew Lake, Elk River, Mississippi River, Rum River, Stony Brook, and St. Francis River, Benton County, Minnesota**

## **Introduction**

Little Rock Lake, Mayhew Lake, Elk River, Mississippi River, Rum River, Stony Brook, and St. Francis River are located in Benton County. The objective of this report was to evaluate the potential for ecological and recreational problems that might develop in Benton County lakes and streams associated with non-native aquatic invasive species and then list possible management actions. The aquatic invasive species evaluated include the following:

### **Species of Interest:**

1. Blue-green algae (*Cylindrospermopsis sp*)(status unknown).
2. Curlyleaf pondweed (present in Little Rock and Mayhew lakes).
3. Eurasian watermilfoil (not present in Benton County lakes).
4. Zebra mussel (Little Rock Lake, Mississippi River, and the Rum River are listed).
5. Common carp (present in Little Rock, Mayhew, and Mississippi River and Elk River).

### **Species to Watch (not present in Benton County lakes unless noted):**

#### **Plants**

Purple Loosestrife (present in Benton County)  
Flowering Rush  
Hydrilla  
Starry stonewort (macroalgae)(present in Stearns County)

#### **Invertebrates**

Rusty Crayfish  
Chinese and Banded Mystery Snail  
Faucet Snail  
Quagga Mussels

#### **Fish**

Asian carp (Bighead and Silver Carps)  
Viral Hemorrhagic Septicemia (VHS)(fish virus)

## Methods Used to Collect Information for AIS Evaluations

**Project Setting and Water Quality:** Locations of lakes and streams discussed in this report are listed in Figure 1. To assist in evaluating the growth potential of various AIS, water quality data were obtained from existing reports or collected in this study (Table 1). Water quality data was used to evaluate growth potential of algae and zebra mussels.

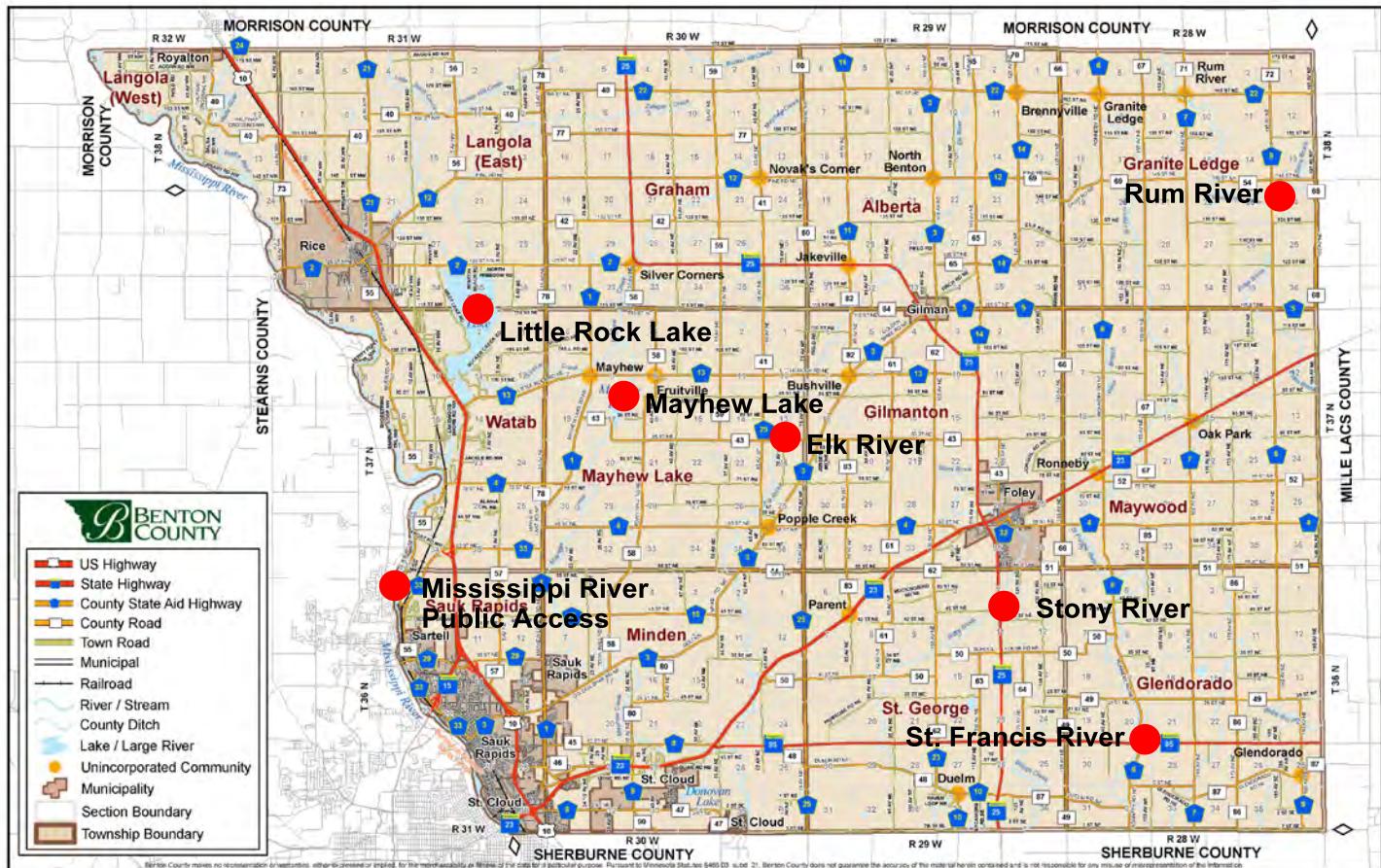


Figure 1. Location of Benton County lakes and streams discussed in this report.

Table 1. Characteristics of Benton County lakes and streams discussed in this report.

	Little Rock Lake	Mayhew Lake	Elk River	Mississippi River	Rum River	Stony Brook	St. Francis River
Lake ID	05001300	05000700	--	--	--	--	--
Size	1,311	128	--	--	--	--	--
Littoral area	1,240	66	--	--	--	--	--
Maximum depth	17	20	--	--	--	--	--
Total phosphorus	293 ppb (2016)	256 ppb (2009)	74 ppb	31 ppb (11.13.17)	35 ppb (11.13.17)	238 ppb	45 ppb
Chlorophyll a	124 ppb (2016)	105 ppb (2009)	2.1 ppb	<1 ppb (11.13.17)	2.1 ppb (11.13.17)	2.1 ppb	4.3 ppb
Calcium	32 mg/l	36 mg/l	41 mg/l	41 mg/l	34 mg/l	49 mg/l	39 mg/l
Alkalinity	99 mg/l	118 mg/l	139 mg/l	129 mg/l	116 mg/l	152 mg/l	124 mg/l
Conductivity	265 umhos	290 umhos	345 umhos	200 umhos	195 umhos	460 umhos	330 umhos

## 1. Blue-green Algae (*Cylindrospermopsis* sp)

**Benton County Status:** Blue-green algae are present in Benton County lakes and streams. Cylindro has not been tested for its presence.

**Nearest Occurrence:** Lake Nokomis, Minneapolis, MN

**Potential for Bloom Conditions in Benton County Lakes and Streams:** The potential is high, as long as the nutrient concentrations remain high.

Cylindro (*Cylindrospermopsis raciborskii*) (Figure 2) is a relatively new invasive blue-green algae found in Minnesota. Just as other blue-green algal species sometimes produce a toxic strain, some strains of cylindro may produce a toxin called cylindrospermopsin.

When Cylindro is a problem it is generally associated with eutrophic conditions. Work in Indiana correlated high densities of cylindro with shallow lakes (maximum depth of 28 feet or less), a low Secchi transparency (average 2.3 feet), and high total phosphorus concentrations averaging 81 ppb (Jones and Sauter 2005). As of 2017, conditions meet those criteria in Benton County lakes for blue-green growth including cylindro (Table 2).



Benton County lakes is located in the North Central Hardwood Forest Ecoregion. Unimpaired shallow lakes in this ecoregion have water clarity greater than 3.3 feet.

**Figure 2. Cylindro is a filamentous blue-green algae.**

**Table 2. Lake water quality impaired criteria for the North Central Hardwood Forest Ecoregion and recent water quality conditions for Benton County lakes, rivers, and streams.**

	Shallow Lake (MPCA impaired criteria for North Central Hardwood Forest Ecoregion)	LAKES		RIVERS AND STREAMS				
		Little Rock Lake	Mayhew Lake	Elk River	Mississippi River	Rum River	Stony Brook	St. Frances River
Secchi Disc (ft & m) (water clarity)	<3.3 ft (1.0 m)	1.2 ft (0.35 m)	2.5 ft (0.77 m)	--	--	--	--	--
Total Phosphorus (fertilizer nutrient)	>60 ppb	293 ppb (2016)	256 ppb (2009)	74	31	35	238	45
Chlorophyll a (measure of algae)	>20 ppb	124 ppb (2016)	105 ppb (2009)	2.1	<1	2.1	2.1	4.3

## ***Management Options for Blue-Green Algae***

**Scouting Activities:** Very little information on algal species distribution in Benton County is available. Occasional sampling in Benton County lakes on a monthly basis from June through September would be one way to evaluate the presence of cylindro as well as other algal species.

**Rapid Response:** A rapid response plan is not necessary, rather long-term plans to reduce phosphorus, which in turn reduce excessive algal growth, is a sound management approach.

**Control Options:** To reduce excessive algal growth in Benton County lakes and streams, phosphorus reduction programs would help. Best management practices in the watershed and in-lake treatments to control phosphorus release from lake sediments would help reduce lake phosphorus concentrations (Figure 3). In Little Rock and Mayhew lakes, a carp management program to reduce the carp population would likely reduce lake phosphorus concentrations.



**Figure 3.** Watershed management practices such as no-till farming (left)(source: USDA - Natural Resources Conservation Service) and lake alum treatments to inactivate lake sediment phosphorus (right) are two approaches that reduce lake phosphorus concentrations.

## 2. Curlyleaf Pondweed (non-native aquatic plant)

**Benton County Lakes and Streams Status:** Present in Benton County lakes.

**Potential for Curlyleaf Pondweed Growth in Benton County Lakes and Streams:**

Mostly light to moderate growth potential with scattered areas of light and heavy growth.

