



# INVASIVE SPECIES 2017

## ANNUAL REPORT



This report is dedicated to the memory of Chip Welling, AIS Management Coordinator, who died of cancer April 28, 2017, at age 62. Chip is deeply missed by his colleagues and friends at the DNR. His memory as a scientist, critical thinker, plant manager and gentle soul continues to inspire us.

---

## **ECOLOGICAL AND WATER RESOURCES**

500 Lafayette Road, St. Paul, MN 55155-4025

651-259-5100

For current invasive species regulations, a list of infested waters, species information, and local DNR contacts, visit [www.mndnr.gov/AIS](http://www.mndnr.gov/AIS).

### **DNR Information Center**

Twin Cities: 651-296-6157

Minnesota Toll Free: 1-888-646-6367

Telecommunication device for the deaf (TDD): 651-296-5484

TDD Toll Free: 1-800-657-3929

This information is available in an alternative format on request. Equal opportunity to participate in and benefit from programs of the Minnesota Department of Natural Resources is available regardless of race, color, national origin, sex, sexual orientation, marital status, status with regard to public assistance, age, or disability. Discrimination inquiries should be sent to Minnesota Department of Natural Resources, 500 Lafayette Road, St. Paul, MN 55155-4031, or the Equal Opportunity Office, Department of the Interior, Washington, D.C. 20240

Submitted to: Environment and Natural Resources Committee of the Minnesota House and Senate

This report should be cited as: Invasive Species Program, 2017, Invasive Species of Aquatic Plants and Wild Animals in Minnesota; Annual Report for 2017, Minnesota Department of Natural Resources, St. Paul, MN. All images in this report copyright State of Minnesota, Department of Natural Resources unless otherwise credited.

© 2017 State of Minnesota, Department of Natural Resources

The total cost to produce this report: Preparation \$8,130.00; Printing \$1,461.21 for 250 copies.

### **Executive Summary**

The Minnesota Department of Natural Resources (DNR) is pleased to submit the 2017 Invasive Species Annual Report to the governor, legislature and citizens of Minnesota. This report summarizes our efforts to prevent the introduction and spread of invasive species of aquatic plants and animals in Minnesota.

The report provides an overview of program activities, finances, prevention and management efforts, goals, highlights, partnerships, and future needs and plans for individual program areas.



# Table of Contents

|                                                                              |    |
|------------------------------------------------------------------------------|----|
| Invasive Species Program Overview.....                                       | 4  |
| Program Finances .....                                                       | 7  |
| Prevention.....                                                              | 11 |
| Education and Public Awareness.....                                          | 16 |
| Enforcement.....                                                             | 19 |
| Watercraft Inspections .....                                                 | 22 |
| Aquatic Invasive Species Prevention Aid .....                                | 27 |
| Invasive Aquatic Plant Management.....                                       | 31 |
| Invasive Aquatic Animals – Zebra Mussels.....                                | 33 |
| Invasive Aquatic Animals – Invasive Carp .....                               | 35 |
| Terrestrial Invasive Species Program.....                                    | 37 |
| Appendix A – Invasive Species Program Staff.....                             | 41 |
| Appendix B – Other Contacts for Invasive Species Prevention and Control..... | 42 |
| Appendix C – Regulations Changes in 2017 .....                               | 44 |
| Appendix D – Lakes and Rivers Listed as Infested January-December 2017 ..... | 48 |

## A Letter From The Invasive Species Unit

Welcome to the 2017 Invasive Species Program annual report. The report highlights the accomplishments of the Invasive Species Program and keeps you up to date with the new issues facing the program as we work to reduce impacts of invasive species on Minnesota's outdoor traditions. It has been another busy year of work and efforts to improve efficiencies and results as we continue to respond to invasive species issues within Minnesota and nearby states.

A lot of great work was accomplished in 2017, with the help of our partners. Some highlights include:

- Partnering on the “Starry Trek” effort to check Minnesota waters for the presence of starry stonewort and the subsequent DNR treatment of Grand Lake (more info on page 6).
- Partnering with local units of government to provide training to a record 949 authorized inspectors hired and managed directly by local units of government.
- Securing a U.S. Fish and Wildlife grant to sponsor training for local units of government, DNR staff and other partners on ways to encourage positive behavior change to reduce the spread of invasive species (see more info on page 28).
- Launching a tagging pilot study with lake service provider businesses to evaluate the feasibility of tagging and tracking water related equipment in infested waters. The pilot allows for removal and re-installment without cleaning all zebra mussels from the equipment.

Thank you for being a part of the effort to stop the spread of invasive species and for reading our 2017 annual report.



Heidi Wolf, Invasive Species Unit Supervisor  
Minnesota Department of Natural Resources



## Program Overview

Invasive species have serious economic, environmental and recreational impacts in Minnesota. In 1991, the Minnesota Legislature directed the Minnesota Department of Natural Resources (DNR) to establish an Invasive Species Program. The program is tasked with preventing the spread of invasive species and managing invasive aquatic plants and wild animals (Minnesota Statutes 84D).

### Program staff work with:

- local government units.
- states, provinces, multi-jurisdictional and national groups.
- the Minnesota Aquatic Invasive Species Research Center at the University of Minnesota.

- the Aquatic Invasive Species Advisory Committee.
- regional DNR staff and specialists in each of the four DNR regions. There are 24 full-time positions in the invasive species program.
- approximately 103 summer staff hired by the program to inspect boats at public water accesses and help implement management activities.
- the Minnesota Invasive Terrestrial Plants and Pests Center at the University of Minnesota.

All DNR staff have made a commitment to include invasive species prevention measures in their work under Operational Order 113.

## GOALS

### The three primary goals of the DNR Invasive Species Program are to:

1. Prevent the introduction of new invasive species into Minnesota.
2. Prevent the spread of invasive species within Minnesota.
3. Reduce the impacts caused by invasive species to Minnesota's ecology, society, and economy.

The DNR's Invasive Species Program tracks invasive species in other areas of North America and the world, works with partners to understand and manage pathways of spread, and works to reduce the potential for their introduction and spread in Minnesota.

Examples of key invasive species not known to be in Minnesota include:

- Hydrilla, an invasive aquatic plant.
- Water chestnut, an invasive aquatic plant.
- Northern snakehead, an invasive fish.

The program addresses invasive species in Minnesota, such as Eurasian watermilfoil, purple loosestrife, zebra mussel, spiny waterflea and starry stonewort. Efforts in this area include working to prevent further spread and to manage impacts from invasive populations.

The DNR's prevention and management activities hinge on collaboration with other states, local governments including counties, cities and townships, agencies, and other partners with similar concerns.

Coordinated prevention efforts not only reduce the spread of invasive species, but also buy critical time needed for research and management that may provide long-term control solutions.

The program also addresses terrestrial invasive species on DNR-managed lands and provides information for private landowners. The program works to enhance the ability of DNR field staff to prevent and manage terrestrial invasive species effectively.

## KEY STRATEGIES INCLUDE:

1. Creating effective invasive species regulations across the state and working with enforcement to ensure compliance;
2. Deepening partnerships with local governments, research institutions, interest groups, lake associations, related businesses and others;
3. Coordinating watercraft inspection and decontamination with counties, tribal entities, lake associations, resort owners and DNR Enforcement.
4. Verifying, reporting and responding to all new infestations immediately;
5. Coordinating invasive species management efforts, inventories, and sharing knowledge of aquatic and terrestrial invasive species.

*A DNR invasive species staffer's young daughter enjoys a sunny Minnesota shoreline.*



## HIGHLIGHTS

- In a partnership with the Minnesota Aquatic Invasive Species Research Center (MAISRC), U of M Extension, and many counties and local partners, a statewide search for waters infested with starry stonewort was completed in August. The search event, called Starry Trek, involved volunteers searching 211 accesses on 178 lakes identified by MAISRC as being at risk of infestation. One waterbody, Grand Lake in Stearns County, was found to be infested. The DNR was able to complete a hand removal of the starry stonewort at Grand Lake and will continue to monitor the algae within the lake. A second infestation was discovered by DNR staff at Lake Minnewaska in Pope County in a private marina.
- Compliance with aquatic invasive species laws has been steadily increasing. The DNR and partners' enforcement and education efforts have helped to push compliance above 95%, based on more than 440,000 watercraft inspections in 2017. See Watercraft Inspection and Enforcement chapters for details.
- In addition to DNR watercraft inspectors, the DNR provided watercraft inspection training to a record 949 tribal and local government unit (LGU) authorized inspectors working throughout the state—an increase from 857 trained LGU inspectors in 2016.
- Invasive Species Prevention Planners continued to coordinate with local government staff overseeing their counties' aquatic invasive species prevention funds. Prevention Planners helped maximize the effectiveness of Minnesota's \$10 million aquatic invasive species prevention aid program. One highlight of their work this year was training to more effectively encourage behaviors that will prevent the spread of invasive species. See the Aquatic Invasive Species Prevention Aid chapter for details.
- 250 lake service provider businesses completed training and were issued permits by the end of the year. The DNR launched a new online lake service provider permit training and improved the previous lake service provider online employee certificate in 2017 to make it easier for providers to get their permits year-round.
- The DNR is now using EDDMapS Midwest as an interface for reporting and mapping aquatic and terrestrial invasive species. Many U.S. states and Canadian provinces are using EDDMapS (Early Detection and Distribution Mapping System). EDDMapS can be found at [www.EDDMapS.org/midwest](http://www.EDDMapS.org/midwest) or downloaded onto a mobile device by searching for "GLEDN" in the device's app store. In fiscal year 2017, DNR staff and contractors made 12,606 reports of invasive species locations covering 101,569 acres. The majority of these reports are terrestrial invasive species.
- In 2017, the DNR planned and launched a tagging pilot study with lake service provider businesses on Lake Minnetonka, Gull Lake and Cross Lake, as authorized by the legislature (Minnesota Statutes 2017, section 84D.108, subdivisions 2a, 2b and 2c). The study will test tagging and tracking boats, docks and lifts with zebra mussels being removed from each study lake and allow businesses to return them to the same lake after storage or maintenance, without decontaminating. Several businesses have enrolled in 2017 and more will be joining the pilot study in 2018. The study will continue through the end of 2019.



*Invasive species specialists attend an aquatic plant identification training.*



# Program Finances

## TIME FRAME

This report covers activities that took place in calendar year 2017: January 1 to December 31, 2017. However, to provide a comprehensive review of expenditures and to coordinate with the state funding cycle, we include expenditures incurred in fiscal 2017: July 1, 2016 to June 30, 2017.

## FUNDING SOURCES

Funding for the Invasive Species Program comes from a variety of sources, including:

### State Funds

- \$1,325,446 from a \$5 surcharge on watercraft registration (valid for three years) in Minnesota.
- \$1,098,589 from a \$5 fee on non-resident fishing licenses.
- \$4,924,000 from a general fund appropriation (of this amount, \$381,000 supported the terrestrial invasive species program).

### Federal Funds

Funds from the U.S. Fish and Wildlife Service (USFWS), including those from the Great Lakes Restoration Initiative, administered by U.S. Fish and Wildlife Service, support the implementation of the Minnesota State Management Plan for Invasive Species including public awareness efforts, enforcement, and watercraft inspections. In fiscal year 2017, expenditures from federal sources totaled \$1,050,216.

### Local Funds

During 2017, local groups receiving invasive species management or watercraft inspection grants from the DNR provided funding totaling \$700,000 to control aquatic invasive plants and increase the number of watercraft inspections on specific lakes.

## COST ACCOUNTING

Minnesota Statute (Minnesota Statutes 2017, section 84D.02, subdivision 6) identifies five expenditure categories that must be reported annually: Administration, Education/Public Awareness, Management/Control, Inspections/Enforcement, and Research. A sixth category, State and Regional Coordination, covers a variety of program-wide activities that do not fit easily into the five reporting categories required by statute.

1. Administration - includes general office supplies, office rent, telephones, workers' compensation fees, computer support fees, the state accounting system fees, departmental operational support costs, as well as clerical and administrative support costs. Staff leave time (time used for holidays, sick leave, and vacation) has been apportioned across all categories based on the proportion of staff time invested in that category.
2. Education/Public Awareness - includes staff time, in-state travel expenses, fleet charges, mailings, supplies, printing and advertising costs, and radio and TV time to increase public awareness of aquatic invasive species. The costs of developing and producing pamphlets, public service announcements, videos, and similar material are included, as are the costs of developing and maintaining invasive species information on the DNR's website.
3. Management/Control - includes staff time, in-state travel expenses, fleet charges, commercial applicator contracts, and supplies to survey the distribution of aquatic invasive species in Minnesota and to prepare for, conduct, supervise, and evaluate control activities. Funds provided to local government units and organizations to offset the cost of Eurasian watermilfoil or curly-leaf pondweed management efforts also are included.
4. Inspections/Enforcement - includes the costs that conservation officers incur enforcing invasive species rules and laws, the costs of implementing watercraft inspections at public water accesses, and staff time and expenses

associated with promulgation of rules, development of legislation, conducting risk assessments, and other efforts to prevent the introduction of additional invasive species into Minnesota.

5. Research - includes staff time, travel expenses, fleet charges, supplies, and contracts with the University of Minnesota and other research organizations to conduct research studies. These studies include efforts to develop new or to improve existing control methods, better understand the ecology of invasive species, better risk assessment tools, and to evaluate program success.
6. State and Regional Coordination - includes general program planning, preparation of state plans and reports, and general invasive species coordination with a wide variety of groups. This category also includes the work of program staff as well as various managers in the Ecological and Water Resources Division who periodically work on invasive species issues. Expenditures primarily represent staff time spent on these activities, as well as staff time and out-of-state travel expenses to work with regional and federal partners on aquatic invasive species issues; work activities that staff participate in to improve their skills, direct co-workers, or help on other projects; as well as fleet costs and the cost to purchase and repair boats, trailers, computers, and similar items.

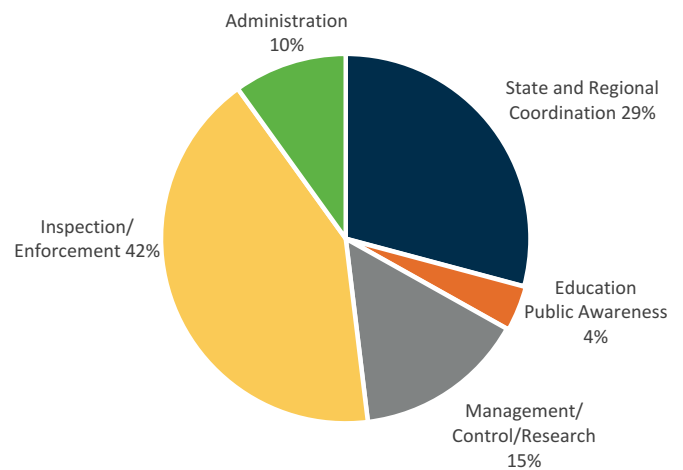
## FISCAL YEAR 2017 EXPENDITURES

Expenditures on aquatic invasive species activities during Fiscal Year 2017 (July 1, 2016-June 30, 2017) totaled \$9,410,000.00.

