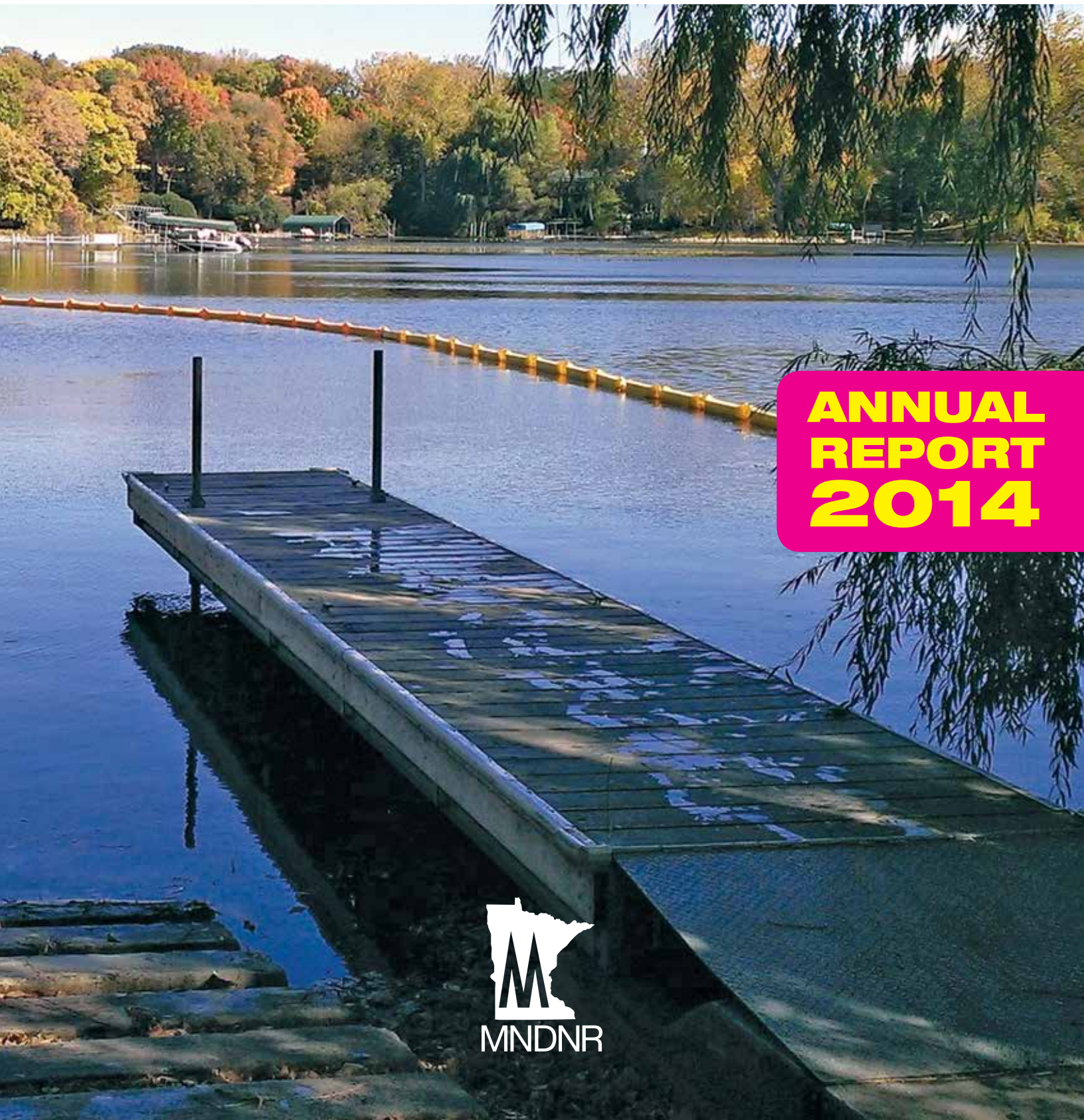
INVASIVE SPECIES OF MINNESOTA



ANNUAL REPORT 2014

MNDNR

MNDNR

Contact Information

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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

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Submitted to

Environment and Natural Resources Committee of the Minnesota House and Senate
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Cover photo: The discovery of zebra mussels in a single location in Christmas Lake (Hennepin County) provided a unique opportunity for DNR to attempt to kill zebra mussels using pesticides.

Executive Summary

The Minnesota Department of Natural Resources (DNR) is pleased to submit the 2014 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.

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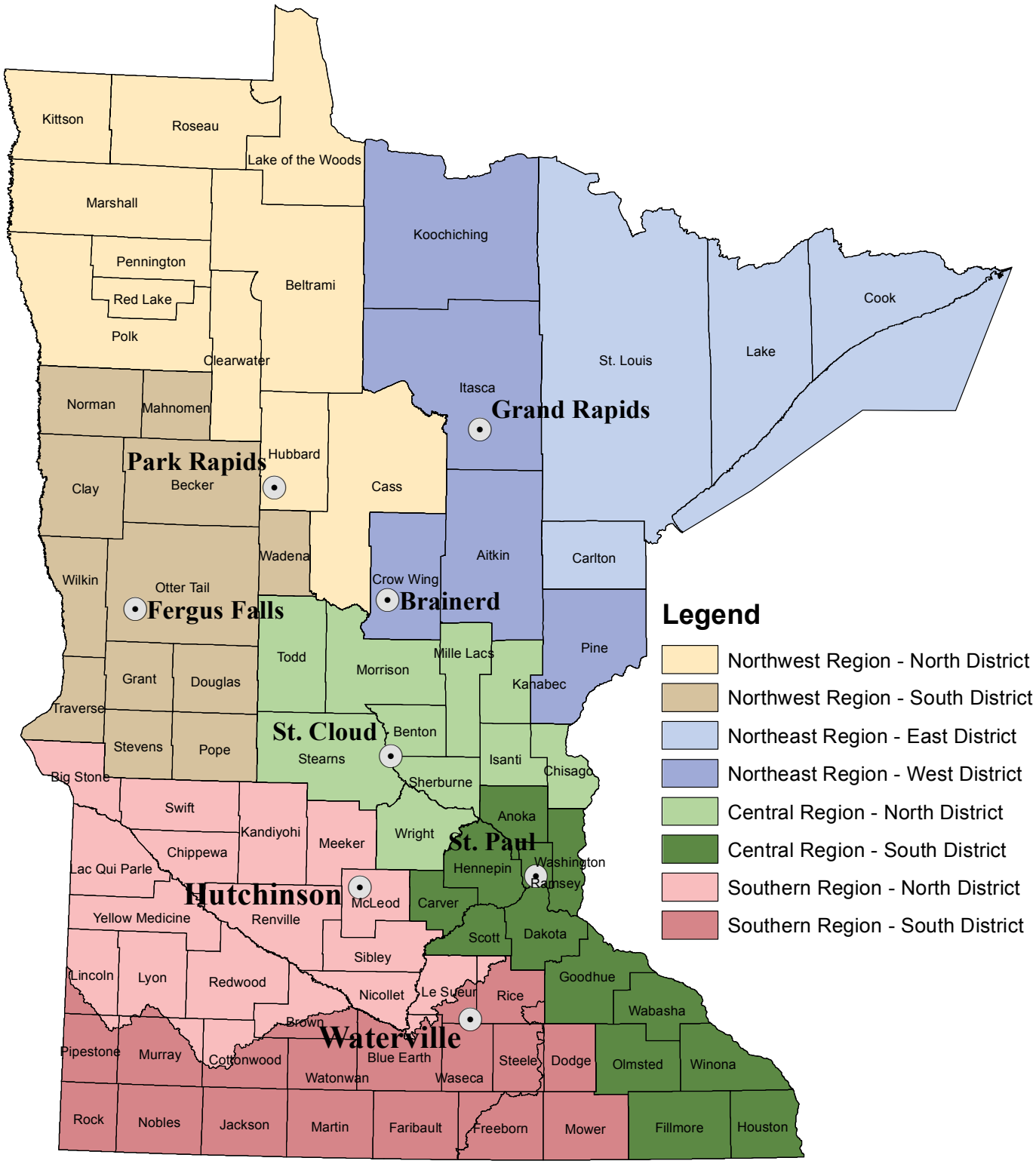


Invasive Species Program Overview

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, the 1991 Minnesota Legislature directed the Minnesota Department of Natural Resources (DNR) to establish the Invasive Species Program. The program is designed to implement actions to prevent the spread of invasive species and manage invasive aquatic plants and wild animals (Minnesota Statutes 84D).

DNR watercraft inspectors require decontamination treatments for watercraft attempting to launch with vegetation or zebra mussels attached.