Various types of curlyleaf pondweed (CLP) growth patterns are shown in Figures 4 and 5.

In Benton County lakes sites with low pH and high iron content will limit CLP growth. Curlyleaf pondweed growth is currently at mostly light to moderate growth but some areas may produce heavy growth in some years (Figure 6).



Figure 4. Underwater views of curlyleaf pondweed. Light growth (left) and moderate growth (right).

### Examples of Curlyleaf Pondweed Growth Characteristics



Figure 5. Light growth (left) refers to non-nuisance growth that is mostly below the surface and is not a recreational or ecological problem. Moderate growth (middle) refers to growth that is just below the water surface. Heavy growth (right) refers to nuisance matting curlyleaf pondweed. This is the kind of nuisance growth predicted by high sediment pH and a sediment bulk density less than 0.51.

**Curlyleaf Pondweed Growth Potential Based on Lake Sediments:** Curlyleaf pondweed is present in Benton County lakes. Research has found curlyleaf is limited or enhanced based on lake sediment characteristics. Based on lake sediment characteristics representing over 1,000 sediment samples from over 100 lakes (McComas, manuscript in preparation), curlyleaf has the potential to produce moderate growth on an annual basis.

In Benton County lakes, sediments have not been tested. If sediment pH is moderate, the iron to manganese (Fe:Mn) ratio is low. These factors contribute to the moderate growth potential of curlyleaf pondweed in a majority of the sediment sites.

### ***Management Options for Curlyleaf Pondweed***

**Scouting Activities:** Annual scouting activities can be used to delineate areas where curlyleaf pondweed (CLP) treatment is considered. Sediment characteristics indicate there is a potential for mostly moderate growth of CLP in Benton County lakes. If a delineation occurs it is recommended that all aquatic plants (including the natives) should be recorded within a delineated area containing curlyleaf pondweed. GPS mapping should be used to outline a treatment area. Areas of light growth do not need to be treated whereas areas of moderate to heavy growth are candidates for treatment.



**Figure 6. Five stems of curlyleaf pondweed are shown on a rakehead sampler in a delineation survey in May. By the end of June this early season density could produce heavy growth.**

**Rapid Response:** Unnecessary, curlyleaf is already present.

**Control Options:** The recommended treatment option at this time is mechanical harvesting with the use of an endothall herbicide as a back-up. Cost of harvesting ranges from about \$450 to \$600 per acre. Not all curlyleaf areas have to be harvested. The areas to consider are areas with moderate to heavy growth. Curlyleaf will continue to grow in Benton County lakes even in years after treatment. Two common treatment methods are shown below



**Herbicide applications**



**Mechanical harvesters**

### 3. Eurasian Watermilfoil (non-native aquatic plant)

**Benton County Lakes and Streams Status:** Not present in Benton County.

**Potential for Eurasian Watermilfoil Growth in Benton County Lakes and Streams:** Mostly light to moderate potential.

Lake sediment sampling results can be used to predict lake areas that have the potential to support light to heavy Eurasian watermilfoil (EWM) growth. Sediments have not been tested in Benton County lakes. Examples of EWM growth characteristics are shown in Figures 7 and 8. Key sediment parameters that influence EWM growth are  $\text{NH}_4$  and organic matter (Barko and Smart 1986, and Wakeman and Les 1994).

In Benton County lakes and streams with low sediment nitrogen will limit EWM growth. EWM abundance can vary from year to year depending largely on climatic factors.

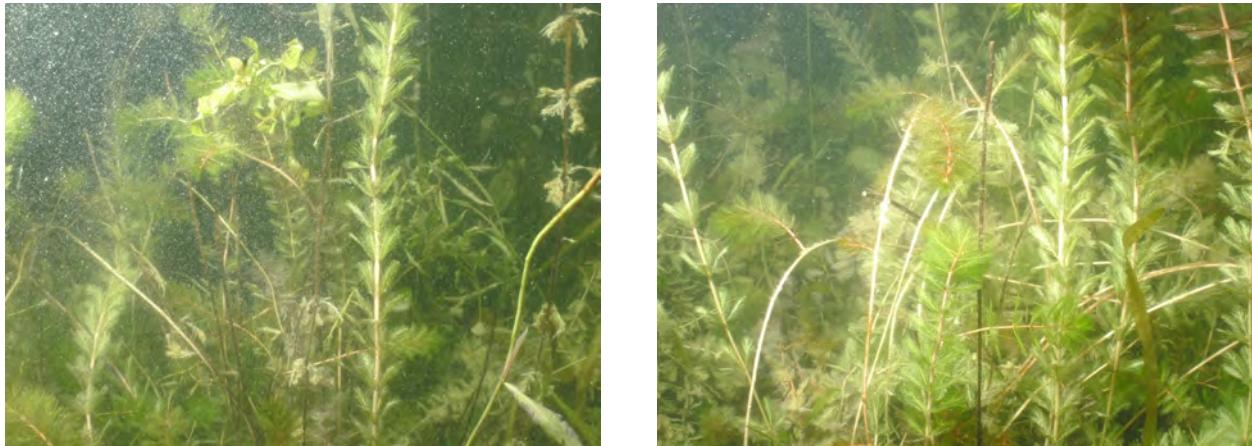


Figure 7. Underwater views of Eurasian watermilfoil.

#### Examples of Eurasian Watermilfoil Growth Characteristics



Figure 8. Light growth (left) refers to non-nuisance growth that is mostly below the surface and is not a recreational or ecological problem. Heavy growth (right) refers to nuisance matting Eurasian watermilfoil. This is the kind of nuisance growth predicted by high sediment nitrogen values and a sediment organic matter content less than 20%.

**Eurasian Watermilfoil Growth Potential:** For Benton County lakes, it is estimated the plants have the potential to grow down to about 5 feet of water depth based on existing water clarity conditions.

### ***Management Options for Eurasian Watermilfoil***

**Scouting Activities:** When observers are on the lake they could be looking for any sign of milfoil growth. This scouting activity can occur at the time of curlyleaf scouting in May and June, but additional monitoring on the lake through the summer sampling season presents additional opportunities for discovering EWM.

**Rapid Response Assessment:** EWM is not present in Benton County lakes. When EWM is first spotted, a rapid response assessment is often conducted.

**Control Options:** Eradication of EWM is not likely feasible but could be considered with new infestations.

If treatment is to be conducted, two treatment options include herbicides and harvesting.



**Herbicide Applications would use a 2,4-D herbicide**



**Mechanical harvesting**

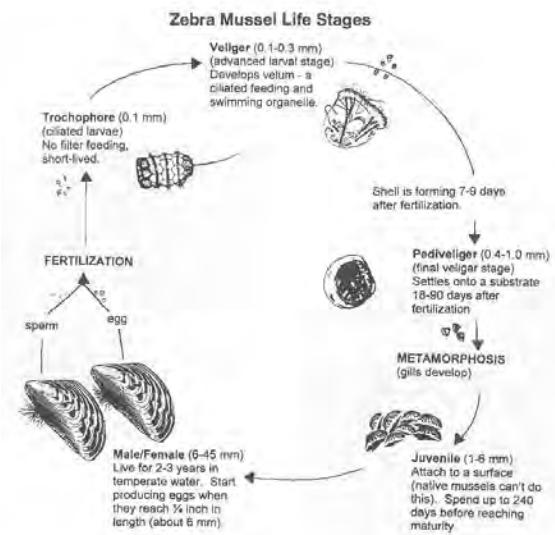
## 4. Zebra Mussels (invertebrate)

**Benton County Lakes and Streams Status:** Zebra mussels are currently in Little Rock Lake, Little Rock Channel, the Mississippi River, and the Rum River.

**Potential for Colonization in Benton County Lakes and Streams:** Low to moderate.

The life cycle of zebra mussels is shown in Figure 9. Zebra mussels can change the water quality in a lake. A dense population filters large volumes of lake water and zebra mussels use the filtered algae for food. Eventually the build-up of excreted fecal material will fertilize the lake bottom and in some cases, generate nuisance growth of filamentous algae. However, zebra mussels do not take over every lake. Factors can limit their growth and three types of growth conditions are shown in Figure 10. A chart of water column parameters indicates a broad range of potential growth for zebra mussels in Benton County lakes (Table 3). Although zebra mussels

prefer hard substrates for optimal growth, they will grow together forming clumps on sand and silt bottoms. Benton County lakes has extensive areas of sandy and mucky sediments that would support moderate zebra mussel colonization (Figure 10).



**Figure 9. Zebra mussel life stages:** Zebra mussels can be detected at the veliger stage using modified zooplankton nets, but this is usually performed by experts (Adopted from U.S. Army Corps of Engineers, WES)(from McComas, 2003. Lake and pond management guidebook).

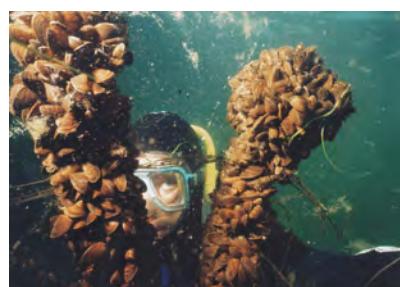
### Examples of Zebra Mussel Growth Conditions



Light Growth



Moderate Growth  
(suboptimal growth)



Heavy Growth  
(optimal growth)

**Figure 10. Light growth (left).** Small mussels can colonize on plants or hard substrates but sometimes conditions will limit growth to a single season followed by a zebra mussel die-off at the end of the year. **Moderate growth (middle)** can be found on soft sediments, in clumps, with zebra mussels attached to each other. Zebra mussels can colonize aquatic plants as well. **Heavy growth (right)** is found where there are hard surfaces such as rocks, woody structures, or docks and where water column conditions are suitable.

Zebra Mussels have been found in Benton County streams. A review of water column characteristics for Benton County lakes and streams was compared to characteristics suited for zebra mussels. It appears that zebra mussels would be limited in Benton County lakes due to the lack of dissolved oxygen in deeper water and too much blue-green algae (Table 3). Zebra mussel growth in streams would be limited due to a lack of algae (expressed as chlorophyll)(Table 3).