The pie chart below provides a broad look at how aquatic invasive species funding was spent in fiscal 2017. The focus on inspections and enforcement, along with Education/Public Awareness (which represents an additional 4% of fiscal 2017 spending), reflects the priority the DNR places on efforts to prevent the spread of invasive species and to help manage the problems those species cause.

### INVASIVE SPECIES PROGRAM SPENDING

Invasive species account, general fund and federal dollars in fiscal 2017 by major categories.



Funding for Management/Control was spent on Eurasian watermilfoil, starry stonewort, zebra mussels and curly-leaf pondweed. Funding was used for inventory, control, and grants for management of these species.

The following table lists expenditures from the Invasive Species Account and General Fund account, along with spending from other accounts including grants received from various state or federal funding sources, such as the USFWS.

The terrestrial invasive species program expended \$381,450 in fiscal year 2017. The work was funded exclusively from the general fund. Of these funds, \$356,000 were funds budgeted for fiscal year 2017 and the remaining funds were roll-forward money from fiscal year 2016. Accomplishments for terrestrial invasive species management activities are covered on page 37.



The program spent \$3,272,000 from the Invasive Species Account in fiscal 2017; slightly more than the \$3,242,000 appropriated by the Legislature, because it was the second year of the biennium and funds from year one roll

forward. General Fund expenditures were \$5,087,252; slightly more than the \$4,924,000 appropriated by the Legislature, due to the roll forward funds from the first year of the biennium.

#### FISCAL 2017 INCOME

| State and Local Funding Invasive Species Account | State and Local Funding General Fund | State and Local Funding Local Contributions | Heritage Enhancement | Federal Funding: Implement State Management for Aquatic Nuisance Species                                                                                                                                         |
|--------------------------------------------------|--------------------------------------|---------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| \$3,602,000                                      | \$4,924,000                          | \$700,000                                   |                      | Total \$1,058,000 in fiscal 2017.<br><br>Federal Grants to implement the State Management Plan for Aquatic Invasive Species and to prevent Invasive Carp awarded in 2017 will be spent in fiscal year 2018/2019. |

#### FISCAL 2017 EXPENDITURES

|                                                    | Invasive Species Account | General Fund       | Heritage enhancement                                                                          | Local Contributions                                                                | Federal/Other                                                                                                                                                                                    | Total               |
|----------------------------------------------------|--------------------------|--------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Administration                                     | \$251,000                | \$667,000          |                                                                                               |                                                                                    | \$18,000                                                                                                                                                                                         | \$936,000           |
| State/Regional Coordination                        | \$698,000                | \$1,385,000        | \$639,000                                                                                     |                                                                                    | \$30,000                                                                                                                                                                                         | \$2,752,000         |
| Education/Public Awareness                         | \$78,000                 | \$292,000          |                                                                                               |                                                                                    | \$4,000                                                                                                                                                                                          | \$374,000           |
| Management/Control: Aquatic                        | \$304,000                | \$690,000          |                                                                                               | \$700,000                                                                          | \$119,000                                                                                                                                                                                        | \$1,333,000         |
| Management/Control: Terrestrial                    |                          | \$220,000          |                                                                                               |                                                                                    |                                                                                                                                                                                                  | \$220,000           |
| Inspections/Enforcement                            | \$1,929,000              | \$1,792,000        |                                                                                               |                                                                                    | \$240,000                                                                                                                                                                                        | \$3,961,000         |
| Research: Aquatic                                  | \$11,000                 | \$7,000            |                                                                                               |                                                                                    |                                                                                                                                                                                                  | \$18,000            |
| Research: Terrestrial                              |                          | \$29,000           |                                                                                               |                                                                                    |                                                                                                                                                                                                  | \$29,000            |
| <b>Total Expenditures Federal, State and Local</b> | <b>\$3,271,000</b>       | <b>\$5,082,000</b> | <b>\$639,000</b><br>Environmental Trust Funds were specifically for invasive carp management. | <b>\$700,000</b><br>Totals include local match for Invasive Aquatic Plant control. | <b>\$411,000</b><br>Includes funds for use specifically on invasive carp from the Lessard-Sams Outdoor Heritage Council awarded in fiscal 2013; the remainder will be spent in fiscal 2017/2018. | <b>\$10,103,000</b> |





# Prevention

## GOALS

The DNR's goals for aquatic invasive species prevention are to:

- prevent the spread of aquatic invasive species within Minnesota; and
- prevent the introduction of new invasive species to the state.

## HIGHLIGHTS

- Invasive species staff engaged with partners in a variety of prevention activities, such as delivering presentations to interested groups, inspecting docks and other equipment for aquatic invasive species, issuing infested waters and prohibited invasive species permits and following up on reports of new infestations of invasive species.
- The DNR convened a workshop to train individuals around the state to more effectively deliver programs to encourage people to adopt behaviors that will reduce the risk of spreading aquatic invasive species.

## REGIONAL PREVENTION ACTIVITIES

In 2017, regional invasive species staff engaged with partners to provide technical guidance, delivered presentations to a variety of groups, and participated in public awareness events such as outdoor shows. Invasive species specialists also provided customized training about how to prevent the spread of aquatic invasive species to groups such as lake service providers and minnow dealers to help them meet permit and certification requirements.

Other prevention activities that regional invasive species staff perform include:

- partnering with lake associations and other stakeholders to provide technical guidance regarding prevention activities on lakes around the state;
- searching for zebra mussels and other aquatic invasive species on water-related equipment on lakes and at public water accesses, in some cases working with a DNR Enforcement aquatic invasive species detection dog;
- inspecting lakes for aquatic invasive species, working with partners to perform early detection aquatic invasive species surveys, and following up on reports from lake users about suspected aquatic invasive species;
- releasing *Galerucella* beetles for biocontrol of purple loosestrife and providing collection maps and other resources to other partners for beetle releases;
- working with counties, aquatic invasive species task forces, and non-profit groups to effectively use the county funding dollars to raise awareness of aquatic invasive species and prevent their spread; and
- increasing public awareness of aquatic invasive species by sharing expertise with radio, newspaper and television outlets.

*Photo: Ty Riihilouma conducts a shoreline search for starry stonewort on Grand Lake in Stearns County.*

## PERMITS

The DNR has authority to issue a number of permits to allow the public to conduct activities with invasive species or in listed infested waters. The DNR provides training to permittees to demonstrate ways to reduce the risk of spreading aquatic invasive species, and permit conditions require permittees to take actions to prevent the spread of aquatic invasive species. The DNR permits related to aquatic invasive species include: lake service provider permits, infested waters permits, prohibited invasive species permits, and bait harvest permits. The DNR also issues invasive aquatic plant management permits, which are discussed on page 34.

## LAKE SERVICE PROVIDER PERMITS

Legislation authorizing a permit program for lake service providers to help prevent the spread of aquatic invasive species in the state took effect in 2012.

Lake service provider business owners are required to complete aquatic invasive species prevention training and acquire a Lake Service Provider Permit before conducting work that involves decontaminating, installing, removing, or renting water-related equipment from or in state waters. Employees who work for a service provider must also successfully complete a free online training course and receive a training certificate. Permits and certificates are valid for three calendar years.

The Lake Service Provider Program launched a new online permit training and updated the current online employee certificate training.



## 2017 Activities

- DNR staff completed 13 in-person permit trainings for 150 lake service provider owners and managers and trained an additional 137 online and issued 250 permits to their businesses.
- 747 lake service provider employees completed mandatory online certificate training.
- A total of 1,220 businesses were permitted lake service providers at the end of 2017. The current list of permitted lake service provider businesses is posted on the DNR website.

## Future plans

- Continue to update and customize training for businesses.

## INVASIVE SPECIES AND INFESTED WATERS PERMITS

People need a permit to divert or transport water from listed infested waters (Minnesota Rules, part 6216.0500). In 2017, the invasive species program issued 12 infested waters permits, and 35 permits for water appropriation and work in public waters were issued through the DNR's Permitting and Reporting System (MPARS) with invasive species conditions.

People need a permit to possess, transport, sell, purchase, or import prohibited invasive species. The invasive species program issued 43 prohibited invasive species permits in 2017.

Individuals can also access several general permits on the DNR website, for example to: possess certain preserved and herbarium specimens of prohibited invasive species; fire departments using infested waters for training purposes; transporting water for water quality sampling; and to transport certain equipment away from a water body to a cleaning or storage location.

## PERMITS TO HARVEST BAIT FROM INFESTED WATERS

In Minnesota, commercial bait harvesters need a permit to work in listed infested waters. DNR Fisheries issues permits to licensed minnow dealers who work in infested waters. Permittees must successfully complete aquatic invasive species training and comply with permit conditions to prevent the spread of aquatic invasive species from infested waters. For example, permitted commercial bait harvesters must attach tags to equipment used in infested waters and they may not use that gear in waters other than those identified by the tag.

In general, people cannot harvest bait for personal use from waters listed as infested with aquatic invasive species.

## REGULATIONS

Regulations, including laws and rules, are an important part of Minnesota's aquatic invasive species prevention strategy. The invasive species program works to review and refine state regulations to optimize legal authority for prevention of the import and introduction of invasive species and to clarify regulations for the public. That includes establishing new and revising existing regulations to address pathways of aquatic invasive species spread into and within the state, designating certain nonnative species as prohibited or regulated invasive species, and listing water bodies as infested with aquatic invasive species within our existing authorities.

Minnesota state law governing aquatic invasive species is primarily located in Minnesota Statutes, chapter 84D; however, authorities and prohibitions related to aquatic invasive species also can be found in: chapter 86B, Water Safety and Watercraft; chapter 97C, Fishing; and chapter 103G, Waters of the State. The administrative rules related to aquatic invasive species are primarily found in Minnesota Rules, chapter 6216.

**Find current versions of statutes and rules at [www.revisor.leg.state.mn.us](http://www.revisor.leg.state.mn.us)**

Past annual reports of the DNR's Invasive Species Program are also a good source of summaries of changes to statute and rule related to invasive species; many of these are available from the Minnesota Legislative Reference Library.

During the 2017 Regular Session of the Minnesota Legislature, several changes were made to invasive species laws. These provisions were passed as part of the omnibus environment and natural resources budget and policy bill (chapter 93, Bill numbers HF771/SF844). The legislature did not approve the Governor's recommendation to increase the aquatic invasive species surcharge on watercraft registration fees from \$5 to \$12; watercraft registrations are valid for three years. Each short description below is followed by the location in statute that was changed; for full statutory language changes, see Appendix C.

### Statutory changes in 2017

1. Clarified that bait intended for sale cannot be held in infested water before sale (Minnesota Statutes, section 84D.03, subdivision 3).
2. Authorized the DNR to remove tags from certain commercial fishing gear used in infested waters after the gear is decontaminated (Minnesota Statutes 2017, section 84D.03, subdivision 4).
3. Authorized the DNR to classify nonnative species of plants and animals at the subspecies, genotype, or genera level of taxonomic classification (Minnesota Statutes 2017, section 84D.04, subdivision 1).
4. Provided an exception to allow commercial garbage haulers to transport prohibited invasive species to a disposal site without a permit (Minnesota Statutes 2017, section 84D.05, subdivision 1).
5. Made clarifications to a pilot study, first authorized in 2016, which would allow certain lake service provider businesses to replace equipment that came from Lake Minnetonka back into the same lake without removing zebra mussels, and expanded pilot zebra mussel studies to Gull Lake and Cross Lake (Minnesota Statutes 2017, section 84D.108).
6. Authorized the DNR to tag and release invasive carp for research or control, until December 31, 2021 (Minnesota Statutes 2017, section 84D.11, subdivision 1a).
7. Required a report on the potential risks of importing golden shiner minnows into Minnesota, due to the legislature in 2018. Previous versions of the bill would have allowed importation of golden shiner minnows from Arkansas (Laws of Minnesota 2017, chapter 93, article 2, section 162).



## INFESTED WATERS

The DNR will add a lake, river, pond or wetland to the infested waters list if it contains certain aquatic invasive species that could spread to other waters. The DNR may also list a lake, river, pond or wetland as infested if it is connected to a body of water where an aquatic invasive species is present. To reduce the risk of spreading aquatic invasive species, activities like bait harvest, commercial fishing, and water use are managed differently in infested waters.

Download the current list of infested waters at [www.mndnr.gov/invasives/ais/infested.html](http://www.mndnr.gov/invasives/ais/infested.html)

Find out if a specific lake is on the infested waters list  
Search Lakefinder at  
<http://www.mndnr.gov/lakefinder>

## Prevention plans in 2018

Prevention is a key element in the state's plan to manage aquatic invasive species. Over the next year, the DNR will continue to:

- work with partners and stakeholders to plan and implement prevention activities.
- monitor the distribution of aquatic invasive species in the state.
- assess the risk of spreading aquatic invasive species during different activities.
- improve and refine the DNR's aquatic invasive species prevention program and supporting regulations.

## WATER BODIES LISTED AS INFESTED BY AQUATIC INVASIVE SPECIES

For more information on which waters were listed in 2017, see Appendix D.

| Species                                                                                                                                                                             | Number of water bodies added to the infested waters list in 2017 | Number of water bodies added to the infested waters list in 2016 | Total number of water bodies on infested waters list |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------|
| Eurasian watermilfoil                                                                                                                                                               | 14                                                               | 21                                                               | 342                                                  |
| zebra mussel – confirmed waters                                                                                                                                                     | 28                                                               | 26                                                               | 176                                                  |
| zebra mussel – connected waters                                                                                                                                                     | 26                                                               | 7                                                                | 149                                                  |
| spiny waterflea                                                                                                                                                                     | 0                                                                | 1                                                                | 66                                                   |
| faucet snail                                                                                                                                                                        | 1                                                                | 6                                                                | 44                                                   |
| bighead carp                                                                                                                                                                        | 1                                                                | 0                                                                | 44                                                   |
| silver carp                                                                                                                                                                         | 0                                                                | 0                                                                | 43                                                   |
| flowering rush                                                                                                                                                                      | 0                                                                | 1                                                                | 36                                                   |
| grass carp                                                                                                                                                                          | 1                                                                | 0                                                                | 12                                                   |
| starry stonewort                                                                                                                                                                    | 2                                                                | 7                                                                | 10                                                   |
| brittle naiad                                                                                                                                                                       | 2                                                                | 0                                                                | 5                                                    |
| round goby, ruffe, VHS, and white perch<br><br>Totals for round goby, ruffe, VHS, and white perch include "Lake Superior tributaries" as one listed water body instead of hundreds. | 0                                                                | 0                                                                | 3                                                    |
| New Zealand mud snail                                                                                                                                                               | 0                                                                | 0                                                                | 2                                                    |
| red swamp crayfish                                                                                                                                                                  | 0                                                                | 1                                                                | 1                                                    |

Photo: Ty Riihilouma tests copper levels in Rice Lake in Stearns County during a starry stonewort treatment.