Most of the invasive species prevention and management activities are conducted or directed by staff from DNR's Division of Ecological and Water Resources – Invasive Species Program. The Invasive Species Program has staff that coordinate aquatic invasive species (AIS) activities statewide including working with other states, multi-state or national groups, and staff in each of the four DNR regions who coordinate regional and local efforts to prevent and manage AIS. In addition, the program hires approximately 150 seasonal staff during the summer to inspect boats at public water accesses and help implement management activities. In total the equivalent of more than 25 full-time positions is focused on invasive species work.

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, invasive carp, 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 mussels, and spiny waterfleas. Efforts in this area include working to prevent spread and to manage problems caused by established populations.

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. 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 through research (i.e., biological control).

Highlights

- No new AIS were found in Minnesota waters during 2014.
- The legislature created a new county aid program in 2014 to distribute money to Minnesota counties for AIS prevention. The Department of Revenue is allocating the funds based on the number of public water accesses and watercraft trailer parking spaces in each county. The Invasive Species Program hired two new AIS prevention planners, one based in St. Paul and another in Brainerd, to help counties develop prevention plans detailing how the counties will use the funding to prevent the spread of AIS.
- The DNR made its invasive species exhibit at the Minnesota State Fair more interactive. The exhibit featured the *Stop Aquatic Hitchhikers!* and *PlayCleanGo* information campaigns.
- In addition to DNR inspectors, the DNR provided watercraft inspection training to 363 tribal and local government unit (LGU) authorized inspectors working throughout the state.
- The DNR treated an early infestation of zebra mussels in Christmas Lake with Zequanox®, a new product, as well as copper sulfate and potash in an attempt to prevent the spread of this invasive species. The DNR also worked on a zebra mussel control effort in Lake Independence.
- In 2014, the DNR issued 265 permits and 207 grants for $660,000 to support management of invasive aquatic plants by partners.
- To better understand the risk of moving zebra mussel larvae (veligers) in residual water, the DNR sampled water left in watercraft after the watercraft had been drained. The DNR will take additional samples in 2015.
- More than 1,000 lake service provider businesses completed training and were issued permits by the end of the year. The training program has been in effect since 2012. The first year of renewals will begin next year and notices were sent to the affected businesses.

In 2013, businesses offering decontamination services were added to the definition of lake service provider in Minnesota Statutes. In 2014, the DNR offered two hot-water/high-pressure decontamination skills training sessions to 23 participants.

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 recreationalists, 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 divisions of Fish and Wildlife, 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 Division of Forestry, 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 – e.g., 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.

Participation in Statewide, Regional, and National Groups

- 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 convened in late 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. Membership on panels, such as the Mississippi River Basin and Great Lakes panels on aquatic nuisance species, helps keep program staff informed of regional and federal efforts regarding invasive species and provides a voice for Minnesota interests.

- 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

After several years of development by MISAC, the Minnesota State Management Plan for Invasive Species was completed in November 2009. 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.

The plan also provides opportunities for improved coordination and partnerships between federal, state, and local governments, tribes, conservation organizations, and others working to minimize the impacts caused by invasive species in the state. The DNR continues to work to implement the plan.

Program Finances

Timeframe

This report covers activities that took place in Calendar Year 2014: January 1 to December 31, 2014. However, to provide a comprehensive review of expenditures and to coordinate with the state funding cycle, we include expenditures incurred in Fiscal Year 2014: July 1, 2013 to June 30, 2014.

Funding Sources

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

State Funds

- $2,182,000 from a $5 surcharge on watercraft registration in Minnesota.
- $943,000 from a $5 fee on non-resident fishing licenses.
- $4,624,000 from a general fund appropriation (of this amount, $356,000 supported the terrestrial invasive species program).
- $1,027,400 from the Environment and Natural Resources Trust Fund (ENRTF).

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 2014, federal expenditures totaled $800,000.

Local Funds

- During 2014, local groups provided funding totaling $1.1 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.

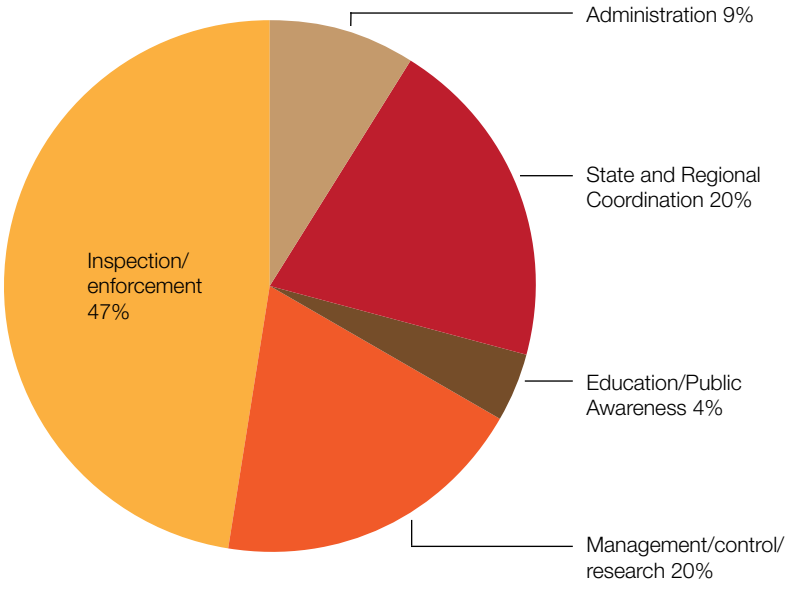
6. **State and Regional Coordination –** includes general program planning, preparation of state plans and reports, and general invasive species coordination with a wide variety of groups. This category also includes the work of program staff as well as various managers in the Division of Ecological 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 co-workers, or help on other projects; as well as fleet costs and the cost to purchase and repair boats, trailers, computers, and similar items.

Fiscal Year 2014 Expenditures

Expenditures on aquatic invasive species activities during Fiscal Year 2014 (July 1, 2013-June 30, 2014) totaled $8,854,235.

The pie chart below provides a broad look at how aquatic invasive species funding was spent in FY 2014. The Inspection/Enforcement category represents the largest segment of the budget, accounting for over 47% 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 4% of FY14 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, the Environment and Natural Resources Trust Fund, and federal dollars in FY14 by major categories.

The terrestrial invasive species program expended $ 264,446 in 2014. The work was funded exclusively from the General Fund. The terrestrial invasive species program also received an LCCMR/ENTRF grant for $140,000 that is good for FY14, 15, and 16 for work on biological control of garlic mustard. These funds will be given to the University of Minnesota and $15,235 was spent in FY14. Accomplishments for terrestrial invasive species management activities are covered beginning on page 51.

In FY14, $3,147,638 was spent from the Invasive Species Account; which is less than the $3,542,000 appropriated by the Legislature.. General Fund expenditures were $4,068,369; slightly less than the $4,268,000 appropriated. All funds roll forward to FY15.

Fiscal Year 2014 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 as ENRTF recommended appropriations and the USFWS.

FY 2014 Income					**Total**
Federal Funding: Implement State Management for Aquatic Nuisance Species					$550,000 in FY14*
State and Local Funding	Invasive Species Account	General Fund	Local Contributions	Heritage Enhancement	
	$3,542,000	$4,624,000	$1,100,000	$1,027,405	$898,508**

FY 2014 Expenditures					
	Invasive Species Account	General Fund	Local Contributions	Heritage Enhancement	Other
Administration	$343,709	$391,154		$24,910	$96,775
State / Regional Coordination	$737,302	$618,253		$415,589	$299,015
Education/Public Awareness	$9,623	$66,260		$67,033	$12,162
Management/Control - Aquatic - Terrestrial	$85,400	$967,417 $264,446	$1,100,000	$231,521	$10,133
Inspections/Enforcement	$1,981,204	$1,739,906			$480,423
Research - Aquatic - Terrestrial	$1,886	$21,037		$667	
TOTAL EXPENDITURES: Federal, State, and Local	$3,147,638	$4,068,369	$1,100,000***	$739,720	$898,508

* Federal Grant to implement State Management Plan for Aquatic Nuisance Species awarded in 2014 will be spent in FY15-FY16.

** Federal Grant to implement State Management Plan for Aquatic Nuisance Species awarded in 2012 and 2013. The remaining balance was spent in the first half of fiscal year 2014.

*** Totals include local match for Invasive Aquatic Plant control.

Prevention and Containment

Goals

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

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

Highlights

- In 2014, no new AIS were detected in Minnesota waters.
- The legislature created a new county aid program in 2014 to distribute money to Minnesota counties for AIS prevention. The Department of Revenue is allocating the funds based on the number of public water accesses and watercraft trailer parking spaces in each county. The Invasive Species Program hired two new AIS prevention planners, one based in St. Paul and another in Brainerd, to help counties develop prevention plans detailing how the counties will use the funding to prevent the spread of AIS.
- The DNR awarded grants to local partners to fund AIS outreach projects, informational signs, and watercraft inspections.
- 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.

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

Early Detection and Rapid Response

After monitoring revealed new infestations of zebra mussels in two lakes, the DNR worked with partners on a rapid response to attempt to eradicate the zebra mussels. See the chapter on "Management of Invasive Aquatic Animals - Zebra Mussels" for more information.