**Table 3. Water column zebra mussel suitability criteria and Benton County water column conditions. Water quality data are from 2017 except for Little Rock Lake.**

		Little Potential for Adult Survival	Little Potential for Larval Development	Moderate (survivable, but will not flourish)	High (favorable for optimal growth)
<b>Shell Formation Factors</b>					
Calcium (mg/l)	LAKES and Rivers				LITTLE ROCK - 32 MAYHEW - 36 Elk - 41 St. Francis - 39 Stoney - 49
	Mackie and Claudi 2010	<8	8 - 15	15 - 30	>30
pH	LAKES and Rivers		Rum - 7.8 Stoney - 7.7	LITTLE ROCK - 9.0 MAYHEW - 8.9 Mississippi - 8.0 Rum - 7.8 St. Francis - 8.0	Elk - 8.5
	Mackie and Claudi 2010	<7.0 or >9.5	7.0 - 7.8 or 9.0 - 9.5	7.8 - 8.2 or 8.8 - 9.0	8.2 - 8.8
Alkalinity (as mg CaCO <sub>3</sub> /l)	LAKES and Rivers			LITTLE ROCK - 99	MAYHEW - 118 Elk - 139 St. Francis - 124 Stoney - 152
	Mackie and Claudi 2010	<30	30 - 55	55 - 100	100 - 280
Conductivity (umhos)	LAKES and Rivers				LITTLE ROCK - 265 MAYHEW - 290 Elk - 345 Mississippi - 200 Rum - 195 St. Francis - 330 Stoney - 460
	Mackie and Claudi 2010	<30	30 - 60	60 - 110	>110
<b>Food Factors</b>					
Chlorophyll a (ug/l) (June-Sept)	LAKES and Rivers	LITTLE ROCK - 124 MAYHEW - 105 Elk - 2.1 Mississippi - <1 Rum - 2.1 Stoney - 2.1			St. Francis - 4.3
	Mackie and Claudi 2010	<2.5 or >25	2.0 - 2.5 or 20 - 25	8 - 20	2.5 - 8
Secchi depth (m) (June-Sept)	LAKES	LITTLE ROCK - 0.35 MAYHEW - 0.77			
	Mackie and Claudi 2010	<1 or >8	1 - 2 or 6 - 8	4 - 6	2 - 4
Total phosphorus (ug/l) (June-Sept)	LAKES and Rivers	LITTLE ROCK - 293 MAYHEW - 256 Elk - 74 Stoney - 238	St. Francis - 45		Mississippi - 31 Rum - 35
	Mackie and Claudi 2010	<5 or >50	5 - 10 or 35 - 50	10 - 25	25 - 35
<b>Substrate Factors (Dissolved oxygen and sediment composition)</b>					
Dissolved oxygen (mg/l)	LAKES	LITTLE ROCK - 4m MAYHEW - 3m			
	Mackie and Claudi 2010	<3 mg/l	3 - 7 mg/l	7 - 8 mg/l	>8 mg/l
Bottom substrate	LAKES and Rivers			Both lakes and rivers	
		soft muck with no hard objects		muck, silt, sand	rock or wood

**Zebra Mussel Growth Potential Based on Water Column and Substrate Conditions:** Two broad categories combine to produce growing conditions in lakes and streams for zebra mussels. The 2 categories are water column conditions and lake bottom (also referred to as substrate) conditions. Water column conditions were summarized in Table 3 and indicate algae could limit zebra mussel growth due to either a lack of algae or undesirable algae species such as blue-greens. The sediments were dominated by sand and silty-sand conditions. Zebra mussels will grow on these bottom sediments, but it is not the optimal substrate. A hard substrate of rocks and boulders is the optimal substrate and rocky areas in Benton County are sparse. A map that combines the growth potential of water column and substrate characteristics is shown in Figure 11. In lakes it appears dissolved oxygen is adequate to allow survival to at least 15 feet. Zebra mussels will grow on each other in clumps (Figure 12) and may begin to become commonly observed 2 to 4 years after first being introduced.

Little Rock Lake Zebra Mussel Growth Potential



Mayhew Lake Zebra Mussel Growth Potential



Figure 11. Key for potential growth: Green = light growth, yellow = moderate growth, and blue = no growth.



Figure 12. Distinctive zebra mussel growth pattern found in sandy and silty sediments. Zebra mussels will grow on each other and form clumps of zebra mussels.

## **Management Options for Zebra Mussels**

**Early Detection:** The zebra mussel is an aquatic invasive species that could be scouted in Benton County. An active scouting program consists of volunteers using a plate sampler, pvc pipe, or ceramic tiles hung from docks to monitor the appearance of juveniles. Samplers should be checked monthly over the summer months. Also docks and boats lifts should be inspected as they are removed at the end of each summer.



**Figure 13.** A zebra mussel plate sampler can be made from pvc materials. Ceramic tiles also make for good monitoring surfaces as well as pvc pipes.

**Rapid Response Assessment:** When zebra mussels are first discovered in a Benton County lake, a rapid response assessment should be conducted. Because search time will likely be limited, high quality target areas should be searched first. High quality areas include public access ramps and rocky shores. For Benton County, a minimum of 20 search hours would be appropriate.

**Rapid Response Action:** One approach for eradicating an early zebra mussel introduction is to surround the area of all known zebra mussels with a floating silt curtain and treat within the site with a copper sulfate compound. Special permits from the MnDNR would be needed for efforts like these. An intense assessment is necessary in order to locate all zebra mussel colonies in a lake if an eradication attempt is planned. It should be noted that there has been only one documented eradication of zebra mussels from a lake once they were discovered. The cost for an eradication attempt in Benton County could cost up to \$30,000.

**Control Options:** Because it takes male and female gametes combining to make trochophore (larvae) which turn into veligers and then into adults (Figure 9), it takes a critical number of mussels to establish a thriving colony. However efforts to control the mussels from reaching a threshold number have not been effective. Therefore zebra mussels will likely colonize around Benton County, but at predicted low densities due to a limiting food source.



Use of small-scale controls that pick-up and remove zebra mussel clumps from the lake bottom could be considered. Modified clam rakes are an example of a small-scale zebra mussel removal tool that would be appropriate for a swimming beach or a boat landing area.

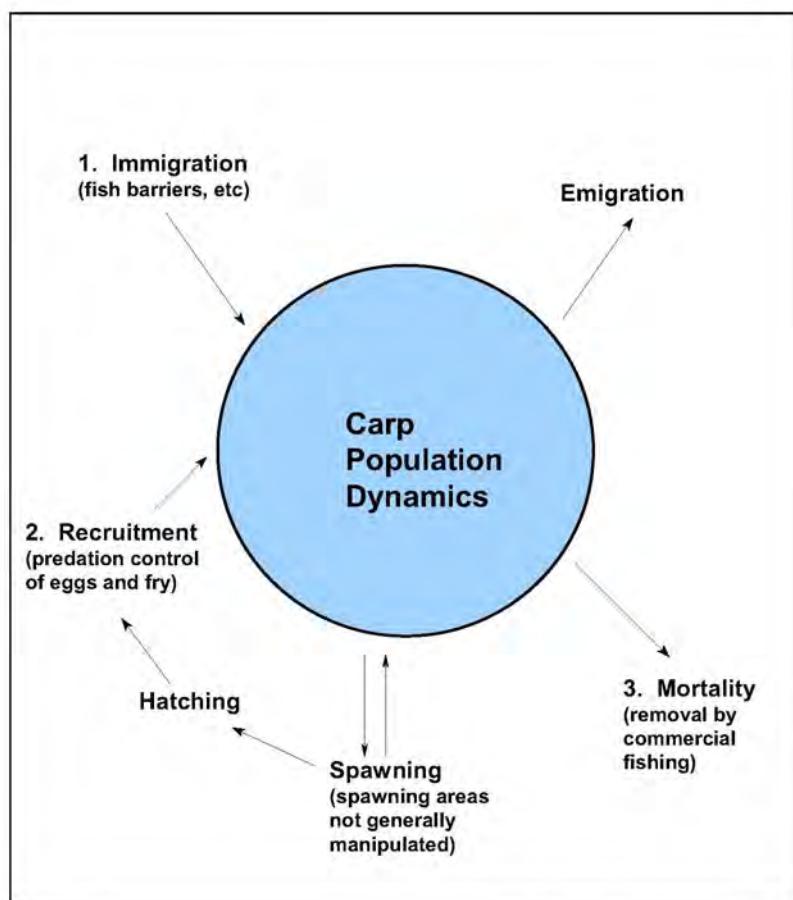
**Figure 14.** Small scale control devices maybe considered for removing zebra mussels in a clump form from swimming areas or sandy spawning sites.

## 5. Common Carp (fish)

**Benton County Status:** Present in Benton County (based on MnDNR fish surveys).

**Potential for Excessive Abundance in Benton County:** Low to high.

Under the right conditions, common carp can become abundant in lakes and produce poor water quality. Three factors that influence carp population are shown in Figure 15. Common carp were sampled in Benton County, based on the MnDNR fish surveys in Little Rock Lake, Mayhew Lake, and Elk River (Table 4). Benton County lake habitat suitability for future growth is high due to immigration conditions that are well suited for introduction of fish (Figure 15).



**Figure 15.** Three factors contribute to carp population dynamics. When carp populations are at a low density in lakes, immigration and recruitment generally limit populations.

**Table 4. Fish sampled in Little Rock Lake, Mayhew Lake, Elk River, Mississippi River, Rum River, Stony Brook, St. Frances River, and Mayhew Creek.**

Species	Little Rock Lake		Mayhew Lake	Elk River	Mississippi River*	Rum River		Stony Brook	St. Frances River
	2014 Trapnet fish/net	2014 Gillnet fish/net				2009 CR22 (fish captured)	2009 CR 9 (fish captured)		
<b>Fish Species</b>									
Bigmouth buffalo	0.11								
Black bullhead			3.67	5.0				1	
Black crappie	0.56	0.36	9.17		0.3				
Bluegill	4.78				0.3				
Bowfin (dogfish)	0.44		0.17						
Brown bullhead	0.11								
Channel catfish	1.11	6.64			8.5				
Common carp	1.56	0.09	0.17	2.1					
Greater redhorse				1.3					
Green sunfish	0.11		0.17	7.9					
Hybrid sunfish	0.11			2.1					
Largemouth bass	0.11		0.17						
Muskellunge					0.6				
Northern pike	0.44	1.09	3.67	9.6	7.9			11	
Rock bass				12.5					
Smallmouth bass					104				
Shorthead redhorse		0.27		0.4					
Silver redhorse	1.78	0.18							
Smallmouth bass		0.18							
Tadpole madtom	0.11			4.2					
Walleye	0.67	1.55	0.33		11.8				
White sucker	0.89	2.27	8.17	49.2		108	122	3	
Yellow bullhead	0.22	0.09							
Yellow perch	3.00	4.82	83	0.4					
<b>Minnow Species</b>									
Bigmouth shiner				11.7		1			
Blacknose dace				17.5					
Blacknose shiner				18.3					
Blackside darter				19.2					
Bluntnose minnow				20.8		1	2		
Brassy minnow				12.9		1	10		
Brook stickleback				0.8		77	13	1	
Central mudminnow				14.2		77	23	16	
Central stoneroller				25.4		1	141		
Creek chub				72.1					
Common shiner				194		6	129	1	
Fathead minnow				4.6		5	7		
Finescale dace						53	75		
Hornyhead chub				69.6					
Logperch									
Pearl dace									

\*only gamefish were reported. Carp are present in the Mississippi River.