# Education and Public Awareness

## GOALS

- Provide the public with clear actions to prevent the introduction and spread of AIS through an understanding of the laws and recommended practices.
- Heighten public awareness of the important recreational and economic value of Minnesota's lakes, rivers, streams and wetlands.
- Raise public awareness of the potential for AIS to have negative environmental and economic impacts on Minnesota resources.
- Increase awareness of the DNR's AIS research, management and prevention efforts, and inform stakeholders, the public and other agencies of available training, funding and educational resources.

## HIGHLIGHTS

### STRATEGIC COMMUNICATIONS

Two information officers serving the program on a part-time basis continued the integration of news and media relations, web, publications and graphic design, public access signs, advertising, and public interactions. They worked with divisional leadership to improve communications and editorial planning, and assisted with an agency-wide process to develop a suite of new communications guidance tools.

The program expanded its commitment to building community norms around behaviors that prevent the spread of invasive species. It hosted the two-day training program highlighted in the Prevention Aid chapter. An information officer presented orientation sessions at numerous meetings and conferences.

The program continued to improve and unify AIS web pages, in conjunction with the department's preparations for migration to responsive design. Responsive design makes web content more easy to read and use on smartphones and tablets.

### INFORMATIONAL MATERIALS

The program continued to assess and revise all DNR AIS informational materials for public distribution. Along with expanded use of a service-marked "Clean In, Clean Out" icon, the program continued to refine public access signs, point of contact materials, and use of license Affirmation language for consistency and greater awareness.

Staff updated invasive species content and advertising for the 2018 Minnesota Fishing Regulations handbook, which includes information about AIS laws and watercraft inspections, species identification information, advertising to remind anglers to help prevent the spread of AIS, and information about the infested waters list. More than 900,000 copies of the fishing regulations will be printed and distributed beginning in February.

Reviewed and updated display materials for upcoming sport shows and other trade events and expositions.

### ADVERTISING

The program is continuing its research into the most effective traditional and new media advertising channels, and is developing a comprehensive advertising campaign for 2018. All materials are designed for smartphone functionality and reach, where most people can now be reached most effectively.

Print and online materials focused on growing compliance with AIS laws, highlighting the "Clean, Drain, Dispose" and "Clean In, Clean Out" messages. Materials were designed to target boaters, anglers, and waterfowl hunters as well as cabin owners who remove docks in the fall.

### WEB/DIGITAL

As mentioned above, AIS web page updates and improvements continue in advance of the 2018 season. Outdated pages and content are being deleted, and existing pages are being updated for consistent appearance, greater clarity and visual appeal, plain language and accessibility. Responsive design is being incorporated as much as possible, for the high percentage of people using mobile devices. Responsive design allows web content to display more effectively on cell phones and other mobile devices.



The program is increasingly making use of the DNR's social media accounts. These efforts are typically coordinated with media events or other major public information efforts.

### **MEDIA RELATIONS**

In 2017, the program expanded placement of more stories about innovations and new steps to reduce the spread of invasive species. Along with information about new AIS confirmations, news releases created greater awareness of the growing community of compliance with AIS laws, aggressive treatment of starry stonewort, advances in research and technologies, and the broad range of partnerships with stakeholders across the state.

We also held several media events on the DNR's ongoing efforts to stop the spread of AIS. Events in 2017 focused on the fishing opener, new partnerships for expanded prevention and detection, zebra mussel-sniffing canine officers, starry stonewort treatments, and expanded enforcement efforts and county programs. Media events are well attended and generate substantially more earned coverage than news releases alone.

### **SHOWS AND FAIRS**

An innovative, interactive projection at the Minnesota State Fair provided a fun new way for people to learn about invasive species through interactive custom animations. The projection system is portable, so it can be used in other high-traffic locations across the state after the Fair.

Staff participated in numerous county fairs, sports and outdoor shows, as well as other special events throughout the year to educate the public and distribute literature and information. Staff also made presentations to lake associations and community groups to answer questions and discuss invasive species issues and activities.

*Photo below: A Minnesota State Fair guest enjoys the new interactive screen and learns how to prevent the spread of invasive species.*



## PARTNERSHIPS

Other agencies and organizations in Minnesota have been cooperatively involved with public awareness efforts to prevent the spread of invasive species, and have partnered with the DNR on a variety of activities.

### **AIS Advisory Committee**

The committee plays a vital role in reviewing and guiding the work of the DNR Aquatic Invasive Species Program. Their experience, vested interest, and engagement with other stakeholders informs the program regarding policy, outreach, research, and interactions with those affected by infestations and interactions with stakeholders.

### **MAISRC**

The Minnesota Aquatic Invasive Species Research Center at the University of Minnesota is a valuable partner, working closely with the program on research and advances in AIS management. Many program staff attended MAISRC's annual showcase and explored new ways to work together.

### **Minnesota Sea Grant**

Minnesota Sea Grant continues to partner with the DNR, Wildlife Forever, U.S. Fish and Wildlife Service, National Park Service, U.S. Forest Service, and other organizations to help prevent the spread of invasive species. Minnesota Sea Grant provides leadership and support in sharing the best available science to improve ballast water policy, and assists in timely and effective implementation of ballast water management and control systems on vessels.

### **Wildlife Forever**

Wildlife Forever is a key partner to help raise awareness about how to prevent the spread of AIS. The nonprofit organization leads the Stop Aquatic Hitchhikers! campaign in Minnesota and works with multiple partners to post highway billboards, print ads and PSAs throughout Minnesota and across the country.

## FUTURE NEEDS AND PLANS

- Continue the integration of the comprehensive invasive species communications plan.
- Find new ways to optimize both paid and earned media in the face of a rapidly changing media climate.
- Deepen engagement with experts and the many county and other staff now trained across the state, to more effectively build community norms and encourage desirable behaviors.
- Develop and use survey, pilot testing, and focus group instruments to more clearly understand and measure effectiveness of mutual communication efforts.
- Continue to teach DNR staff about plain language, electronic information accessibility and other communication components and techniques.
- Develop and implement a writing style guide to bring consistency and clarity to all written communications.
- Continue to work collaboratively with MAISRC, Minnesota Sea Grant, Wildlife Forever, and other stakeholders to pursue research and outreach funding through National Sea Grant, the Great Lakes Restoration Initiative, USFWS, foundations and other sources.



*County and DNR staff learn how to build community norms around invasive species prevention at a training in St. Cloud in October.*



# Enforcement

## GOALS

- Analyze the DNR's Aquatic Invasive Species (AIS) laws, with input from stakeholders:
- Continue to work with stakeholders on legislative issues, to give enforcement the tools necessary to assist in controlling the spread of AIS.
- Continue to emphasize AIS as priority work and a core responsibility:
- Monitor and provide advanced training to all conservation officers, to ensure they have the knowledge they need to effectively enforce AIS laws.
- Continue inspections by conservation officers, to reduce the risk of spreading AIS by water-related equipment.
- Assist Level 1 and Level 2 inspectors at public access sites and investigate violations reported by inspectors.
- Quickly respond to reports of new infestations.
- Train local law enforcement to enforce invasive species laws.
- Continue saturation details statewide to target high-priority areas.
- Continue to analyze data, develop protocols, and secure needed equipment to administer AIS checkpoints safely and effectively.
- Work with internal and external stakeholders to identify the types of activities that are likely to spread invasive species in Minnesota waters:
- Provide information to the public and work with lake associations, other user groups and media to help raise awareness about controlling the spread of invasive species. Continue attending statewide public input meetings to maintain and increase dialog with concerned citizens and user groups.
- Investigate non-traditional structures/ watercraft being moved into Minnesota waters from infested waters, and other pathways for spreading AIS, such as food markets, bait dealers, aquatic plant dealers, etc.:
- Train and educate commercial entities to increase compliance with invasive species regulations.



*Enforcement Officer Julie Siems and zebra mussel sniffing K9 Brady conduct a boat search at a public access.*

## HIGHLIGHTS

- During 2017, DNR conservation officers provided 16,618 hours of AIS enforcement and education.
- The Enforcement Division conducted numerous media interviews on the importance of AIS regulation compliance.
- The Enforcement Division's four zebra mussel detection canine officers assisted officers and inspectors during AIS enforcement efforts. The dogs improve the efficiency of conservation officers, with faster and more thorough inspections of water-related equipment. The canine teams also provided educational demonstrations at the Minnesota State Fair, Aquatic Invader's Summit, Upper Midwest Invasive Species Conference and several other public events, to bring awareness to AIS issues.
- Six conservation officers designated as Water Resource Enforcement Officers continued to dedicate a significant portion of their work toward AIS enforcement and education.
- Enforcement worked with Ecological and Water Resources staff to create strategies and plans for statewide AIS work focus.
- Enforcement Pilots worked with the Minnesota Seaplane Association to develop recommended actions on helping prevent the spread of aquatic invasive species by seaplanes.

### STATEWIDE VIOLATIONS 2017

- 127 total citations, civil and criminal
- 557 verbal warnings
- 124 citations by statute
- 540 verbal warnings by statute
- 2 citations by rule
- 17 verbal warnings by rule
- 1 civil citation

### ENFORCEMENT COMPLIANCE CHECKS 2013-2017

|                            | 2013 | 2014 | 2015 | 2016 | 2017 |
|----------------------------|------|------|------|------|------|
| Number of citations issued | 406  | 343  | 244  | 123  | 127  |
| Number of warnings issued  | 733  | 847  | 911  | 671  | 557  |

### 2017 AIS CHECK STATIONS (SPRING TO FALL)

| County                        | # of Insp. | Op. Hrs. | Vio. Delay | No vio. Delay | Crim Cit. | Warning | Civil Cit. | Violation rate |
|-------------------------------|------------|----------|------------|---------------|-----------|---------|------------|----------------|
| LOW                           | 39         | 4        | 9          | 4.05          | 0         | 2       | 0          | 5.00%          |
| Lyon                          | 6          | 4        | 10.00      | 2.20          | 0         | 2       | 0          | 33.00%         |
| St Louis                      | 5          | 3        | 3.00       | 2.00          | 0         | 1       | 0          | 20.00%         |
| LOW                           | 67         | 4        | 8.50       | 3.35          | 7         | 3       | 0          | 15.00%         |
| Aitkin                        | 13         | 4        | 3          | 2.00          | 0         | 3       | 0          | 23.00%         |
| Dakota                        | 15         | 4        | 8          | 2.50          | 0         | 4       | 0          | 27.00%         |
| St Louis                      | 214        | 5        | 6.3        | 3.20          | 23        | 6       | 0          | 14.00%         |
| Aitkin                        | 38         | 4        | 4.36       | 2.25          | 2         | 9       | 0          | 29.00%         |
| Statewide totals and averages | 397        | 32       | 6.52       | 2.69          | 32        | 30      | 0          | 15.62%         |

## STATEWIDE OPEN WATER SEASON ENFORCEMENT RESULTS

As illustrated in the tables on page 20, compliance with invasive species regulations at Enforcement check stations remains steady from 86% in 2015 to 82% in 2016 to 84% in 2017. Compliance at check stations has sharply increased from 63% in 2012.

See chart on page 20 for summary of law enforcement AIS compliance checks in 2017.

## PARTNERSHIPS

Enforcement of Minnesota's invasive species regulations is essential to the ultimate goal of preventing their spread into and across Minnesota. Conservation officers continue to work with lake associations, local governments, user groups and other DNR divisions to assist in sharing information about how to control the spread of invasive species.

Enforcement activities—whether educational opportunities or issuing citations and warnings—focus on compliance. Enforcement is a primary motivator to help change the behavior of those who may spread invasive species, whether intentionally or unintentionally.

## FUTURE NEEDS AND PLANS

The Enforcement Division continues to focus its efforts on enforcement and education, both proven to be critical tactics in reducing the spread of invasive species.

We will continue to monitor and evaluate our actions to provide the most effective measures available. We will work with the public and private entities on legislative issues to provide enforcement with the tools necessary to prevent the spread of AIS.

We also will continue to emphasize this as priority work and a core responsibility.

*Photo below: Signage helps alert water users about the presence of aquatic invasive species.*



# Invasive Species Alert

These waters are designated as **INFESTED WATERS** and contain:

**Eurasian Watermilfoil**  
(12-21 pairs of leaflets)



Mature plant



Minnesota Department of Natural Resources



# Watercraft Inspection

## GOALS

**The Watercraft Inspection Program helps to prevent the spread of invasive species into and within Minnesota by:**

- Conducting watercraft inspections at public water accesses across the state and requiring watercraft users to decontaminate their watercraft if aquatic invasive species (AIS) or water are found.
- Increasing public awareness about AIS and reducing the potential for boaters to transport AIS between water bodies.
- Increasing education efforts with citizen groups.
- Distributing information at events around the state.
- Through delegation agreements, tribal governments and LGUs employed an additional 949 DNR-trained watercraft inspectors throughout the state.
- DNR staff hosted 45 trainings for LGU inspectors throughout the state.
- Assisted the Division of Enforcement with staffing AIS check stations around the state.
- Conducted 11 AIS volunteer training sessions that resulted in 173 trained AIS volunteers around the state. These trained volunteers educate watercraft users at public water accesses on how to inspect their watercraft. Eleven volunteers were trained via a new online training available for returning AIS volunteers.

## HIGHLIGHTS

In 2017, both the DNR and tribal or local units of government (LGUs) authorized watercraft inspectors stationed at public water accesses across Minnesota.

- Approximately 103 DNR watercraft inspectors worked during the open water season (17 in Region 1, 27 in Region 2, 51 in Region 3 and 8 in Region 4).

Inspections started in mid-April and continued through the end of October. During this 25-week period, DNR watercraft inspectors logged 29,400 access inspection hours. A total of 84,824 watercraft/trailers were inspected by DNR staff and another 365,986 were inspected by watercraft inspectors authorized under a delegation agreement.

*Photo below: DNR watercraft inspection staff decontaminate a boat using high pressure water.*



### How are the hours distributed?

The DNR allocates its watercraft inspectors' hours using a tiered system that focuses inspection resources on high-use, infested water bodies; high-use, non-infested water bodies; and water bodies where many of the incoming watercraft were last used at zebra mussel infested waters.

