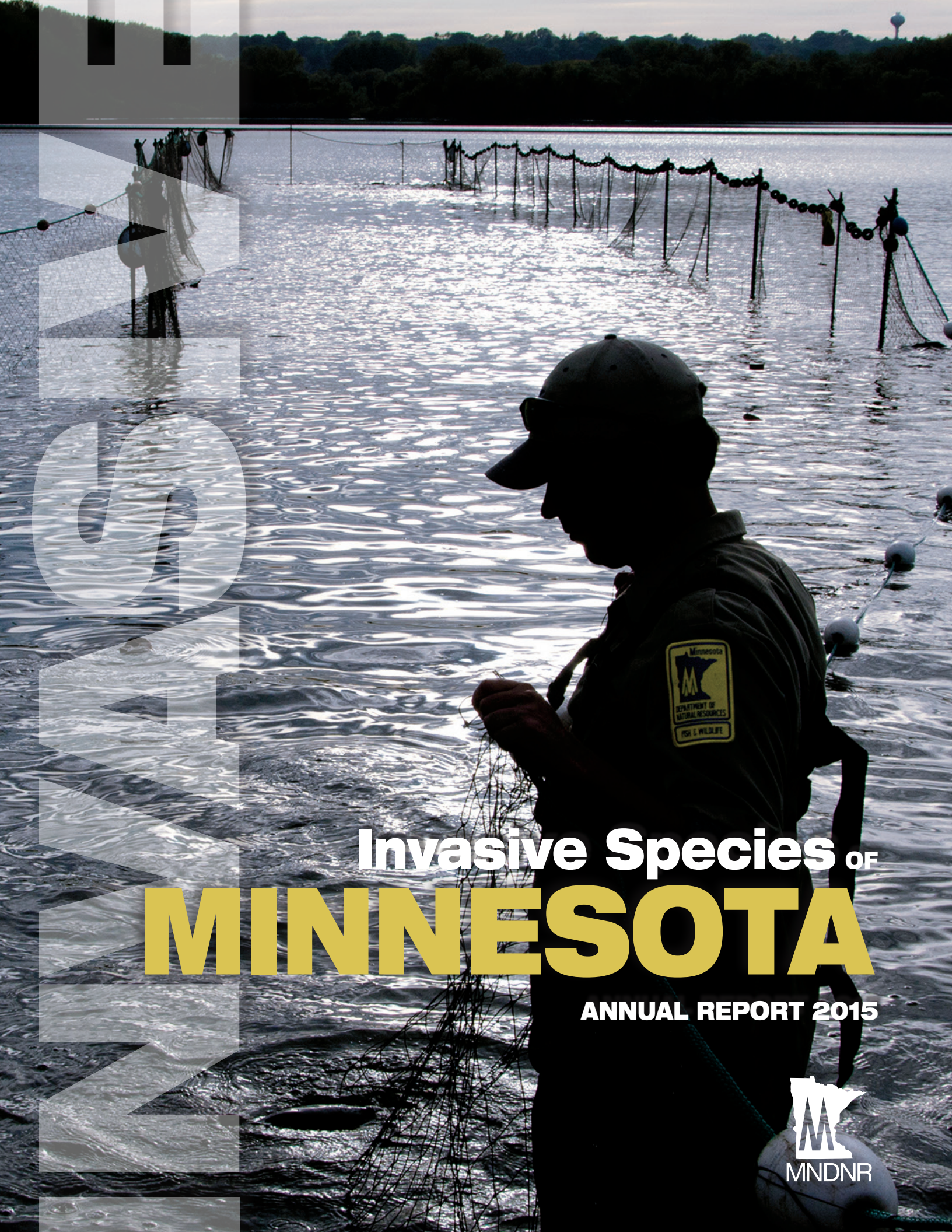

Invasive Species of MINNESOTA

ANNUAL REPORT 2015

MNDNR

MNDNR

Contact Information

Minnesota Department of Natural Resources
Ecological and Water Resources Division
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**.

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.

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Submitted to

Environment and Natural Resources Committee of the Minnesota House and Senate
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Cover photo:
The DNR Invasive Species Program worked with field staff and contract fisheries in 2015 to monitor and remove carp from the Mississippi and St. Croix Rivers.

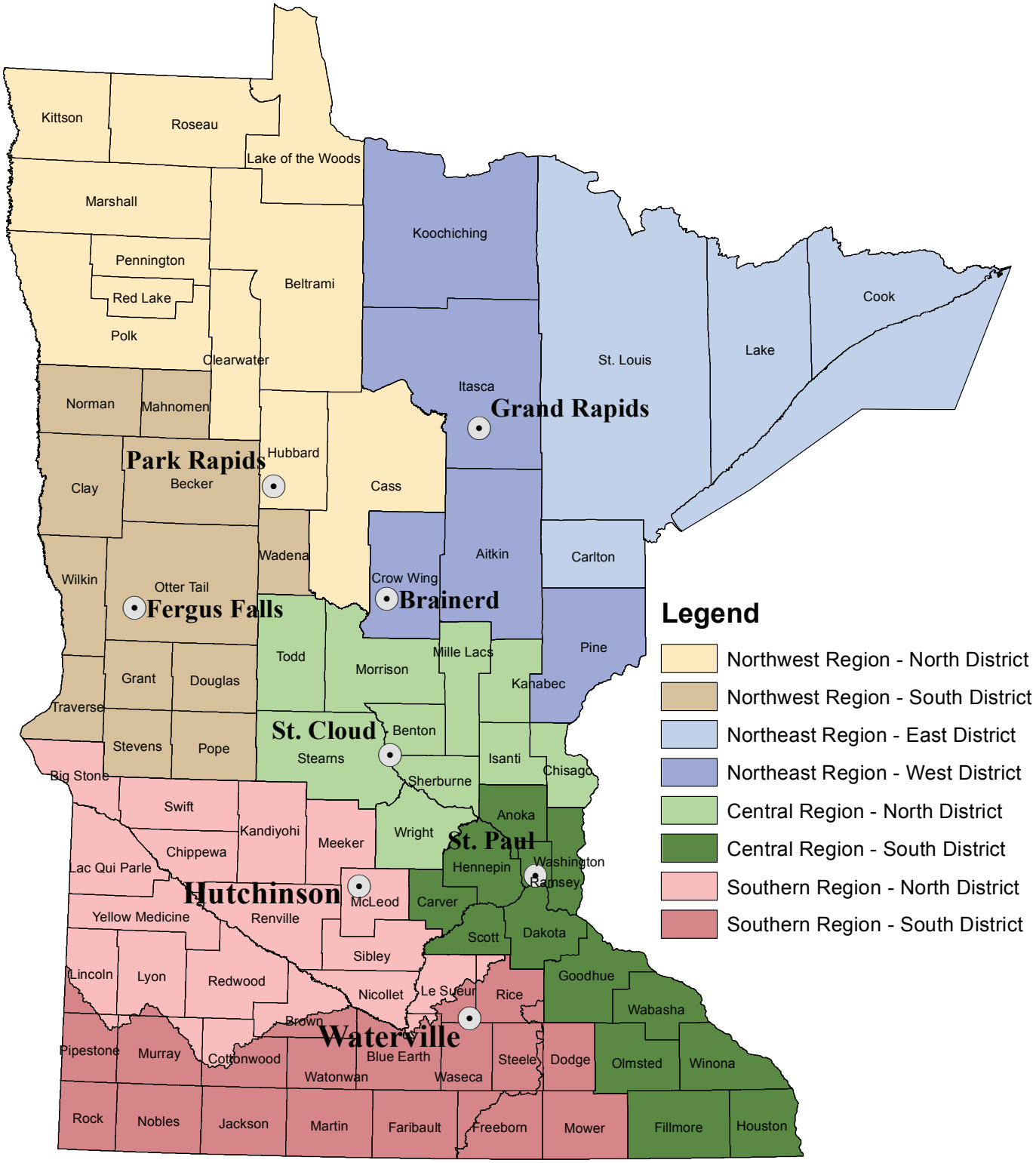
Executive Summary

The Minnesota Department of Natural Resources (DNR) is pleased to submit the 2015 Invasive Species Annual Report to the governor, legislature and citizens of Minnesota. This report summarizes the prevention and management efforts we have pursued to contain and control invasive species of aquatic plants and wild animals in Minnesota.

The first few chapters provide an overview of program activities, finances, and prevention and management efforts, followed by goals, highlights, partnerships, and future needs for individual program areas.

Table of Contents

Minnesota Department of Natural Resources Ecological and Water Resources Districts



Invasive Species Program Overview

Invasive species have the potential to cause serious problems in Minnesota. Evidence from numerous locations in North America, and from around the world, demonstrates that these nonnative species are a threat to the state's natural resources and local economies that depend on natural resources.

To address the problems caused by invasive species, Minnesota Legislature directed the Minnesota Department of Natural Resources (DNR) to establish the Invasive Species Program in 1991. The program is tasked with preventing the spread of invasive species and managing invasive aquatic plants and wild animals (Minnesota Statutes 84D).

The Invasive Species Program staff coordinate invasive species (IS) activities statewide including working with local government units, other states and provinces, multi-jurisdictional or national groups, and staff in each of the four DNR regions who coordinate regional and local efforts to prevent and manage IS. There are 24 full-time positions in the invasive species program and the program hires approximately 140 seasonal staff during the summer to inspect boats at public water accesses and help implement management activities. In addition all DNR staff have made a commitment to include invasive species prevention measures in their work as a part of operational order 113.

Ruth Lake zebra mussel cages in water.

Ruth Lake zebra mussels from red cage.

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 attempts to prevent the introduction of invasive species that have the potential to move into Minnesota, for example hydrilla and water chestnut. To do so, the program identifies potentially invasive species in other areas of North America and the world, predicts pathways of spread, and develops and implements solutions that reduce the potential for introduction and spread.

The program addresses many species that are present in Minnesota, such as Eurasian watermilfoil, purple loosestrife, zebra mussel, and spiny waterflea. Efforts in this area include working to prevent spread and to manage problems caused by established populations.

The DNR's prevention and management activities are often undertaken in collaboration with other states, agencies, and partners with similar concerns. Prevention efforts today 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. Within the DNR, our goal is to enhance the ability of field staff to prevent and manage terrestrial invasive species effectively.

Key strategies include:

1. Coordinate inventories of public lands for the presence of invasive species;
2. Gather, maintain, and share knowledge of integrated pest management (chemical, mechanical, and biological control) for terrestrial invasive species;
3. Fund management efforts on state-managed lands; and
4. Develop or improve management practices (i.e., biological control) through research.

Highlights

- The DNR created a new zebra mussel pilot project permit process to enable successful applicants to attempt to kill zebra mussels in lakes. The first pilot project started in October in Ruth Lake (Crow Wing County). Please see the Management of Invasive Aquatic Animals – Zebra Mussels chapter for more information.
- Starry stonewort, an AIS not previously known in Minnesota, was found in Lake Koronis in Stearns County in August of 2015. Staff worked to respond to this new infestation including listing the water as infested and completing plant management treatments. See the Management chapters for more information.
- Aquatic invasive species violation rates decreased from 17% in 2014 to 14.3% in 2015. The DNR and partners' enforcement and education efforts have helped to lower the violation rates for the third year in a row. See Enforcement Chapter for details.
- Invasive Species Prevention Planners completed their first full year of work. In 2015 these two planners built relationships with local government staff overseeing AIS county prevention funds; provided technical support such as feedback on prevention plans and

resolutions; created new tools such as the Local Water Access Editor Tool; and hosted AIS prevention workshops to bring neighboring county AIS staff together. The ten AIS prevention workshops brought together 160 participants from 67 counties and 25 statewide/regional partners to learn from each other and to help foster regional partnerships.

- In addition to DNR inspectors, the DNR provided watercraft inspection training to over 700 tribal and local government unit (LGU) authorized inspectors working throughout the state—almost twice as many LGU inspectors as DNR trained in 2014.
- Continued a project started in 2014 to better understand the risk of moving zebra mussel larvae (veligers) in residual water. The DNR sampled water left in watercraft after drain plugs were removed.
- 792 lake service provider businesses completed training and were issued permits by the end of the year. In addition, 2015 was the first year that businesses have needed to renew permits since 2012 when this training program went into effect.

Partnerships

Invasive species are one of the top conservation challenges of our time and a high priority for the DNR. To address these challenges, the department works in partnerships at many levels.

Local Partnerships

- Local entities, including LGUs, tribal governments, lake associations, and recreation groups, among others, play a key role in managing invasive plants, and providing prevention activities, including authorized inspections and enforcement, public awareness, and educational activities.

Departmental and other State Entity Partnerships

- Staff from the DNR Fish and Wildlife Divisions, Enforcement, and the Office of Communication and Outreach contribute significantly to the implementation and coordination of invasive species activities.
- The DNR and the Minnesota Department of Agriculture (MDA) administer prevention and control programs for other invasive species in Minnesota. The DNR's Forestry Division working in cooperation with the MDA, is charged with surveying and controlling forest pests, including nonnative organisms such as bark beetles.
- The MDA is the lead regulatory agency to address terrestrial invasive species—such as noxious weeds, gypsy moth, emerald ash borer, and sudden oak death—under authority in Minnesota Statutes, Chapter 18G, H, J and Chapters 18 and 21. Information about control, prevention, and regulatory programs for several terrestrial invasive species, plant pests, and noxious weeds may be obtained from the MDA.
- The University of Minnesota Sea Grant Extension has an Aquatic Invasive Species Information Center in Duluth. The center promotes education and outreach to prevent the spread of AIS in the state.
- The DNR also works in close partnership with the Minnesota Aquatic Invasive Species Research Center at the University of Minnesota, providing input and feedback on research needs aimed at managing the AIS challenge.

Contractor applying EarthTec QZ pesticide to kill zebra mussels in Ruth Lake, Crow Wing County, in 2015.