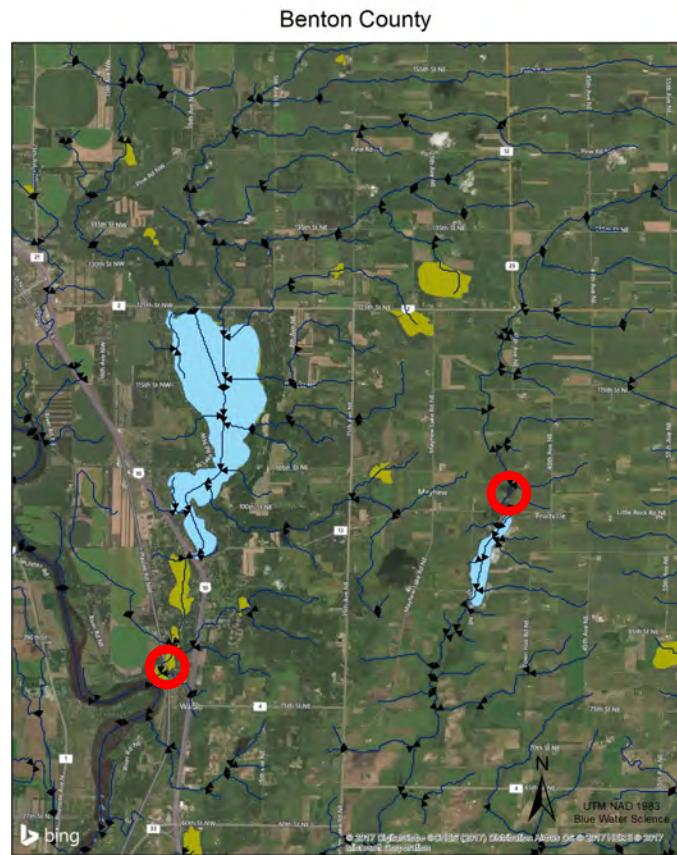
## Management Options for Common Carp in Little Rock and Mayhew Lakes

Carp are currently present in Benton County lakes and rivers. Carp abundance can change water quality problems depending on the success or failure of recruitment and spawning. Fish survey techniques can provide a good indication of the carp population and whether or not management is needed.

**Existing Conditions for Little Rock and Mayhew Lakes:** Both lakes have carp populations (Table 5) that are likely adversely impacting water quality and limiting aquatic plant distribution. It appears a challenge will be to limit immigration (Figure 16) and reduce in-lake spawning success.

**Table 5. Fish sampled in Little Rock Lake and Mayhew Lake.**

Species	Little Rock Lake		Mayhew Lake
	2014 Trapnet fish/net	2014 Gillnet fish/net	2008 Gillnet fish/net
<b>Fish Species</b>			
Bigmouth buffalo	0.11		
Black bullhead			3.67
Black crappie	0.56	0.36	9.17
Bluegill	4.78		
Bowfin (dogfish)	0.44		0.17
Brown bullhead	0.11		
Channel catfish	1.11	6.64	
Common carp	1.56	0.09	0.17
Green sunfish	0.11		0.17
Hybrid sunfish	0.11		
Largemouth bass	0.11		0.17
Northern pike	0.44	1.09	3.67
Shorthead redhorse		0.27	
Silver redhorse	1.78	0.18	
Smallmouth bass		0.18	
Tadpole madtom	0.11		
Walleye	0.67	1.55	0.33
White sucker	0.89	2.27	8.17
Yellow bullhead	0.22	0.09	
Yellow perch	3.00	4.82	83



**Figure 16. Common carp potential to immigrate into Little Rock and Mayhew lakes is high (shown with red circles).**

**Control Options:** Controlling carp generally involves 3 areas to address to implement a successful program. The three areas to address are 1) Immigration, 2) Recruitment, and 3) Mortality (Figure 17). Currently, there is carp immigration into Little Rock and Mayhew lakes. In addition the recruitment category centers around the spawning habitat that is found in areas outside of the lake but connected by small streams. These areas are probably present adjacent to Little Rock and Mayhew lakes. More work is needed to better characterize these conditions. A range of costs for the carp management program is shown in Table 5.



**1. Immigration**

*(Need to reduce fish migration into Little Rock and Mayhew Lakes)*



**2. Recruitment**

*(Need to reduce spawning in satellite water bodies to reduce the potential for carp to enter back into the lakes)*



**3. Mortality**

*(Commercial fishing is necessary when carp are abundant in lakes)*

Figure 17. Three factors impacting carp population dynamics.

**Table 5. Range of costs for a carp control program.**

	<b>Little Rock Lake (1,311 ac)</b>	<b>Mayhew Lake (128 ac)</b>
Determine biomass and abundance (electrofishing) and distribution (radio tagging)	\$12,000 - 18,000	\$6,000 - 10,000
Fish removal by commercial fishermen	\$5,000+	\$5,000+
<b>Barriers to stop immigration of carp</b>		
Bubble barrier (1 <sup>st</sup> choice for a barrier, if feasible)	\$30,000 - 50,000	\$10,000 - 20,000
Electrical barrier	\$80,000 - 100,000	\$40,000 - 60,000

## Other Non-Native Species to Consider

### Flowering Rush (aquatic plant)

**Benton County Status:** Currently not in Benton County.

**Potential for Colonization in Benton County:** Low.

#### Background Information:

- Flowering rush is actively expanding in some parts of the country. It has spread from a limited area around the Great Lakes and the St. Lawrence river to sporadic appearances in the northern U.S. and southern Canada.
- It competes with native shoreland vegetation.
- It is a Eurasian plant that is sold commercially for use in garden pools. It is now illegal to buy, sell or possess the plant.
- There is documentation from a site in Idaho, between 1956 and 1973, where flowering rush appeared to be out-competing willows and cattails.
- Flowering rush is on the DNR Prohibited invasive species list in Minnesota.



Figure 18. [left] Flowering rush plant and flowering rush flowerhead [right].

## **Management Options for Flowering Rush**

Flowering rush is a perennial aquatic herbaceous plant. It grows 1-4' high on an erect stem along shores in shallow water. In deeper water it grows submerged without producing flowers.

Flowering rush is very difficult to identify when not in flower. It closely resembles many native shoreland plants, such as the common bulrush.

Populations in the eastern U.S. produce seeds. Only one Minnesota population (Forest Lake, Washington County) produces viable seeds. Flowering rush reproduces by vegetative spread from buoyant rhizome fragments which may facilitate long distance disposal. Both seeds and bulb-lets are dispersed by water current.

### **Control Options**

**Mechanical:** Cut below the water surface several times per summer and remove cut parts from water. This will help control spreading. Hand dig isolated plants with care, root fragments can spread and sprout

**Chemical:** Application of the herbicide diquat (trade name Reward). Preliminary testing indicates that a mid-summer application during calm wind conditions may be most effective.

## Purple Loosestrife (aquatic and terrestrial plant)

**Benton County Status:** Present in Benton County.

**Potential for Nuisance Colonization in Benton County:** Moderate.

Purple loosestrife can colonize a wide range of soil conditions. Because of its high seed production it has a high potential to spread. It has moderate potential to produce nuisance growth conditions on individual lake lots because residents can control small infestations. It has a higher potential to produce moderate to heavy growth in undeveloped areas around Benton County.

**Purple Loosestrife in Benton County:** Purple Loosestrife is found in Benton County. Purple loosestrife is able to establish and multiply rapidly (Figure 19). If it is found in or around Benton County, its recommended that the lake association consider removal of the few individual plants before it can establish a foothold.



Source: MnDNR



Source: MnDNR

Figure 19. [left] Purple loosestrife flowerhead and a purple loosestrife plant [right].

## **Management Options for Purple Loosestrife**

**Scouting Activities:** Using lake maps lake observers should make notes of where shoreland purple loosestrife plants are observed. The next step would be to notify lake residents that purple loosestrife is present on their property and that removal is encouraged.

**Control Options:** Information and education materials are abundant from the MnDNR and other sources that describe how to control purple loosestrife found in small or large patches. For small area control, like what would be found along a shoreline area, hand pulling or treatment with a herbicide such as Rodeo is recommended. Rodeo is a broad spectrum herbicide and will kill all plants it comes in contact with. Therefore applications should target individual plants. If chemical treatment occurs within the ordinary high water mark on Benton County, a MnDNR aquatic nuisance control permit may be needed. There is no charge.

For large-scale control efforts encompassing an acre or more, biological control using flower-eating weevils and leaf-eating beetles could be considered. The MnDNR has information on the steps needed to implement a control program using weevils or beetles.