The DNR developed the tiered system to allocate watercraft inspection hours to maximize the

effectiveness of watercraft inspectors at reducing the risk of AIS spread via watercraft.

In addition to the hours of watercraft inspection that are directed by the goals of the Invasive Species Program, the DNR also offered approximately 7,500 hours of DNR watercraft inspector time through grants to local groups, as well as grants to tribal governments and LGUs to hire their own authorized inspectors.

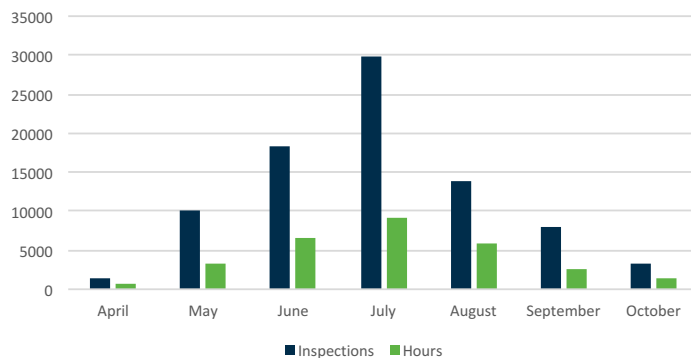
**NUMBER OF WATERCRAFT INSPECTIONS** conducted and total number of inspection hours completed by authorized DNR watercraft inspectors from 2014 to 2017. Totals are rounded values.

| DNR Inspections        | 2017   | 2016    | 2015    | 2014    |
|------------------------|--------|---------|---------|---------|
| Total Inspections      | 84,824 | 102,441 | 103,400 | 120,000 |
| Total Inspection Hours | 29,400 | 38,000  | 33,000  | 49,550  |
| Inspections per Hour   | 2.88   | 2.7     | 3.13    | 2.4     |

### Inspections by DNR Region (included in above total)

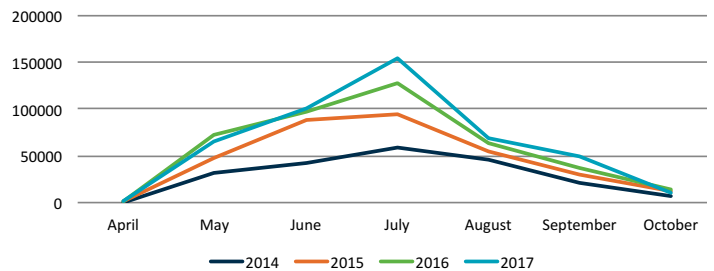
| Region        | 2017   | 2016   | 2015   | 2014   |
|---------------|--------|--------|--------|--------|
| Northwest - 1 | 17,857 | 23,576 | 20,250 | 26,500 |
| Northeast - 2 | 11,413 | 13,770 | 12,450 | 14,100 |
| Central - 3   | 51,513 | 62,150 | 67,800 | 74,900 |
| Southern - 4  | 4,041  | 2,950  | 3,000  | 3,600  |

### DNR INSPECTIONS COMPLETED PER MONTH, COMPARED TO THE NUMBER OF HOURS WORKED AT ACCESSES STATEWIDE

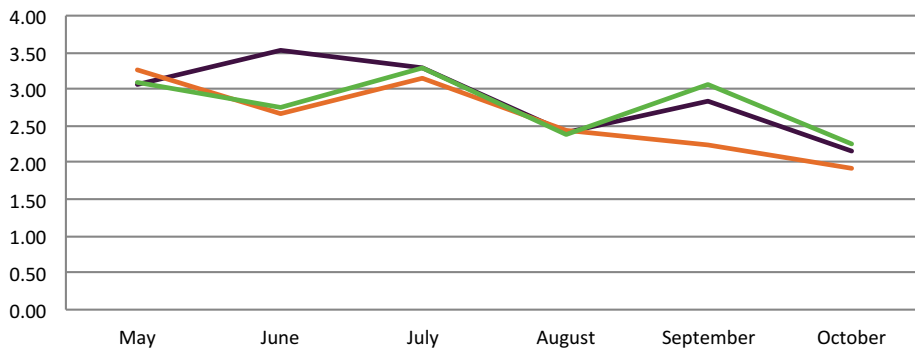


### AUTHORIZED WATERCRAFT INSPECTIONS PER MONTH DURING THE 2014-2017 FIELD SEASONS

These figures include DNR staff as well as inspectors authorized under a delegation agreement.



## DNR INSPECTIONS PER HOUR BY MONTH AT PUBLIC WATER ACCESSES DURING THE SEASON (figure does not include drive time)



### TRANSPORTATION OF INVASIVE SPECIES

In order to address the risk of moving AIS such as spiny waterflea or tiny zebra mussel larvae in water that is not drained from a watercraft or other equipment, the DNR educates boaters about Minnesota’s “pull the plug” law and the importance of draining all water before transporting their watercraft.

In 2017, DNR, tribal and LGU watercraft inspectors intercepted numerous watercraft arriving at accesses in violation of state laws. In 2017, approximately 3% (7,981 occurrences) of the watercraft inspected had the drain plug in when they arrived at the access, which is one percent lower than observed (4%; 8,632) in 2016.

Watercraft users arriving at the access with their drain plugs in were asked to remove plugs and drain any water away from the access before launching.

- 4,463 (2%) watercraft arrived at an access with vegetation attached compared to 3,835 in 2016, with the highest number occurring in Region 3 both years.
- Watercraft inspectors found zebra mussels on 205 incoming watercraft in 2017 (2016 had 199 occurrences); 25 of these occurred at water bodies not known to be infested with zebra mussels. In these cases, inspectors instructed the watercraft owners not to launch until all zebra mussels had been removed. The highest number occurred in Region 3, with 150 watercraft arriving with attached zebra mussels; there were 21 in Region 1 and 34 in Region 2.
- During the 2017 inspection season, watercraft inspection staff forwarded 205 zebra mussel violations to DNR Enforcement for additional follow-up.

- Watercraft inspectors required decontamination prior to launching for any watercraft attempting to enter a water body with vegetation or zebra mussels attached. Decontamination methods include hand removal, draining or a high-pressure hot water treatment.

### DECONTAMINATION UNITS

In 2017, the Watercraft Inspection Program hired approximately 46 Level 2 watercraft inspectors trained to decontaminate watercraft with high-pressure, hot-water wash units. DNR staff used 23 portable wash units around the state to perform 1,620 decontaminations. We put decontamination units at high-use watercraft accesses on zebra mussel-infested water bodies. Partnering LGU-authorized inspectors completed 2,892 decontaminations.

### PARTNERSHIPS

The DNR partners with other groups through grants and delegation agreements.

The DNR provided 7,500 hours of watercraft inspection time to citizen groups in 2017. Typically, citizen groups are seeking additional hours of inspection on lakes where they live or recreate. To address this need, the DNR offers watercraft inspection grants annually, providing a one-to-one match for hours financed by citizen groups. Organizations that receive inspection hours are allowed to use them on non-infested waters; however, applications for water bodies that are infested or are near infested waters are given a higher grant rating.

LGUs or tribal governments are able to partner with the DNR by completing a delegation agreement, which allows them to hire authorized watercraft inspectors to support local watercraft inspection programs. There were 58 active delegation agreements during the 2017 season, and these LGUs and tribal governments hired an additional 949 watercraft inspectors around the



state. This is a significant increase in inspectors when compared to 56 active delegation agreements and 857 trained LGU authorized inspectors in 2016.

These tribal or LGU employees used DNR survey questions and reported their survey findings to the DNR Watercraft Inspection Program by using a statewide watercraft inspection mobile application. More than 365,000 surveys were completed by tribal or LGU inspectors in 2017; an increase of 53,000 inspections from the total watercraft inspected in 2016.

The Watercraft Inspection Program also helped citizen groups increase the number of hours at watercraft accesses by conducting AIS volunteer training sessions to teach citizens how to educate watercraft users at waters where they live or recreate. In 2016, the Watercraft Inspection Program conducted 11 AIS volunteer training sessions resulting in 173 trained AIS volunteers around the state. Watercraft inspectors also worked at the Minnesota State Fair and other local events, educating the public about invasive species.

## FUTURE NEEDS AND PLANS

In 2018, the Watercraft Inspection Program plans to focus on working with local partners to increase access coverage and inspection consistency across the state. 2017 set another new record for the largest number of authorized inspectors. As inspection efforts continue to grow throughout the state, increased communication with partners is essential to operating effectively. During the winter of 2017-2018, the Watercraft Inspection Program is focused on improving training materials and manuals to meet ADA compliance requirements, and to improve our AIS volunteer inspection training materials.

We also will review 2017 data and use them to refine our survey process and adjust the hours and days spent at watercraft accesses, to try to increase our inspections per hour. We will continue to train citizen groups to conduct AIS education at local watercraft accesses and work to expand the number of partnerships with tribal governments and LGUs in an effort to increase total watercraft inspection capacity around the state.

*Photo below: Clean In Clean Out zones at public accesses provide a safe place to clean boats, drain water and dispose of unwanted bait.*







# Aquatic Invasive Species Prevention Aid

The Minnesota Legislature provides \$10 million directly to Minnesota counties to help prevent the spread of aquatic invasive species (AIS). The funds are allocated based on each county's share of watercraft trailer launches (50%) and watercraft trailer parking spaces (50%).

Each County Board and/or designated local government decides how the funds will be used. Each county submits a copy of its guidelines for use of the proceeds to the DNR by December 31 of each year.

## GOALS

- Annually review and collect county AIS plans and resolutions, describing how funds will be used each year.
- Provide opportunities for local government staff leading their county's AIS Prevention Program to:
  - Share and learn from one another's collective experiences,
  - Initiate regional and statewide collaborative efforts, and
  - Maintain strong relationships with local stakeholders such as local governments, state and federal agencies, nonprofits, businesses, lake associations, outdoor recreation groups, etc.
- Provide technical support and training to local governments and their partners as they develop, implement and evaluate their local AIS prevention strategies.

## PROVIDED TECHNICAL SUPPORT

- Received and provided feedback on guidelines (resolutions and plans) from the 83 Minnesota counties receiving funds.
- Provided information on an array of DNR AIS Programs (e.g. public outreach, watercraft inspection, AIS management). This included updating key resources and promoting available support from the DNR on the Local AIS Prevention Aid webpage ([mndnr.gov/invasives/ais/prevention](http://mndnr.gov/invasives/ais/prevention)).
- Played an advisory role on county AIS Task Forces and Advisory Committees.
- Re-launched the web-based Local Water Access Editor Application, used by county AIS leads to update information about their public water accesses.
- Developed passive (guidance documents, online resources) and active (workshops, presentations) ways to relay information to counties and their local stakeholders.
- Provided feedback on communication materials developed by local governments to promote consistent messages about AIS and AIS prevention steps (e.g. Clean, Drain, Dispose).
- Created a template of metrics so that county AIS leads and their partners can track their accomplishments and demonstrate that AIS Prevention Aid is making a difference in their communities.

*Photo: DNR invasive species specialists conduct hand removal of starry stonewort from Grand Lake in Stearns County.*

## **ACTIVELY ENGAGED LOCAL GOVERNMENTS AND THEIR PARTNERS**

- Created and maintained a network of support by developing a primary contact list of lead AIS staff in each county and encouraged them to use the list to collaborate with one another.
- Held four workshops in March 2017, bringing in 64 county representatives from 43 counties. The purpose of the workshops was to bring neighboring counties together to share their collective AIS prevention experiences, to learn from one another's successes and challenges, support collaborative efforts, and to build stronger inter-county relationships. Discussion topics included: grants and requests for proposals; leveraging additional resources; finding a balance while funding treatment; volunteers; improving watercraft inspection coverage and efficiencies; enforcement; decontamination and boat cleaning strategies; field data collection; traditional and new media; resorts and private accesses; fishing tournaments; schools and youth.

## **HIGHLIGHTED SUCCESSFUL LOCAL AIS EFFORTS**

- Assisted St. Louis County with creation of an informal online AIS County Message Board for interested individuals and organizations to ask questions and share ideas and resources related to the AIS Prevention Aid program.
- Shared information on projects already implemented by counties (youth education, citizen monitoring, rapid response, grant programs, etc.) with other AIS leads interested in starting similar projects.
- Presented AIS Prevention Aid information to a variety of audiences such as the Statewide AIS Advisory Committee. Provided general AIS education to interested groups such as lake associations and at youth education events.

## **HOSTED A LOCAL ENGAGEMENT WORKSHOP**

- Secured funding through a Great Lakes Restoration Initiative grant and generous sponsorships from seven counties.
- Secured presenter Dr. Doug McKenzie-Mohr, author of "Fostering Sustainable Behavior."
- Organized a two-day workshop in October 2017 for county AIS leads, county partners, and DNR personnel to learn how to promote adoption of desirable AIS prevention behaviors and create positive social norms around AIS prevention.
- Attracted 77 participants, with representation from 34 counties. Many county representatives said this was the best workshop they had ever attended.

## **PARTNERSHIPS**

There are many partners in the AIS field working toward common goals. It is essential to bridge gaps between all involved, to build and maintain effective and efficient programs.

- Built stronger working relationships between the DNR, local governments and their partners, enabling more effective implementation of AIS work locally, regionally and statewide.
- Continued to provide technical support to a group of AIS leads from the 12 counties that receive the most funding. This self-organized group meets to brainstorm ideas on how they can work together to have a greater statewide impact.



## FUTURE NEEDS AND PLANS

County AIS programs are diverse, at different stages of development and implementation, and cover a spectrum of AIS activities. As the needs of the counties change, so will the technical support provided.

- Work to continuously improve online resources, like the DNR's Local AIS Prevention Aid webpage, to provide a "one-stop shop" of resources local governments and their partners can use to develop and implement their local programs.
- Support implementation of local projects that use community-based social marketing strategies.
- Continue to support communication and collaboration among local governments about AIS prevention strategies. For example, continue to host Regional AIS Prevention Workshops and Informal Learning Sessions.
- Continue to provide technical support, tools, and resources to help local governments achieve their goals and run successful AIS prevention programs.

*Photo above: County AIS leads, partners and DNR staff share prevention successes and challenges at a DNR-facilitated regional workshop.*



Flowering rush, an invasive aquatic plant, competes with native shoreline vegetation.



# Invasive Aquatic Plant Management

## GOALS

The goals of the Invasive Species Program’s efforts to manage invasive aquatic plants are to work with citizens to

- reduce the impacts of invasive aquatic plants on Minnesota’s ecology, society and economy.
- prevent the spread of invasive aquatic plants within Minnesota.