Participation in Statewide, Regional, and National Groups

- The DNR works closely with the AIS Advisory Committee to maintain strong relationships with AIS stakeholders and seek its advice and recommendations on program activities. The AIS Advisory Committee was formed in 2012.
- The Invasive Species Program, along with other agencies in the state, participates in statewide groups such as the Minnesota Invasive Species Advisory Council (MISAC) and the Noxious Weed Advisory Committee.
- The Invasive Species Program participates in multiple regional and federal groups that convene partners to address invasive species. Program staff represent Minnesota on the Mississippi River Basin and Great Lakes panels on aquatic nuisance species to stay informed of regional and federal AIS efforts and to share Minnesota's work.
- In addition, the DNR is involved with several regional groups, including but not limited to:
  - Invasive Carp Regional Coordination Committee;
  - Association of Fish and Wildlife Agencies-Invasive Species Committee;
  - St. Croix River Zebra Mussel Task Force (see Appendix B);
  - National garlic mustard biocontrol working group; and
  - Council of Great Lakes Governors' Aquatic Invasive Species Task Force.

Implementation of a Statewide Invasive Species Management Plan

MISAC developed the Minnesota State Management Plan for Invasive Species. The plan provides a framework for addressing both aquatic and terrestrial invasive species and includes strategies and actions to address the main issues related to invasive species:

- Prevention of new introductions into the state;
- Early detection and rapid response to new introductions;
- Containment of populations; and
- Management of established populations to reduce their harm.

You can access the plan at:
www.anstaskforce.gov/State%20Plans/MN/state_invasive_species_plan.pdf

Program Finances

Time Frame

This report covers activities that took place in calendar year 2015: January 1 through December 31, 2015. However, to provide a comprehensive review of expenditures and to coordinate with the state funding cycle, we include expenditures incurred in fiscal year 2015: July 1, 2014 through June 30, 2015.

Funding Sources

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

State Funds

- $1,386,954 from a $5 surcharge on watercraft registration in Minnesota.
- $1,090,279 from a $5 fee on non-resident fishing licenses.
- $5,324,000 from a general fund appropriation (of this amount, $356,000 supported the terrestrial invasive species program).

Federal Funds

- Funds from the U.S. Fish and Wildlife Service (USFWS) support the implementation of the Minnesota State Management Plan for Invasive Species including public awareness efforts, enforcement, and watercraft inspections. In 2015, federal expenditures totaled $747,000.

Local Funds

- During 2015, local groups provided funding totaling $1.2 million to control aquatic invasive plants and increase the number of watercraft inspections on specific lakes.

Cost Accounting

Minnesota Statute (M.S. 84D.02 Subd. 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 Division of Ecological and Water Resources 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 coworkers, or help on other projects; as well as fleet costs and the cost to purchase and repair boats, trailers, computers, and similar items.

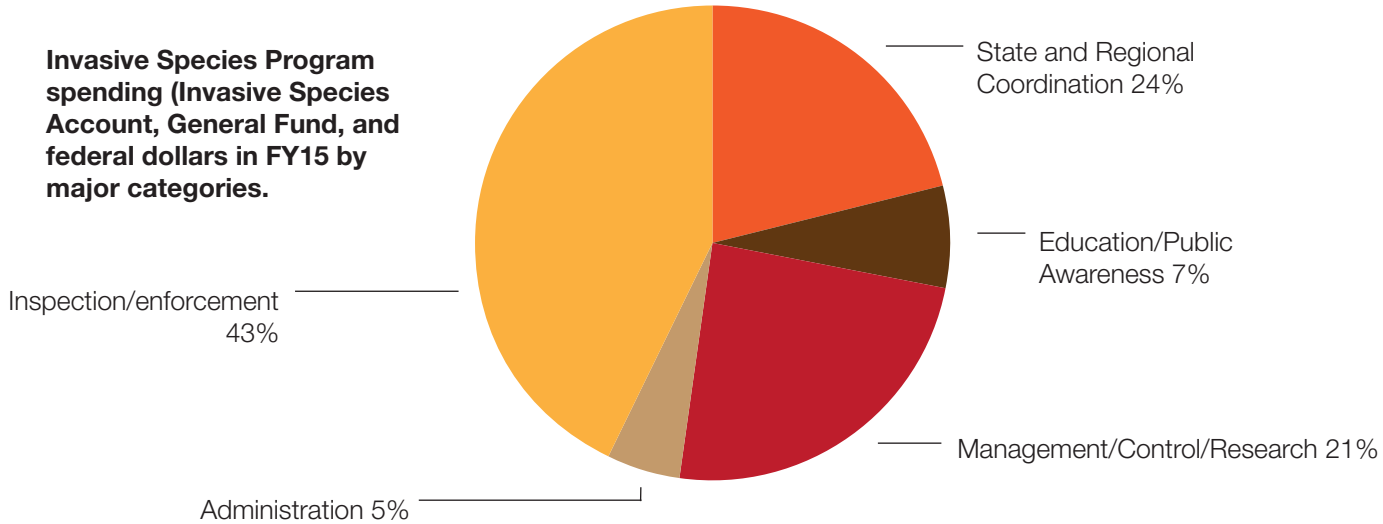
Fiscal Year 2015 Expenditures

Expenditures on aquatic invasive species activities during fiscal year 2015 (July 1, 2014 through June 30, 2015) totaled $10,509,000.

The pie chart below provides a broad look at how aquatic invasive species funding was spent in FY 2015. The Inspections/Enforcement category represents the largest segment of the budget, accounting for over 43% of expenditures. These funds supported a substantial effort in enforcement and watercraft inspections relative to prevention efforts. Individual sections of this report provide details on the activities accomplished with these funds. The focus on inspections and enforcement, along with Education/Public Awareness (which represents an additional 7% of FY15 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.

Most of the funding for Management/Control was spent on Eurasian watermilfoil and curly-leaf pondweed. Funding was used for inventory, control, and grants for management of these two species.

Invasive Species Program spending (Invasive Species Account, General Fund, and federal dollars in FY15 by major categories.



The terrestrial invasive species program expended $413,633 in FY15. The work was funded exclusively from the General Fund. The FY15 expenditures include both FY15 funds and funds rolled forward from FY14. The terrestrial invasive species program also received a LCCMR/ENTRF grant for $140,000 for FY14, 15, and 16 work on biological control of garlic mustard. These funds are contracted with the University of Minnesota which spent $84,756.23 in FY15. Accomplishments for terrestrial invasive species management activities are covered on pages 49-51.

In FY15, $3,547,000 was spent from the Invasive Species Account; which is less than the $3,602,000 appropriated by the Legislature. General Fund expenditures were $6,214,000; which were more than the $5,324,000 appropriated due to roll forward funds from the previous year.

Fiscal Year 2015 Income and Expenditures

Table 1. The table below lists income from federal, state, and local sources, and expenditures from the Invasive Species Account and General Fund account. It also lists spending from other accounts, including grants received from various state or federal funding sources, such the USFWS.

FY 2015 Income				**Total**
Federal Funding: Implement State Management for Aquatic Nuisance Species				$825,000 in FY15*
State and Local Funding	Invasive Species Account	General Fund	Local Contributions	
	$3,602,000	**$5,324,000**	**$1,200,000**	**$747,000****

FY 2015 Expenditures				
	Invasive Species Account	General Fund	Local Contributions	Other
Administration	$236,000	$244,000		$11,000
State/Regional Coordination	$584,000	$1,801,000		$116,000
Education/Public Awareness	$4,000	$667,000		$46,000
Management/Control - Aquatic - Terrestrial	$690,000	$1,161,000 $227,000	$1,200,000	$139,000
Inspections/Enforcement	$2,014,000	$2,080,000		$436,000
Research - Aquatic - Terrestrial	$19,000	$20,000 $14,000		
TOTAL EXPENDITURES: Federal, State, and Local	**$3,547,000**	**$6,214,000****	**$1,200,000*****	**$747,000**

* Federal Grant to implement State Management Plan for Aquatic Nuisance Species awarded in 2015 will be spent in FY16-FY17.

** Federal Grant to implement State Management Plan for Aquatic Nuisance Species awarded in 2012 and 2013. The remaining balance was spent in FY15.

*** Totals include local match for invasive aquatic plant control.

**** This amount includes roll forward funds from the previous year.

Prevention and Containment

Goals

The DNR's goals for aquatic invasive species (AIS) prevention and containment are to:

- Prevent the spread of AIS within Minnesota;
- Prevent the introduction of new invasive species to the state; and
- Contain infestations where treatment is not possible.

DNR worked with partners to treat a small population of zebra mussels in Christmas Lake.

Highlights

- Regional invasive species staff engaged with partners in a variety of prevention and containment activities, such as delivering presentations to lake groups, inspecting docks and other equipment for AIS, issuing infested waters and prohibited invasive species permits and following up on reports of new infestations of invasive species.
- The DNR awarded grants to local partners to fund AIS outreach projects, informational signs, and watercraft inspections.

Prevention Grants

DNR grants help lake associations, local citizen groups, coalitions of lake associations, and local government units (e.g., conservation districts, lake improvement districts, watershed districts, and counties) implement locally-focused AIS prevention activities. In 2015, the DNR provided grants to local groups and government entities to help prevent the spread of AIS into Minnesota waters. The DNR awarded the following grants in 2015:

- Watercraft inspection grants: 22 local entities received 9,621 hours of DNR staff time for watercraft inspections. The DNR provided an additional 19 grants, totaling $148,900 to fund local government units to hire their own watercraft inspectors.
- Twenty-three public awareness grants, totaling $50,802, were awarded for advertising and educational material.
- The DNR funded the placement of a number of Help Stop Aquatic Hitchhikers! and other signs at water accesses to educate water access users about AIS. The DNR made Help Stop Aquatic Hitchhikers! sign art available so that cooperators could manufacture the DNR signs on their own and include their logos on the signs.

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.

Most water bodies in Minnesota are not on the infested waters list—only about 5% of Minnesota's more than 11,000 lakes are on the infested waters list. Less than 2% of Minnesota lakes are listed as infested with zebra mussels.

In 2015, the DNR added water bodies with starry stonewort to the list of infested waters. Starry stonewort is a nonnative, grasslike algae that was first discovered in Minnesota in August 2015. The DNR also added water bodies with grass carp to the infested waters list. Grass carp are not new to Minnesota, but the DNR added that species to the infested waters list to be consistent with the other two species of invasive carp, bighead and silver, which also "trigger" an infested waters listing.

The infested waters list can be accessed by three different ways:

- The current list of infested waters is located on the DNR website at www.dnr.state.mn.us/invasives/ais/infested.html
- It is printed in the DNR's annual fishing regulations booklet.
- By searching on LakeFinder at www.dnr.state.mn.us/lakefind/index.html

Table 2. The number of water bodies listed as infested by AIS, as of October 2015.

Species	Number of water bodies added to the infested waters list in 2015	Total number of water bodies on infested waters list
bighead carp (*Hypophthalmichthys nobilis*)	1	43
brittle naiad (*Najas minor*)	1	4
Eurasian watermilfoil (*Myriophyllum spicatum*)	13	322
faucet snail (*Bithynia tentaculata*)	2	38
flowering rush (*Butomus umbellatus*)	4	35
grass carp	11*	11*
New Zealand mud snail (*Potamopyrgus antipodarum*)	0	2
round goby (*Neogobius melanostomus*)	0	3*
ruffe (*Gymnocephalus cernuus*)	0	3*
silver carp (*Hypophthalmichthys molitrix*)	1*	43*
spiny waterflea (*Bythotrephes longimanus*)	3*	65*
starry stonewort (*Nitellopsis obtusa*)	1	1
viral hemorrhagic septicemia (VHS)	0	3*
white perch (*Morone americana*)	0	3*
zebra mussel (*Dreissena spp.*)	22*	244*
Total	**59**	**820**

* Totals include water bodies where the AIS was newly discovered in 2015, plus connected water bodies. See Table 3 for more detail. Some water bodies listed as infested include designation of a certain length of the tributaries to that water body; for example, Lake Superior is listed for several invasive fish species, and because those animals are mobile, tributaries to Lake Superior are also listed as infested a certain distance upstream from Lake Superior. However, the DNR lists "Lake Superior tributaries" as one water body instead of as multiple water bodies.

Table 3. Lakes and rivers listed as infested with AIS in 2015, by DNR region.