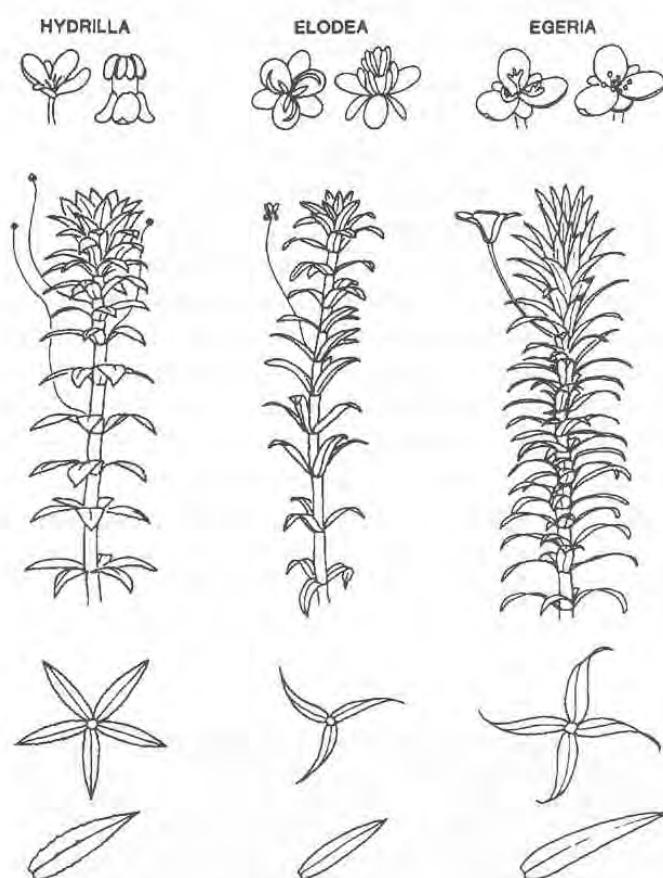
## Hydrilla (aquatic plant)

**Benton County Status:** Not present in Benton County (or in Minnesota) as of 2017.

**Nearest occurrence:** Arkansas to the south and Maryland to the east. Hydrilla was reported in a pond in Wisconsin and a lake in Indiana. Both infestations were considered to be eradicated.

**Potential for Nuisance Colonization in Benton County:** Low to moderate.

Hydrilla is an aquatic plant in the same family as Elodea, a native aquatic plant. Based on the ecology of hydrilla, studies have found it could survive in Minnesota. In the right settings hydrilla has the potential to produce more significant nuisance growth than curlyleaf pondweed or Eurasian watermilfoil. However, the correlation of hydrilla growth characteristics to sediment characteristics is not as well established compared to what is known for curlyleaf pondweed and Eurasian watermilfoil so it is difficult to predict what it would do in Benton County.



**Figure 20.**

Hydrilla is closely related to Egeria (an exotic plant in the U.S.) and elodea (a native). All three can produce nuisance growth conditions, but hydrilla takes the prize. (Line drawings from University of Florida, IFAS, Center for Aquatic Plants, Gainesville. With permission.)

From McComas 2003. Lake and Pond Management Guidebook.

### Management Options for Hydrilla

**Scouting Activities:** The picture of hydrilla should be copied and laminated and taken along with observers when they are scouting for curlyleaf pondweed and Eurasian watermilfoil. Any suspicious looking plant should be bagged and brought into the MnDNR for an identification confirmation. The probability is low that the first sighting of hydrilla in Minnesota would occur in Benton County, but observers should be aware of the possibility.

**Control Options:** If hydrilla was confirmed in Benton County, the MnDNR would more than likely handle the initial control or eradication tasks. Because hydrilla has the potential to be worse than curlyleaf pondweed or milfoil in the State of Minnesota, aggressive eradication efforts should be taken. Herbicides would be used immediately with follow-up inspections and treatments continuing for a year or more.

## Rusty Crayfish (invertebrate)

**Benton County Status:** Not presently found in Benton County as of 2017.

**Nearest Occurrence:** They are found in Cass County in Leech Lake as well as several other lakes.

**Potential for Nuisance Colonization in Benton County:** Low to moderate.

Rusty crayfish are regional non-native species. They are native to the Ohio River drainage, but once they get into a new area, rusty crayfish population controls are not in place and their population can increase dramatically. They feed heavily on vegetation and can devastate aquatic plant beds. If rusty crayfish invade Benton County they could reduce the aquatic plants found in the littoral area. Rusty crayfish would have minimal effect in the deeper parts of Benton County since submerged aquatic plants are rare there.

### Management Options for Rusty Crayfish

**Scouting Activities:** Over the course of the summer, modified minnow traps can be set to check for the presence of rusty crayfish. Several traps should be set around the Benton County and checked weekly.

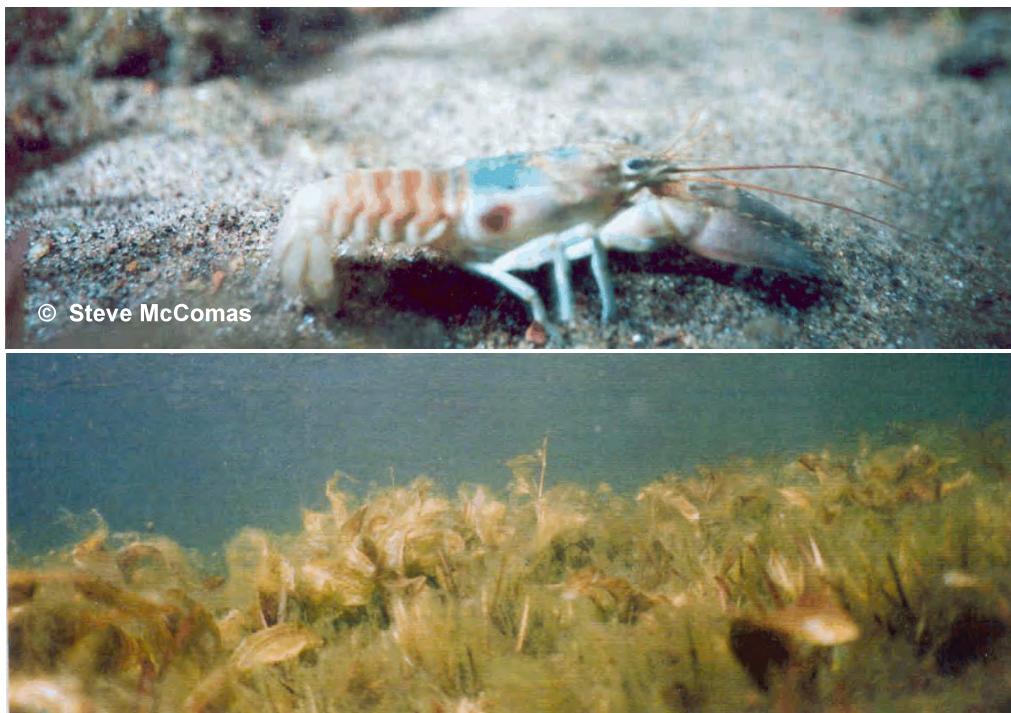


Figure 21. [top] Rusty crayfish in breeding colors (Plum Lake, Wisconsin). They can be identified by a reddish dot on their carapace (side of their body). Native crayfish do not have this marking. [bottom] Rusty crayfish graze down aquatic plant beds and eventually eliminate them.

Rusty crayfish traps are basically standard minnows trap with a slightly enlarged opening to allow crayfish entry. It is often baited with fish parts. A goal for Benton County is to deploy 5 to 10 rusty crayfish traps and monitor them over the summer for the presence of rusty crayfish, although any native crayfish appearances should be noted as well.

**Control Options:** Once in a lake, rusty crayfish are difficult to get under control and even more difficult to eradicate. Control efforts are two-pronged. Lake groups implement a trapping program to remove large crayfish and then rely on fish predation to control the smaller crayfish. Crayfish trapping would be concentrated in the bays that have aquatic plants. A total of 30 to 50 traps would be set in an initial control effort. If crayfish abundance was high, trapping would probably occur for 5 to 10 years. If crayfish abundance is low, trapping could be discontinued after a year or two and natural fish predation would be the main control.

Benton County has several predator fish species that would prey on rusty crayfish. The fish species are northern pike (low numbers), largemouth bass (low numbers), and yellow perch (low numbers). Because rusty crayfish are more aggressive defenders than native crayfish, it takes several years for the predator fish to “learn” how to capture rusty crayfish. Once this behavior is learned, it seems fish could be a long-term control.



Figure 22. Examples of three types of rusty crayfish traps. The trap on the right is a modified minnow trap.



Figure 23. Big Bearskin Lake, Oneida County, Wisconsin has an active rusty crayfish control program. Volunteers run the rusty crayfish traps. Crayfish are collected and brought to a central site for sorting. Small crayfish are taken into the woods for bear and raccoon food and the large crayfish are taken to a restaurant in Green Bay.

## Other Molluscs

**Quagga Mussel:** The Quagga mussel can inhabit both hard and soft substrates, including sand and mud, and can colonize to depths with lower dissolved oxygen than zebra mussels can handle but has a hard time colonizing in shallow water. The fan shaped mussel, has several life stages and is about the size of an adult's thumbnail. The quagga, like zebra mussels, is a filter feeder that can hurt fisheries by eating the zooplankton that native fish need to survive. It has also been noted to accumulate pollutants and pass them up the food chain.

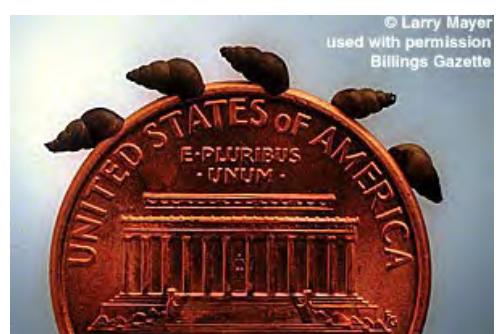


Photo courtesy of USGS

**Chinese and Banded Mystery Snail (CMS), (BMS):** A larger olive colored snail species, CMS and BMS can form dense aggregations. CMS can transmit human intestinal flukes, not documented in the US. Also a carrier of trematode parasites found in native mussels. CMS occur in over 80 waters and BMS are present in about 50 waters. The name "mystery" snail comes from their odd reproduction, where offspring appear, suddenly, fully developed. After a fourth year of reproduction, the snails die and the shells wash to shore. The snail was introduced as an aquarium organism that may have been dumped into a water body.



**New Zealand Mudsnavl:** A small snail introduced with fish stocking and ballast waters in the 1980's. They reproduce asexually and their numbers can reach high densities, 100,000-700,000 per m<sup>2</sup>. They are typically able to outcompete native snails that are important forage for fish. Found in Lake Superior in 2001, they have been slowly spreading inland since. The New Zealand mudsnail can attach to gear placed in the water or on hard surfaces.



**Faucet Snail:** Introduced in the great lakes in the 1870's the faucet snail has become fairly well established in Minnesota especially along the Mississippi River corridor. The snail acts as an intermediate host for 3 different hosts that can be fatal to ducks and coots, causing internal hemorrhaging and lesions. The parasites have a complex life cycle, requiring 2 intermediate hosts.