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 2014, the DNR continued to provide grants to local groups and government entities to help prevent the spread of AIS into Minnesota waters. The DNR awarded the following grants in 2014:

- Watercraft inspection grants: 24 local entities received 10,200 hours of DNR staff time for watercraft inspections. The DNR provided an additional 27 grants, totaling $150,000, to fund local government units to hire their own watercraft inspectors.

- Ten public awareness grants, totaling $18,000, were awarded for advertising and educational material.

- The DNR funded the placement of a number of *Stop Aquatic Hitchhikers!* and other signs at water accesses to educate water access users about AIS.

Infested Waters

The DNR relies on citizens, staff, other state and federal agencies, commercial herbicide applicators, and others to report suspected new occurrences of AIS. Since Invasive Species Program staff are only able to visit a limited number of lakes each year, many new infestations are first reported by non-DNR partners. In 2014, Conservation Corps Minnesota crews assisted the DNR in searching selected lakes for AIS in the central region, resulting in several newly found occurrences of Eurasian watermilfoil.

The DNR maintains a list of water bodies infested with certain AIS, comprised mostly of plant, fish, and invertebrate species that are classified as prohibited invasive species in Minnesota, as well as: one regulated invertebrate species, spiny waterflea; one regulated plant species, Brazilian elodea; and one pathogen, viral hemorrhagic septicemia. See table 2 for a complete list of the species that trigger an infested waters listing. In listed infested water bodies, activities such as commercial fishing, water appropriation, and bait harvest are limited. Because AIS can move into connected water bodies by swimming, by currents, or by people, the DNR also may list connected water bodies as infested. The tables below summarize lakes and rivers listed as infested with AIS in 2014.

Table 2. The number of water bodies listed as infested by AIS. 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, "Lake Superior tributaries" are listed as one water body instead of hundreds.

Species	Infested waters listings added (removed) in 2014	Total number of infested waters listings*, including 2014
bighead carp *(Hypophthalmichthys nobilis)* and silver carp *(Hypophthalmichthys molitrix)*	1	34
Brazilian elodea *(Egeria densa)*	(1)	0
brittle naiad *(Najas minor)*	1	3
Eurasian watermilfoil *(Myriophyllum spicatum)*	19 (1)	300
faucet snail *(Bithynia tentaculata)*	2	34
flowering rush *(Butomus umbellatus)*	4	31
New Zealand mud snail *(Potamopyrgus antipodarum)*	0	2
round goby *(Neogobius melanostomus)*	0	3
ruffe *(Gymnocephalus cernuus)*	0	3
spiny waterflea *(Bythotrephes longimanus)*	8*	62
viral hemorrhagic septicemia (VHS)	0	3
white perch *(Morone americana)*	0	3
zebra mussel *(Dreissena* spp.)	36*	212
Net Total	69	690

*Totals include water bodies where the AIS was newly discovered in 2014, and water bodies that were listed as infested due to connections with the water bodies where the AIS was found. See Table 3 for more detail.

The DNR removed two water bodies from the list of infested waters in 2014. Powderhorn Lake in Hennepin County, which had been listed as infested with Brazilian waterweed, was removed from the list because Brazilian waterweed had not been observed during surveys on that water body since 2007. Gleason Lake, which had been listed as infested with Eurasian watermilfoil, also was removed from the list of waters infested with that species.

Table 3. Lakes and rivers listed as infested with AIS in 2014, by DNR region.

DNR region	Species	County	Water Body
Northwest (1)	Eurasian watermilfoil	Pope	Lake Emily
	zebra mussel	Becker	Bucks Mill Pond (Minnow Pond)*
			Lake Melissa
			Mill Pond*
			Pickerel Lake
		Beltrami	Andrusia Lake*
			Big Rice Lake*
			Buck Lake*
			Cass Lake
			Kitchi Lake*
			Little Rice Lake*
			Mississippi River between Wolf Lake, Andrusia Lake, and Cass Lake*
			Pug Hole Lake*
			Unnamed stream connecting Big Rice Lake, Little Rice Lake, and Kitchi Lake*
			Unnamed stream connecting Kitchi Lake, Pug Hole Lake, and Cass Lake*
			Unnamed stream connecting Pike Bay and Cass Lake*
			Wolf Lake*
		Cass	Pike Bay*
		Douglas	Lake Charley*
			Lake Latoka**
			Lake Louise*
		Multiple counties	Mississippi River between Cass Lake and Lake Winnibigoshish*
		Otter Tail	Lida Lake (North and South)**
			Venstrom Lake*
Northeast (2)	Eurasian watermilfoil	Crow Wing	Lake Emily
		Itasca	Coon-Sandwick (Coon Lake and Sandwick Lake)**
			Hale Lake
	faucet snail	Multiple counties	St. Louis River downstream of the Fond du Lac Dam
		Multiple counties	Lake Superior*
	flowering rush	Itasca	Spider Lake
	spiny waterflea	Lake	Basswood Lake
			Basswood River between Basswood Lake and Crooked Lake*
			Crooked Lake*
			Newton Lake*

Table 3 continued

DNR region	Species	County	Water Body
Northeast (2) continued	spiny waterflea	St. Louis	Bottle Lake*
			Bottle River between Bottle Lake and Lac La Croix*
			Iron Lake*
		Multiple counties	Shagawa River between Shagawa Lake and Fall Lake*
	zebra mussel	Crow Wing	Gilbert Lake
			North Long Lake
		Lake	Artlip Lake*
			Crooked Lake
			Houghtaling Creek downstream of the mouth of the unnamed creek draining Artlip Lake*
			Unnamed creek between Crooked Lake and Houghtaling Creek*
		Multiple counties	Mississippi River between Cass Lake and Lake Winnibigoshish*
Central (3)	bighead and silver carp	Multiple counties	Mississippi River between Lock and Dam 1 and Lock and Dam 2 (Pool 2)
	brittle naiad	Hennepin	Purgatory wetland**
	Eurasian watermilfoil	Anoka	Linwood Lake
		Carver	Hydes Lake**
		Chisago	Comfort Lake
		Dakota	Alimagnet Lake**
		Hennepin	Saunders Lake
		Isanti	Skogman Lake
		Sherburne	Rush Lake
		Stearns	St. Anna Lake
		Stearns	Lower Spunk Lake
			Middle Spunk Lake
		Wright	Lake Charlotte
			Schmidt Lake
	flowering rush	Anoka	Amelia Lake**
			Bass Lake**
	zebra mussel	Carver	Lake Virginia
			Lake Waconia
		Hennepin	Christmas Lake
			Lake Independence
		Washington	White Bear Lake
Southern (4)	Eurasian watermilfoil	Kandiyohi	Games Lake
		Meeker	Lake Erie
		Waseca	Reeds Lake
	flowering rush	Rice	Sprague Lake**
	zebra mussel	Kandiyohi	Green Lake
			Lake Calhoun*

* This water body was listed as infested because it is connected to a water body where an AIS has been found, and is therefore highly likely to be infested as well.

** This water body was added to the list of infested waters in 2014 although the AIS was found in a prior year.

Permits

The DNR has authority to issue a number of permits to allow the public to conduct activities with invasive species or in waters listed as infested with invasive species. 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 discussed in more detail later in this chapter, aquatic plant management permits discussed on page 38, and the permits described below.

Infested Waters Permits

Minnesota Rules 6216.0500 prohibits the diversion and transport of water from designated infested waters except by permit.

Prohibited Invasive Species Permits

State law prohibits the possession, transport, sale, purchase, and import of prohibited invasive species except when authorized by permit.

Permits to Harvest Bait from Infested Waters

Under state statute and rule, commercial harvest of bait from infested waters is prohibited, except when authorized by permit. 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.

In 2014, Invasive Species Program staff collaborated with DNR Fisheries staff to convene a group of stakeholders to discuss current policies governing bait harvest in infested waters. This project considered policies that affect both commercial and non-commercial bait harvesters. A stakeholder group met several times to better understand the process of bait harvest and the associated risk of moving AIS during this activity, and to develop a number of recommendations to the DNR for refinements to policies. DNR staff summarized the group's findings and recommendations in a report.

Regional Prevention Activities

In each of the four DNR regions, invasive species specialists 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 provide customized training about how to prevent the spread of AIS to groups such as lake service providers and minnow dealers to help them meet certification requirements. Local invasive species specialists also work with groups and individuals to permit activities in infested waters and with prohibited or regulated invasive species.

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 or regulated invasive species
Northwest (1)	4	9
Northeast (2)	11	9
Central (3)	9	16
Southern (4)	-	3

Additional activities related to invasive species prevention in each region are highlighted below.