Water body name	County or counties	Listed for aquatic invasive species	Year species was first confirmed, or connected water body
Augusta	Multiple (Stearns and Wright)	zebra mussel	connected to Clearwater (86-0252)
Bear	Carlton	Eurasian watermilfoil	2015
Big Cormorant	Becker	zebra mussel	2015
Bishop Creek between North Long and Round (also known as Sugar Bush Creek)	Crow Wing	zebra mussel	connected to North Long (18-0372)
Bowstring	Itasca	faucet snail	2012
Bryant	Hennepin	zebra mussel	2015
Clearwater	Multiple (Wright and Stearns)	zebra mussel	2015
Clearwater River from Clearwater Lake to the Mississippi River	Multiple (Stearns and Wright)	zebra mussel	connected to Clearwater (86-0252)
Eagle (includes North and South Eagle)	Blue Earth	Eurasian watermilfoil	2015
Eunice	Becker	zebra mussel	2015
Fish Trap	Morrison	zebra mussel	2015
Fish Trap Creek from Fish Trap Lake to the Long Prairie River	Multiple (Morrison and Todd)	zebra mussel	connected to Fish Trap (49-0137)
Forest	Washington	zebra mussel	2015
Forest	Washington	Eurasian watermilfoil	2015
Grass	Multiple (Stearns and Wright)	zebra mussel	connected to Clearwater (86-0252)
Horseshoe, Little	Chisago	Eurasian watermilfoil	2015
Hunt	Rice	Eurasian watermilfoil	2015
Ida	Becker	zebra mussel	2015
Jefferson	Le Sueur	Eurasian watermilfoil	part of Jefferson chain
John	Wright	zebra mussel	2015
Koronis (includes Mud)	Stearns	starry stonewort	2015
Long	Ramsey	Eurasian watermilfoil	2015
Magda	Hennepin	Eurasian watermilfoil	2015
Maple (Upper Maple)	Wright	flowering rush	2015
McCraney	Mahnomen	faucet snail	2015
Mississippi River, Pool 1	Multiple	bighead carp	connected to Mississippi River, Pool 2
Mississippi River, Pools 1-9	Multiple	grass carp	confirmed in 2008 in Pool 8
Mississippi River, Pool 1	Multiple	silver carp	connected to Mississippi River, Pool 2
Mississippi River, Pool 2	Multiple	flowering rush	2015
Otter	Stearns	zebra mussel	connected to Clearwater (86-0252)
Pickerel	Becker	flowering rush	2015
Pike River from Pike River Dam at CSAH 77 near Peyla to Vermilion Lake	St. Louis	spiny waterflea	connected to Vermilion (69-0378)

Table 3 continued

Water body name	County or counties	Listed for aquatic invasive species	Year species was first confirmed, or connected water body
Red River	Multiple (Clay, Kittson, Marshall, Norman, Polk and Wilkin)	zebra mussel	2015
Ruth**	Crow Wing	zebra mussel	2015
Shields	Rice	Eurasian watermilfoil	2015
St. Croix River downstream of the dam at Taylors Falls	Multiple (Chisago and Washington)	grass carp	connected to Mississippi River
Staring	Hennepin	Eurasian watermilfoil	2015
Staring	Hennepin	brittle naiad	2015
Stella	Meeker	zebra mussel	2015
Swede's Bay (DOW 40-0092-03)	Le Sueur	Eurasian watermilfoil	part of Jefferson chain
Sylvia	Stearns	zebra mussel	2015
Threemile Creek between Otter and Clearwater	Stearns	zebra mussel	connected to Clearwater (86-0252)
Trout	Itasca	flowering rush	2015
Trout 31.0216	Itasca	Eurasian watermilfoil	2015
Unnamed	Multiple (Stearns and Wright)	zebra mussel	connected to Clearwater (86-0252)
Vermilion	St. Louis	spiny waterflea	2015
Vermilion River from Vermilion Lake to Crane Lake	St. Louis	spiny waterflea	connected to Vermilion (69-0378)
Washington	Meeker	zebra mussel	connected to Stella (47-0068)
Weigand	Multiple (Stearns and Wright)	zebra mussel	connected to Clearwater (86-0252)
West Jefferson (DOW 40-0092 -02)	Le Sueur	Eurasian watermilfoil	part of Jefferson chain
White Sand	Crow Wing	Eurasian watermilfoil	2015

** The DNR issued a zebra mussel pilot project permit to Ruth Lake to kill zebra mussels after this new infestation was discovered. See the chapter *Management of zebra mussels* for more information.

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 AIS, and permit conditions require permittees to take actions to prevent the spread of AIS. The DNR permits related to AIS include: lake service provider permits, infested waters permits, prohibited invasive species permits, and bait harvest permits. The DNR also issues aquatic plant management permits, which are discussed on page 39.

Lake Service Provider Permits

Legislation authorizing a permit program for lake service providers to help prevent the spread of AIS between waters in the state took effect in 2012. Lake service provider business owners are required to complete AIS permit training and acquire a Lake Service Provider Permit before conducting work that involves decontaminating, installing, removing, or renting water-related equipment from state waters. Employees who work for a service provider must also take free online training and receive a training certificate. Permits and certificates are valid for three calendar years.

The Lake Service Provider Program completed its first renewal year in 2015.

Activities:

- Completed 33 trainings for 962 lake service provider owners and managers and issued 792 permits to their businesses; 1,505 lake service provider employees completed mandatory online training.
- The current list of permitted lake service provider businesses is posted online. This list is updated automatically as training requirements are completed and permits are issued. The list included 1,172 businesses at the end of 2015.
- Offered two, free hot-water/high-pressure decontamination skills trainings to 12 participants from 8 lake service provider businesses.

Future plans:

- Update online lake service provider employee training methods, registration, content, and testing to improve training experience.
- Create and pilot online lake service provider owner/manager permit training option to make it easier for business owners to attend.
- Continue outreach to remaining lake service provider businesses not yet permitted.

Infested Waters Permits

People need a permit for divert or transport of water from listed infested waters (Minnesota Rules 6216.0500). The invasive species program issued 26 infested waters permits in 2015; see Table 4 for the number of infested waters permits issued by DNR region. Starting in 2015, permit conditions related to working in infested waters began to be incorporated into permits issued through the DNR's Permitting and Reporting System (MPARS). In 2015, 38 permits for water appropriation and work in public waters were issued through MPARS with invasive species conditions.

Prohibited Invasive Species Permits

People need a permit to possess, transport, sell, purchase, or import prohibited invasive species. The invasive species program issued 29 prohibited invasive species permits in 2015; see Table 4 for the number of infested waters permits issued by DNR region.

Table 4. Numbers of infested waters and prohibited or regulated invasive species permits issued by regional DNR staff in 2014.

DNR region	Infested waters	Prohibited invasive species
Northwest (1)	4	1
Northeast (2)	6	17
Central (3)	12	1
Southern (4)	4	0

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 attend AIS training and pass a test, and must comply with permit conditions to prevent the transfer of AIS 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.

Regional Prevention Activities

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 AIS to groups such as lake service providers and minnow dealers to help them meet permit and certification requirements. Other activities are highlighted below by DNR region.

Northwest region invasive species staff:

- Presented at several Youth Water Festivals educating fourth and sixth graders about aquatic invasive species;
- Searched for zebra mussels and other aquatic invasive species on water-related equipment on numerous lakes, in some cases working with DNR Enforcement's aquatic invasive species detection dog;
- Conducted purple loosestrife control activities including the release of Galerucella beetle for biocontrol at several sites; and
- Shared their expertise with radio, newspaper and television outlets to increase public awareness of AIS, including participating in taping an educational video as part of a county-wide effort to reach new audiences.

Northeast region invasive species staff:

- Provided support to the Ruth Lake zebra mussel pilot project (see chapter *Management of zebra mussels* for more information);
- Continued to monitor zebra mussel populations on Pelican Lake and Mille Lacs Lake;
- Provided technical support to the Crow Wing and Itasca County AIS programs; and
- Inspected 30 lakes for Eurasian watermilfoil and curly-leaf pondweed.

Central region invasive species staff:

- Trained Conservation Corps Minnesota staff to conduct baseline AIS surveys; they inspected 30 lakes for invasive aquatic plants and animals;
- Presented AIS information and prevention activities through several different outlets: county shoreline workshop, sportshows, and education events;
- Partnered with Conservation Corps Minnesota staff to conduct purple loosestrife control activities, including releasing Galerucella beetles for biocontrol of several sites in central Minnesota and providing technical assistance for counties to conduct biocontrol; and
- Posted new AIS signs at public water accesses throughout counties in the central region.

Southern region invasive species staff:

- Worked with counties, AIS task forces, and nonprofit groups to effectively use the county funding dollars to raise awareness on AIS and prevent their spread;
- Inspected docks at high-use lakes to monitor for new infestations of AIS; and
- Shared their expertise in radio, print, and television interviews to increase public awareness of invasive species.

Prevention and Containment Plans in 2015

Prevention and containment are key elements in the state's plan to manage AIS. Over the next year, the DNR will continue to:

- Work with partners and stakeholders to plan and implement prevention activities;
- Monitor the distribution of AIS in the state;
- Assess the risk of spreading AIS during different activities; and
- Improve and refine the DNR's AIS prevention program.

Education and Public Awareness

Goals

- To provide the public with clear actions they must take to prevent the introduction and spread of AIS through an understanding of the laws and recommended practices.
- To heighten public awareness of the important recreational and economic value of Minnesota's lakes, rivers, streams and wetlands.
- To raise public awareness of the potential for AIS to have negative environmental and economic impacts on Minnesota resources.
- To 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.

Events provide an opportunity for staff to educate the public about invasive species issues.

Highlights

New Information Officers

The Ecological and Water Resources Division added two new Central Office information officers early in the year, with a significant amount of their time dedicated to invasive species communications. One is focused on strategic communications and media relations, with the other concentrating on digital communications. This brought new dimensions and capacity to the program, as follows:

Communications Plan

- A comprehensive AIS communications plan was developed, vetted and implemented in 2015. The plan will guide all DNR AIS communications, with a focus on communications effectiveness and measureable impact.
- The plan incorporates new science from a series of spring and summer trainings in Community-Based Social Marketing (CBSM) attended by several AIS staff. CBSM uses positive messaging and reinforcement to build community norms around desirable behaviors.
- The plan also incorporates the Governor's Plain Language Initiative, Electronic Information Accessibility, and climate change planning and adaptation strategies. Communications staff are training AIS staff and others in plain language and EIA, and are on the divisional Climate Change Team.

Informational Materials

- Initiated annual assessment and revision of all DNR AIS informational materials for public distribution. The *Help Protect Minnesota Waters* brochure, public access signs, and new affirmation language were among the major materials to go through this process in 2015.
- Updated invasive species content in the 2015 Minnesota Fishing Regulations handbook, which includes the infested waters list, species identification information and advertising to remind anglers to help prevent the spread of AIS. More than 900,000 copies of the fishing regulations will be printed and distributed beginning in February.
- Updated the graphics and information illustrating how to inspect a boat and trailer in the *Minnesota Boating Guide*. This guide is updated annually and distributed to more than 300,000 boaters.
- Included information about invasive species prevention in the 2013-14 edition of the *Explore Minnesota Fishing Guide*, a publication of Explore Minnesota Tourism. The guide targets anglers traveling to Minnesota and is widely distributed throughout the Midwest at major outdoor and sports shows. It is also distributed at travel information centers across the state and to Minnesota outdoor retailers.
- Drafted an AIS Alert to serve property owners and other stakeholders affected by new infestations, after the AIS Advisory expressed the need for more specific information. This action-oriented fact sheet will be reviewed and implemented in early 2016.
- Reviewed and updated display materials for upcoming sport shows and other trade events and expositions.

Advertising targets not only anglers and boaters but also hunters and hikers.

Advertising

- The program is conducting an audit of traditional and new media channels, their reach, cost, and potential effectiveness. The changing ways people are using newspapers, TV, radio, and digital/social media require a fresh assessment. This audit will be completed with updated advertising recommendations and plans in place for the 2016 season.
- The DNR again partnered with Wildlife Forever and the U.S. Forest Service to post more than 40 AIS billboards along key state travel routes to and from lake areas in Minnesota. The billboards were installed beginning in May and continued through September. A customized billboard targeted to waterfowl hunters was installed during the hunting season.
- Print and online materials focused on AIS laws, highlighting the "Clean, Drain, Dispose" message. Materials were designed to target boaters, anglers, and waterfowl hunters as well as cabin owners who remove docks in the fall.
- *Minnesota Waters at Risk*, an award-winning DVD, continues to be distributed to media outlets, lake associations, conservation groups, and tourism organizations.

Web/Digital

- The DNR's Web pages continue to be a valuable resource for the public and partner organizations. Nearly 200,000 individuals viewed the pages, covering both aquatic and terrestrial invasive species.
- As with traditional media, an audit of existing DNR AIS Web pages is being conducted. Outdated pages/material will be deleted, and existing pages will be updated for consistent appearance, greater clarity and visual appeal, plain language and accessibility. Responsive design will be incorporated as much and as soon as possible, for the high percentage of people using mobile devices.

- While the program does not have (or need) its own social media pages, it 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, such as the annual *Think Zero* weekend.

Media Relations

- With a new Central Office information officer dedicating a significant amount of time each day to AIS media relations, earned media expanded significantly in 2015. Intake of media requests, outreach through media events, and the division's news release process have all been expanded and improved.
- Media messaging was made consistent and was integrated with other communications tools (Web, social media, GovDelivery, events, etc.). The "Clean, Drain, Dispose" message and emphasis on doing the right things were repeated and reinforced in all news releases and related materials.
- An unprecedented 35 news releases about invasive species prevention, infestation and education were distributed to Minnesota media outlets in 2015. News releases generate "earned" (unpaid) media coverage, increasing public awareness of invasive species issues. Earned media also brings greater legitimacy than paid media (advertising), and is replicated not only in print or on the air but also on media websites state- and nation-wide.
- We also held several media events on the DNR's ongoing efforts to stop the spread of AIS. 2015 events focused on the fishing opener, invasive carp on the St. Croix River, *Think Zero* weekend, zebra mussel-sniffing K9s, ongoing treatment and research at Christmas Lake, pilot projects, 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

- Invasive Species Program staffing of the DNR building and information booth at the Minnesota State Fair continued our annual effort to reach out and talk with fairgoers. Commissioner Tom Landwehr worked alongside AIS staff at the information booth, fielding questions about AIS management and DNR policy. DNR and partner brochures and information were distributed and frequent questions/concerns were tabulated for ongoing use.
- 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.

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.

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. Most program staff attended MAISRC's annual showcase and explored new ways to work together. A major research project of the DNR and MAISRC, in conjunction with Tonka Bay Marina, will study residual water in boat compartments and the threat of spread posed by zebra mussel veligers in residual water. The program and Tonka Bay Marina have already prompted one pontoon maker to implement design alterations to reduce residual water, and many more will be presented with the results of this research.

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. In 2015, the program again collaborated on the statewide highway billboard campaign.

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 assist in timely and effective implementation of ballast water management and control systems on vessels.