## Asian Carp

**Benton County Status:** Not present in Benton County as of 2017.

**Nearest occurrence:** St. Croix and Mississippi Rivers eDNA found. Live fish caught in 2015 in Pool 1 on the Mississippi River (Minneapolis/St. Paul area).

**Potential for Nuisance Colonization in Benton County:** Low.

Asian carp are filter feeders that can consume large amounts of plankton. They are voracious feeders, reaching over a hundred pounds for bighead and 60 lbs for silver carp. The worry is they will outcompete native fishes and young of the year for the plankton, thereby reducing sport fish abundance. The river fish have been spreading up from Illinois where ideal conditions have allowed them to establish. In Minnesota, individual carps have been netted but no established populations have been found.

The spawning requirements for Asian carp require a river flow of 2 to 8 feet per second and 50 miles long.

## Management Options for Asian Carp

**Control Options:** Asian carp may not be able to spawn in Benton County. Control options include commercial fishing or to let the carp die off naturally.



Figure 24. Bighead carp, *Hypophthalmichthys nobilis*, and distribution maps (USFWS photo).



Figure 25. Silver carp, *Hypophthalmichthys molitrix*, and distribution map (USFWS photo).



## Snakehead

**Benton County Status:** Not present in Benton County as of 2017.

**Nearest occurrence:** East coast.

**Potential for Nuisance Colonization in Benton County:** Moderate to high.

The northern snakehead is native to eastern Asia. In the United States, it has few predators, and could disrupt ecosystems and native fish assemblages. Snakeheads are very hardy, adaptive, and can even live and travel out of water. The snakehead is extremely aggressive and territorial, typically feeding on other fish species. Adult snakeheads have been shown to have a diet overlap with largemouth bass in the Potomac River where they are established.

The northern snakehead has a range that extends north of the great lakes region.

## Management Options for Snakehead

**Control Options:** Preventative measures will be the most effective. Once established, rotenone can be used for eradication, however all fish species will be killed. A dissolved oxygen content of less than 3 parts per million should be achieved throughout the waterbody to ensure sufficient dosage.



**Figure 26. Picture of a snakehead (left) and distribution map (right). From the USGS website (Nonindigenous Aquatic Species (NAS) page).**

## **Viral Hemorrhagic Septicemia (VHS)(fish virus)**

**Benton County Status:** Not present in Benton County as of 2017.

**Nearest occurrence:** Several inland lakes in Wisconsin and all the Great Lakes.

**Potential for Nuisance Colonization in Benton County:** Moderate.

Prevention is the key to minimize the impact of VHS. This fish virus will kill a variety of fish species, but does not eliminate the entire fish population in a lake. If it were to be introduced to Benton County, it has a high probability of becoming established.

### **Management Options for VHS**

**Scouting Activities:** The basic strategy is to make anglers aware that they should report any fish with signs of hemorrhaging to the MnDNR. If they have caught a fish with hemorrhaging they should bring the fish to the MnDNR. If a fish kill is observed involving hemorrhaging fish don't collect the fish, but call the MnDNR immediately.

**Control Options:** At the present time, there is no known way to reduce or inactivate the virus in the open water. The best approach is to remove infected fish as soon as feasible. The virus can be passed from one infected fish to another. If VHS is discovered in Benton County, an intensive information program should be implemented by the Benton County Environmental staff. Staffing public access landings could be considered to prevent the spread of VHS by way of livewell and bilge water transport to other lakes. Costs for these actions could be partly covered by grants.



**Figure 27. Examples of hemorrhaging in fish with the VHS virus.**

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## Appendix B: Benton County AIS Task Force Brainstorming

### Benton AIS Plan Development Meeting Cumulative

As of March 20, 2017

Facilitated by the Crow River Organization of Water

Benton County Courthouse

February 28, 2017, 10:00 a.m. – 12:00 p.m.

The meeting focused on interesting AIS as a county concern, a short presentation on select species, an introduction into the planning process, and a group prioritization exercise

#### Program Administration

- Combination of partners for project administrations
  - Who is responsible for leading the group?
  - What approvals are needed to spend AIS funds?
  - How do we make sure these funds are used in a way to fully address the county's needs?

#### Individual Species Program

- Harvesting Carp (Little Rock, Hog feed) **1x10**
  - Who will serve as the project lead?
  - What are itemized steps that can be accomplished this year?
  - What program foundations need to be established?
  - How much should the AIS funds be used to assist?
  - Where will the Carp go?
  - How to create sustainability in the process?
- Plants from Little Rock drawdown **1x1, 2x2, 3x2**
  - What are need MN DNR permitting requirements?
  - Who will serve as the project lead during this phase?
  - What is the timeline for this drawdown?
  - How certain are the next steps on this project?
  - What percentage of the budget should be used on this endeavor?

#### Education and Outreach **2x2, 3x1**

- Focus on the river **2x1**
  - What would programming and/or outreach on the river look different than lakes?
  - How is the river used primarily?
  - What are existing examples of programming?
- Factual outreach, rather anecdotal
  - What kinds of information does the group want communicated?
    - Economic
    - Ecological
  - What medium does the group want to pursue?
    - Mailings
    - Billboards
    - Giveaways
    - Specific environments or opportunities
    - Think creatively
  - Are newspapers still a valid way to communicate information?
  - What level of innovation is the group interested in?

- What level of costs does
- School: high schools & elementary schools
  - Who has connections to the school system?
  - What kind of material would the school system want and accept?
  - Are there outside groups that may assist with this?
- 5<sup>th</sup> grade poster contest for Little Rock Lake
  - Is there any interest in expanding this county wide?
  - How would artwork from Little Rock Lake be used for a larger effort?
- Governor's opener on Saint Cloud/Mississippi this May w/200 gift packs
  - What giveaway item do we want to provide?
  - Do we want to provide any educational materials?
- Include individual give away ideas in plan
  - What giveaways do we want to provide?
  - Where do we want to give these giveaways out?
- Active sportsman's club
  - What kind of efforts could be pursued with this engaged group?
- Very active county fair
  - What are some interesting ways to engage with the public?
  - Who is going to host this booth?

### Management and Control

- Comprehensive review of need of treatment in consideration of shoreline health and erosion controls.  
**2x1, 3x4**
- Cost share program/granting
  - Who is this program open to?
  - How much can the program afford to give sustainably?
  - Who is leading this program?

### Topics of No to Limited Interest:

- Inspection and Decontamination
- AIS- Specific Enforcement

## Appendix C: Benton County AIS Task Force Open house

# LAKE DETECTIVE STEVE McCOMAS

### WHEN

**August 22  
10am – 12pm**

### WHERE

**Benton Beach  
Pavilion**

**130 125<sup>th</sup> Street NW, Rice MN 56367**

**What Will You Learn · Aquatic Invasive Species · Lake  
Ecology · Identification · Suitability Assessment ·**

### ALL AGES EVENT

### ADDRESS

Common Carp  
Curlyleaf Pondweed  
Eurasian Watermilfoil  
Flowering Rush  
New Zealand Mud Snail  
Starry Stonewort

### AT THE PAVILION

FREE Event  
Opportunity to Learn  
More about our Water  
Resources

### SPONSORS

Benton County AIS  
Task Force

Benton County  
Blue Water Science  
CROW

### BENEFITING

Benton County Rivers  
and Lakes

## Appendix D: Lake Service Providers (LSP) In/Near Benton County



Company	Personell	Contact Information	Location
South Side Sports	Jeff Deering	320-584-5514 jeff@southsidesports.com	17430 Highway 10 NW, Royalton, MN 56373
G & H Irrigation Inc	Jason Hollenkamp	320-333-5960	1149 29th Ave NE, Sauk Rapids, MN 56379
JB Lund Dock & Lift		844-586-3462	207 Highway 10 South, Royalton, MN 56373
Lake Weeders Digest	Bruce Wahlstrom	763-551-1441 Info@WeedersDigest.com	5701 International Parkway, New Hope, MN 55428
RMB Environmental Laboratories	Emelia Hauck	218-846-1465 customerservice@rmbel.info	22796 County Highway 6, Detroit Lakes, MN 56501
TM Home and Lawn Care LLC, DBA Waterfront Services	Todd Moos	B: 763-444-7181 P: 612-221-9503	29320 River Ridge Road NW, Isanti, MN 55040
Channel Marine and Sports	Casey Hopfer	320-597-5975	101 4th Street SW, Richmond, MN, 56368
Westre's Marine and Sports	Jason Westre	320-230-0000	1101 Highway 10 South, St Cloud, MN 56304
J & J Marine		320-236-3625	14882 State highway 55 South Haven, Annandale, MN 55382
Miller Marine	Jim Beam	B: 844-361-8150 P: 320-252-8747	2930 2nd Street South

## **Appendix E: Selected Minnesota Laws Related to Water-related Equipment, Watercraft Inspections, and Decontamination (August 1, 2013)**

### **M.S. 84D.01 DEFINITIONS.**

**Subdivision 1.** Terms. For the purposes of this chapter, the following terms have the meanings given them.

**Subd. 2. Aquatic macrophyte.** "Aquatic macrophyte" means a macroscopic non-woody plant, either a submerged, floating leafed, floating, or emergent plant that naturally grows in water.

**Subd. 3a. Decontaminate.**

"Decontaminate" means to wash, drain, dry, or thermally or otherwise treat water-related equipment in order to remove or destroy aquatic invasive species using the "Recommended Uniform Minimum Protocols and Standards for Watercraft Interception Programs for Dreissenid Mussels in the Western United States" (September 2009) prepared for the Western Regional Panel on Aquatic Nuisance Species, or other protocols developed by the commissioner.

**Subd. 8a. Introduce .**

"Introduce" means to place, release, or allow the escape of a nonnative species into a free-living state . Introduce does not include: the immediate return of a nonnative species to waters of the state from which the nonnative species was removed; or the seasonal return of nonnative species attached to water-related equipment, such as a dock or boat lift, that has been stored on riparian property and directly returned to the same waters of the state from which the water- related equipment was removed .

**Subd. 8b. Inspect.**

"Inspect" means to examine water-related equipment to determine whether aquatic invasive species, aquatic macrophytes, or water is present and includes removal, drainage, decontamination, or treatment to prevent the transportation and spread of aquatic invasive species, aquatic macrophytes, and water

**.Subd. 8c. Inspector.**

"Inspector" means: (1) an individual trained and authorized by the commissioner to inspect water-related equipment under section 84D .105, subdivision 2, paragraph (a); or (2) a conservation officer or a licensed peace officer .