Northwest region:

- After the discovery of zebra mussels in Lake Melissa in Becker County, DNR staff partnered with representatives from the City of Detroit Lakes, Pelican River Watershed District, and Lakes Melissa + Sallie Improvement Association to hold a media event.
- Regional invasive species staff inspected docks and lifts for AIS; fortunately, no AIS were found during these inspections.

Northeast region:

- Regional invasive species staff presented information about AIS during the Governor's fishing opener.
- Regional invasive species staff inspected 29 lakes for curly-leaf pondweed and Eurasian watermilfoil.
- Regional invasive species staff conducted purple loosestrife control activities, including releasing *Galerucella* beetles for biocontrol of several sites in north central Minnesota, grading historical beetle release sites, and using herbicide at sites with limited purple loosestrife infestations.

Central region:

- Regional invasive species staff trained Conservation Corps Minnesota staff to conduct baseline AIS surveys; they inspected 44 lakes for invasive aquatic plants and animals, resulting in the discovery of two new infested lakes.
- Regional invasive species staff conducted purple loosestrife control activities, including releasing *Galerucella* beetles for biocontrol of several sites in central Minnesota.
- Regional invasive species staff and Conservation Corps Minnesota posted ten new AIS signs at public water accesses throughout counties in the central region.

Southern region:

- Regional invasive species staff inspected docks at high-use lakes to monitor for new infestations of AIS.
- Regional invasive species staff shared their expertise in radio, print, and television interviews to increase public awareness of invasive species.

Lake Service Provider Program

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. Service providers are required to complete AIS 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 online training and receive a training certificate. Permits and certificates are valid for three calendar years.

The Lake Service Provider Program improved and streamlined in its third year and prepared for the first renewal year in 2015.

Activities

- Offered 20 trainings and issued 183 permits for lake service provider owners and managers; 605 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 1,194 businesses at the end of 2014.
- Continued to improve lake service provider communications and outreach (simplified webpage, sent e-news updates to permitted businesses, developed radio PSAs and news articles).
- Offered two, free hot-water/high-pressure decontamination skills trainings to 23 participants from 16 lake service provider businesses.

Future plans

- Continue outreach to remaining lake service provider business not yet permitted.
- Implement new lake service provider training methods, content, and testing to improve training experience.
- Prepare online registration and sufficient training opportunities for 815 renewing lake service provider training attendees and additional new businesses that will attend training in 2015.
- Assess options for offering lake service provider owner/manager trainings online to help address scheduling and geographic challenges, and determine best methods to offer effective online training (including improving the current employee online training).

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 aquatic invasive species (AIS) through an understanding of the laws and best 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

Informational Materials

- Created new promotional materials to remind boaters and other water recreationists about invasive species laws and how to prevent the spread of aquatic invaders. The promotional materials are distributed at outdoor shows and special events, such as the Minnesota State Fair.

- Updated invasive species content in the *2015 Minnesota Fishing Regulations* book, which includes the infested waters list, species identification information, and an ad placed on the outside back cover 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.

- Added a graphic illustrating how to inspect a boat and trailer to the AIS information included 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 as well as to Minnesota outdoor retailers.

- Minnesota partnered with the Michigan and Wisconsin departments of natural resources to create a 30-second public service announcement (PSA) about preventing the spread of AIS. The PSA was distributed in the Twin Cities metro in spring 2014, with plans to distribute in additional Minnesota markets in 2015.

Advertising

- The DNR partnered with Wildlife Forever and the U.S. Forest Service to post 43 "Clean-Drain-Dry" 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 advertising focused on AIS laws, highlighting the *Stop Aquatic Hitchhikers!* message. The ads were designed to target boaters, anglers, and waterfowl hunters as well as cabin owners who remove docks in the fall. The ads were placed in major daily newspapers and specialty publications, reaching these primary audiences as well as the traveling public.

Newspaper ads continued into the fall to reach waterfowl hunters.

- The DNR purchased advertising on major radio stations to reach large numbers of boaters and anglers in specific locations during the peak summer months. In addition, paid ads and PSAs were aired on Minnesota News Network, reaching nearly 60 commercial radio stations throughout greater Minnesota.

- The DNR's television advertising helps to remind viewers of the continuing concerns about invasive species in the state. A series of 30-second PSAs covers several topics such as how to clean boats and trailers, the impacts of zebra mussels, and invasive species laws.

- *Minnesota Waters at Risk*, an award-winning DVD, continues to be distributed to media outlets, lake associations, conservation groups, and tourism organizations.

Invasive Species Online

The DNR's web pages continue to be a valuable resource for the public and partnering organizations. Nearly 200,000 individuals viewed the pages, covering both aquatic and terrestrial invasive species.

Media

Twenty news releases alerting the public about new infestations and invasive species activities in the state were distributed throughout the year to all major Minnesota media outlets. News releases typically generate additional coverage, increasing public awareness of invasive species issues.

We also held five media events on the DNR's ongoing efforts to stop the spread of AIS. The events focused on the following issues: drain plug violations; an invasive species prevention message prior to Memorial Day weekend; announcement of a new zebra mussel infestation in Lake Melissa; enforcement efforts and zebra mussel detecting dog demonstration; and zebra mussel eradication efforts at Christmas Lake. The media events are well attended and help to broadly distribute our messages through television, radio, and print media.

Shows and Fairs

The DNR improved its invasive species exhibit at the Minnesota State Fair, featuring the *Stop Aquatic Hitchhikers!* and *PlayCleanGo* information campaigns. The updated exhibit was more interactive for visitors, highlighting three distinct recreational activities—boating, camping, and hiking—and included invasive species prevention messages relevant to those activities. DNR staff and volunteers from partnering organizations answered visitors' questions.

Invasive Species Program 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.

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. Wildlife Forever works with lake associations, tribal organizations, state and federal agencies, sportsmen's clubs, academia, and fishing industry organizations. In 2014, the collaborative highway billboard campaign reached a potential of more than 36 million impressions in Minnesota.

Minnesota Sea Grant

Minnesota Sea Grant continued to partner with the DNR, Wildlife Forever, U.S. Fish and Wildlife Service (USFWS), National Park Service, U.S. Forest Service, and other organizations to support the *Stop Aquatic Hitchhikers!* and *Habitattitude* campaigns across the Great Lakes region.

- Since 2010, the Great Lakes Sea Grant Network and its partners generated 21.2 million impressions through its regional outreach campaign.
- Outreach efforts continue to build strong partnerships with community groups to increase awareness of AIS issues and actions the public can take to prevent and control AIS spread.
- Minnesota Sea Grant and the Great Lakes Commission conducted a meta-analysis based on six recent AIS outreach assessments in the Great Lakes region. The analysis showed consistent high awareness and understanding of AIS among water recreationists across all assessments. The *Stop Aquatic Hitchhikers!* campaign was largely credited with influencing awareness and desired behaviors.

- Minnesota Sea Grant and Wisconsin Extension co-chaired the 2014 Upper Midwest Invasive Species Conference, held in Duluth, in October. Nearly 700 people attended the conference which showcased local management and the latest research being conducted on invasive species.

- Minnesota Sea Grant continues to provide 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.

Future Needs

- Increase information about invasive species available through various communication channels such as the DNR website, publications, and media outlets.

- Maintain spending on paid public awareness radio/TV spots and newspaper ads to reinforce the high awareness of invasive species by watercraft users in Minnesota and to reach new audiences.

- Continue development of a brand standards document for the DNR's AIS program to deliver consistent messaging, and create a common look and feel across all publications, and clarify legal actions and recommendations necessary to stop the spread of AIS.

- Work cooperatively with specific industry groups such as the aquaculture industry, live bait dealers, water garden and horticulture industry, aquarium trade, and lake service providers, to develop targeted public awareness efforts.

- Expand joint public awareness activities with lake communities through grants and other means.

- Continue to work collaboratively with 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 aquatic invasive species (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 with decontamination efforts at public access sites.
  - 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 2014, DNR conservation officers provided 19,144 hours of AIS enforcement and education, resulting in over 15,790 contacts.

- The weekend of July 11-13 was designated as "Think Zero" – 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 routine or focused AIS enforcement efforts. The dogs improve the efficiency of conservation officers with faster and more thorough inspections of water-related equipment.

- Again this year, nine conservation officers designated as water resource enforcement officers continued to dedicate a significant portion of their work toward AIS enforcement.

- Water resource enforcement officers and regional conservation officers staffed several AIS booths at major sport and outdoor shows and events in 2014.

- 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 2012-2014.

Year	2014	2013	2012
number of law compliance checks	13,461	7,974	17,700
number of citations issued	366	405	998
number of written warnings issued	847	688	1,550
percent of law compliance checks resulting in a citation or written warning	9.0	13.7	14.4

Table 6: Summary data for law enforcement AIS roadside check stations in 2012-2014.