The DNR is committed to working with our partners to meet these goals by

- providing technical assistance to individuals and organizations.
- permitting management by treatment with herbicides or mechanical control.
- providing grants to help fund costs of control done by partners as funding allows.
- supporting and using research that leads to improved AIS control techniques.

## HIGHLIGHTS

In 2017, the DNR rolled out an online system to apply for Invasive Aquatic Plant Management (IAPM) permits to allow management of curly-leaf pondweed, Eurasian watermilfoil, purple loosestrife, starry stonewort, non-native Phragmites, and flowering rush.

More than 90 grants were awarded, offering up to \$200,000 in reimbursements to support management of invasive aquatic plants by partners.

Starry stonewort, *Nitellopsis obtusa*, was discovered in two additional lakes in Minnesota. The DNR continues to evaluate the effectiveness of various methods to control starry stonewort. To date, starry stonewort has not been eradicated in any waterbody in the United States. In order to understand the efficacy of starry stonewort control methods the DNR now requires monitoring the results of starry stonewort treatments done under IAPM permits. In 2017, the DNR made \$20,000 in grants available to help fund that monitoring.

## MANAGEMENT

The number of IAPM permits issued to control curly-leaf pondweed was greater than the numbers issued for any other species.

In 2017, the amount of funding provided for grants to support control of curly-leaf pondweed, Eurasian watermilfoil or both was unchanged compared to the previous year. However, because of reductions in the overall invasive species budget, the DNR is not able to offer any invasive species control grants in 2018.

During the spring and summer of 2017, the DNR provided \$200,000 through 91 grants to cooperators to support the control of flowering rush, curly-leaf pondweed, Eurasian watermilfoil or a combination of those species. The DNR has reimbursed grantees \$144,470 for these projects as of October 2017 and anticipates paying an additional \$51,000 for work completed in 2017. In addition, \$8,000 in grants were provided for the monitoring of starry stonewort control projects in 2017.

The number of IAPM permits varied among DNR regions. As in previous years, Region 3 issued the most permits.

## NUMBER OF IAPMPS ISSUED TO ALLOW CONTROL OF VARIOUS SPECIES IN 2013 TO 2017

| Species                                       | 2013 | 2014 | 2015 | 2016 | 2017 |
|-----------------------------------------------|------|------|------|------|------|
| Curly-leaf pondweed                           | 126  | 131  | 168  | 148  | 184  |
| Eurasian watermilfoil                         | 68   | 83   | 110  | 102  | 110  |
| Curly-leaf pondweed and Eurasian watermilfoil | 15   | 4    | 5    | 9    | 12   |
| Subtotal                                      | 209  | 218  | 283  | 259  | 306  |
| Flowering rush                                | 4    | 9    | 10   | 5    | 8    |
| Purple loosestrife                            | 2    | 1    | 0    | 3    | 1    |
| Non-native Phragmites                         | 0    | 0    | 0    | 3    | 2    |
| Yellow iris                                   | 0    | 0    | 0    | 2    | 2    |
| Starry stonewort                              | 0    | 0    | 0    | 7    | 6    |
| Brittle naiad                                 | 0    | 0    | 0    | 0    | 2    |

**NUMBER OF IAPMPS ISSUED IN DNR REGIONS FOR CONTROL OF CURLY-LEAF PONDWEED OR EURASIAN WATERMILFOIL OR BOTH FOR 2013 THROUGH 2017**

| Region<br>Location and<br>number | 2013 | 2014 | 2015 | 2016 | 2017 |
|----------------------------------|------|------|------|------|------|
| Northwest 1                      | 18   | 18   | 17   | 15   | 26   |
| Northeast 2                      | 11   | 12   | 38   | 28   | 38   |
| Central 3                        | 150  | 157  | 199  | 185  | 205  |
| Southern 4                       | 30   | 31   | 29   | 31   | 37   |
| Total                            | 209  | 218  | 283  | 259  | 306  |

**MANAGEMENT OF OTHER AQUATIC INVASIVE PLANTS**

Starry stonewort, *N. obtusa*, was discovered in two additional lakes within Minnesota, Lake Minnewaska in Pope County and Grand Lake in Stearns County. Starry stonewort was first discovered in Lake Koronis and connected Mud Lake in Stearns County in August, 2015. The size and scope of starry stonewort found in the eleven waterbodies where it is known to occur varies from large populations in many locations to several plants in areas less than half an acre. Treatment methods for this new invasive macroalgae included herbicide application, Diver Assisted Suction Harvesting (DASH), suction dredging, and hand-pulling within the infested area. The DASH and hand-pulling treatments were the first of their kind.

Outcomes from pilot project efforts in Lake Koronis showed mixed results. Chemical and mechanical treatments were very effective in continuing to reduce the biomass of the Starry Stonewort, with the most dramatic results in the area both pulled and chemically treated. However, University of Minnesota-Minnesota Aquatic Invasive Species Research Center (MAISRC) researchers sampled bulbils following all of the pilot activities that were completed and initial laboratory testing demonstrated that bulbils remained viable even after two chemical treatments.

**RESEARCH AND PARTNERSHIPS**

Dr. Dan Larkin, an Assistant Professor and Extension Specialist at MAISRC, continued to implement a research and extension program focused on aquatic and wetland plant management and restoration. In 2017, he partnered with the DNR on research related to ecology and management of starry stonewort,

Eurasian and hybrid watermilfoil, and curly-leaf pondweed.

In addition, Dr Larkin, in partnership with the DNR and the University of Minnesota Extension program, coordinated a day-long volunteer effort to search for starry stonewort. More than 200 volunteers surveyed 178 lakes statewide. Starry stonewort was confirmed in one new lake, Grand Lake in Stearns County, as a result of this effort.

DNR staff had many conversations with citizens by email, phone and in person throughout the year. We continued to engage with stakeholders to hear their perspectives on invasive aquatic plants, which helps guide the evolution of Minnesota’s approach to management.

IAPM permit applications are now accepted through the Minnesota DNR Permitting and Reporting System (MPARS). MPARS can be easily accessed from any computer connected to the internet.

**FUTURE NEEDS AND PLANS**

To effectively and proactively manage invasive aquatic plants into the future, we will:

- Engage stakeholders and refine the issuance of permits and grants for the control of invasive aquatic plants.
- Work with partners to manage invasive aquatic plants.
- Monitor the distribution of invasive aquatic plants in the state, with emphasis on verification of reports of new occurrences.
- Assess risks posed to Minnesota by various nonnative aquatic plants.
- Improve our understanding of the ecology and management of invasive aquatic plants, including non-native Phragmites, the macroalgae starry stonewort, and hybrids of Eurasian watermilfoil, by continuing to work with researchers at MAISRC, the U.S. Army Corps of Engineers Engineer and Research Development Center, and other institutions. Support from watershed districts and other partners will continue to be very important.
- Review and revise best management practices for herbicide treatment of aquatic invasive plants, in light of results from ongoing research and pilot projects.





# Invasive Aquatic Animals – Zebra Mussels

## GOALS

- Prevent the spread of zebra mussels to uninfested, unconnected lakes and rivers in the state.
- Support, assist and/or conduct research on zebra mussel ecology, biology, life history and other aspects to help manage and prevent spread.

## HIGHLIGHTS

Issued two Invasive Aquatic Plant Management Permits (IAPM) for zebra mussel control using pesticides in open water:

1. Lake Marion, Dakota County - rapid response effort using EarthTec QZ on zebra mussels found near public access in lake. Staff provided diving surveys, barrier placement assistance and coordination with USGS research staff to conduct bioassays determining treatment efficacy.
2. Lake Minnewashta - rapid response efforts using EarthTec QZ to control a small number of tiny zebra mussels found at public access.

## RESEARCH

DNR biologists completed a three-year study on the effects of early season rising water temperatures in veliger densities in lakes. Results from this effort can help with regulating activities in zebra mussel waters. Research is planned to continue, expanding lake types in the study.

DNR biologists continued monitoring the growth of zebra mussels in a new expanding population in White Bear Lake. Biologists continued research monitoring numbers and size of zebra mussels in Green Lake, in connection with Fisheries monitoring efforts on the lake.

The MAISRC Technical Committee will review and amend future research priorities for MAISRC scientists. DNR staff provided review of proposed new control technologies to assess efficacy and potential use in infested lakes.

Results from a three year study on spring water temperatures and veliger production in three lakes (Prior, Sand, Gull) were finalized to help guide DNR regulations on bait harvest in infested waters.

## PARTNERSHIPS

The DNR establishes and maintains partnerships with lake associations, lake user groups, tribal organizations, local governmental agencies and others throughout the state. DNR AIS specialists in several regions continued assisting MAISRC researcher Dr. Michael McCartney in research fieldwork.

The DNR also depends on the work of volunteers across Minnesota who look at docks, lifts, boats, recreational equipment, shorelines and other objects to monitor for zebra mussels as part of the Volunteer Zebra Mussel Monitoring Program. Because the DNR doesn't have the capacity to monitor the thousands of lakes and other waters in the state, citizen monitors are usually the first to discover and report new infestations of zebra mussels.

## FUTURE NEEDS AND PLANS

The DNR will continue to:

- Examine potential uses of pesticides to control zebra mussels as opportunities arise.
- Monitor, with partners, the post-treatment efficacy of previous control projects.
- Work with citizen groups to provide control advice and education.

To learn more, visit

[www.mndnr.gov/volunteering/zebramussel\\_monitoring](http://www.mndnr.gov/volunteering/zebramussel_monitoring)

*Photo below: Zebra mussels attached to native clams can kill them over time.*







# Invasive Aquatic Animals - Invasive Carp

## GOALS

- Prevent or limit range expansion of invasive carp (bighead, black, grass, and silver carp) at strategic locations.
- Monitor Minnesota waters for changes in population sizes, range expansion and reproduction.
- Accelerate research on control strategies.

## HIGHLIGHTS

The DNR is highly engaged on the invasive carp issue. The agency uses the Minnesota Invasive Carp Action Plan to guide activities. The agency annually updates interested stakeholders at the Minnesota Invasive Carp Forum in spring each year.

For more information about the Minnesota Invasive Carp Action Plan visit [www.mndnr.gov/invasive-carp](http://www.mndnr.gov/invasive-carp)

## NEW DETECTIONS OF JUVENILE AND ADULT INVASIVE CARP

The DNR relies on five methods to detect and monitor the expansion of invasive carp into Minnesota:

1. Traditional fisheries monitoring programs
2. Targeted sampling
3. Contracted commercial fishing
4. Monitoring the commercial catch
5. Public reported sightings

In 2016, six adult invasive carp were captured using these methods:

| Location                 | Species      | Date    | Number Caught | Type of Gear                 |
|--------------------------|--------------|---------|---------------|------------------------------|
| St. Croix River          | Bighead Carp | 3/10/17 | 1             | Commercial Fisher            |
| St. Croix River          | Silver Carp  | 3/10/17 | 1             | Commercial Fisher            |
| St. Croix River          | Silver Carp  | 4/2/17  | 1             | Commercial Fisher            |
| Mississippi River Pool 2 | Grass Carp   | 4/11/17 | 1             | Contracted Commercial Fisher |
| Mississippi River Pool 2 | Grass Carp   | 4/11/17 | 1             | Contracted Commercial Fisher |
| St. Croix River          | Bighead Carp | 7/28/17 | 1             | DNR personnel                |

The DNR received 14 encounter reports from the public in 2017. All reports were investigated in person, by phone or via e-mail. One report was confirmed as an invasive carp, five reports were confirmed not to be invasive carp based on photographs, six reports were unlikely to be invasive carp based on discussions, one report was likely to be an invasive carp, and a determination could not be made on one report. Follow up sampling was conducted in response to two of the reports. One additional carp was captured from follow up sampling.

## INVASIVE CARP TRACKING

The Minnesota Legislature granted the MN DNR the authority to use tagging as a research tool. Legislative approval was needed because the agency is putting an invasive species back into the water. The DNR tagged its first carp on July 28, 2017 in the St. Croix River. Fish biologists tracked its movement using active boat tracking and the passive receiver array present in the river system. The DNR will continue to track and deploy a recapture effort in the future.

*Photo: DNR Fisheries staff implant a small tracking device in a bighead carp to learn more about invasive carp habits.*



*Photo above: Individual silver carp, an invasive species, have been found in the St. Croix river in Minnesota.*

## **UPPER MISSISSIPPI RIVER COLLABORATION**

The DNR is part of a multi-state and federal agency collaboration working on preventing the expansion and reducing the impacts of invasive carp. This workgroup is working together at a basin level rather than at the individual state level to develop projects and strategies to meet the above objectives. This includes a system-wide monitoring program, implementing a commercial harvest program at the reproduction front, and developing a deterrent strategy.

## **PARTNERSHIPS**

### **MINNESOTA AQUATIC INVASIVE SPECIES RESEARCH CENTER – UNIVERSITY OF MINNESOTA**

Dr. Peter Sorensen's lab continued lock and dam evaluation work in 2017. The lab has tagged and tracked 160 fish (common carp, walleye, catfish, bigmouth buffalo and smallmouth buffalo) at Lock and Dam 2. Additionally, the group has tagged and followed over 120 common carp at Lock and Dam 8. Scientists are working on analyzing and publishing the data. Additional field work and analysis will be performed in 2018.

### **MINNESOTA STATE UNIVERSITY – MANKATO**

The DNR has partnered with Minnesota State University, Mankato to evaluate invasive carp deterrents in the Minnesota River. University partners finished collecting a third and final year of data. Scientists were finishing analysis in the fall

and are preparing the final report for submission to the DNR in the first quarter of 2018. The final report will describe the hydrologic and geomorphic characteristics of the river including channel migration rates, flood plain inundation, bathymetry, and sediments. The project is also examining biological data to identify habitats that are highly suitable for invasive carp.

### **UNIVERSITY OF MINNESOTA – DULUTH**

Dr. Al Mensinger's lab has been contracted to evaluate the feasibility of using complex noise at Mississippi River Lock and Dam 5 to deter upstream movement of invasive carps. The contract was awarded in July. The lab has started interviewing experts, talked with US Army Corps of Engineers staff, and began collecting soundscape data at the location.

### **U.S. FISH AND WILDLIFE SERVICE**

The USFWS is the lead agency on eDNA sampling for invasive carp. In 2017, water samples were collected from the Mississippi River down river from Minnesota and in the St. Louis Estuary. The samples are processed at the USFWS Whitney Genetics Lab in LaCrosse, WI. Results can be found at [www.fws.gov/midwest/fisheries/edna.html](http://www.fws.gov/midwest/fisheries/edna.html). The USFWS also assists the DNR with response actions when requested.

### **FUTURE NEEDS AND PLANS**

Funding will be needed for additional prevention, monitoring and response projects, as identified in the Minnesota Invasive Carp Action Plan.