Minnehaha Creek Watershed District
The Minnehaha Creek Watershed District (MCWD) has been a particularly important partner in 2015, working closely with DNR staff during surveys and treatment of Christmas Lake for zebra mussels. Much has been learned, and much more is to come. The MCWD named the DNR AIS Program recipient of their 2015 "Outstanding Partner" Watershed Heroes Award.

Future Needs

- Complete the implementation 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 CBSM experts and consultants, to more effectively build community norms around 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, CBSM, 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.
- Work cooperatively with specific industry groups such as aquaculture, live bait dealers, water garden and horticulture, aquarium trade, and lake service providers, to develop targeted public awareness efforts.
- 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.

Enforcement

Goals

- Analyze the DNR's AIS laws with input from stakeholders:
  - Continue to work with the public and private entities on legislative issues in order to provide enforcement with 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 safely and effectively administer AIS checkpoints.
- 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 and other user groups 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 water, 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.

Highlights

- During 2015, DNR conservation officers provided 19,890 hours of AIS enforcement and education.
- The weekend of July 31 – Aug. 2 was designated as "Think Zero" weekend—zero AIS violations and zero new infestations. Several media interviews were conducted and officers worked extra AIS hours over the three days to bring attention to AIS in Minnesota.
- The Enforcement Division's two zebra mussel detection canines 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 MN State Fair and at 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.
- Conservation officers staffed several AIS booths at major sport and outdoor shows and events in 2015.
- Enforcement worked with Ecological and Water Resources staff to create strategies and plans for statewide AIS work focus.

Statewide Open Water Season Enforcement Results

As illustrated in the following two tables, the rate of persons found to be violating AIS laws, either in regular law enforcement compliance checks or at roadside check stations, has been decreasing since 2012.

Table 5 Summary data for law enforcement AIS compliance checks in 2012-2015.

Year	2015	2014	2013	2012
number of citations issued	244	343	406	1072
number of written warnings issued	911	847	733	1619

Table 6 Summary data for law enforcement AIS roadside check stations in 2012-2015.

Year	2015	2014	2013	2012
number of AIS check stations	12	27	18	12
number of hours that AIS check stations were in operation	51	117	79	44
number of inspections that occurred at AIS check station	251	625	322	219
average delay if no violation (in minutes)	2.29	3.0	3.3	3.9
average delay if violation found (in minutes)	5.78	10.7	10.8	10.7
violation rate	14.32%	16.96%	22.98%	36.8%

Partnerships

The enforcement of Minnesota's invasive species regulations is essential to the ultimate goal of preventing their spread into and throughout 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—are focused on compliance to help control the spread of AIS. Enforcement is a primary motivator to help change the behavior of those who may transport invasive species, whether intentionally or unintentionally.

Future Needs

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.

Enforcement will continue to plan, implement, execute, and evaluate this type of natural resource enforcement to provide the most effective measures available now and into the future. This will be accomplished by our continued efforts in AIS enforcement, education, partnerships, and training. The division also will continue to work with the legislature to secure laws and funding for AIS work.

Regulations

The DNR 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;
- Establish new and revise existing regulations to address pathways of AIS spread into and within the state; and
- Use DNR's authority to prevent the spread of AIS by designating certain nonnative species as prohibited or regulated invasive species and listing water bodies as infested with AIS.

Minnesota state law governing aquatic invasive species (AIS) is primarily located in Chapter 84D of Minnesota Statutes; however, authorities and prohibitions related to AIS 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 invasive species are primarily found in Minnesota Rules, Chapter 6216.

You can find current versions of statutes and rules at:
www.revisor.leg.state.mn.us.

Past annual reports of the DNR's Invasive Species Program are also a good source of summaries of annual changes in statute and rule related to invasive species.

Changes to Minnesota Law Regarding Aquatic Invasive Species

The Minnesota Legislature made six modifications to state statutes related to AIS in 2015:

1. Starting in 2016, applicants for new watercraft licenses and nonresident fishing licenses will receive a summary of AIS laws and will be required to affirm that they have read and understand the summary in order to receive their license.
2. New language allows DNR and other enforcement personnel to require a person to decontaminate his/her equipment if a decontamination unit is available on site.
3. A new provision allows people to obtain a permit to harvest gizzard shad in certain rivers for personal use as bait; this program is set to expire in 2017.
4. New language allows people to obtain a prohibited invasive species permit for the purpose of decontamination.
5. New language allows the DNR to use funds in the invasive species account for habitat improvements.
6. In 2015, the word used to describe the process of categorizing nonnative species was changed to restore the original language.

The changes to legislative language that enact these six changes are detailed in Appendix C. Deletions are shown in strikeout, new text is indicated by an underline, and effective dates are shown inside brackets. We present in Appendix C only subdivisions, paragraphs, and clauses to which changes were made in 2015.

Changes to Minnesota Rules Related to Invasive Species

The DNR is authorized by statute to classify nonnative species into the following categories: prohibited invasive species, regulated invasive species, unlisted nonnative species, and unregulated nonnative species. In 2015, the DNR moved the designation for yabby (Cherax destructor) from the "Fish" to the "Invertebrates" section of the prohibited invasive species listings because it is a crayfish species. The DNR also reclassified water hyacinth (Eichhornia crassipes) as a regulated invasive species; water hyacinth was listed as a prohibited invasive species in 2014.

Minnesota Rules 6216 were also changed by a rule to control and prevent the fish disease viral hemorrhagic septicemia (VHS) by restricting the use of bait from certain waters.

Watercraft Inspections

Goals

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

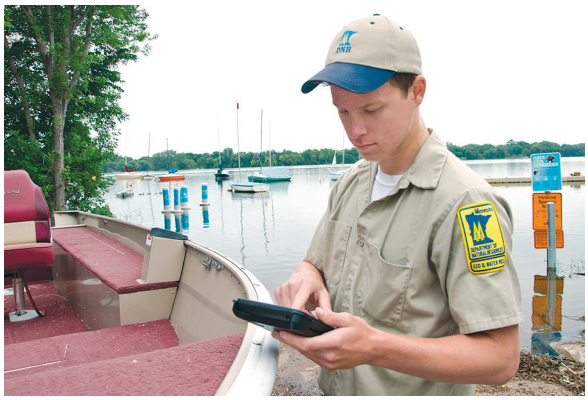
- Conducting watercraft inspections at public water accesses across the state and requiring watercraft users to decontaminate their watercraft if aquatic invasive species (AIS) or water are found.
- Increasing public awareness about AIS and reducing the potential for boaters to transport AIS between water bodies.
- Increasing education efforts with citizen groups.
- Distributing information at events around the state.

Highlights

Watercraft Inspections

In 2015, both the DNR and tribal or local units of government (LGUs) had authorized watercraft inspectors stationed at public water accesses across Minnesota.

- Approximately 105 DNR watercraft inspectors worked during the open water season. There were 21 inspectors in Region 1 - northwest Minnesota, 27 inspectors in Region 2 – northeast Minnesota, 27 inspectors in Region 3 – central Minnesota, and 30 inspectors in Region 4 – southern Minnesota.



DNR watercraft inspectors worked from April to October, checking boats and trailers for AIS.

- Through delegation agreements, tribal governments and LGUs employed an additional 705 DNR-trained watercraft inspectors throughout the state, far more inspectors than ever before protecting Minnesota waters.
- Assisted the Division of Enforcement with staffing 12 AIS check stations around the state.
- Conducted seven AIS volunteer training sessions that resulted in 123 trained AIS volunteers around the state who can educate watercraft users at public water accesses on how to inspect their watercraft.
- A new online calendar for decontamination unit locations was created for use by the public. This page is intended to be used by boaters as an additional tool to seek out decontamination units for a courtesy decontamination to further reduce the risk of spreading aquatic invasive species.

Inspections began in mid-April and continued though the end of October. During this 25-week period, DNR watercraft inspectors logged 46,127 inspection hours. A total of 103,394 watercraft/trailers were inspected by DNR staff and another 226,118 were inspected by watercraft inspectors authorized under a delegation agreement.

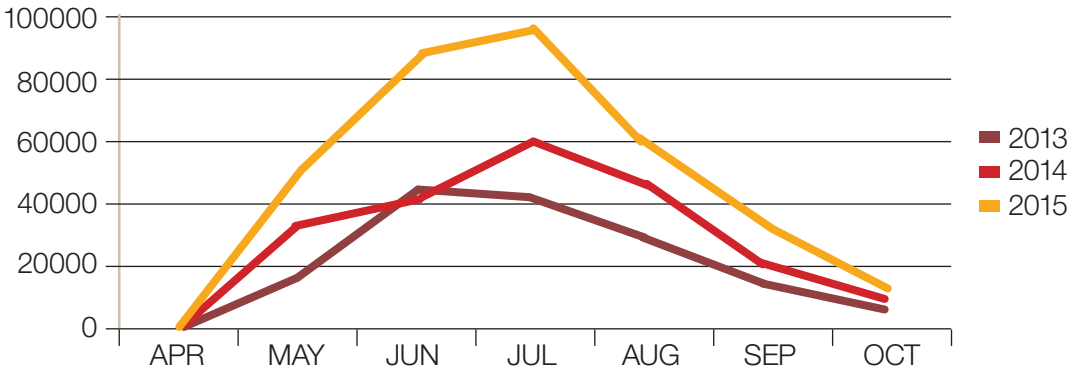
Table 7. Number of watercraft inspections conducted and total number of inspection hours completed by authorized DNR watercraft inspectors in 2013, 2014, and 2015. Totals are rounded values, using data received by Nov. 30, 2015.

DNR Inspections	2015	2015*	2014	2014*	2013
Total Inspections	103,400	103,400	120,000	120,000	123,000
Total Inspection Hours	48,500	35,000	68,000	49,550	66,800
Inspections per Hour	2.13	2.95	1.76	2.4	1.84

Inspections by DNR Region (included in total above)			
Northwest - 1	20,250	26,500	28,500
Northeast - 2	12,450	14,100	17,900
Central - 3	67,800	74,900	72,600
Southern - 4	3,000	3,600	4,000

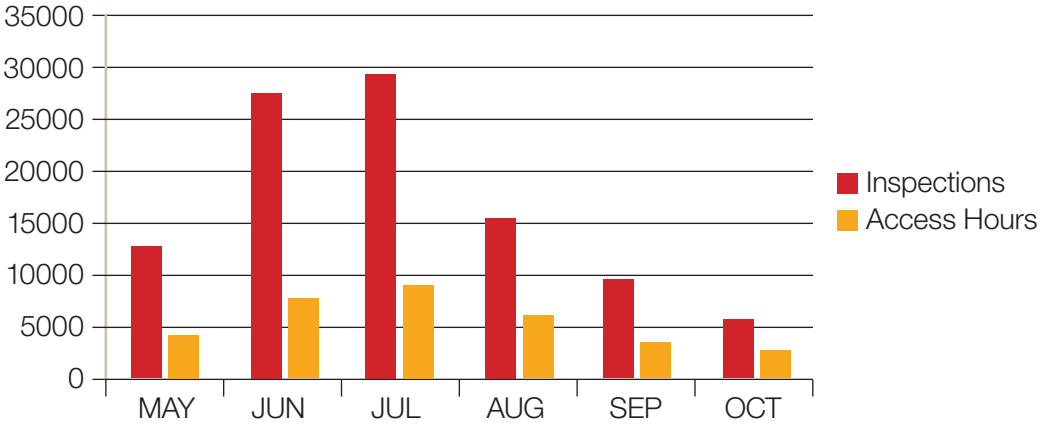
* With the addition of Level 2 inspectors, there are many times that more than one inspector is present at an access. Record keeping changes in 2014 allow the DNR to more accurately report the number of hours that inspectors were present at accesses regardless of how many inspectors are actually working.

Authorized Watercraft Inspections Per Month



Authorized watercraft inspections per month during the 2013-2015 field seasons. These figures include DNR staff as well as inspectors authorized under a delegation agreement.

Inspections and Access Time



DNR inspections completed per month, compared to the number of hours worked at accesses statewide.

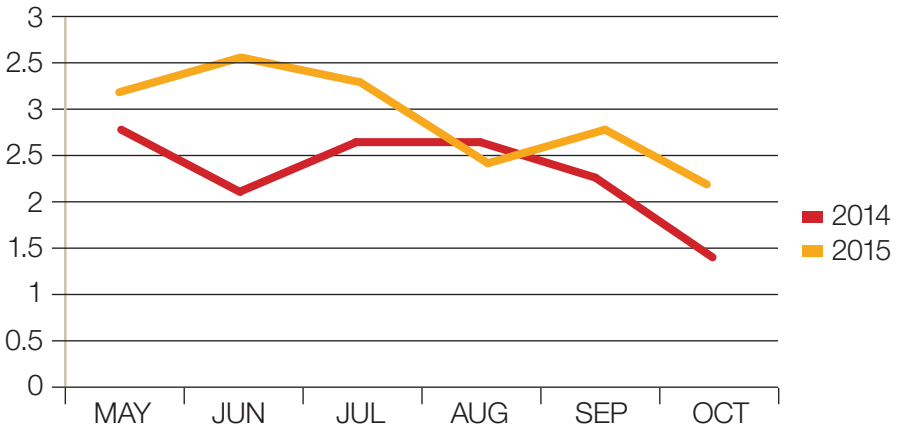
How are the Hours Distributed?

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 are arriving from 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 10,000 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. See the Partnerships section on page 33 for more information.

DNR Watercraft Inspections Per Hour by Month



DNR inspections per hour by month at public water accesses during the season. This figure does not include drive time, and uses 35,000 inspection hours for 2015, and 49,550 inspection hours for 2014. Inspector turnover and hiring difficulties, including a freeze prior to a possible shutdown, led to a reduction in total hours worked by DNR inspectors during 2015. An increase in inspections per hour can be attributed to high water conditions throughout much of the state during the summer of 2014.

Transportation of Invasive Species

As more water bodies have become infested with zebra mussels and spiny waterfleas, the DNR has become increasingly concerned about 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. Minnesota's "pull the plug" law continues to help the DNR educate boaters about the importance of draining all water before transporting their watercraft.