Year	2014	2013	2012
number of AIS check stations	27	18	9
number of hours that AIS check stations were in operation	117	79	44
number of inspections that occurred at AIS check station	625	322	139
average delay if no violation (in minutes)	3.0	3.3	3.9
average delay if violation found (in minutes)	10.7	10.8	10.7
violation rate	17.0%	20.2%	31.3%

The data for this year, although still preliminary, include everything except citations and warnings that have not been sent in for entry into the department's records. No major changes to the numbers are anticipated.

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 Division of Enforcement 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

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. Current versions of both statutes and rules are available at www.revisor.leg.state.mn.us. Past annual reports of the DNR's Invasive Species Program are a good source of summaries of annual changes in statute and rule related to invasive species.

The DNR is authorized to list waters as infested with AIS if the water body "contains a population of an aquatic invasive species that could spread to other waters if use of the water and related activities are not regulated to prevent this" or if "the water is highly likely to be infested by an aquatic invasive species because it is connected to a water that contains a population of an aquatic invasive species" (Minnesota Statutes 84D.03). The DNR lists water bodies as infested with certain AIS, such as Eurasian watermilfoil, faucet snail, flowering rush, New Zealand mudsnail, ruffe, round goby, spiny waterflea, white perch, or zebra mussels. The current list of infested waters is posted on the DNR website at www.mndnr.gov/ais.

The DNR also is required to adopt rules (Minnesota Statutes 84D.12) that place nonnative aquatic plant and wild animal species into various regulatory classifications and prescribe how invasive species permits will be issued (per Minnesota Rules 6216.0265). The DNR is authorized to adopt other rules regarding infested waters and invasive species of aquatic plants and wild animals.

Goals

- Continue to support efforts to integrate and improve the comprehensiveness, enforceability, and responsiveness of federal laws regarding noxious weeds, injurious wildlife, and other designations related to invasive species.
- Continue to adopt state rules that designate species as prohibited invasive species, regulated invasive species, and unregulated nonnative species.
- Continue to list waters as infested with AIS.
- Per the strategies in the Minnesota State Management Plan for Invasive Species, "Review state regulations to optimize legal authority for prevention of the import and introduction of invasive species" and "Establish new and maintain/revise/improve existing regulations that address pathways of spread in the state."

Changes to Minnesota Law Regarding Aquatic Invasive Species

The Minnesota Legislature made several modifications to state statutes related to AIS in 2014. Minnesota Statutes were amended as described in the sections below: deletions are shown in strikeout, new text is indicated by an underline, and effective dates are shown inside brackets. Only subdivisions, paragraphs, and clauses to which changes were made in 2014 are presented below.

Process for Listing Infested Waters

- Legislative changes in 2013 made the process more efficient for listing waters as infested with an AIS. Previously, the DNR was required to publish a written designation order in the *State Register*. Changes to 84D.03, and conforming changes elsewhere in Chapter 84D, allow the DNR to list infested waters more quickly and to make the list of infested waters available to the public.

84D.01 DEFINITIONS.
Subd. 8. Infested waters.
"Infested waters" means waters of the state ~~designated~~ listed by the commissioner under sections 84D.03, subdivision 1, and 84D.12. ***[Effective 8-1-2014]***

84D.03 INFESTED WATERS; RESTRICTED ACTIVITIES.
Subdivision 1. Infested waters; restricted activities.
(a) The commissioner shall ~~designate~~ list a water of the state as an infested water if the commissioner determines that…
(c) The presence of common carp and curly-leaf pondweed shall not be the basis for ~~designating~~ listing a water as infested.
(d) The ~~designation of infested waters by the commissioner shall be by written order published in the State Register~~ maintain a list of infested waters and provide access to a copy of the listed waters. ~~Designations~~ Listings are not subject to the rulemaking provisions of chapter 14 and section 14.386 does not apply. ***[Effective 8-1-2014]***
Subd. 3. Bait harvest from infested waters.
(b) In waters that are ~~designated~~ listed as infested waters, except those ~~designated~~ listed because they contain 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:
(2) bait purposes for noncommercial personal use in waters that contain Eurasian water milfoil, when the infested waters are ~~designated~~ 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) harvest of bullheads, goldeyes, mooneyes, sheepshead (freshwater drum), and suckers for bait from streams or rivers ~~designated~~ listed as infested waters, by hook and line for noncommercial personal use. Other provisions that apply to this clause are…
(c) Equipment authorized for minnow harvest in a ~~designated~~ 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 8-1-2014]***

Subd. 4. Commercial fishing and turtle, frog, and crayfish harvesting restrictions in infested and noninfested waters.

(a) All nets, traps, buoys, anchors, stakes, and lines used for commercial fishing or turtle, frog, or crayfish harvesting in an infested water that is ~~designated~~ listed because it contains invasive fish, invertebrates, or certifiable diseases, as defined in section 17.4982, may not be used in any other waters. If a commercial licensee operates in an infested water ~~designated~~ listed because it contains invasive fish, invertebrates, or certifiable diseases, as defined in section 17.4982, all nets, traps, buoys, anchors, stakes, and lines used for commercial fishing or turtle, frog, or crayfish harvesting in waters ~~designated~~ listed as infested with invasive fish, invertebrates, or certifiable diseases, as defined in section 17.4982, must be tagged with tags provided by the commissioner, as specified in the commercial licensee's license or permit. This tagging requirement does not apply to commercial fishing equipment used in Lake Superior.

(b) All nets, traps, buoys, anchors, stakes, and lines used for commercial fishing or turtle, frog, or crayfish harvesting in an infested water that is ~~designated~~ listed solely because it contains Eurasian water milfoil must be dried for a minimum of ten days or frozen for a minimum of two days before they are used in any other waters, except as provided in this paragraph. Commercial licensees must notify the department's regional or area fisheries office or a conservation officer before removing nets or equipment from an infested water ~~designated~~ listed solely because it contains Eurasian water milfoil and before resetting those nets or equipment in any other waters. Upon notification, the commissioner may authorize a commercial licensee to move nets or equipment to another water without freezing or drying, if that water is ~~designated~~ listed as infested solely because it contains Eurasian water milfoil.

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

(d) The commissioner shall provide a commercial licensee with a current listing of ~~designated~~ listed infested waters at the time that a license or permit is issued. ***[Effective 8-1-2014]***

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:

(3) removal of water-related equipment from waters of the state to remove prohibited invasive species if the water has not been ~~designated~~ listed by the commissioner as being infested with that species… ***[Effective 8-1-2014]***

Subd. 4. Persons transporting water-related equipment.

(d) Portable bait containers used by licensed aquatic farms, portable bait containers when fishing through the ice except on waters ~~designated~~ listed infested for viral hemorrhagic septicemia, and marine sanitary systems are exempt from this subdivision. ***[Effective 8-1-2014]***

84D.11 PERMITS.

Subd. 2a. Harvest of bait from infested waters.

(a) The commissioner may issue a permit to allow the harvest of bait:

(1) from waters that are ~~designated~~ listed as infested waters, except those ~~designated~~ listed because they contain prohibited invasive species of fish or certifiable diseases of fish as defined in section 17.4982, subdivision 6… ***[Effective 8-1-2014]***

84D.12 RULES.

Subd. 2. Authorized rules.

The commissioner may adopt rules:

(2) regulating the appropriation, use, and transportation of water from listed infested waters.
[Effective 8-1-2014]

84D.13 ENFORCEMENT; PENALTIES.
Subd. 5. Civil penalties.
(a) A civil citation issued under this section must impose the following penalty amounts:
(4) for placing or attempting to place into waters of the state water-related equipment that has prohibited invasive species attached when the waters are not ~~designated~~ listed by the commissioner as being infested with that invasive species, $500… ***[Effective 8-1-2014]***

Listing Nonnative Species

- The word used to describe the process of categorizing nonnative species was changed from "designate" to "list."

84D.01 DEFINITIONS.
Subd. 13. Prohibited invasive species.
"Prohibited invasive species" means a nonnative species that has been ~~designated~~ listed as a prohibited invasive species in a rule adopted by the commissioner under section 84D.12. ***[Effective 8-1-2014]***
Subd. 15. Regulated invasive species.
"Regulated invasive species" means a nonnative species that has been ~~designated~~ listed as a regulated invasive species in a rule adopted by the commissioner under section 84D.12. ***[Effective 8-1-2014]***
Subd. 17. Unlisted nonnative species.
"Unlisted nonnative species" means a nonnative species that has not been ~~designated~~ listed 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 8-1-2014]***
Subd. 18. Unregulated nonnative species.
"Unregulated nonnative species" means a nonnative species that has been ~~designated~~ listed as an unregulated nonnative species in a rule adopted by the commissioner under section 84D.12. ***[Effective 8-1-2014]***

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 ~~designated~~ listed the species as appropriate… ***[Effective 8-1-2014]***
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, ~~designating~~ listing 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, ~~designating~~ listing the species as an unregulated nonnative species… ***[Effective 8-1-2014]***

84D.12 RULES.
Subdivision 1. Required rules.
The commissioner shall adopt rules:
(1) ~~designating~~ listing prohibited invasive species, regulated invasive species, and unregulated nonnative species of aquatic plants and wild animals; ***[Effective 8-1-2014]***
Subd. 3. Expedited rules.
The commissioner may adopt rules under section 84.027, subdivision 13, that ~~designate~~ list…
[Effective 8-1-2014]

Watercraft Inspection Delegation Agreements

- New language allows for greater flexibility in the liabilities and responsibilities that tribal or local governments will assume when entering into a delegation agreement with DNR.