**Subd. 16. Transport.**

"Transport" means to cause or attempt to cause a species to be carried or moved into or within the state, and includes accepting or receiving the species for transportation or shipment . Transport does not include:

- (1) the movement of infested water or a nonnative species within a water of the state or to a connected water of the state where the species being transported is already present; or
- (2) the movement of a nonnative species attached to water-related equipment or other water-related structures from a water of the state to the shore of riparian property on that water or the return of water-related equipment or structures from the shore into the same water of the state .

**Subd. 18a. Water-related equipment.**

"Water-related equipment" means a motor vehicle, boat, watercraft, dock, boat lift, raft, vessel, trailer, tool, implement, device, or any other associated equipment or container, including but not limited to portable bait containers, live wells, ballast tanks except for those vessels permitted under the Pollution Control Agency vessel discharge program, bilge areas, and water-hauling equipment that is capable of containing or transporting aquatic invasive species, aquatic macrophytes, or water .

### **M.S. 84D.02 INVASIVE SPECIES MANAGEMENT PROGRAM FOR AQUATIC PLANTS AND WILD ANIMALS .**

**Subdivision 1. Establishment.**

The commissioner shall establish a statewide program to prevent and curb the spread of invasive species of aquatic plants and wild animals . The program must provide for coordination among governmental entities and private organizations to the extent practicable . The commissioner shall seek available federal funding and grants for the program .

**M.S. 84D.05 PROHIBITED INVASIVE SPECIES. Subdivision 1. Prohibited activities.**

A person may not possess, import, purchase, sell, propagate, transport, or introduce a prohibited invasive species, except:

- (1) under a permit issued by the commissioner under section 84D .11;
- (2) in the case of purple loosestrife, as provided by sections 18 .75 to 18 .88;
- (3) under a restricted species permit issued under section 17 .457;
- (4) when being transported to the department, or another destination as the commissioner may direct, in a sealed container for purposes of identifying the species or reporting the presence of the species;
- (5) when being transported for disposal as part of a harvest or control activity under a permit issued by the commissioner according to section 103G .615, when being transported for disposal when specifically authorized under a commercial fishing license issued by the commissioner according to section 97A .418, 97C .801, 97C .811, 97C .825, 97C .831, or 97C .835, or when being transported as specified by the commissioner;

- (6) when the specimen has been lawfully acquired dead and, in the case of plant species, all seeds are removed or are otherwise secured in a sealed container;
- (7) in the form of herbaria or other preserved specimens;
- (8) when being removed from watercraft and equipment, or caught while angling, and immediately returned to the water from which they came; or
- (9) as the commissioner may otherwise prescribe by rule .

**Subd. 2. Seizure.**

Under section 97A .221, the commissioner may seize or dispose of all specimens of prohibited invasive species unlawfully possessed, imported, purchased, sold, propagated, transported, or introduced in the state .

**M.S. 84D.07 REGULATED INVASIVE SPECIES.**

Except as provided in rules adopted under section 84D .12, subdivision 2, clause (1), a person may not introduce a regulated invasive species without a permit issued by the commissioner .

**M.S. 84D.09 AQUATIC MACROPHYTES. Subdivision 1. Transportation prohibited.**

Unless specifically authorized under a license or permit issued by the commissioner, a person may not transport aquatic macrophytes except as provided in this section .

**Subd. 2. Exceptions.**

Unless otherwise prohibited by law, a person may transport aquatic macrophytes:

- (1) that are duckweeds in the family Lemnaceae;
- (2) for purposes of constructing shooting or observation blinds in amounts sufficient for that purpose, provided that the aquatic macrophytes are emergent and cut above the waterline;
- (3) when legally purchased or traded by or from commercial or hobbyist sources for aquarium, wetland or lakeshore restoration, or ornamental purposes;
- (4) when harvested for personal or commercial use if in a motor vehicle;
- (5) to the department, or another destination as the commissioner may direct, in a sealed container for purposes of identifying a species or reporting the presence of a species;
- (6) that are wild rice harvested under section 84 .091;
- (7) in the form of fragments of emergent aquatic macrophytes incidentally transported in or on watercraft or decoys used for waterfowl hunting during the waterfowl season; or
- (8) when removing water-related equipment from waters of the state for purposes of cleaning off aquatic macrophytes before leaving a water access site .

**M.S. 84D.10 WATERCRAFT REQUIREMENTS AND PROHIBITIONS. Subdivision 1.**

**Launching prohibited.**

A person may not place or attempt to place into waters of the state a watercraft, a trailer, or aquatic plant harvesting or control equipment that has aquatic macrophytes or prohibited invasive species attached except as provided in this section .

**Subd. 3. Removal and confinement.**

- (a) A conservation officer or other licensed peace officer may order:
  - (1) the removal of aquatic macrophytes or prohibited invasive species from water-related equipment before it is placed into waters of the state;
  - (2) confinement of the water-related equipment at a mooring, dock, or other location until the water-related equipment is removed from the water;
  - (3) removal of water-related equipment from waters of the state to remove prohibited invasive species if the water has not been designated by the commissioner as being infested with that species .; and
  - (4) a prohibition on placing water-related equipment into waters of the state when the water-related equipment has aquatic macrophytes or prohibited invasive species attached in violation of subdivision 1 or when water has not been drained or the drain plug has not been removed in violation of subdivision 4 .
- (b) An inspector who is not a licensed peace officer may issue orders under paragraph (a), clauses (1), (3), and (4) .

**Subd. 4. Persons transporting water-related equipment.**

- (a) When leaving waters of the state a person must drain water-related equipment holding water and live wells and bilges by removing the drain plug before transporting the water-related equipment off the water access site or riparian property .
- (b) Drain plugs, bailers, valves, or other devices used to control the draining of water from ballast tanks, bilges, and live wells must

be removed or opened while transporting water-related equipment .

- (c) Emergency response vehicles and equipment may be transported on a public road with the drain plug or other similar device replaced only after all water has been drained from the equipment upon leaving the water body .
- (d) Portable bait containers used by licensed aquatic farms, portable bait containers when fishing through the ice except on waters designated infested for viral hemorrhagic septicemia, and marine sanitary systems are exempt from this subdivision .
- (e) A person must not dispose of bait in waters of the state .
- (f) A boat lift, dock, swim raft, or associated equipment that has been removed from any water body may not be placed in another water body until a minimum of 21 days have passed .
- (g) A person who transports water that is appropriated from non-infested surface water bodies and that is transported by a commercial vehicle, excluding watercraft, or commercial trailer, which vehicle or trailer is specifically designed and used for water hauling, is exempt from paragraphs (a) and (b), provided that the person does not discharge the transported water to other surface waters or within 100 feet of a surface water body .
- (h) A person transporting water from non-infested surface water bodies for firefighting or emergencies that threaten human safety or property is exempt from paragraphs (a) and (b) .

#### **M.S. 84D.105 INSPECTION OF WATER-RELATED EQUIPMENT.**

##### **Subdivision 1. Compliance inspections.**

Compliance with aquatic invasive species inspection requirements is an express condition of operating or transporting water-related equipment . An inspector may prohibit an individual from placing or operating water-related equipment in waters of the state if the individual refuses to allow an inspection of the individual's water-related equipment or refuses to remove and dispose of aquatic invasive species, aquatic macrophytes, and water .

##### **Subd. 2. Inspector authority.**

- (a) The commissioner shall train and authorize individuals to inspect water-related equipment for aquatic macrophytes aquatic invasive species, and water .  
The commissioner may enter into a delegation agreement with a tribal or local government where inspection authority as provided under paragraphs (b), (g), and (h) is delegated to tribal and local governments that assume all legal, financial, and administrative responsibilities for inspection programs on some or all public waters within their jurisdiction .
- (b) Inspectors may visually and tactiley inspect watercraft and water-related equipment to determine whether aquatic invasive species, aquatic macrophytes, or water is present . If a person transporting watercraft or water-related equipment refuses to take required corrective actions or fails to comply with an order under section 84D .10, subdivision 3, an inspector who is not a licensed peace officer shall refer the violation to a conservation officer or other licensed peace officer .
- (c) In addition to paragraph (b), a conservation officer or other licensed peace officer may inspect any watercraft or water-related equipment that is stopped at a water access site, any other public location in the state, or a private location where the watercraft or water-related equipment is in plain view, if the officer determines there is reason to believe that aquatic invasive species, aquatic macrophytes, or water is present on the watercraft or water-related equipment .
- (d) Conservation officers or other licensed peace officers may utilize check stations in locations, or in proximity to locations, where watercraft or other water-related equipment is placed into or removed from waters of the state . Any check stations shall be operated in a manner that minimizes delays to vehicles, equipment, and their occupants .

#### **M.S. 84D.13 ENFORCEMENT;**

##### **PENALTIES. Subdivision 1. Enforcement.**

Unless otherwise provided, this chapter and rules adopted under section 84D .12 may be enforced by conservation officers under sections 97A .205, 97A .211, and 97A .221 and by other licensed peace officers .

##### **Subd. 2. Cumulative remedy.**

The authority of conservation officers and other licensed peace officers to issue civil citations is in addition to other remedies available under law, except that the state may not seek penalties under any other provision of law for the incident subject to the citation .

##### **Subd. 3. Criminal penalties.**

- (a) A person who violates a provision of sections 84D .03 or 84D .06 to 84D .11, or a rule adopted under section 84D .12, is guilty of a misdemeanor .
- (b) A person who possesses, transports, or introduces a prohibited invasive species in violation of section 84D .05 is guilty of a misdemeanor . A person who imports, purchases, sells, or propagates a prohibited invasive species in violation of section 84D .05 is guilty of a gross misdemeanor .
- (c) A person who refuses to obey an order of a peace officer or conservation officer to remove prohibited invasive species or aquatic macrophytes from any water-related equipment is guilty of a gross misdemeanor .