# Terrestrial Invasive Species Program

## GOALS

- Improve or enhance the ability of DNR staff to effectively manage terrestrial (land-based) invasive species on DNR-managed lands through prevention, management and inventory, outreach and communication, and research.
- Prevent or limit the negative impacts on Minnesota’s ecology, economy and human health that can result from terrestrial invasive species such as Oriental bittersweet, wild parsnip, buckthorn, garlic mustard, earthworms, emerald ash borer and gypsy moth.
- Prevent and manage terrestrial invasive species to protect and/or restore habitats for wildlife species, especially those species in greatest conservation need.

## HIGHLIGHTS

### PREVENTION

- Worked with DNR staff to ensure that they had the equipment needed to prevent invasive species spread and follow DNR’s Invasive Species Operational Order 113. The Operational Order went through a full departmental review in 2017 and was updated and signed by the commissioner.
- Through outreach and education with the public, worked to prevent the introduction of terrestrial invasive species to state-managed lands. The photo shows the new educational display at the State Fair.

### MANAGEMENT AND INVENTORY

The Invasive Species Program initiated a funding program in 2006 for the management and inventory of terrestrial invasive plant species on state-managed lands. Funds are dispersed to DNR divisions and regions. Funding for this program has decreased from its high in 2009.

Fiscal Year 2018: Thirty-seven proposals totaling \$389,695 were received; \$217,620 was awarded for 26 projects.

| Fiscal Year/s | Dollars Awarded | Acres                              | Number of Projects |
|---------------|-----------------|------------------------------------|--------------------|
| 2006-2007     | \$365,000       | 27,375                             | 31                 |
| 2008          | \$435,660       | 26,523                             | 32                 |
| 2009          | \$610,807       | 40,000 est.                        | 47                 |
| 2010          | \$606,777       | 27,955 + 40,000 from aerial survey | 42                 |
| 2011          | \$438,000       | 18,258                             | 33                 |
| 2012          | \$178,340       | 24,989 + 13,500 from aerial survey | 26                 |
| 2013          | \$160,000       | 7,547                              | 22                 |
| 2014          | \$144,249       | 11,860                             | 18                 |
| 2015          | \$270,674       | 12,994                             | 26                 |
| 2016          | \$192,339       | 5,501                              | 23                 |
| 2017          | \$219,834       | 5,755                              | 21                 |
| 2018          | \$217,620       | In progress                        | 26                 |

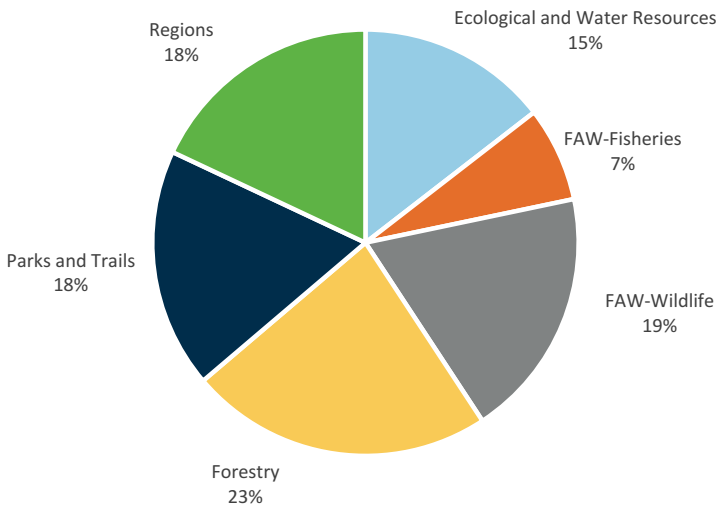
### FISCAL 2017 FUNDING DISTRIBUTION

Total \$219,834 • 21 projects • 3,633 acres inventoried • 2,122 acres managed

### Species inventoried and managed in various projects:

Bird’s foot trefoil, black locust, bull thistle, butter and eggs, Canada thistle, chicory, common buckthorn, common burdock, common teasel, cow vetch, crown vetch, cut-leaved teasel, garlic mustard, glossy buckthorn, Japanese hops, Japanese/Bohemian knotweed, leafy spurge, meadow knapweed, moth mullein, must thistle, non-native bush honeysuckles, Oriental bittersweet, poison hemlock, Queen Anne’s lace, reed canarygrass, Siberian elm, Siberian peashrub, spotted knapweed, tansy, wild parsnip, wooly cupgrass.

## FISCAL YEAR 2017 FUNDING DISTRIBUTION



## DNR CONTINUES TO USE EDDMAPS AS INVENTORY TOOL FOR INVASIVE SPECIES

EDDMapS (Early Detection and Distribution Mapping System) is a national website for collecting and sharing invasive species inventory information ([www.eddmaps.org](http://www.eddmaps.org)). In 2016, the DNR adopted EDDMapS for invasive species location information. The EDDMapS Midwest ([www.eddmaps.org/midwest](http://www.eddmaps.org/midwest)) webpage was created as a central source of information on invasive species in the Midwest.

The EDDMapS Midwest webpage and the associated Great Lakes Early Detection Network (GLEDN) app allows people to make reports of invasive species, collect photos associated with the locations, send reports through a system of verifiers, and view verified reports.



EDDMapS Midwest modernizes invasive species inventory collection and provides a centralized place for organizations to share data. EDDMapS collects data on aquatic and terrestrial invasive species including plants, diseases, insects, fish and other animals. In fiscal year 2017, DNR staff and contractors made 12,606 reports of invasive species locations covering 101,569 acres.

## OUTREACH AND COMMUNICATION

The State Fair Invasive Species Display brought invasive species prevention messages to many State Fair visitors.

A new interactive screen exhibit debuted at the State Fair. Attendees could practice the actions of *PlayCleanGo: Stop Invasive Species in Your Tracks* through a hiking scene and ATV scene.

## RESEARCH

Garlic mustard biological control took a big step forward in 2017. Garlic mustard (*Alliaria petiolata*) is an invasive biennial plant of forest understories. It is a challenging and expensive species to manage, so research to find a biological control insect began in 1998.

The Technical Advisory Group for Biological Control Agents of Weeds (TAG) recommended in February of 2017 that the root-mining weevil, *Ceutorhynchus scrobicollis* be released for biological control of garlic mustard in North America. This panel of 19 scientists from across the United States and Canada advises USDA APHIS-PPQ (the United States Department of Agriculture - Animal and Plant Health Inspection Service, Plant Protection and Quarantine program) on whether new biological control agents should or should not be released in North America. This is a major milestone culminating of over 18 years of research.

The next steps are for review by USDA-APHIS staff who oversee permitting of biological control agents of weeds to determine if they agree with the TAG review panel recommendations. That will be followed by U.S. Fish and Wildlife Service review to ensure compliance with the Endangered Species Act, and additional APHIS staff review to ensure compliance with the National Environmental Policy Act and with executive orders related to tribal coordination. In



Photo above: A new interactive display at the Minnesota State Fair highlights how to clean equipment to prevent the spread of terrestrial invasive species.

recent history, testing the prospective biological control insect and gaining approval by TAG has been the most time consuming part of this process. The Minnesota Invasive Terrestrial Plants and Pests Center (MITPPC), through an appropriation from the Environment and Natural Resource Trust Fund (ENTRF), is supporting ongoing garlic mustard biocontrol research.

Common buckthorn is an invasive woody plant. After buckthorn is removed, there is often a flush of new buckthorn plants that germinate making it hard to return the site to native species. MITPPC with support from ENTRF is funding the “Cover It Up” research project at the University of Minnesota which aims to develop strategies to prevent buckthorn from coming back after it has been removed.

## PARTNERSHIPS

The PlayCleanGo program is built around partnering and consistent messaging. As of September 2017, PlayCleanGo had more than 450 partners in the United States, Canada and Mexico.

For more information, visit [www.playcleango.org/partners](http://www.playcleango.org/partners)

The Minnesota Invasive Species Advisory Council (MISAC) continues to provide a mechanism for interagency and inter-organization communication and collaboration on invasive species issues. The DNR

was an active participant in 2017. MISAC produced a 2018 wall calendar highlighting 12 invasive species and issues of concern to Minnesotans.

Visit MISAC at [www.mninvases.org](http://www.mninvases.org)

The DNR is a member of the Noxious Weeds Advisory Committee convened by the Minnesota Department of Agriculture (MDA) to evaluate plant species for invasiveness, difficulty of control, cost of control, benefits, and amount of injury caused by the species. For each species evaluated, the committee recommends to the MDA commissioner whether the species should be placed on a noxious weed list.

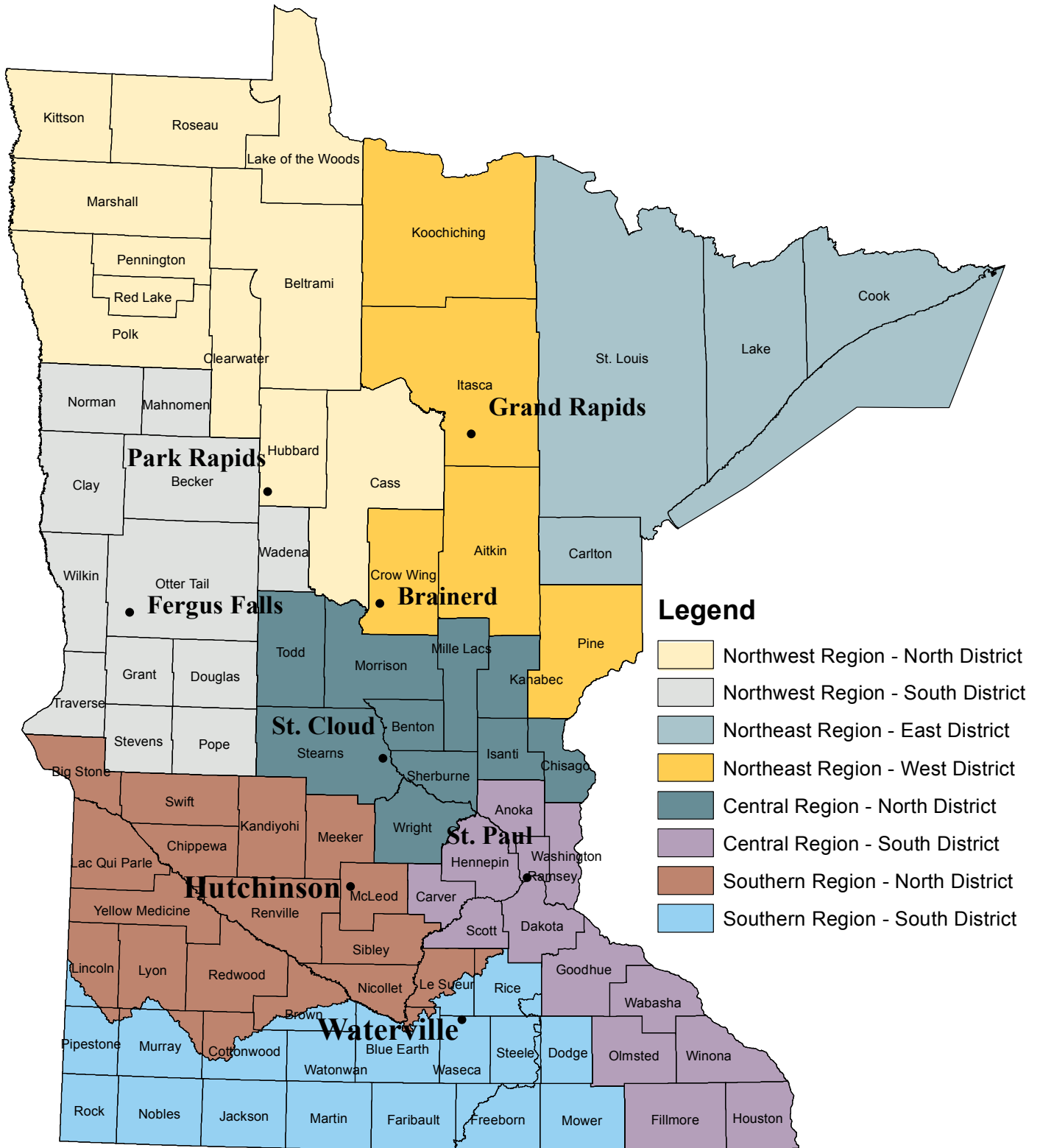
The Minnesota Invasive Terrestrial Plants and Pests Center at the University of Minnesota funds applied scientific research to prevent and minimize the threats posed by terrestrial invasive plants, other weeds, pathogens, and pests.

Visit at [www.mitppc.umn.edu](http://www.mitppc.umn.edu)

## FUTURE NEEDS AND PLANS

Within the DNR, there is an ongoing need to expand awareness, data, tools and resources to reduce impacts of terrestrial invasive species on state-managed lands. Funding for terrestrial invasive species work has decreased since 2010. The terrestrial invasive species program plans to continue to work to meet the growing needs for outreach materials, data, tools and resources.

# Minnesota Department of Natural Resources Ecological and Water Resources Districts





# Appendix A

## INVASIVE SPECIES PROGRAM STAFF

Telephone numbers and email addresses are available at [www.mndnr.gov/ais](http://www.mndnr.gov/ais)—click on Contact an Expert.