84D.105 INSPECTION OF WATER-RELATED EQUIPMENT.
Subd. 2. Inspector authority.

(a) The commissioner shall train and authorize individuals to inspect water-related equipment for aquatic macrophytes, aquatic invasive species, and water. The commissioner may enter into a delegation agreement with a tribal or local government where inspection authority as provided under paragraphs (b), (g), and (h) is delegated to tribal and local governments ~~that assume all~~. The delegation agreements may provide for the assumption of legal, financial, and administrative responsibilities for inspection programs on some or all public waters within their jurisdiction.

(g) The commissioner may authorize tribal and local governments that enter into a delegation agreement with the commissioner to conduct mandatory inspections of water-related equipment at specified locations within a defined area before a person places or removes water-related equipment into or out of a water body. Tribal and local governments that are authorized to conduct inspections under this paragraph must:

(1) to the extent called for in the delegation agreement, assume ~~all~~ legal, financial, and administrative responsibilities for implementing the mandatory inspections, alone or in agreement with other tribal or local governments… ***[Effective 8-1-2014]***

Collection and Sampling Added to Inspection

- The definition of inspection was revised to add "collection and sampling" to the activities allowed during inspection of water-related equipment.

84D.01 DEFINITIONS.
Subd. 8b. Inspect.

"Inspect" means to examine water-related equipment to determine whether aquatic invasive species, aquatic macrophytes, or water is present and includes removal, drainage, decontamination, collection and sampling, or treatment to prevent the transportation and spread of aquatic invasive species, aquatic macrophytes, and water. ***[Effective 7-1-2014]***

Invasive Carp

- A new law in 2014 requires DNR to use the term "invasive carp" to refer to carp species that are not naturalized to Minnesota waters, and statutory language in Chapter 97C was altered to comply with this new nomenclature.

Laws of Minnesota 2014 chapter 289, section 67
INVASIVE CARP.

The commissioner of natural resources shall not propose laws to the legislature that contain the term "Asian carp." The commissioner shall use the term "invasive carp" or refer to the specific species in any proposed laws, rules, or official documents when referring to carp species that are not naturalized to the waters of this state. ***[Effective 5-22-2014]***

GAME AND FISH LAWS
CHAPTER 97C
FISHING
97C.417 REPORTING ~~ASIAN~~ INVASIVE CARP.

A person who takes any of the following ~~Asian~~ invasive carp species must report the type of carp taken to the commissioner within seven days of taking… ***[Effective 5-22-2014]***

Invasive Species Training Requirements

- The legislature added new requirements for minnow dealers, leech harvesters under age 18, and commercial fishing licensees to successfully complete invasive species training and certification.

MINNOWS
97C.502 MINNOWS AND LEECHES; INVASIVE SPECIES TRAINING REQUIRED. [NEW]
Subdivision 1. Minnows; invasive species training required. [NEW]
A minnow dealer, and each person working under the minnow dealer's license, must annually satisfactorily complete aquatic invasive species-related training provided by the commissioner before taking, selling, or transporting for sale minnows within the state. ***[Effective 3-1-2015]***
Subd. 2. Training certification required. *[NEW]*
Minnow dealers, and each person working under the minnow dealer's license, must have a valid invasive species training certification in possession while taking, selling, or transporting for sale minnows within the state. A person who only sells minnows for the licensed minnow dealer at a retail location is not required to have a training certification. ***[Effective 3-1-2015]***
Subd. 3. Leeches; invasive species training required. *[NEW]*
A resident under age 18 must annually satisfactorily complete aquatic invasive species-related training provided by the commissioner before taking, selling, or transporting for sale leeches within the state. A resident under age 18 must have a valid invasive species training certification in possession while taking, selling, or transporting for sale leeches within the state. ***[Effective 3-1-2015]***

NETTING AND COMMERCIAL FISHING
97C.821 POSSESSION, SALE, AND TRANSPORTATION OF COMMERCIAL FISH.
Subdivision 1. Transporting and holding commercial fish. *[NEW]*
Subject to the applicable provisions of the game and fish laws, fish taken under commercial fishing licenses may be possessed in any quantity, bought, sold, and transported at any time. Commercial fishing licensees may transport their catch live to holding facilities, if the licensee has exclusive control of the facilities. Licensees must annually provide the legal description and verification of exclusive control on forms provided by the commissioner with the license application. ***[Effective 3-1-2015]***
Commercial fishing licensees may harvest fish from their holding facilities at any time with their licensed gear. The commissioner may prohibit the transport of live fish taken under a commercial fishing license from waters that contain nonnative species, are ~~designated~~ listed ***[Effective 8-1-2014]*** *as infested waters, or are infected with any certifiable disease.*
Subd. 2. Invasive species permit certification. *[NEW]*
(a) A commercial fishing licensee, and each apprentice working under the licensee's commercial fishing license, must annually complete invasive species training provided by the commissioner and pass an examination to qualify to take, sell, or transport commercial fish within the state.
(b) A commercial fishing licensee, and each apprentice working under the licensee's commercial fishing license, must have a valid invasive species training certification in possession while taking, selling, or transporting commercial fish within the state. ***[Effective 3-1-2015]***

Cattail Control in Loring Park Lake

- A new law in 2014 authorized the Minneapolis Park and Recreation Board to remove all hybrid and narrow-leaved cattails from Loring Park Lake.

Laws of Minnesota 2014 chapter 290 section 60
HYBRID AND NARROW-LEAVED CATTAIL CONTROL; LORING PARK LAKE.
Pursuant to permits issued by the Department of Natural Resources in 1997 and 2014 and this section, the Minneapolis Park and Recreation Board is authorized to remove all hybrid and narrow-leaved cattails by mechanical removal and chemical control at Loring Lake in Hennepin County, and replant the shoreland with native species in accordance with the permits issued by the Department of Natural Resources. The authority to remove all cattails under the 1997 and 2014 permits and this section is continuous. ***[Effective 5-22-2014]***

Invasive Terrestrial Plants and Pests Center

- A new law asks the University of Minnesota to establish an Invasive Terrestrial Plants and Pests Center to "research and develop effective measures to prevent and minimize the threats posed by terrestrial invasive plants, pathogens, and pests, including agricultural weeds and pests."

Laws of Minnesota 2014 chapter 312 article 13 section 44
INVASIVE TERRESTRIAL PLANTS AND PESTS CENTER.
Subdivision 1. Establishment.
The Board of Regents of the University of Minnesota is requested to establish an Invasive Terrestrial Plants and Pests Center to prevent and minimize the threats posed by terrestrial invasive plants, other weeds, pathogens, and pests in order to protect the state's prairies, forests, wetlands, and agricultural resources. With the approval of the board, the College of Food, Agricultural and Natural Resource Science, in coordination with the College of Biological Sciences, shall administer the center utilizing the following departments:

(1) Entomology;
(2) Plant Pathology;
(3) Forest Resources;
(4) Horticultural Science;
(5) Fisheries Wildlife and Conservation Biology;
(6) Agronomy and Plant Genetics;
(7) Plant Biology; and
(8) Ecology, Evolution, and Behavior.

The college may also utilize the following research and outreach centers in achieving the purposes of this section: Cloquet Forestry Center; North Central Research and Outreach Center; Northwest Research and Outreach Center; Southern Research and Outreach Center; Southwest Research and Outreach Center; West Central Research and Outreach Center; Rosemount Research and Outreach Center; Horticultural Research Center; and Sand Plain Research Center. ***[Effective 7-1-2014]***

Subd. 2. Purpose.
The purpose of the Invasive Terrestrial Plants and Pests Center is to research and develop effective measures to prevent and minimize the threats posed by terrestrial invasive plants, pathogens, and pests, including agricultural weeds and pests, in order to protect the state's native prairies, forests, wetlands, and agricultural resources, by:

(1) creating a prioritized list of pest and plant species that threaten the state's prairies, forests, wetlands, and agricultural resources and making the list publicly accessible; and

(2) conducting research focused on the species included on the prioritized list developed under this subdivision that includes:

(i) development of new control methods, including biocontrols;
(ii) development of integrated pest management tools that minimize nontarget impacts;
(iii) research projects focused on establishment prevention, early detection, and rapid response;
(iv) an analysis of any consequences related to the management of prioritized species to the state's water, pollinators, and native prairies and other native species; and
(v) reports on the results that are made publicly accessible. ***[Effective 7-1-2014]***

Subd. 3. Report.
By January 15, 2015, as a condition of the appropriation provided under this act, the Board of Regents of the University of Minnesota shall submit a report to the chairs and ranking minority members of the house of representatives and senate committees and divisions with jurisdiction over the environment and natural resources and agriculture on: (1) the activities and outcomes of the center; and (2) any recommendations for additional funding for education, implementation, or other activities. ***[Effective 7-1-2014]***

Local Government Aid for Aquatic Invasive Species Prevention

- The legislature created a new program in 2014 to distribute money to counties for AIS prevention. The money will be allocated to counties based on the number of watercraft trailer launches and watercraft trailer parking spaces in each county. Counties are required to submit plans for the use of this aid to the DNR.