In 2015, DNR, tribal, and LGU watercraft inspectors intercepted numerous watercraft arriving at accesses in violation of state laws. In 2015, approximately 4% (8,503 occurrences) of the watercraft inspected had the drain plug in when they arrived at the access, a slight percentage decrease from the 6% (7,292) violation rate in 2014. Watercraft users arriving at the access with their drain plugs in—a violation of state law—were asked to remove plugs and drain any water away from the access before launching.

Transportation of Invasive Species Cont.

- 3,950 watercraft arrived at an access with vegetation attached compared with 2,550 in 2014, with the highest number occurring in Region 3 both years.
- Watercraft inspectors found zebra mussels on 199 incoming watercraft in 2015 (2014 had 238 occurrences); 24 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 145 watercraft arriving with attached zebra mussels; there were also 22 in Region 1 and 31 in Region 2. One watercraft was found with zebra mussels attached during road checks.
- During the 2015 inspection season, watercraft inspection staff forwarded 199 zebra mussel violations to the DNR Division of 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.
- Watercraft inspectors from the DNR and local government agencies responded to the discovery of starry stonewort, a new invasive species for Minnesota. Inspectors staffed the access daily during September and October to educate boaters about the new species, and completed 716 insepctions.

Decontamination Units

In 2015, the Watercraft Inspection Program hired approximately 46 Level 2 watercraft inspectors trained to decontaminate watercraft with high-pressure, hot-water wash units. The staff used 23 portable wash units around the state to perform 950 decontaminations of varying types. The decontamination units were situated at high-use watercraft accesses on zebra mussel-infested water bodies. Partnering LGU authorized inspectors completed 767 decontaminations.

Partnerships

The DNR partners with other groups through grants and delegation agreements. The DNR offers two types of watercraft inspection grants:

1. Grants for hours of DNR Watercraft Inspection Program staff time at public water accesses.
2. Grants to fund tribal governments and LGUs to hire authorized watercraft inspectors.

The DNR provided 10,000 hours of staff time to citizen groups in 2015. 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. This offers local entities an opportunity to intercept watercraft coming to local water bodies that could be carrying AIS.

There were 24 grants to tribal governments or LGUs to help fund local watercraft inspection efforts in 2015. Grantees are required to have their watercraft inspectors trained and authorized through a delegation agreement with the DNR. LGUs or tribal governments that did not receivethe DNR. LGUs or tribal governments that did not receive grants also were able to complete delegation agreements and hire authorized watercraft inspectors to support

local watercraft inspection programs. There were 47 active delegation agreements during the 2015 season, and these LGUs and tribal governments hired an additional 705 watercraft inspectors around the state.

These tribal or LGU employees used DNR survey questions and reported their survey findings to the DNR Watercraft Inspection Program. Over 226,000 surveys were completed by tribal or LGU inspectors in 2014; this increase more than doubled the total inspections completed by LGU inspectors during the 2014 season.

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 2014, the Watercraft Inspection Program conducted 7 AIS volunteer training sessions that resulted in 123 trained AIS volunteers around the state. Watercraft inspectors also worked at the Minnesota State Fair and other local events, speaking to the public about invasive species.

Future Needs

In 2016, the Watercraft Inspection Program plans to focus on filling Level 2 inspector vacancies to increase the hours of inspection at public water accesses. In 2015 the largest number of authorized inspectors to date was trained and operating throughout the state. During the winter of 2015-2016 the Watercraft Inspection Program is focused on improving training materials and manuals to improve the efficiency of inspections statewide.

We also will review 2015 data and use it 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.

Aquatic Invasive Species Prevention Aid

In 2014, the Minnesota legislature passed a county aid tax bill providing $4.5 million directly to Minnesota counties to help prevent the spread of aquatic invasive species (AIS). For 2015 and each year thereafter, the appropriation increased to $10 million. The funds are allocated based on each county's share of watercraft trailer launches (50%) and each county's share of watercraft trailer parking spaces (50%).

Roundtable discussion on how counties can collaborate on AIS prevention activities at a Regional AIS Prevention workshop in Little Falls, MN on June 2nd, 2015.

Minnesota Statute 477A.19: Aquatic Invasive Species Prevention Aid states, "A county that receives a distribution under this section must use the proceeds solely to prevent the introduction or limit the spread of aquatic invasive species at all access sites within the county. The county must establish, by resolution or through adoption of a plan, guidelines for the use of the proceeds." Furthermore, "Each county must submit a copy of its guidelines for use of the proceeds to the Department of Natural Resources by December 31 of the year the payments are received."

Each County Board designated oversight of funds and program management to a local government unit (LGU) within the county. It is up to the County Board and/or designated LGU to make decisions on how the funds are to be used, according to the Statute, while still abiding by all current laws and regulations.

Goals

- Receive submitted plans and resolutions.
- Provide technical support and training to local government staff as they develop, implement, and evaluate their local AIS prevention strategies.
- Work to get local governments the resources and tools that they need to run a successful AIS prevention program.
- Facilitate and promote collaboration among neighboring counties, which in turn supports regional (multi-county or statewide) approaches to AIS prevention.
- Build stronger relationships between local governments, DNR, nonprofits, businesses, university programs, local organizations (e.g. lake associations, outdoor recreation groups), and other statewide AIS partners.

Highlights

Built Framework of Support

- The DNR Invasive Species Program hired two AIS Prevention Planners and two AIS Trainers to provide technical support and training to LGUs.
- Contacted the County Board Chair and County Administrator in each county with a letter from the DNR Commissioner regarding available support from the DNR.
- Received guidelines from the 83 Minnesota counties receiving funds in the form of 48 resolutions, 9 plans, and 26 dual plans and resolutions for 2014. The DNR will continue to receive guidelines for the December 31, 2015 deadline.
- Conducted a series of training workshops across the state.
- Worked closely with LGUs that were designated oversight of their county's AIS prevention program, such as: county board of commissioners, county departments (environmental services, parks, planning and zoning, land management, sheriff's office), soil and water conservation districts, and AIS advisory committees and task forces.
- Developed and maintained a primary contact list of lead AIS staff in each county.
- Updated key AIS Prevention Aid resources and promoted available support from the DNR on the DNR's *Local AIS Prevention Aid* Web page.

Provided Technical Support

- Provided feedback on guidelines (resolutions and plans) shared by LGUs, including guidance on how to implement action items outlined in the *Local AIS Plan Framework* (developed by the DNR at the start of the AIS Prevention Aid in 2014).
- Provided feedback on communication materials developed by LGUs to promote consistent messages about AIS and AIS prevention steps (e.g. Clean, Drain, Dispose).
- Provided information on the DNR's AIS Programs (e.g. watercraft inspection, invasive species management, etc.).
- Presented AIS Prevention Aid information to a variety of audiences, such as at the Wisconsin Lakes Partnership Convention, Annual Minnesota County Planning and Zoning Administrators Conference, and Minnesota's Statewide AIS Advisory Committee meeting. Also participated on county AIS Task Forces and Advisory Committee meetings and provided general AIS education to interested groups (e.g. lake associations) and at youth education events.
- Created tools and adapted programs to meet local government needs. For example, in partnership with the DNR Parks & Trails Division and Minnesota's Information Technology agency, created and launched the Local Water Access Site Editor Tool: a web-based mapping tool that gives LGUs the ability to review and update information about public water access sites within their county. Adapted the AIS sign grants program into a more streamlined AIS signage request process, which allows LGUs to request signs or print them on their own to post at water accesses. Created a standardized set of AIS monitoring procedures for resource professionals called "Guidance for Conducting AIS Early Detection and Baseline Monitoring in Lakes."

Hosted Regional AIS Prevention Workshops

- The purpose of the workshops was to bring neighboring counties together to share their collective AIS prevention experiences, to learn from one another, and to build stronger inter-county relationships. The workshops provided a platform for LGUs to share current AIS prevention activities, successes, challenges, program evaluation, and current collaboration efforts.
- Ten workshops were held in late spring of 2015, which brought in a total of 160 participants. This included 119 representatives from 67 of the 83 counties receiving aid, 16 DNR staff, and 25 statewide/regional partners.
- A few takeaways from the workshops:
  - LGU staff appreciated and took advantage of the opportunity to learn from and network with others. It was extremely helpful to share successes and challenges.
  - This local funding is essential to building community capacity to prevent the spread of AIS. Long term, stable funding is essential for program success.
  - LGU staff would like more collaboration opportunities in the future.
  - On an evaluation form, one attendee wrote "The most useful parts [of the regional AIS Prevention Workshops] were the conversations and sharing of ideas, the information and continuation of partnerships, and the networking that happened."

Partnerships

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

- Built stronger working relationships between the DNR and local governments, and connected them to other resources of information and assistance. These include other LGUs, soil and water conservation districts, nonprofits, outdoor recreation associations, lake associations, coalitions of lake associations (COLAs), researchers, University Extension, foundations, joint powers boards, other state and local agencies, and others involved in AIS prevention activities across the state.
- Continuously shared expertise and advice among DNR staff and programs. These include but are not limited to the watercraft inspection program, AIS Specialists, AIS Trainers, regional planners, creative services, communications and planning, Parks and Trails Division, Minnesota's information technology agency, etc.

Future Needs

- Work to create, facilitate, or find an online platform for sharing ideas and resources in real time (e.g. Listserv, file share, discussion board) between LGUs, the DNR, and AIS partners.
- Create a Listserv for interested individuals and organizations to receive information from the DNR related to the AIS Prevention Aid program.
- Work to continuously improve online resources, like the DNR's Local AIS Prevention Aid webpage, in order to provide a one-stop shop of resources LGUs can use to develop and implement their local programs.
- Continue to support communication and collaboration among local governments about AIS prevention strategies. For example, continue to host Regional AIS Prevention Workshops.
- Continue to provide technical support, tools, and resources as needed to help local governments achieve their goals and run successful AIS prevention programs.

Management of Invasive Aquatic Plants

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;
- supporting and using research that leads to improved AIS control techniques.

Highlights

In 2015, the DNR continued to issue Invasive Aquatic Plant Management Permits to allow management of curly-leaf pondweed, Eurasian watermilfoil and flowering rush.

In addition, more than 200 grants were awarded to offer up to $675,000 in reimbursements to support management of invasive aquatic plants by partners. The trend of increases in numbers of permits and grants issued continued in 2015 by comparison with the preceding three years.

Starry stonewort, *Nitellopsis obtusa*, was discovered for the first time in Minnesota. The plant is well established in Lake Koronis near St. Cloud. The DNR directed a contractor to treat an area by a public water access on the lake to begin to evaluate the potential to manage this non-native and invasive macroalga.

The Great Lakes Indian Fish and Wildlife Commission continued to pursue its inquiry submitted to the DNR regarding possible management of the non-native haplotype of Phragmites in the Saint Louis River estuary. In July, Saint Louis County awarded $70,000 to the St. Louis River Alliance to identify and implement management of this invasive plant in the St. Louis River Estuary.

The U.S. Army Engineer Research and Development Center (ERDC) continued studies designed to improve selective control of Eurasian watermilfoil with herbicide.

In 2015, the Pelican River Watershed District (PRWD) continued to support evaluations by researchers from Mississippi State University of the potential to reduce flowering rush by treatment with herbicide.

Management

The number of Invasive Aquatic Plant Management Permits (IAPMP) issued in 2015 increased by 9% by comparison with the previous year (Table 1). The number of IAP MP issued to allow control of curly-leaf pondweed was greater than the numbers issued for any other species.

In 2015, the number of grants provided to support control of curly-leaf pondweed or Eurasian watermilfoil, or both, increased by 30% by comparison with the previous year (Table 3). This reflects a decision to provide funding to as many projects as cooperators want to initiate. The DNR has reimbursed grantees $507,000 for these projects as of early December 2015, and anticipates paying an additional $156,000 for work completed in 2015.

The number of IAPMP varied among DNR regions (Table 4). The greatest numbers of permits were issued in the north and south districts of the Central Region. The proportions of permits issued in different regions were similar in 2013 and 2015.

Table 8.
Number of IAPMP issued to allow control of various species in 2013, 2014, and 2015.

Species	Number of permits issued		
	2013	2014	2015
Curly-leaf pondweed	144	161	170
Eurasian watermilfoil	85	88	103
Curly-leaf pondweed and Eurasian watermilfoil	13	3	5
Subtotal	**242**	**252**	**278**
Flowering rush	6	10	9
Purple loosestrife	2	1	2
Phragmites	0	1	1
Yellow iris	0	1	0
Total	**250**	**265**	**290**

Table 9. Number of permits issued in DNR regions for control of curly-leaf pondweed or Eurasian watermilfoil or both in 2013, 2014, and 2015.

Region Location and Number	2013	2014	2015
Northwest - 1	20	22	23
Northeast - 2	38	39	36
Central - 3	150	172	203
Southern - 4	29	32	29
Total	**237**	**265**	**291**

In recent years, the DNR shifted its focus from lake-wide to partial-lake treatment of curly-leaf pondweed. Partial-lake treatments are less time-consuming and expensive than lake-wide treatments.

Management of Other Aquatic Invasive Plants

Starry stonewort, *Nitellopsis obtusa*, was discovered for the first time in Minnesota. The plant is well established in Lake Koronis near St. Cloud. The DNR directed a contractor to treat an area by a public water access on the lake to begin to evaluate the potential to manage this nonnative and invasive macroalga.

The Great Lakes Indian Fish and Wildlife Commission continued to pursue its inquiry submitted to the DNR regarding possible management of the non-native haplotype of Phragmites in the Saint Louis River estuary. In July, Saint Louis County awarded $70,000 to the St. Louis River Alliance to identify and implement management of this invasive plant in the St. Louis River Estuary.