### **Michael Bolinski**

Watercraft Inspection  
Program Supervisor  
Northwest Region, Fergus Falls

### **Kylie Cattoor**

Natural Resource Specialist  
Central Region, St. Paul

### **Wendy Crowell**

Grants Coordinator  
Central Office, St. Paul

### **Adam Doll**

Watercraft Inspection  
Program Coordinator  
Central Office, St. Paul

### **Jessamyn Foley**

Watercraft Inspection  
Program Assistant  
Northeast Region, Brainerd

### **Nick Frohnauer**

Invasive Fish Coordinator  
Central Office, St. Paul

### **Allison Gamble**

Invasive Species Specialist  
Southern Region, Waterville

### **Christine Hokkala-Kuhns**

Watercraft Inspection  
Program Supervisor  
Central Region, Sauk Rapids

### **Jeannine Howland**

Watercraft Inspection  
Program Assistant  
Central Region, St. Paul

### **Keri Hull**

Watercraft Inspection  
Program Supervisor  
Northeast Region, Brainerd

### **Phil Hunsicker**

AIS Prevention Planner  
Northwest and Northeast Regions,  
Brainerd

### **Greg Husak**

Communications/Information Officer  
Central Office, St. Paul

### **Christine Jurek**

Invasive Species Specialist  
Central Region, Sauk Rapids

### **Eric Katzenmeyer**

Invasive Species Specialist  
Southern Region, Hutchinson

### **Travis Kinsell**

Watercraft Inspection Supervisor  
Southern Region, Hutchinson

### **Nicole Kovar**

Invasive Species Specialist  
Northwest Region, Park Rapids

### **April Londo**

Natural Resource Specialist  
Central Region, St. Paul

### **Keegan Lund**

Invasive Species Specialist  
Central Region, St. Paul

### **Carrie Maurer-Ackerman**

Aquatic Invasive Species Trainer  
Northwest and Northeast Regions,  
Brainerd

### **Courtney Millaway**

Natural Resource Specialist  
Central Region, Sauk Rapids

### **Gary Montz**

Research Scientist  
Central Office, St. Paul

### **Anna Ness**

Watercraft Inspection  
Program Assistant  
Northwest Region, Fergus Falls

### **Sara Okstad**

Watercraft Inspection  
Program Assistant  
Central Region, St. Paul

### **Cory Palmer**

Regional Manager Enforcement  
New Ulm

### **Kelly Pennington**

Aquatic Invasive Species  
Prevention Coordinator  
Central Office, St. Paul

### **Ann Pierce**

Ecosystem Management and  
Protection Section Manager  
Central Office, St. Paul

### **Tim Plude**

Invasive Species Specialist  
Northeast Region, Brainerd

### **Mark Ranweiler**

Assistant Invasive Species Specialist  
Northwest Region, Fergus Falls

### **Richard Rezanka**

Invasive Species Specialist  
Northeast Region, Grand Rapids

### **Ty Riihiluoma**

Natural Resource Specialist Central  
Region, Sauk Rapids

### **April Rust**

Training Coordinator  
Central Office, St. Paul

### **Mike Smith**

Aquatic Invasive Species Trainer  
Central and Southern Regions

### **Laura Van Riper**

Terrestrial Invasive Species  
Coordinator  
Central Office, St. Paul

### **Chip Welling**

Aquatic Invasive Species  
Management Coordinator  
Central Office, St. Paul

### **Tina Wolbers**

AIS Prevention Planner  
Central and Southern Regions  
Central Office, St. Paul

### **Heidi Wolf**

Invasive Species Program Supervisor  
Central Office, St. Paul

# Appendix B

## OTHER CONTACTS FOR INVASIVE SPECIES PREVENTION AND CONTROL PROGRAMS

### STATE AGENCIES

#### **Minnesota Department of Agriculture (MDA) – Invasive Species Programs**

The MDA is responsible for the prevention and early detection of new and emerging terrestrial plant pests and management of noxious weeds. The MDA’s Pest Detection and Management Unit addresses new and emerging invasive species such as brown marmorated stink bug, potato cyst nematode and Asian long-horned beetle. The Pest Mitigation and Regulatory Response Unit coordinates all aspects of survey, treatment and regulatory work pertaining to quarantined pests such as gypsy moth and emerald ash borer. The Noxious and Invasive Weed Program oversees the Minnesota Noxious Weed Law, coordinates weed biological control efforts and assists land managers with general weed management and early detection efforts.

##### **Plant Protection Division**

|                                              |                          |              |
|----------------------------------------------|--------------------------|--------------|
| Pest Detection and Management Unit           | Mark Abrahamson          | 651-201-6505 |
| Pest Mitigation and Regulatory Response Unit | Kimberly Thielen Cremers | 651-201-6329 |

##### **Noxious and Invasive Weed Program**

|                                                         |                  |              |
|---------------------------------------------------------|------------------|--------------|
| Noxious Weed Law                                        | Anthony Cortilet | 651-201-6538 |
| Early Detection, Biological Control and Data Management | Monika Chandler  | 651-201-6537 |
| Early Detection and Rapid Response                      | Emilie Justen    | 651-201-6360 |

#### **Minnesota Department of Natural Resources (DNR) – Forest Health Program**

The DNR’s Forestry Division, working in cooperation with the MDA, is charged with surveying and controlling forest pests including invasive organisms such as gypsy moth and several bark beetles. An annual report is prepared by the DNR Forest Health Protection Team on those issues.

##### **Forestry Division**

|                                         |                 |              |
|-----------------------------------------|-----------------|--------------|
| Invasive Species Program Coordinator    | Susan Burks     | 651-259-5251 |
| Forest Health Program Coordinator       | Val Cervenka    | 651-259-5296 |
| Metro/Southern Forest Health Specialist | Brian Schwingle | 651-259-5821 |
| Northeast Forest Health Specialist      | Jess Hartshorn  | 218-328-8897 |
| Northwest Forest Health Specialist      | Mike Parisio    | 218-327-4234 |

#### **University of Minnesota Sea Grant - Aquatic Invasive Species Information Center**

The Aquatic Invasive Species Information Center at the University of Minnesota Sea Grant Program provides research, outreach, and education in collaboration with the DNR’s Invasive Species Program. The center has served as an important resource on aquatic nuisance species and provides information to the public to prevent and slow the spread of aquatic invaders.

|                                      |             |              |
|--------------------------------------|-------------|--------------|
| AIS Info Center Coordinator – Duluth | Doug Jensen | 218-726-8712 |
|--------------------------------------|-------------|--------------|

INTERAGENCY AND INVASIVE SPECIES GROUPS

There are several invasive species committees and work groups that facilitate coordination between agencies.

**Gypsy Moth Program Advisory Committee**

Kimberly Thielen Cremers 651-201-6329

**St. Croix River Zebra Mussel Task Force**

Primary members include: Minnesota Department of Natural Resources, Wisconsin Department of Natural Resources, Great Lakes Indian Fish and Wildlife Commission, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and National Park Service.

**Minnesota Invasive Species Advisory Council (MISAC)**

Angela Gupta, MISAC chair, University of Minnesota Extension 507-280-2869  
Angelique Dahlberg, MISAC co-chair, St. Croix River Association 715-483-3300

**Minnesota Noxious Weed Advisory Committee**

Minnesota Department of Agriculture Anthony Cortilet 651-201-6538

# Appendix C: Regulations Changes in 2017

See the Regulations section of the Prevention chapter (page 13) for more information about regulatory changes in 2017. This appendix presents only the statute and rule language, with deletions shown in strikeout, new text indicated by an underline, and effective dates shown inside brackets. We present only the subdivisions or subparts that were changed in 2017; for complete, updated statute and rule language see the Minnesota Office of the Revisor of Statutes website ([www.revisor.leg.state.mn.us](http://www.revisor.leg.state.mn.us)).

## CHANGES TO MINNESOTA STATUTES

Numbers correspond to the summary of legislative changes on page 13.

1.

### 84D.03 INFESTED WATERS; RESTRICTED ACTIVITIES.

#### SUBDIVISION 3. BAIT HARVEST FROM INFESTED WATERS.

(a) Taking wild animals from infested waters for bait or aquatic farm purposes is prohibited, except as provided in paragraph (b), (c), or (d), and section 97C.341.

(b) In waters that are listed as infested waters, except those listed as infested with prohibited invasive species of fish or certifiable diseases of fish, as defined under section 17.4982, subdivision 6, taking wild animals may be permitted for:

(1) commercial taking of wild animals for bait and aquatic farm purposes as provided in a permit issued under section 84D.11, subject to rules adopted by the commissioner; and

(2) bait purposes for noncommercial personal use in waters that contain Eurasian watermilfoil, when the infested waters are listed solely because they contain Eurasian watermilfoil and if the equipment for taking is limited to cylindrical minnow traps not exceeding 16 inches in diameter and 32 inches in length.

(c) In streams or rivers that are listed as infested waters, except those listed as infested with certifiable diseases of fish, as defined under section 17.4982, subdivision 6, the harvest of bullheads, goldeyes, mooneyes, sheepshead (freshwater drum), and suckers for bait by hook and line for noncommercial personal use is allowed as follows:

(1) fish taken under this paragraph must be used on the same body of water where caught and while still on that water body. Where the river or stream is divided by barriers such as dams, the fish must be

caught and used on the same section of the river or stream;

(2) fish taken under this paragraph may not be transported live from or off the water body;

(3) fish harvested under this paragraph may only be used in accordance with this section;

(4) any other use of wild animals used for bait from infested waters is prohibited;

(5) fish taken under this paragraph must meet all other size restrictions and requirements as established in rules; and

(6) all species listed under this paragraph shall be included in the person's daily limit as established in rules, if applicable.

(d) In the Mississippi River downstream of St. Anthony Falls and the St. Croix River downstream of the dam at Taylors Falls, including portions described as Minnesota-Wisconsin boundary waters in Minnesota Rules, part 6266.0500, subpart 1, items A and B, the harvest of gizzard shad by cast net for noncommercial personal use as bait for angling, as provided in a permit issued under section 84D.11, is allowed as follows:

(1) nontarget species must immediately be returned to the water;

(2) gizzard shad taken under this paragraph must be used on the same body of water where caught and while still on that water body. Where the river is divided by barriers such as dams, the gizzard shad must be caught and used on the same section of the river;

(3) gizzard shad taken under this paragraph may not be transported off the water body; and

(4) gizzard shad harvested under this paragraph may only be used in accordance with this section.

(e) Equipment authorized for minnow harvest in a listed infested water by permit issued under paragraph (b) may not be transported to, or used in, any waters other than waters specified in the permit.

(f) Bait intended for sale may not be held in infested water after taking and before sale, unless authorized under a license or permit according to Minnesota Rules, part 6216.0500. [Effective 07-01-2017]

## 2.

### **84D.03 INFESTED WATERS; RESTRICTED ACTIVITIES.**

#### **SUBDIVISION 4. COMMERCIAL FISHING AND TURTLE, FROG, AND CRAYFISH HARVESTING RESTRICTIONS IN INFESTED AND NONINFESTED WATERS.**

(a) All nets, traps, buoys, anchors, stakes, and lines used for commercial fishing or turtle, frog, or crayfish harvesting in an infested water that is listed because it contains invasive fish, invertebrates, or certifiable diseases, as defined in section 17.4982, ~~may not be used in any other waters. If a commercial licensee operates in an infested water listed because it contains invasive fish, invertebrates, or certifiable diseases, as defined in section 17.4982,~~ all nets, traps, buoys, anchors, stakes, and lines used for commercial fishing or turtle, frog, or crayfish harvesting in waters listed as infested with invasive fish, invertebrates, or certifiable diseases, as defined in section 17.4982, must be tagged with tags provided by the commissioner, as specified in the commercial licensee's license or permit. Tagged gear must not be used in water bodies other than those specified in the license or permit. The permit may authorize department staff to remove tags after the gear is decontaminated. This tagging requirement does not apply to commercial fishing equipment used in Lake Superior. **[Effective 07-01-2017]**

(b) All nets, traps, buoys, anchors, stakes, and lines used for commercial fishing or turtle, frog, or crayfish harvesting in an infested water that is listed solely because it contains Eurasian water milfoil must be dried for a minimum of ten days or frozen for a minimum of two days before they are used in any other waters, except as provided in this paragraph. Commercial licensees must notify the department's

regional or area fisheries office or a conservation officer before removing nets or equipment from an infested water listed solely because it contains Eurasian water milfoil and before resetting those nets or equipment in any other waters. Upon notification, the commissioner may authorize a commercial licensee to move nets or equipment to another water without freezing or drying, if that water is listed as infested solely because it contains Eurasian water milfoil.

(c) A commercial licensee must remove all aquatic macrophytes from nets and other equipment before placing the equipment into waters of the state.

(d) The commissioner shall provide a commercial licensee with a current listing of listed infested waters at the time that a license or permit is issued.

## 3.

### **84D.04 CLASSIFICATION OF NONNATIVE SPECIES.**

#### **SUBDIVISION 1. CLASSES.**

The commissioner shall, as provided in this chapter, classify nonnative species of aquatic plants and wild animals, including subspecies, genotypes, cultivars, hybrids, or genera of nonnative species, according to the following categories:

(1) prohibited invasive species, which may not be possessed, imported, purchased, sold, propagated, transported, or introduced except as provided in section 84D.05;

(2) regulated invasive species, which may not be introduced except as provided in section 84D.07;

(3) unlisted nonnative species, which are subject to the classification procedure in section 84D.06; and

(4) unregulated nonnative species, which are not subject to regulation under this chapter.

**[Effective 07-01-2017]**

## 4.

### 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 when specifically authorized under a permit issued by the commissioner according to section 103G.615, when being transported for disposal as specified 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 being removed from watercraft and equipment, or caught while angling, and immediately returned to the water from which they came; or
  - (7) when being transported from riparian property to a legal disposal site that is at least 100 feet from any surface water, ditch, or seasonally flooded land, provided the prohibited invasive species are in a covered commercial vehicle specifically designed and used for hauling trash; or
- (~~7~~) (8) as the commissioner may otherwise prescribe by rule.

**[Effective 07-01-2017]**

## 5.

### 84D.108 SERVICE PROVIDER PERMIT. SUBDIVISION 2a. LAKE MINNETONKA PILOT STUDY.

(a) The commissioner may issue an additional permit to service providers to return to Lake Minnetonka water-related equipment with zebra mussels attached after the equipment has been seasonally stored, serviced, or repaired. The permit must include verification and documentation requirements and any other conditions the commissioner deems necessary.

(b) Water-related equipment with zebra mussels attached may be returned only to Lake Minnetonka (DNR Division of Waters number 27-0133) by service providers permitted under subdivision 1.

(c) The service provider's place of business must be within the Lake Minnetonka

Conservation District as established according to sections 103B.601 to 103B.645 or within a municipality immediately bordering the Lake Minnetonka Conservation District's boundaries.

(d) A service provider applying for a permit under this subdivision must, if approved

for a permit and before the permit is valid, furnish a corporate surety bond in favor of the state for \$50,000 payable upon violation of this chapter while the service provider is acting under a permit issued according to this subdivision.

(e) This subdivision expires December 1, 2018 2019.

**[Effective 07-01-2017]**

### SUBDIVISION 2b. GULL LAKE PILOT STUDY.

(a) The commissioner may include an additional targeted pilot study to include water-related equipment with zebra mussels attached for the Gull Narrows State Water Access Site, Government Point State Water Access Site, and Gull East State Water Access Site on Gull Lake (DNR Division of Waters number 11-0305) in Cass and Crow Wing Counties using the same authorities, general procedures, and requirements provided for the Lake Minnetonka pilot project in subdivision 2a. Lake service providers participating in the Gull Lake targeted pilot study place of business must be located in Cass or Crow Wing County.

(b) If an additional targeted pilot project for Gull Lake is implemented under this section, the report to the chairs and ranking minority members of the senate and house of representatives committees having jurisdiction over natural resources required under Laws 2016, chapter 189, article 3, section 48, must also include the Gull Lake targeted pilot study recommendations and assessments.

(c) This subdivision expires December 1, 2019.