CHAPTER 477A. LOCAL GOVERNMENT AID
477A.19 AQUATIC INVASIVE SPECIES PREVENTION AID.
Subdivision 1. Definitions.
(a) When used in this section, the following terms have the meanings given them in this subdivision.
(b) "Aquatic invasive species" means nonnative aquatic organisms that invade water beyond their natural and historic range.
(c) "Watercraft trailer launch" means any public water access site designed for launching watercraft.
(d) "Watercraft trailer parking space" means a parking space designated for a boat trailer at any public water access site designed for launching watercraft.
Subd. 2. Distribution.
The money appropriated to aquatic invasive species prevention aid under this section shall be allocated to all counties in the state as follows: 50 percent based on each county's share of watercraft trailer launches and 50 percent based on each county's share of watercraft trailer parking spaces.
Subd. 3. Use of proceeds.
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. The guidelines set by the county board may include, but are not limited to, providing for site-level management, countywide awareness, and other procedures that the county finds necessary to achieve compliance. The county may appropriate the proceeds directly, or may use any portion of the proceeds to provide funding for a joint powers board or cooperative agreement with another political subdivision, a soil and water conservation district in the county, a watershed district in the county, or a lake association located in the county. Any money appropriated by the county to a different entity or political subdivision must be used as required under this section. 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.
Subd. 4. Payments.
The commissioner of revenue must compute the amount of aquatic invasive species prevention aid payable to each county under this section. On or before August 1 of each year, the commissioner shall certify the amount to be paid to each county in the following year. The commissioner shall pay aquatic invasive species prevention aid to counties annually at the times provided in section 477A.015. For aid payable in 2014 only, the commissioner shall certify the amount to be paid to each county by July 1, 2014, and payment to the counties must be made at the time provided in section 477A.015 for the first installment of local government aid.
Subd. 5. Appropriation.
$4,500,000 in 2014, and $10,000,000 each year thereafter, is appropriated from the general fund to the commissioner of revenue to make the payments required under this section. ***[Effective beginning with aid payable in 2014]***

Training for Offenders

- The following language was new in 2013 and requires individuals who are convicted of an invasive species violation to successfully complete an AIS training course.

CHAPTER 86B
WATER SAFETY, WATERCRAFT, AND WATERCRAFT TITLING
GENERAL PROVISIONS
86B.13 AQUATIC INVASIVE SPECIES PREVENTION PROGRAM.
Subd. 1a. Training for offenders.
A person who is convicted of or subject to a final order for a violation of chapter 84D involving water-related equipment must successfully complete the training course in subdivision 1 before continuing operation or use of water-related equipment. ***[Effective 7-1-2015]***

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 2014, a number of additions were made to the list of prohibited and regulated invasive species through an expedited permanent rule. The additions listed below became effective June 30, 2014.

The following species were designated as prohibited invasive species (Minnesota Rules 6216.0250):

- water hyacinth *(Eichhornia crassipes)* Solms;
- Amur sleeper *(Perccottus glenii)* Dybowski;
- crucian carp *(Carassius carassius)* Linnaeus;
- Eurasian minnow *(Phoxinus phoxinus)* Linnaeus;
- European perch *(Perca fluviatilis)* Linnaeus;
- largescale silver carp *(Hypophthalmichthys harmandi)* Sauvage;
- Oriental weatherfish *(Misgurnus anguillicaudatas)* Cantor;
- Prussian carp *(Carassius gibelio)* Bloch;
- roach *(Rutilus rutilus)* Linnaeus;
- stone moroko *(Pseudorasbora parva)* Temminck & Schlegels;
- wels catfish *(Siluris glanis)* Linnaeus;
- western mosquitofish *(Gambusia affinis)* Baird & Girard;
- yabby *(Cherax destructor)* Clark;
- faucet snail *(Bithynia tentaculata)* Linnaeus;
- quagga mussel *(Dreissena bugensis)* Andrusov; and
- red swamp crayfish *(Procambarus clarkii)* Girard.

The following species were designated as regulated invasive species (Minnesota Rules 6216.0260):

- banded mystery snail *(Viviparus georgianus)* I. Lea; and
- red-eared slider *(Trachemys scripta elegans)* Wied-Neuweid.

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.

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

Highlights

Watercraft Inspections

In 2014, both the DNR and tribal or local units of government (LGUs) had authorized watercraft inspectors stationed at public water accesses across Minnesota.

- Approximately 124 DNR watercraft inspectors worked the majority of the open water season.
- Through delegation agreements, tribal governments and LGUs employed an additional 363 DNR trained watercraft inspectors throughout the state
- Assisted the Division of Enforcement with staffing 27 AIS check stations around the state.
- Conducted 21 AIS volunteer training sessions that resulted in 313 trained AIS volunteers around the state who can educate watercraft users at public water accesses on how to inspect their watercraft.

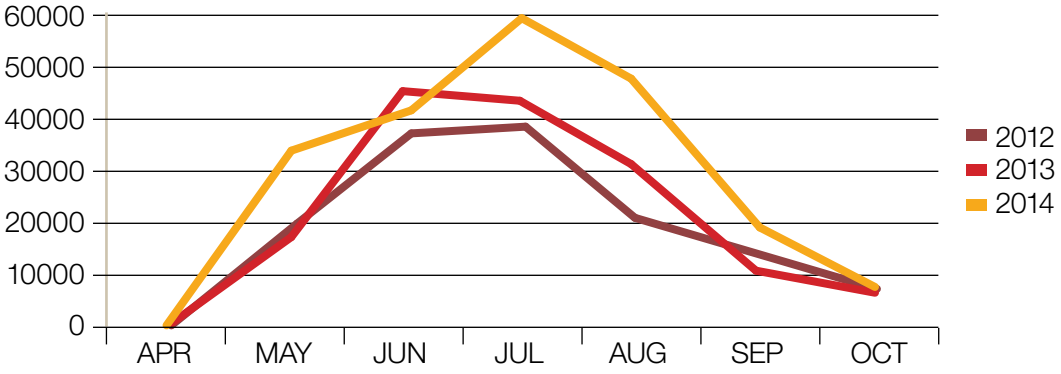
Inspections began in late April and continued though the end of October. During this 25-week period, DNR watercraft inspectors logged 68,670 inspection hours. A total of 119,874 watercraft/trailers were inspected by DNR staff and another 88,948 were inspected by watercraft inspectors authorized under a delegation agreement.

Table 7. Number of watercraft inspections conducted and total number of inspection hours completed by authorized DNR watercraft inspectors in 2012, 2013, and 2014. Totals are rounded values.

DNR Inspections	2014	2014*	2013	2012
Total inspections	120,000	120,000	123,000	102,600
Total inspection hours	68,000	49,550	66,800	65,880
Inspections per hour	1.76	2.4	1.84	1.56
Inspections by DNR Region (included in total above)				
Northwest - 1	26,500		28,500	24,600
Northeast - 2	14,100		17,900	11,500
Central - 3	74,900		72,600	64,800
Southern - 4	3,600		4,000	1,700

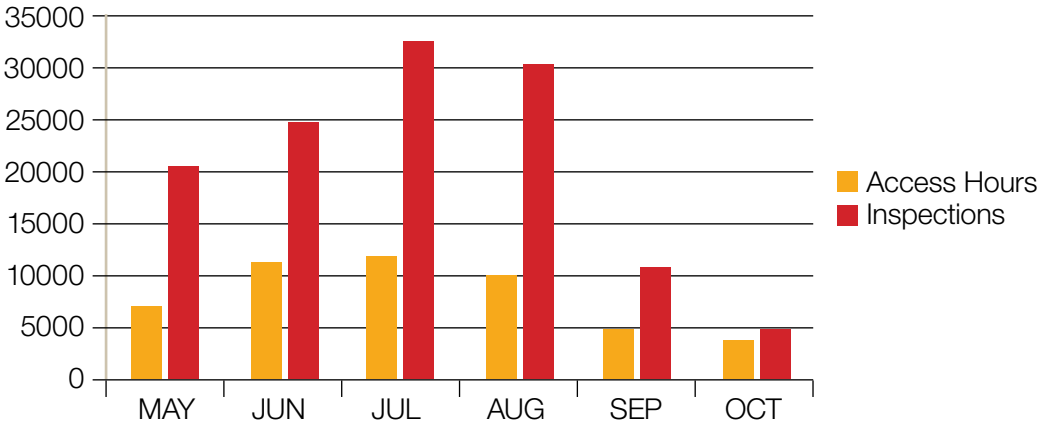
*With the addition of Level 2 inspectors, there are many times that more than one inspector is present at an access. Record keeping changes in 2014 allow the DNR to more accurately report the number of hours that inspectors were present at accesses regardless of how many inspectors are actually working.