Research

The Minnesota Aquatic Invasive Species Research Center (MAISRC) at the University of Minnesota hired Dr. Daniel Larkin as an Assistant Professor/Extension Specialist to develop a new research and extension program. The program is intended to advance aquatic plant management and restoration approaches for lakes, rivers, and wetlands degraded by invasive plant species and other human-caused stressors. The DNR's Coordinator of Aquatic Invasive Species Management was a member of the search committee for this new position.

The US Army Engineer Research and Development Center (ERDC) published key results from studies of whole-bay management of Eurasian watermilfoil in Lake Minnetonka (Netherland and Jones 2015). They wrote that "[o]verall, the results of this 3-year monitoring effort confirmed that low use rates of triclopyr [herbicide] for bay-wide applications can provide up to two seasons of EWM control."

ERDC

In 2015, researchers from the Wisconsin Department of Natural Resources and ERDC reported results from studies of the use of 2, 4-D to control Eurasian watermilfoil (Nault et al. 2015).

In 2015, the PRWD continued to support evaluations by researchers from Mississippi State University of the potential to reduce flowering rush by repeated treatments with contact herbicides. Results of monitoring to date suggest that long-term and lake-wide control of flowering rush may be achieved by treatment with diquat herbicide. The PRWD also provided support to initiation of an evaluation of the potential to apply diquat herbicide to reduce flowering rush growing in stands of hard-stem bulrush without reducing the bulrush.

Partnerships

Stakeholder engagement: DNR staff had many conversations with citizens by email, phone, and in person throughout the year. In addition, we continue to engage with stakeholders to hear their perspectives on invasive aquatic plants to help guide the evolution of Minnesota's approach to management.

These efforts included seeking responses during the fall of 2013 to a questionnaire from citizens who were involved in projects to manage invasive aquatic plants in Minnesota lakes. One comment offered by a number of citizens was that issuance of IAPMP by the Invasive Species Program was time-consuming. This resulted in there being little time between receipt of an IAPMP and the need to complete treatments, especially in the case of curly-

leaf pondweed. In response, the Invasive Species Program revised our approach in 2015 to issuance of IAPMP (see text above and Table 2).

The Invasive Species Program hosted a meeting with stakeholders in the west metro in March 2015, at which there was much discussion of lake-wide projects to manage invasive aquatic plants. A second meeting with stakeholders was planned for mid-April in Brainerd. Unfortunately, this meeting had to be postponed due to a snow storm.

Future Needs

To effectively and proactively manage invasive aquatic plants into the future we plan to continue the following activities:

- 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 by continuing to work with researchers at MAISRC, the ERDC, and other institutions. Support from partners like the PRWD and others will continue to be very important.
- Assess potential utility of hydroacoustic sampling of submersed plants.
- Review the results of bay-wide or lake-wide treatments of Eurasian watermilfoil and the possible differences in susceptibility to herbicides of Eurasian watermilfoil and hybrids with native watermilfoil.
- Review results of lake-wide control of flowering rush by partners, and the effectiveness of biocontrol in different years of purple loosestrife.

Management of Invasive Aquatic Animals – Zebra Mussels

Goals

The goals of the Invasive Species Program for zebra mussel efforts are to:

- Prevent the spread of this invasive invertebrate 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 management and prevention of spread.

Highlights

New Infestations

A complete list of new zebra mussel infestations by region can be found in the Prevention section of this report.

Activities in the Regions

Region 1

- Aquatic invasive species (AIS) specialists assisted the University of Minnesota's Minnesota Aquatic Invasive Species Research Center (MAISRC) to collect veliger data on zebra mussel populations in Pelican Lake (Otter Tail County).
- DNR staff conducted limited monitoring for adult zebra mussel populations using scuba and snorkel surveys.
- DNR staff conducted shoreline searches to follow up on possible zebra mussel infestations.
- DNR staff gave presentations to elementary and high school students, lake associations, and sportsman's groups about aquatic invasive species and the effects of aquatic invasive species.
- Regional AIS specialists cooperated with DNR Enforcement on the use of zebra mussel detection dogs to aid with early detection activities. The use of trained dogs will be further explored in 2016.

Region 2

- Zebra mussels were discovered by a teenage boy while swimming on the east shore of Ruth Lake in mid-July. The Ruth Lake Improvement District led an effort to determine if the zebra mussels were contained at the site. Veliger sampling was done by both the Ruth LID and the DNR. The Ruth LID hired a contract scuba diver to search for zebra mussels and determined that the zebra mussels were within a small area. Boat lifts and docks were inspected in the fall for zebra mussels by the Ruth LID and none were found. Earthtec QZ was applied to the 2.89 acre site from October 6th thru October 10th. The treatment results were monitored by

Invasive Species Program staff conduct searches to confirm possible zebra mussel infestations.

the DNR. Post treatment work will be continued over the next 3 years by the Ruth LID to help determine if the project was successful.

- AIS specialists assisted University of Minnesota aquatic invasive species researchers in collecting zebra mussel veligers and adults from Cross Lake (Crow Wing County), Pelican Lake (Crow Wing County), Lake Winnibigoshish (Itasca/Cass counties), and the Duluth harbor (St. Louis County).
- AIS specialists continued to work with DNR Fisheries staff to monitor zebra mussel populations in Mille Lacs Lake as part of an ongoing, long-term monitoring study, by collecting veliger samples and diving to monitor adult zebra mussel densities. Similar efforts also continued in Pelican Lake (Crow Wing County) and Lake Winnibigoshish in order to monitor the distribution and density of zebra mussels in those lakes.
- AIS specialists worked with the Whitefish Area Property Owners Association and the Pelican Lake Association to gather zebra mussel data from lake residents as they removed their water-related equipment in the fall of 2015.
- The zebra mussel populations in Sand and Little Sand lakes (Itasca County) were monitored with significant help from local residents.

Region 3

- Fall of 2014, the EPA approved through an Emergency Exemption the use of potash (potassium chloride) to treat zebra mussels in both Christmas Lake and Lake Independence in Hennepin County. Following ice-off, treatments utilizing potash were applied in both Christmas Lake and Lake Independence in the spring of 2015. Multiple treatments were conducted and monitored for effectiveness. The last treatment to be conducted with potash was an expanded treatment area of 10 acres at Christmas Lake in late June/early July. All treatments were monitored by the DNR and partners (Minnehaha Creek Watershed District and Three Rivers Park District).
- Follow-up zebra mussel surveys completed throughout the summer of 2015 (post treatment) found zebra mussels outside the treatment areas at both Lake Independence and Christmas Lake. These treatments were not successful in eradicating zebra mussels from either lake. However, valuable information was gained pertaining to pesticide treatment methods, zebra mussel monitoring, and post-treatment surveys. This information will be applied to future zebra mussel pilot projects such as the ongoing project on Ruth Lake in Crow Wing County.
- A zebra mussel population monitoring program was initiated in White Bear Lake (Washington County) to track zebra mussel population growth in the lake following the 2014 infestation. In addition, a volunteer zebra mussel assessment program, in coordination with the White Bear Lake Conservation District, has been collecting zebra mussel settlement numbers on water related equipment such as boat lifts. This information will help quantify zebra mussel population growth in the early stages of a zebra mussel infestation.
- Reports of new zebra mussel infestations were investigated during the open water season. Invasive species specialist confirmed 6 new zebra mussel lake infestations in John and Clearwater Lakes (Wright County), Fishtrap Lake (Morrison County) Lake Sylvia (Stearns County), Bryant Lake (Hennepin County), and Forest Lake (Washington County).
- CCM crews (under direction of the DNR) conducted zebra mussel searches (snorkel and shoreline searches) in non-infested lakes near newly infested waterbodies as part of a zebra mussel monitoring program.

Region 4 North District

- AIS specialists conducted transect surveys to document the spread of the zebra mussel infestation on Green Lake (Kandiyohi County). Specialists also assisted the Green Lake Property Owners Association with data collection from zebra mussel settling plates.
- AIS specialists confirmed new infestations in Lake Stella and Lake Washington in Meeker County. Extensive searches of the Lake Stella eventually revealed three attached, viable adult zebra mussels. Within-lake searches on Lake Washington were negative for zebra mussels, but fall dock searches are planned.

Research

DNR biologists and AIS staff continued to sample water remaining in watercraft that had been drained in compliance with Minnesota regulations to document volumes remaining and the presence of zebra mussel veligers. A final report on this three-year project is expected in fall or late winter. Another study looking at spring water temperatures and veliger production was started in three lakes (Prior, Sand, Gull). This study will continue in spring 2016. DNR staff participated in the MAISRC Technical Committee to review and amend future research priorities for MAISRC scientists and future research.

Partnerships

The DNR establishes and maintains partnerships with lake associations, lake user groups, tribal organizations, local governmental agencies, and others throughout the state. One key example is DNR AIS specialists in several regions assisting MAISRC researcher Dr. Michael McCartney in critical fieldwork. DNR staff also continued cooperative efforts with watershed districts and county park staff in Christmas Lake and Lake Independence. DNR staff worked with a local lake association (Ruth Lake) on a pilot project for zebra mussel control.

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 zebra mussels.

To learn more about the program visit:
www.dnr.state.mn.us/volunteering/zebramussel_monitoring

Future Needs

Additional efforts examining potential uses of pesticides to control zebra mussels will occur as opportunities arise.

Management of Aquatic Invasive 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 with the invasive carp issue. The agency uses the Minnesota Invasive Carp Action Plan, www.dnr.state.mn.us/invasive-carp to guide activities. The agency annually updates interested stakeholders at the Minnesota Invasive Carp Forum, held in early December.

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; and
5. Reporting sightings.

Table 10. In 2015, nine adult invasive carp were captured using these methods:

Location	Species	Date	Number Caught	Type of Gear
Mississippi River - Pool 6	Grass Carp	1/15/15	1	Contracted commercial
Mississippi River - Pool 4	Grass Carp	1/22/15	1	Commercial fisher
Mississippi River - Pool 2	Grass Carp	4/28/15	1	Contracted commercial
St. Croix River, Bayport, MN	Bighead Carp	5/26/15	1	Angler
St. Croix River, Bayport, MN	Bighead Carp	5/27/15	1	Angler
St. Croix River, Bayport, MN	Bighead Carp	5/28/15	1	MN DNR personnel
St. Croix River, Bayport, MN	Bighead Carp	5/30/15	1	Angler
St. Croix River, Bayport, MN	Bighead Carp	5/31/15	1	Angler
St. Croix River, Bayport, MN	Bighead Carp	6/8/15	1	Angler

The DNR has received 33 encounter reports from the public since September 2013. All reports were followed up in person, by phone, or via email. Five of the reports were confirmed as invasive carp, eight of the reports were confirmed not to be invasive carp based on photographs, fifteen were unlikely to be invasive carp based on discussions, and a determination could not be made on five encounters. The DNR performed follow-up sampling on ten reports. The DNR crew captured one bighead carp on the St. Croix River at Bayport, MN on May 28, 2015 as result of follow-up sampling after a capture was reported by a shore angler.

St. Anthony Falls

The DNR believed that the best way to keep Invasive Carp out of the upper Mississippi River watershed was to close the Upper St. Anthony Falls Lock. It required an act of Congress to close the lock, which is administered by the United States Army Corps of Engineers (USACE). Lock closure provisions were included in the WRRDA bill which was signed into law by President Obama on June 10, 2014. The lock was closed on June 10, 2015.

Lock and Dam 1 Electronic Barrier

At the beginning of 2013, the DNR explored alternative barrier technologies to prevent upstream movement of Asian carp. The agency took this approach because it was unknown whether a St. Anthony Falls Lock closure provision would make progress at the federal level —either as its own bill or as part of a larger bill. In addition, it was highly unpredictable if such a provision would pass. In December 2014, Smith-Root delivered 100% completed design plans for a "sweeping" electrical barrier in Lock 1. The barrier will not be built due to the closure of Upper St. Anthony Falls Lock.

SW Minnesota Barriers

In fiscal year 2013, the Minnesota DNR received funding from the Outdoor Heritage Fund (State of Minnesota) to place additional barriers in southwest Minnesota. The area fisheries office identified seven sites for new projects to prevent the spread of Asian carp into high value lakes or between watersheds. Work continued in 2015 on one uncompleted electric barrier project to protect a high value recreational lake. A build contract has been awarded with a completion date set for November 2015.

A culvert screen installed in southwestern Minnesota to prevent invasive carp moving from the Missouri River water shed into the Des Moines River watershed during high water events.

Minnesota River Watershed

In response to the risk in the Minnesota River watershed, DNR fisheries identified priority aquatic resources for protection. As funding becomes available, barrier sites are chosen to prevent carp expansion into these resources. As of September 2015, the DNR had identified two sites in the Le Sueur River watershed to protect upstream lakes. These sites are currently in the design stage and negotiations with landowners are underway.

Risk Assessment for Invasive Carp

DNR Fisheries released a GIS risked-based spatial map depicting where invasive carp may spread by their own swimming capabilities (www.dnr.state.mn.us/invasive-carp/migration.html) in November 2013. This included assigning relative risk of invasive carp passage at stream barriers and identification of potential watershed breaches. Since publication, work has been done on verifying watershed breaches.

Minnesota DNR fisheries biologists identified 43 potential breach locations using GIS and local expertise. Biologists visited 22 of these sites and revisited nine of these 22 sites during higher water conditions. Two of the examined locations were determined to be high risk for a watershed boundary breach. Work continues on visiting remaining sites and locations needing a revisit during higher water conditions.

Additionally, The Minnesota Center for Environmental Advocacy sponsored a project that examined using GIS data to refine potential locations.