##### **Subd. 4. Warnings; civil citations.**

After appropriate training, conservation officers, other licensed peace officers, and other department personnel designated by the commissioner may issue warnings or citations to a person who:

- (1) unlawfully transports prohibited invasive species or aquatic macrophytes;
- (2) unlawfully places or attempts to place into waters of the state water-related equipment that has aquatic macrophytes or prohibited invasive species attached;
- (3) intentionally damages, moves, removes, or sinks a buoy marking, as prescribed by rule, Eurasian water milfoil;
- (4) fails to remove plugs, open valves, and drain water water-related equipment before leaving waters of the state or when transporting water-related equipment as provided in section 84D .10, subdivision 4; or
- (5) transports infested water, in violation of rule, off riparian property .

**Subd. 5. Civil penalties.**

A civil citation issued under this section must impose the following penalty amounts:

- (1) for transporting aquatic macrophytes in violation of section 84D .09, \$100;
- (2) for placing or attempting to place into waters of the state water-related equipment that has aquatic macrophytes attached, \$200;
- (3) for unlawfully possessing or transporting a prohibited invasive species other than an aquatic macrophyte, \$500;
- (4) for placing or attempting to place into waters of the state water-related equipment that has prohibited invasive species attached when the waters are not designated by the commissioner as being infested with that invasive species, \$500 for the first offense;
- (5) for intentionally damaging, moving, removing, or sinking a buoy marking, as prescribed by rule, Eurasian water milfoil, \$100;
- (6) for failing to remove plugs, open valves, and drain water from water-related equipment, other than marine sanitary systems, before leaving waters of the state, \$100; and
- (7) for transporting infested water off riparian property without a permit as required by rule, \$200 .

**Subd. 6. Watercraft license suspension.**

A civil citation may be issued to suspend, for up to a year, the watercraft license of an owner or person in control of a watercraft or trailer who refuses to submit to an inspection under section 84D .105 or who refuses to comply with a removal order given under this section .

**Subd. 7. Satisfaction of civil penalties.**

A civil penalty is due and a watercraft license suspension is effective 30 days after issuance of the civil citation. A civil penalty collected under this section must be paid to either: (1) the commissioner if the citation was issued by a conservation officer and must be credited to the invasive species account; or (2) the treasury of the unit of government employing the officer who issued the civil citation.

**M.S. 86B.811 CRIMINAL PENALTIES.**

**Subd. 1a. Petty misdemeanor.**

A watercraft owner who fails to obtain or display an aquatic invasive species rules decal or a person who operates a watercraft that does not display an aquatic invasive species rule decal in violation of section 86B .508 is guilty of a petty misdemeanor .

**MINNESOTA RULES 6216.0250 PROHIBITED INVASIVE SPECIES.**

**Subpart 1. Designation.** The species in subparts 2 to 5 and any hybrids, cultivars, or varieties of the species are designated as prohibited invasive species .

**Subp. 2. Aquatic plants.** The following aquatic plants are designated as prohibited invasive species:

A . African oxygen weed (*Lagarosiphon major*) (Ridley) Moss ex Wagner; B. aquarium watermoss or giant salvinia (*Salvinia molesta*) Mitchell; C . Australian stonecrop (*Crassula helmsii*) (Kirk) Cockayne; D . brittle naiad (*Najas minor*) Allioni; E . curly-leaf pondweed (*Potamogeton crispus*) Linnaeus; F. Eurasian water milfoil (*Myriophyllum spicatum*) Linnaeus; G . European frog-bit (*Hydrocharis morsus-ranae*) Linnaeus; H . flowering rush (*Butomus umbellatus*) Linnaeus; I . hydrilla (*Hydrilla verticillata*) (Carl von Linnaeus) Royle; J. Indian swampweed (*Hydrophila polysperma*) (Roxburgh) T . Anders; K . purple loosestrife (*Lythrum salicaria*, *Lythrum virgatum*, or any variety, hybrid, or cultivar thereof) Linnaeus; L . water aloe or water soldiers (*Stratiotes aloides*) Linnaeus; and M . water chestnut (*Trapa natans*) Linnaeus. N. 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*)

**Subp. 3. Fish.** The following fish are designated as prohibited invasive species:

A . bighead carp (*Hypophthalmichthys nobilis*) Richardson; B . black carp (*Mylopharyngodon piceus*) (Richardson) Peters; C . grass carp (*Ctenopharyngodon idella*) Valenciennes; D . largescale silver carp (*Hypophthalmichthys harmandi*) Sauvage; E . northern snakehead fish (*Channa argus*);

F . round goby (*Neogobius melanostomus*); G . rudd (*Scardinius erythrophthalmus*) Linnaeus; H . ruffe (*Gymnocephalus cernuus*) Linnaeus; I . sea lamprey (*Petromyzon marinus*) Linnaeus; J . silver carp (*Hypophthalmichthys molitrix*) Valenciennes; K . tubenose goby (*Proterorhinus marmoratus*) Pallas; L . western mosquitofish (*Gambusia affinis*) Baird & Girard; M . white perch (*Morone americana*) Gmelin; and N . zander (*Stizostedion lucioperca*) Linnaeus .

**Subp. 4. Invertebrates.** The following invertebrates are designated as prohibited invasive species: A . faucet snail (*Bithynia tentaculata*); B . New Zealand mud snail (*Potamopyrgus antipodarum*); C . quagga mussel (*Dreissena bugensis*); D . red swamp crayfish (*Procambarus clarkii*); and E . zebra mussel (*Dreissena spp.*) .

#### **6216.0260 REGULATED INVASIVE SPECIES.**

**Subpart 1. Designation.** The species in subparts 2 to 5 are designated as regulated invasive species .

**Subp. 2. Aquatic plants.** The following aquatic plants are designated as regulated invasive species: A . Brazilian waterweed (*Egeria densa*) Planchon; B . Carolina fanwort or fanwort (*Cabomba caroliniana*) A . Gray; C . Chinese water spinach (*Ipomoea aquatica*) Forsskal; D . parrot's feather (*Myriophyllum aquaticum*) (da Conceicao Vellozo) Verdcourt; E . nonnative waterlilies (*Nymphaea spp.*) Linnaeus, or any variety, hybrid, or cultivar thereof Native Minnesota waterlilies are: *Nymphaea odorata* Aiton subsp. *odorata* Aiton, *N. leibergii* Morong, and *N. odorata* Aiton subsp. *tuberosa* (Paine) Wiersema & Hellquist; and F . yellow iris or yellow flag (*Iris pseudacorus*) Linnaeus .

**Subp. 3. Fish.**

A . alewife (*Alosa pseudoharengus*) Wilson; B . common carp, koi (*Cyprinus carpio*) Linnaeus; C . goldfish (*Carassius auratus*) Linnaeus; D . rainbow smelt (*Osmerus mordax*) Mitchell; and E . tilapia (*Tilapia*, *Oneochromis*, *Sarotherodon spp.*) .

**Subp. 5. Invertebrates. The following invertebrates are designated as regulated invasive species:**

A . banded mystery snail (*Viviparus georgianus*) I . Lea; B . Chinese mystery snail, Japanese trap door snail (*Cipangopaludina spp.*) Hannibal; C . rusty crayfish (*Orconectes rusticus*) Girard; and D . spiny waterflea (*Bythotrephes longimanus*) Leydig .

## **Appendix F: Benton County AIS Task Force**

One Representatives from each Organization:

County Board  
Mayhew Lake  
Little Rock Lake Association Member  
Little Rock Lake Association Board Member  
Mississippi River Representative

### **Advisory Committee**

Benton County Department of Development Staff  
Benton Parks Commission Member  
Benton County Water Planner

## **Benton County AIS Task Force Contacts**

Any comments, concerns, and/or questions, please contact below resources:

### **Benton County**

Department of Development Director  
531 Dewey Street  
PO Box 129  
Foley, MN 56329  
Main Line: 320-968-5065

### **Benton SWCD**

**Water Planner**  
14 2<sup>nd</sup> Ave West  
Foley, MN 56329  
Main Line: 320-968-5300

## Appendix G: Benton County Board AIS Resolution

**Benton County Board of Commissioners**  
**Resolution # 2018-#14**

**A RESOLUTION TO APPROVE AND ADOPT THE BENTON COUNTY AQUATIC  
INVASIVE SPECIES PREVENTION AND MANAGEMENT PLAN**

**WHEREAS**, the Minnesota Legislature provided in Session Laws of 2014, Chapter 308 a new form of aid to counties to fund programs designed to prevent the introduction or limit the spread of aquatic invasive species; and

**WHEREAS**, the aid distribution formula contained in Chapter 308 provided Benton County with aid totaling \$35,228 in 2017; and

**WHEREAS**, counties are required under Chapter 308 to adopt guidelines by resolution or plan describing how the county intends to utilize its aquatic invasive species aid; and

**WHEREAS**, said guidelines must be adopted by December 31<sup>st</sup> in the year in which aid is received; and

**WHEREAS**, Benton County has contracted in 2016 with the Crow River Organization of Water to develop a County aquatic invasive species plan; and

**WHEREAS**, Crow River Organization of Water in conjunction with Water Resource Advisory Committee and County staff, have developed an AIS Plan outlining guidelines for the use of the AIS funds provided to Benton County by the State of Minnesota; and

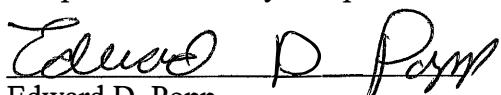
**WHEREAS**, the Benton County Aquatic Invasive Species Prevention and Management Plan is in accordance with the goals set forth in MN Statute 477 A. 19.

**NOW, THEREFORE, BE IT RESOLVED**, the Benton County Board of Commissioners hereby approves and adopts the Benton County Aquatic Invasive Species Prevention and Management Plan and supporting documentation dated April 2018; and

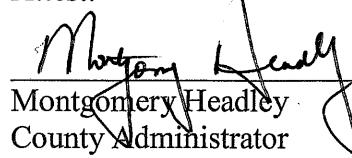
**BE IT FURTHER RESOLVED** that the Benton County Board of Commissioners authorizes the establishment of an AIS Task Force with the responsibility reviewing requests for AIS funding in accordance with the AIS Plan and providing recommendations to the County Board; and

**BE IT FURTHER RESOLVED** that the Benton County Board of Commissioners submits the Aquatic Invasive Species Prevention and Management Plan to the Minnesota Department of Natural Resources prior to December 31, 2018.

Adopted this 17<sup>th</sup> day of April 2018.

  
Edward D. Popp  
Chair, Benton County Commissioners

Attest:

  
Montgomery Headley  
County Administrator