**[Effective 07-01-2017]**

#### SUBDIVISION 2c. CROSS LAKE PILOT STUDY.

(a) The commissioner may include an additional targeted pilot study to include water-related equipment with zebra mussels attached for the Cross Lake #1 State Water Access Site on Cross Lake (DNR Division of Waters number 18-0312) in Crow Wing County using the same authorities, general procedures, and requirements provided for the Lake Minnetonka pilot project in subdivision 2a. The place of business of lake service providers participating in the Cross Lake targeted pilot study must be located in Cass or Crow Wing County.

(b) If an additional targeted pilot project for Cross Lake is implemented under this section, the report to the chairs and ranking minority members of the senate and house of representatives committees having jurisdiction over natural resources required under Laws 2016, chapter 189, article 3, section 48, must also include the Cross Lake targeted pilot study recommendations and assessments.

(c) This subdivision expires December 1, 2019.

**[Effective 07-01-2017]**

## 6.

### **84D.11 PERMITS.**

#### SUBDIVISION 1a. PERMIT FOR INVASIVE CARP.

The commissioner may issue a permit to departmental divisions for tagging bighead, black, grass, or silver carp for research or control. Under the permit, the carp may be released into the water body from which the carp was captured. This subdivision expires December 31, 2021.

**[Effective 07-01-2017]**

## 7.

### **MINNOW IMPORTATION RISK REPORT.**

By January 15, 2018, the commissioner of natural resources must report to the chairs of the legislative committees with jurisdiction over natural resources regarding potential risks of importing golden shiner minnows into Minnesota. The commissioner of natural resources must coordinate with the University of Minnesota and may use a third party to produce the report. The report must:

(1) review the Arkansas bait certification program to determine specific risks and potential mitigation measures of allowing the importation of golden shiner minnows by a person that holds a Minnesota wholesale minnow dealers license issued under Minnesota Statutes, section 97C.501, subdivision 2; and

(2) include recommendations on testing protocols or procedures needed to protect Minnesota's waters from invasive species and fish disease introduction.

**[Effective 07-01-2017]**

# Appendix D

## WATER BODIES LISTED AS INFESTED IN 2017

Year species was first confirmed, or connected water body: Either (1) the year in which we first confirmed a population of the aquatic invasive species in the water body, or (2) “connected” to indicate that we listed the water body because it is connected to a water body where the aquatic invasive species has been confirmed; this column may also contain the name and/or DOW number of the connected, confirmed water body.

DOW number: an identifying number for lakes. DOW stands for the former DNR Division of Waters. Ponds and wetlands that are not on the public waters inventory are listed with “none” in the number column. Most rivers and streams on the public waters inventory are listed without a number in the number column; some river pools are identified with a DOW number.

| Water body name     | County or counties | Listed for aquatic invasive species | Year listed as infested | Year species was first confirmed, or connected water body            | DOW number |
|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------------------------------------------|------------|
| Alstead Mine        | Crow Wing          | zebra mussel                        | 2017                    | connected to Mahnomen Mine Pit #1 and #2 (18-0440-01 and 18-0440-02) | 18-0440-06 |
| Ann                 | Carver             | brittle naiad                       | 2017                    | 2017                                                                 | 10-0012    |
| Arco Mine           | Crow Wing          | zebra mussel                        | 2017                    | connected to Mahnomen Mine Pit #1 and #2 (18-0440-01 and 18-0440-02) | 18-0440-07 |
| Bad Axe             | Hubbard            | Eurasian watermilfoil               | 2017                    | 2017                                                                 | 29-0208    |
| Benedict            | Hubbard            | zebra mussel                        | 2017                    | connected to Leech                                                   | 29-0048    |
| Blackhawk           | Dakota             | Eurasian watermilfoil               | 2017                    | 2014                                                                 | 19-0059    |
| Bolfing             | Stearns            | zebra mussel                        | 2017                    | connected to Knaus (73-0086)                                         | 73-0088    |
| Burandt             | Carver             | zebra mussel                        | 2017                    | 2017                                                                 | 10-0084    |
| Burgen              | Douglas            | zebra mussel                        | 2017                    | 2017                                                                 | 21-0049    |
| Cedar               | Wright             | zebra mussel                        | 2017                    | 2017                                                                 | 86-0227    |
| Chippewa            | Douglas            | zebra mussel                        | 2017                    | 2017                                                                 | 21-0145    |
| Clark               | Crow Wing          | zebra mussel                        | 2017                    | 2017                                                                 | 18-0374    |
| Comfort             | Chisago            | zebra mussel                        | 2017                    | 2017                                                                 | 13-0053    |
| Deer                | Otter Tail         | zebra mussel                        | 2017                    | connected to Otter Tail and East Lost                                | 56-0298    |
| Devils              | Douglas            | zebra mussel                        | 2017                    | connected to Whiskey (21021600)                                      | 21-0213    |
| Dora                | Itasca             | zebra mussel                        | 2017                    | 2017                                                                 | 31-0882    |
| East Lost           | Otter Tail         | zebra mussel                        | 2017                    | 2017                                                                 | 56-0378    |
| East Red River Lake | Otter Tail         | zebra mussel                        | 2017                    | connected to Otter Tail and East Lost                                | 56-0573    |
| Edina               | Hennepin           | Eurasian watermilfoil               | 2017                    | 2017                                                                 | 27-0029    |
| Edward              | Crow Wing          | zebra mussel                        | 2017                    | 2017                                                                 | 18-0305    |
| Elk                 | Grant              | zebra mussel                        | 2017                    | 2017                                                                 | 26-0040    |
| Elkhorn             | Kandiyohi          | Eurasian watermilfoil               | 2017                    | 2017                                                                 | 34-0119    |
| Frances             | Le Sueur           | Eurasian watermilfoil               | 2017                    | 2017                                                                 | 40-0057    |
| Garfield            | Hubbard            | zebra mussel                        | 2017                    | 2017                                                                 | 29-0061    |



| Water body name                                                             | County or counties                                                                                                                                                               | Listed for aquatic invasive species | Year listed as infested | Year species was first confirmed, or connected water body            | DOW number |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------|----------------------------------------------------------------------|------------|
| George                                                                      | Kandiyohi                                                                                                                                                                        | zebra mussel                        | 2017                    | 2017                                                                 | 34-0142    |
| Girl                                                                        | Cass                                                                                                                                                                             | Eurasian watermilfoil               | 2017                    | 2017                                                                 | 11-0174    |
| Grand                                                                       | Stearns                                                                                                                                                                          | starry stonewort                    | 2017                    | 2017                                                                 | 61-0130    |
| Harriet                                                                     | Hennepin                                                                                                                                                                         | zebra mussel                        | 2017                    | 2017                                                                 | 27-0016    |
| Hoot                                                                        | Otter Tail                                                                                                                                                                       | zebra mussel                        | 2017                    | connected to Otter Tail and East Lost                                | 56-0782    |
| Juergens                                                                    | Todd                                                                                                                                                                             | zebra mussel                        | 2017                    | connected to Guernsey (77-0182)                                      | 77-0163    |
| Knaus                                                                       | Stearns                                                                                                                                                                          | zebra mussel                        | 2017                    | 2017                                                                 | 73-0086    |
| Krays                                                                       | Stearns                                                                                                                                                                          | zebra mussel                        | 2017                    | connected to Knaus (73-0086)                                         | 73-0087    |
| Little Chippewa                                                             | Douglas                                                                                                                                                                          | zebra mussel                        | 2017                    | connected to Whiskey (21021600)                                      | 21-0212    |
| Little Comfort                                                              | Chisago                                                                                                                                                                          | zebra mussel                        | 2017                    | connected to Comfort (13-0053)                                       | 13-0054    |
| Little Sauk                                                                 | Todd                                                                                                                                                                             | zebra mussel                        | 2017                    | 2017 (veligers)                                                      | 77-0164    |
| Long                                                                        | Hubbard                                                                                                                                                                          | faucet snail                        | 2017                    | 2017                                                                 | 29-0161    |
| Lotus                                                                       | Carver                                                                                                                                                                           | brittle naiad                       | 2017                    | 2017                                                                 | 10-0006    |
| Mahnomen Mine Pit #1 & #2                                                   | Crow Wing                                                                                                                                                                        | zebra mussel                        | 2017                    | 2017                                                                 | 18-0440    |
| Mahnomen Mine Pit #3                                                        | Crow Wing                                                                                                                                                                        | zebra mussel                        | 2017                    | connected to Mahnomen Mine Pit #1 and #2 (18-0440-01 and 18-0440-02) | 18-0440-03 |
| Marie                                                                       | Stearns                                                                                                                                                                          | Eurasian watermilfoil               | 2017                    | 2017                                                                 | 73-0014    |
| Marion                                                                      | Dakota                                                                                                                                                                           | zebra mussel                        | 2017                    | 2017                                                                 | 19-0026    |
| Mary                                                                        | Crow Wing                                                                                                                                                                        | Eurasian watermilfoil               | 2017                    | 2017                                                                 | 18-0185    |
| Medicine                                                                    | Hennepin                                                                                                                                                                         | zebra mussel                        | 2017                    | 2017                                                                 | 27-0104    |
| Minnesota River from Granite Falls to the confluence with Mississippi River | Multiple (Chippewa, Yellow Medicine, Renville, Redwood, Brown, Nicollet, Sibley, Blue Earth, Le Sueur, Scott, Carver, Hennepin, Dakota, Ramsey)                                  | bighead carp                        | 2017                    | 2016                                                                 | NA         |
| Minnesota River from Granite Falls to the confluence with Mississippi River | Multiple (Chippewa, Yellow Medicine, Renville, Redwood, Brown, Nicollet, Sibley, Blue Earth, Le Sueur, Scott, Carver, Hennepin, Dakota, Ramsey)                                  | grass carp                          | 2017                    | 2015                                                                 | NA         |
| Minnesota River                                                             | Multiple (Big Stone, Lac Qui Parle, Swift, Chippewa, Yellow Medicine, Renville, Redwood, Brown, Nicollet, Sibley, Blue Earth, Le Sueur, Scott, Carver, Hennepin, Dakota, Ramsey) | zebra mussel                        | 2017                    | 2017                                                                 | NA         |
| Minnewaska                                                                  | Pope                                                                                                                                                                             | starry stonewort                    | 2017                    | 2017                                                                 | 61-0130    |
| Muskrat                                                                     | Becker                                                                                                                                                                           | zebra mussel                        | 2017                    | connected to Detroit (03-0381)                                       | 03-0360    |

| Water body name                                                                       | County or counties       | Listed for aquatic invasive species | Year listed as infested | Year species was first confirmed, or connected water body            | DOW number |
|---------------------------------------------------------------------------------------|--------------------------|-------------------------------------|-------------------------|----------------------------------------------------------------------|------------|
| Nest                                                                                  | Kandiyohi                | zebra mussel                        | 2017                    | 2017                                                                 | 34-0154    |
| North Star                                                                            | Itasca                   | zebra mussel                        | 2017                    | 2017                                                                 | 31-0653    |
| North Ten Mile                                                                        | Otter Tail               | zebra mussel                        | 2017                    | connected to Ten Mile (56061300)                                     | 56-0604    |
| Orchard                                                                               | Dakota                   | Eurasian watermilfoil               | 2017                    | 2017                                                                 | 19-0031    |
| Otter Tail River downstream of Otter Tail Lake to the confluence of the Pelican River | Otter Tail               | zebra mussel                        | 2017                    | connected to Otter Tail and East Lost                                | NA         |
| Pelican River between Detroit and Sallie                                              | Becker                   | zebra mussel                        | 2017                    | connected to Detroit (03-0381)                                       | NA         |
| Pennington Mine                                                                       | Crow Wing                | zebra mussel                        | 2017                    | connected to Mahnomon Mine Pit #1 and #2 (18-0440-01 and 18-0440-02) | 18-0439    |
| Pine                                                                                  | Crow Wing                | Eurasian watermilfoil               | 2017                    | 2017                                                                 | 18-0261    |
| Pine River upstream of Pine Lake to Cross Lake                                        | Crow Wing                | Eurasian watermilfoil               | 2017                    | 2017                                                                 | NA         |
| Pleasant                                                                              | Wright                   | Eurasian watermilfoil               | 2017                    | 2017                                                                 | 86-0251    |
| Red River Lake                                                                        | Otter Tail               | zebra mussel                        | 2017                    | connected to Otter Tail and East Lost                                | 56-0711    |
| Redick Swamp                                                                          | Douglas                  | zebra mussel                        | 2017                    | connected to Whiskey (21021600)                                      | 21-0214    |
| Round                                                                                 | Grant                    | zebra mussel                        | 2017                    | connected to Elk (26004000)                                          | 26-0031    |
| Rush                                                                                  | Otter Tail               | zebra mussel                        | 2017                    | 2017                                                                 | 56-0141    |
| Sauk River from Knaus to Mississippi River                                            | Stearns                  | zebra mussel                        | 2017                    | 2017                                                                 | NA         |
| Serpent                                                                               | Crow Wing                | zebra mussel                        | 2017                    | 2017                                                                 | 18-0090    |
| Southeast Anderson                                                                    | Hennepin                 | Eurasian watermilfoil               | 2017                    | 2017                                                                 | 27-0062    |
| Spring                                                                                | Grant                    | zebra mussel                        | 2017                    | connected to Elk (26004000)                                          | 26-0032    |
| Steamboat                                                                             | Multiple (Cass, Hubbard) | zebra mussel                        | 2017                    | 2017                                                                 | 11-0504    |
| Stowe                                                                                 | Douglas                  | zebra mussel                        | 2017                    | connected to Whiskey (21021600)                                      | 21-0264    |
| Ten Mile                                                                              | Otter Tail               | zebra mussel                        | 2017                    | 2017                                                                 | 56-0613    |
| Turtle                                                                                | Grant                    | zebra mussel                        | 2017                    | connected to Elk (26004000)                                          | 26-0030    |
| Victoria                                                                              | Douglas                  | Eurasian watermilfoil               | 2017                    | 2017                                                                 | 21-0054    |
| West Lost                                                                             | Otter Tail               | zebra mussel                        | 2017                    | connected to Otter Tail and East Lost                                | 56-0481    |
| West Sylvania                                                                         | Wright                   | zebra mussel                        | 2017                    | connected to East Sylvania (86-0289)                                 | 86-0279    |
| Whiskey                                                                               | Douglas                  | zebra mussel                        | 2017                    | 2017                                                                 | 21-0216    |
| Wright                                                                                | Otter Tail               | zebra mussel                        | 2017                    | 2017                                                                 | 56-0783    |





**ECOLOGICAL AND WATER RESOURCES**

500 Lafayette Road, St. Paul, MN 55155-4025

651-259-5100

[www.mndnr.gov/invasives](http://www.mndnr.gov/invasives)