Project results are summarized in a completion report:
Bevis, B. 2015. *Expansion of invasive carp range in Minnesota: using glacial geomorphology, digital elevation models and vector data to identify potential watershed breaches in ArcGIS.* University of Minnesota – Center for Urban and Regional Affairs.

http://www.cura.umn.edu/publications/catalog/cap-197

Telemetry Study

DNR fisheries began a fish telemetry study in spring of 2013 to understand fish movement around lock and dams and in the Mississippi River system. The USFWS also connected the receiver system with one located in Missouri to help monitor carp movements throughout the river. This study continued in 2014/15.

Updated information can be found in the following report:
Minnesota Department of Natural Resources – Division of Fish and Wildlife. 2015. East Metro Area Rivers Telemetry Project – 2014 Progress Report. MN DNR, St. Paul, MN.

Partnerships

Minnesota Aquatic Invasive Species Research Center – University of Minnesota – Twin Cities

The University of Minnesota is continuing to pursue a number of research initiatives, including:

- Understanding and developing strategies for Implementing eDNA as a molecular technique to assess potential presence of Asian carp in large Minnesota rivers
- Evaluating the potential to detect and locate Asian carp through the use of "Judas fish," a new behavioral tool to locate aggregating invasive fish so they might be tracked and/or removed
- Developing food, pheromone, and hormone attractants for Asian carp to induce high-density aggregation for the purposes of fish detection, measurement, control and removal
- Conducting an assessment of effectiveness of enhanced bubble curtains as effective deterrents of Asian carp movement into small tributaries
- Installation of sound deterrents to Asian carp in the Mississippi River
- Assessing the potential use of native pathogens as invasive carp control agents
- Conducting risk analyses to identify Asian carp control priorities and methods

Minnesota Aquatic Invasive Species Research Center – University of Minnesota – Twin Cities Cont.

In addition, the University of Minnesota is continuing its collaboration with USACE to develop ways (including applications of new technologies) to modify operations of Lock and Dam numbers 2 through 8 to optimize their ability to impede Bighead and Silver Carp movement into the St. Croix and Mississippi Rivers within Minnesota. Specific activities include:

- Immediate development and implementation of a deterrent strategy for Lock and Dam 8, including installation of an experimental underwater sound deterrent shield
- Quantification of adult Bighead Carp swimming capabilities
- Testing and development of new acoustical deterrent systems for locks that deter Asian carp and minimally affect native fishes

Minnesota State University – Mankato
The DNR is partnering with Minnesota State University - Mankato to evaluate invasive carp deterrents in the Minnesota River. University partners will collect and analyze data on hydrologic and geomorphic characteristics to determine potential locations and feasibility for deterrent measures. The project also will examine biological data to identify habitats that are highly suitable for invasive carp. Lastly, scientists will investigate the Minnesota River-Red River watershed boundary to determine if the two watersheds can become connected during high water events. The university began collecting data in spring 2015. A progress report will be submitted to the DNR in December 2015.

U.S. Fish and Wildlife Service
The U.S. Fish and Wildlife Service is the lead agency on eDNA sampling for invasive carp. In 2015, 602 water samples were collected from Mississippi River pools 5a, 6, 8, and 9. The samples were analyzed at the Whitney Genetics Lab in La Crosse, Wisconsin. No samples came back positive for bighead carp or silver carp.

Future Needs

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

Filming of the training video "Cleaning to Avoid Spreading Terrestrial Invasive Species"

- To 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.
- To prevent or limit the negative impacts on Minnesota's ecology and economy and on 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.
- To 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.
- Worked with DNR staff to create the training video *Cleaning to Avoid Spreading Terrestrial Invasive Species*. This video provides DNR staff and others with information on how to prevent the spread of terrestrial invasive species during the course of their work. The video can be viewed at www.dnr.state.mn.us/invasives/dnrlands.html.
- Through outreach and education with the public, worked to prevent the introduction of terrestrial invasive species to state managed lands.
- Worked with members of the Minnesota Invasive Species Advisory Council on the development of the Minnesota's Urban and Community Forestry Best Management Practices for Invasive Species document (http://files.dnr.state.mn.us/natural_resources/invasives/terrestrialplants/is-bmp.pdf).

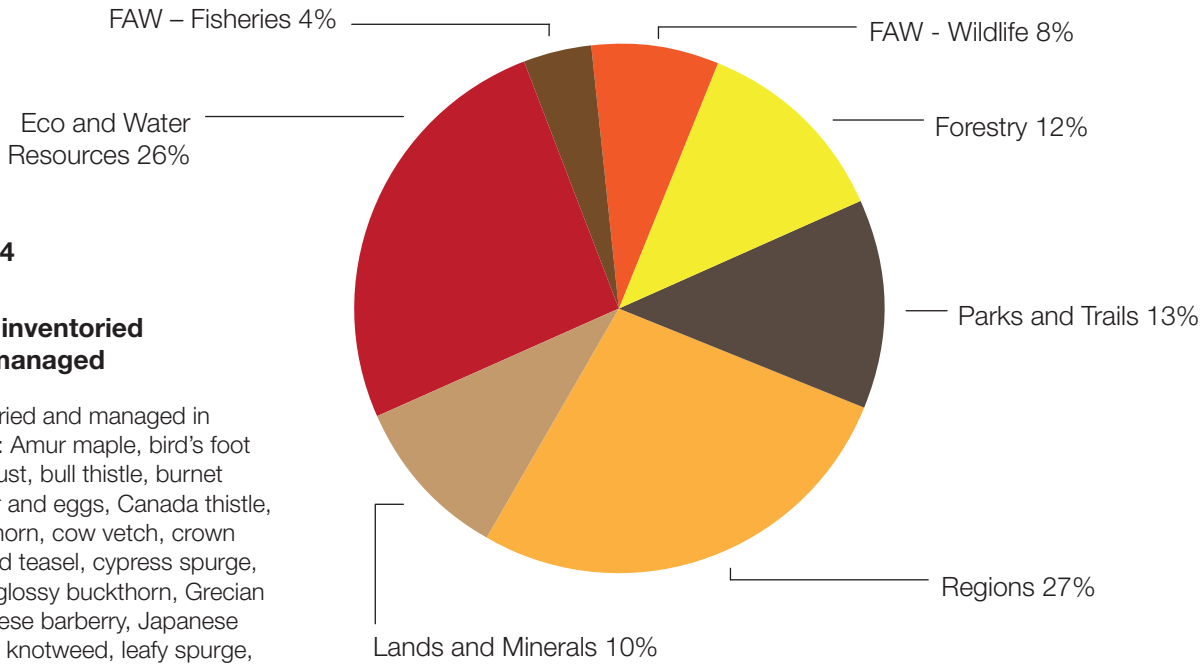
Management and Inventory

- 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 2010.
- Fiscal Year 2016: Thirty-seven proposals totaling $298,473 were received; $200,000 was awarded for 23 projects.

Table 11.
Funding History for Terrestrial Invasive Species Program.

Fiscal Year/s	Dollars Awarded	Acres (Inventoried + Managed)	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	$200,000	in progress	23

Terrestrial Invasive Species Program - Fiscal Year 2015 Funding Distribution
Work in fiscal year 2015 included funds that were rolled forward from fiscal year 2014 along with a second round of funding provided mid fiscal year 2015.



Total $270,674

26 projects
10,855 acres inventoried
2,139 acres managed

Species inventoried and managed in various projects: Amur maple, bird's foot trefoil, black locust, bull thistle, burnet saxifrage, butter and eggs, Canada thistle, common buckthorn, cow vetch, crown vetch, cut-leaved teasel, cypress spurge, garlic mustard, glossy buckthorn, Grecian foxglove, Japanese barberry, Japanese hops, Japanese knotweed, leafy spurge, non-native honeysuckle, non-native lupine, oriental bittersweet, plumeless thistle, Queen Ann's lace, Siberian elm, Siberian peashrub, spotted knapweed, St. John's wort, stinking chamomile, sweetclover, tansy, wild parsnip.

Outreach and Communication

- In 2015, the outreach program "PlayCleanGo: Stop Invasive Species in Your Tracks" continued its social media presence on PlayCleanGo Facebook, Twitter, Pinterest, YouTube, and GovDelivery accounts.
- More than 11,000 people liked the PlayCleanGo Facebook page as of November 2015.
- The second annual PlayCleanGo Day was held June 3, 2015 at fourteen sites across Minnesota. Volunteers shared information materials with visitors and demonstrated steps visitors could take to prevent the spread of invasive species.
- The State Fair Invasive Species Display brought invasive species prevention messages to many State Fair visitors.

Research

- Garlic mustard (*Alliaria petiolata*) biological control research continues to for the approval of a biological control insect for garlic mustard. Host-specificity testing of native plant species continued. Research is the furthest along for the weevil Ceutorhynchus scrobicollis. In October 2013, a petition for an agreed upon test plant list was submitted to the USDA APHIS Technical Advisory Group (TAG). In November 2014 the TAG response was received. Ten reviewers accepted the list, but two had suggested additional species. In February 2015 petitioners sent a letter to the TAG chair detailing which additional reviewer suggested species they think are appropriate to add. July 15 TAG chair notified reviewers that the petitioners should test the species in their letter. In fall of 2015, the host-specificity testing for C. scrobicollis will be completed with a goal to have the petition for release written by early 2016.
- DNR cooperated with the University of Minnesota Terrestrial Invasive Plants and Pests Center on processes to identify the top invasive species threats to Minnesota and to help prioritize top invasive species research needs.
- DNR cooperated with Dr. Roger Becker of the University of Minnesota on a research project to test native Minnesota thistle species to make sure the Canada thistle biological control insect *Ceutorhynchus litura* does not develop on native thistles.
- Funding for the above projects was provided by the Minnesota Environment and Natural Resources Trust Fund as recommended by the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

Partnerships

- The PlayCleanGo program is built around bringing in partners to help spread the word by using consistent messaging. As of September 2015, PlayCleanGo had more than 200 partners with parters from both the United States and Canada (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 (www.mda.state.mn.us/misac). DNR was an active participant in 2015. MISAC produced a 2015 wall calendar highlighting 12 invasive species and issues of concern to Minnesotans.

Visitors explore the DNR State Fair invasive species display

- 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 or not the species should be placed on a noxious weed list.

Future Needs

Within the DNR, there is a need to expand the amount of awareness, data, tools and resources to reduce impacts caused by terrestrial invasive species on state-managed lands. Funding available 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 to reduce the impacts of invasive species on state management lands.

Appendix A

Invasive Species Program Staff

Staff is located in Central Office, St. Paul unless otherwise noted. Telephone numbers and email addresses are available at mndnr.gov/ais—click on Contact an Expert.

Bruce Anspach
Watercraft Inspection Program Assistant
Northwest Region, Park Rapids

Kylie Bloodsworth
Natural Resource Specialist
Central Region, St. Paul

Michael Bolinski
Watercraft Inspection Program Supervisor
Northwest Region, Fergus Falls

Nick Brown
Invasive Species Specialist
Southern Region, Hutchinson

Wendy Crowell
Grants Coordinator

Adam Doll
Watercraft Inspection Program Supervisor
Central Region, St. Paul

Evan Freeman
Watercraft Inspection Program Supervisor
Central Region, St. Cloud

Nick Frohnauer
Invasive Fish/River Habitat Coordinator

Allison Gamble
Invasive Species Specialist
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Phil Hunsicker
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Christine Jurek
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Nicole Kovar
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Enforcement, New Ulm

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Richard Rezanka
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Dan Swanson
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Northeast Region, Brainerd

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Northeast Region, Brainerd

Laura Van Riper
Terrestrial Invasive Species Coordinator

Chip Welling
Invasive Aquatic Plants Management Coordinator

Tina Wolbers
AIS Prevention Planner

Heidi Wolf
Invasive Species Program Supervisor

Maureen Ziskovsky
Watercraft Inspection Program Assistant
Central Region, 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 Response Unit addresses species such as emerald ash borer, potato cyst nematode and Asian long-horned beetle. The Pest Mitigation and Biocontrol Unit coordinates all aspects of survey, treatment, and regulatory work pertaining to gypsy moth. The Noxious 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 Protection and Response Unit	Mark Abrahamson	651-201-6505
Pest Mitigation and Biocontrol Unit	Kimberly Thielen Cremers	651-201-6329
Pest Mitigation and Biocontrol Unit-Biocontrol	Monika Chandler	651-201-6537

Noxious Weed Program

Noxious Weed Law/General Management	Anthony Cortilet	651-201-6538

Minnesota Department of Natural Resources (DNR) – Forest Health Program
The DNR's Division of Forestry, 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
Metro/Southern Forest Health Specialist	Brian Schwingle	651-259-5821
Forest Health Program Coordinator	Val Cervenka	651-259-5296

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)

Robert Venette, MISAC Chair, USDA Forest Service 651-649-5028

Kathy Kromroy, MISAC Cochair, Minnesota Department of Agriculture 651-201-6343

In 2016, Kathy Kromroy is Chair and Marte Kitson (Sea Grant) is Cochair.

Minnesota Noxious Weed Advisory Committee

Minnesota Department of Agriculture, Anthony Cortilet 651-201-6538

Appendix C
Regulations

Aquatic Invasive Species Affirmation

1. The Minnesota Legislature repealed the trailer decal requirement enacted in 2012. In its place, starting in 2016, applicants for new watercraft licenses and nonresident fishing licenses will receive a summary of AIS laws and will be required to affirm that they have read and understand the summary in order to receive their license. No fees are associated with the affirmation. This affirmation is a regular part of the application process—no other actions are required.

86B.13 AQUATIC INVASIVE SPECIES PREVENTION PROGRAM.

~~***Subd. 2. Aquatic invasive species trailer decal.***~~

~~*The commissioner shall issue an aquatic invasive species trailer decal for each trailer owned by a person that satisfactorily completes the required course of instruction.*~~

~~***Subd. 4. Aquatic invasive species trailer decal display required.***~~

~~*(a) A person may not transport watercraft or water-related equipment, as defined under section 84D.01, subdivision 18a, with a trailer unless the person has an aquatic invasive species trailer decal issued under this section. Temporary authorizations valid for seven days can be requested by persons that have not completed the required course of instruction.*~~

~~*(b) Aquatic invasive species trailer decals are valid for three years.*~~

~~*(c) The aquatic invasive species trailer decal must be adhered to the side of the trailer frame tongue near the hitch in a manner that it is readily visible and does not interfere with the display of any registration requirements under section 169.79.*~~

~~*(d) Aquatic invasive species trailer decals are not transferable.*~~

~~*(e) Violation of this section shall not result in a penalty, but is punishable only by a warning.*~~

[Effective 6-14-2015]

84D.01 DEFINITIONS.

Subd. 1a. Aquatic invasive species affirmation. [NEW]

"Aquatic invasive species affirmation" means an affirmation of the summary of the aquatic invasive species laws of this chapter that is part of watercraft licenses and nonresident fishing licenses, as provided in section 84D.106.

[Effective 1-1-2016]

84D.106 AQUATIC INVASIVE SPECIES AFFIRMATION. [NEW]

Aquatic invasive species affirmation is required for all:

(1) watercraft licenses issued under section 86B.401; and

(2) all nonresident fishing licenses, as provided in section 97C.301, subdivision 2a.

[Effective 3-1-2016]

84D.13 ENFORCEMENT; PENALTIES.

Subd. 5. Civil penalties.

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

(6) for failing to have drain plugs or similar devices removed or opened while transporting water-related equipment or for failing to remove plugs, open valves, and drain water from water-related equipment, other than marine sanitary systems, before leaving waters of the state, $100; ~~and~~

(7) for transporting infested water off riparian property without a permit as required by rule, $200; and

(8) for failing to have aquatic invasive species affirmation displayed or available for inspection as provided in sections 86B.401 and 97C.301, subdivision 2a, $25.

[Effective 7-1-2015]

86B.401 WATERCRAFT LICENSES.

Subd. 3. Licensing.

(a) The license agent shall register the watercraft on receiving an application and the license fee. A license and registration sticker with a registration number shall be issued and must be affixed to the watercraft as prescribed by the commissioner of natural resources.

(b) A license includes aquatic invasive species affirmation as provided in section 84D.106. The aquatic invasive species affirmation portion of the license must be on board or available with the signed license certificate. The aquatic invasive species affirmation will be provided with an application for a new, transfer, duplicate, or renewal watercraft license.

(c) The license is not valid unless signed by at least one owner.

(d) Failure to complete the aquatic invasive species affirmation in this subdivision is subject to the penalty prescribed in section 84D.13, subdivision 5.

[Effective 1-1-2016]

97C.301 LICENSE REQUIRED TO TAKE FISH.

Subd. 2a. Aquatic invasive species affirmation. [NEW]

(a) A nonresident license to take fish issued under section 97A.475, subdivision 7, includes aquatic invasive species affirmation as provided in section 84D.106.

(b) The aquatic invasive species affirmation portion of the license must be displayed with the signed nonresident license to take fish issued under section 97A.475, subdivision 7. The aquatic invasive species affirmation will be provided at the time of purchase of a new or duplicate nonresident license.

(c) If a license is purchased online, the aquatic invasive species affirmation may be completed electronically as part of the online sales process, and the electronic record of the license sale is sufficient for documenting the affirmation.

(d) Failure to complete the aquatic invasive species affirmation in this subdivision is subject to the penalty prescribed in section 84D.13, subdivision 5.

[Effective 3-1-2016]

Require Decontamination

2. New language allows DNR and other enforcement personnel to require a person to decontaminate his/her equipment if a decontamination unit is available on site.

84D.10 WATERCRAFT AND WATER-RELATED EQUIPMENT REQUIREMENTS AND PROHIBITIONS.

Subd. 3. Removal and confinement.

(a) A conservation officer or other licensed peace officer may order:

(1) the removal of aquatic macrophytes or prohibited invasive species from water-related equipment, including decontamination using hot water or high pressure equipment when available on site, before ~~it~~ the water-related equipment is transported or before it is placed into waters of the state;

(2) confinement of the water-related equipment at a mooring, dock, or other location until the water-related equipment is removed from the water;

(3) removal of water-related equipment from waters of the state to remove prohibited invasive species if the water has not been listed by the commissioner as being infested with that species; ~~and~~

(4) a prohibition on placing water-related equipment into waters of the state when the water-related equipment has aquatic macrophytes or prohibited invasive species attached in violation of subdivision 1 or when water has not been drained or the drain plug has not been removed in violation of subdivision 4.; and

(5) decontamination of water-related equipment when available on site.

(b) An order for removal of prohibited invasive species under paragraph (a), clause (1), or decontamination of water-related equipment under paragraph (a), clause (5), may include tagging the water-related equipment and issuing a notice that specifies a time frame for completing the removal or decontamination and reinspection of the water-related equipment.

~~(b)~~ (c) An inspector who is not a licensed peace officer may issue orders under paragraph (a), clauses (1), (3), ~~and~~ (4), and (5). ***[Effective 7-1-2015]***

Gizzard Shad for Bait

3. A new provision allows people to obtain a permit to harvest gizzard shad in certain rivers for personal use as bait; this program is set to expire in 2017.

84D.03 INFESTED WATERS; RESTRICTED ACTIVITIES.

Subd. 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 ~~because they contain~~ 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 ~~according to~~ 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 water milfoil, when the infested waters are listed solely because they contain Eurasian water milfoil and if the equipment for taking is limited to cylindrical minnow traps not exceeding 16 inches in diameter and 32 inches in length~~; and~~.

~~(3)~~ (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 ~~from streams or rivers listed as infested waters,~~ by hook and line for noncommercial personal use~~. Other provisions that apply to this clause are~~ is allowed as follows:

~~(i)~~ (1) fish taken under this ~~clause~~ 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;

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

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

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

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

~~(vi)~~ (6) all species listed under this ~~clause~~ 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.

This paragraph expires December 1, 2017.

~~(c)~~ (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.

[Effective 7-1-2015; paragraph (d) expires 12-1-2017]

97C.345 RESTRICTIONS ON USE AND POSSESSION OF NETS AND SPEARS.

Subd. 3a. Cast nets for gizzard shad. [NEW]

(a) Cast nets may be used only to take gizzard shad for use as bait for angling:

(1) from July 1 to November 30; and

(2) from 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, that are listed as infested waters as allowed under section 84D.03, subdivision 3.

(b) Cast nets used under this subdivision must be monofilament and may not exceed seven feet in diameter, and mesh size must be from three-eighths to five-eighths inch bar measure.

(c) This subdivision expires December 1, 2017. The commissioner must report to the chairs and ranking minority members of the house of representatives and senate committees with jurisdiction over environment and natural resources by March 1, 2018, on the number of permits issued, conservation impacts from the use of cast nets, and recommendations for any necessary changes in statutes or rules.

[Effective 7-1-2015]

Permit for Contamination

4. New language allows people to obtain a prohibited invasive species permit for the purpose of decontamination.

84D.11 PERMITS.

Subdivision 1. Prohibited invasive species.

The commissioner may issue a permit for the propagation, possession, importation, purchase, or transport of a prohibited invasive species for the purposes of disposal, decontamination, control, research, or education. ***[Effective 7-1-2015]***

Habitat Improvement

5. New language allows the DNR to use funds in the invasive species account for habitat improvements.

84D.15 INVASIVE SPECIES ACCOUNT.

Subd. 3. Use of money in account.

Money credited to the invasive species account in subdivision 2 shall be used for management of invasive species and implementation of this chapter as it pertains to invasive species, including control, public awareness, law enforcement, assessment and monitoring, management planning, habitat improvements, and research.

[Effective 7-1-2015]

Designating Nonnative Species

6. In 2015, the word used to describe the process of categorizing nonnative species was changed from "list" to "designate." This restores the original language by correcting a change that was applied too broadly in 2014.

84D.01 DEFINITIONS.

Subd. 13. Prohibited invasive species.

"Prohibited invasive species" means a nonnative species that has been ~~listed~~ designated as a prohibited invasive species in a rule adopted by the commissioner under section 84D.12.
[Effective 7-1-2015]

Subd. 15. Regulated invasive species.

"Regulated invasive species" means a nonnative species that has been ~~listed~~ designated as a regulated invasive species in a rule adopted by the commissioner under section 84D.12.
[Effective 7-1-2015]

Subd. 17. Unlisted nonnative species.

"Unlisted nonnative species" means a nonnative species that has not been ~~listed~~ designated as a prohibited invasive species, a regulated invasive species, or an unregulated nonnative species in a rule adopted by the commissioner under section 84D.12. ***[Effective 7-1-2015]***

Subd. 18. Unregulated nonnative species.

"Unregulated nonnative species" means a nonnative species that has been ~~listed~~ designated as an unregulated nonnative species in a rule adopted by the commissioner under section 84D.12

[Effective 7-1-2015]

84D.06 UNLISTED NONNATIVE SPECIES.

Subdivision 1. Process.

A person may not introduce an unlisted nonnative aquatic plant or wild animal species unless:

(2) the commissioner has made the classification determination required in subdivision 2 and ~~listed~~ designated the species as appropriate… [Effective 7-1-2015]

Subd. 2. Classification.

(a) If the commissioner determines that a species for which a notification is received under subdivision 1 should be classified as a prohibited invasive species, the commissioner shall:

(1) adopt a rule under section 84D.12, subdivision 3, ~~listing~~ designating the species as a prohibited invasive species; and

(b) If the commissioner determines that a species for which a notification is received under subdivision 1 should be classified as an unregulated nonnative species, the commissioner shall:

(1) adopt a rule under section 84D.12, subdivision 3, ~~listing~~ designating the species as an unregulated nonnative species…

[Effective 7-1-2015]

84D.12 RULES.

Subdivision 1. Required rules.

The commissioner shall adopt rules:

(1) ~~listing~~ designating prohibited invasive species, regulated invasive species, and unregulated nonnative species of aquatic plants and wild animals; [Effective 7-1-2015]

Subd. 3. Expedited rules.

The commissioner may adopt rules under section 84.027, subdivision 13, that ~~list~~ designate …

[Effective 7-1-2015]

6216.0400 RESTRICTED ACTIVITIES ON INFESTED WATERS; PERMITS.

Subpart 1. Taking bait from infested waters.

The taking of wild animals from infested waters for bait or aquatic farm purposes is prohibited, except:

A. by permit according to part 6254.0200 and Minnesota Statutes, sections 84D.03, subdivision 3, and 84D.11, subdivision 2a; ~~and~~

B. harvest for bait purposes from waters that are designated as infested waters solely because they contain Eurasian water milfoil is allowed for noncommercial personal use.; and

C. harvest of rainbow smelt or cisco for bait purposes from Lake Superior or its tributaries below the posted boundaries, except those streams listed in part 6262.0300, subpart 4, item C, for use as fresh, dead, frozen, or preserved bait only on Lake Superior or its tributaries below the posted boundaries, in accordance with Minnesota Statutes, section 97C.341, paragraph (c).

[Effective 5-26-2015]

Appendix D

References Cited

Gessler, T., and M. Marko. 2014. Quantitative analysis of the efficacy of biological control of purple loosestrife in Minnesota. Poster prepared by Concordia College, Moorhead, MN 56562 [rcvd in March].

Glomski, L.M., and M.D. Netherland. 2014. Response of waterlily, spatterdock, and hardstem bulrush to liquid and granular triclopyr treatments. Journal of Aquatic Plant Management 52:81-84.

Jensen, A., H. Houle, and K. LeDuc. 2014. Analysis of Minnesota DNR data pertaining to Purple loosestrife management and bicontrol. Poster prepared by Concordia College, Moorhead, MN 56562 [rcvd in March].

Madsen, John D., Gray Turnage, and Bradley T. Sartain. 2014. Management of flowering rush using the contact herbicide diquat in Detroit Lakes, Minnesota 2013. Geosystems Research Institute Report 5063. Geosystems Research Institute, Mississippi State University, Mississippi State, MS 39762 (dated May - DRAFT - rcvd on 19 May).

Marko, M.D., J.D. Madsen, R.A. Smith, B. Sartain, and C.L. Olson. 2015. Ecology and phenology of flowering rush in the Detroit Lakes chain of lakes, Minnesota. Journal of Aquatic Plant Management 53:54-63.

Mudge, C.R., and M.D. Netherland. 2014. Response of invasive floating plants and nontarget emergent plants to foliar applications of imazamox and penoxsulam. Journal of Aquatic Plant Management 52:1-7.

Nault, M., M.D. Netherland, A. Mikulyuk, J. G. Skogerboe, T. Asplund, J. Hauxwell, and P. Toshner. 2014. Efficacy, selectivity, and herbicide concentrations flowing a whole-lake 2,4-D application targeting Eurasian watermilfoil in two adjacent northern Wisconsin lakes. Lake and Reservoir Management 30:1-10.

Nault, M., S. Knight, S. van Egeren, E. Heath, J. Skogerboe, M. Barton, and S. Provost. 2015. Control of invasive aquatic plants on a small scale. LakeLine [Spring]:35-39.

Netherland, M.D., and L.M. Glomski. 2014. Mesocosm evaluation of triclopyr on Eurasian watermilfoil and three native species: The role of treatment timing and herbicide exposure. Journal of Aquatic Plant Management 52:57-64.

Netherland, Michael D., and K. Dean Jones. 2015. A three-year evaluation of triclopyr for selective whole-bay management of Eurasian watermilfoil on Lake Minnetonka, Minnesota. Lake and Reservoir Management 31:306-323.

Wersal, Ryan M., A.G. Poovey, J.D. Madsen, K.D. Getsinger, and C.R. Mudge. 2014. Comparison of lateseason herbicide treatments for control of emergent flowering rush in mesocosms. Journal of Aquatic Plant Management 52:85-89.

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