DNR Watercraft Inspections Per Month



Authorized watercraft inspections per month during the 2012-2014 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.

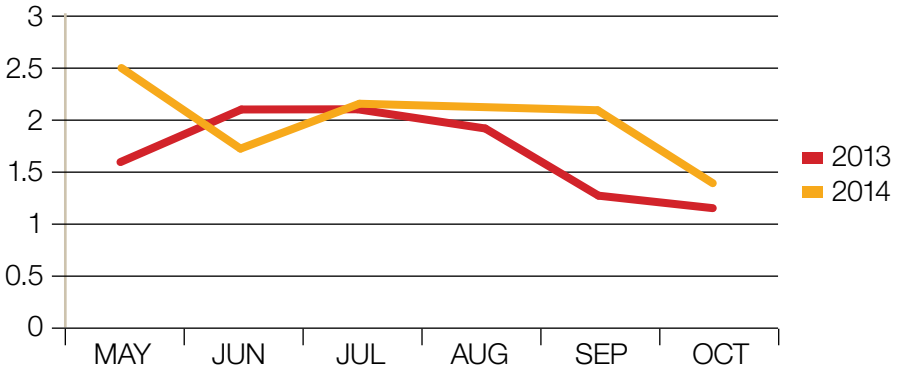
How are the Hours Distributed?

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 Watercraft Inspection Program's tiered system, the Invasive Species Program also offered approximately 10,000 hours of DNR watercraft inspector time through grants to local groups. The criteria for these grants included the waterbody being a destination for boaters leaving zebra mussel infested waters, having high use, being near infested waters and being located in a high use or popular destination area. The DNR also provided grants to local units of government who had delegation agreements to hire their own authorized watercraft inspectors. See the Partnership section on page 36 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 68,000 inspection hours for 2014, and 66,800 inspection hours for 2013. The drop in inspections per hour during the month of June can be attributed to high water across much of the state and an associated decline in recreational watercraft use.

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 2014, DNR, tribal, and LGU watercraft inspectors intercepted numerous watercraft arriving at accesses in violation of state laws. In 2014, approximately 6% (7,292 occurrences) of the watercraft inspected had the drain plug in when they arrived at the access, a slight decrease from the 7% violation rate in 2013. 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.

- 2,550 watercraft arrived at an access with vegetation attached compared with 1,247 in 2013, with the highest number occurring in Region 3 both years.

- Watercraft inspectors found zebra mussels on 238 incoming watercraft in 2014 (2013 had 134 occurrences); 61 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 194 watercraft arriving with zebra mussels attached; there were also 24 in Region 1, and 18 in Region 2. Two watercraft were found with zebra mussels attached during road checks.

- During the 2014 inspection season, watercraft inspection staff forwarded 166 of these violations to the DNR Division of Enforcement for additional follow-up. Thirty nine surveys were not forwarded to enforcement due to data entry errors.

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

Decontamination Units

In 2014, 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 1,568 decontaminations of varying types. The decontamination units were situated at high-use watercraft accesses on zebra mussel-infested water bodies.

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 2014. 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.

In addition, DNR made 27 grants to tribal governments or LGUs to help fund local watercraft inspection efforts in 2014. 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 receive grants also were able to complete delegation agreements and hire authorized watercraft inspectors to support local watercraft inspection programs. A total of 16 tribal governments and LGUs completed new delegation agreements in 2014. There were 43 active delegation agreements during the 2014 season, and these LGUs and tribal governments hired an additional 363 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. A total of 88,948 surveys were completed by tribal or LGU inspectors in 2014. This is an increase from 64,177 completed surveys during the 2013 open water 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 21 AIS volunteer training sessions that resulted in 313 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 2015, the Watercraft Inspection Program plans to complete 60,000 hours of combined Level 1 and Level 2 watercraft inspection, with at least 2,400 days of Level 2 watercraft inspection at public accesses around the state. Each year we refine and implement a continuous improvement process to increase our efficiency. In the winter of 2014-2015, the Watercraft Inspection Program staff and leadership are reviewing and updating the processes for decontamination unit deployment in the state.

We also will review 2014 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.

We also plan to explore options for increasing the availability of decontamination units operated by the state, LGUs, and private entities and to implement online refresher training for returning AIS volunteers.

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 2014, the DNR issued 265 permits and 207 grants totaling $660,000 to support management of invasive aquatic plants by partners. The trend of increases in numbers of permits and grants issued continued in 2014 by comparison with the preceding three years.

In 2014, the DNR Invasive Species Program revised our approach to issuance of Invasive Aquatic Plant Management Permits (IAPMP) to give partners more time to plan, arrange, and complete projects to manage invasive aquatic plants. This change resulted in an increase in the numbers of IAPMP issued during late winter and early spring in 2014 by comparison with 2013.

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

In 2014, 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 IAPMP issued in 2014 increased by 8% by comparison with the previous year (Table 8). The number of IAPMP issued to allow control of curly-leaf pondweed was greater than the numbers issued for any other species.

In 2014, the Invasive Species Program responded to concerns expressed by citizens that IAPMP were issued at a point in spring that left inadequate time for partners to complete treatments in a timely way. Specifically, the Invasive Species Program began to issue IAPMP in 2014 without field inspection in response to proposals to treat areas that were permitted for such treatment in a previous year and that did not exceed the 15% limit. In the case of Region 3, this resulted in many more IAPMP being issued in late winter or early spring than in 2013 (Table 9).

In 2014, 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 10). 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 2014, and anticipates paying an additional $156,000 for work completed in 2014.

The number of IAPMP varied among DNR regions (Table 11). 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 2014.

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

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

Table 9. Number of IAPMP issued by month in the Central Region in 2013 and 2014.

	Number of permits issued	
Month	**2013**	**2014**
January	0	1
February	0	15
March	13	45
April	2	70
May	87	14

Table 10. Number of IAPMP and grants issued by the DNR for control of curly-leaf pondweed or Eurasian watermilfoil or flowering rush or a combination of these, and the amount of reimbursements.

Year	Number of permits	Numbers of grants	Amount of funding paid as reimbursements under grants
2011	149	54	$ 530,000
2012	197	147	$ 840,000
2013	242	158	$ 610,000
2014	252	207	$ 660,000[1]

[1] This is the amount of reimbursements paid in early December at the time of the writing of this report plus the amount of additional reimbursements that the DNR expects to pay for work done during 2014.

Table 11. Number of permits issued in DNR regions for control of curly-leaf pondweed or Eurasian watermilfoil or both in 2013 and 2014.

Region Location and Number	2013	2014
Northwest - 1	19	17
Northeast - 2	38	37
Central - 3 (North District)	82	78
Central - 3 (South District)	74	90
Southern - 4	29	31
Total	**242**	**253**

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

Purple Loosestrife

In 2014, purple loosestrife, *Lythrum salicaria,* grew abundantly throughout Minnesota. Reports of new populations came from private citizens, government units, and other DNR cooperators. Along with those reports came additional data suggesting increases in the abundance of purple loosestrife at established loosestrife sites throughout the state.

Invasive Species Program staff responded to the reports with increased efforts in 2014. These efforts include methods which have been used historically to monitor and manage the purple loosestrife population. Methods include: Field observation of new and existing populations, long-term experimental transects, biocontrol efforts to manage large populations, and herbicide application to control small, recently discovered purple loosestrife sites.

Reports of purple loosestrife sites were promptly addressed by DNR Invasive Species Program staff. Most reports were of plants re-occurring at sites after several seasons of absence. Only a few new sites were recorded around the state in 2014. Many reports of purple loosestrife were discovered to be native look-alike plants.

The purple loosestrife biocontrol program has been in place since the early 1990s. The program introduced insects on loosestrife sites around the metro and throughout greater Minnesota. Sites where the insects were released have been re-visited on a recurring basis to grade or score the effects of the biocontrol and to ensure adequate insect populations are in

place to maintain management goals. Insects used for biocontrol efforts are gathered from sites with strong populations and transplanted to the new sites. Many cooperators have participated in the biocontrol program including citizens, lake associations, local governments, and consultants.

Demand for insects was high in 2014 and Invasive Species Program staff continually kept abreast of good insect harvesting sites. Insects were released on some new, large sites in 2014, but most releases were on existing loosestrife sites where insect numbers were unable to effectively reduce the loosestrife population.

DNR Invasive Species Program staff are licensed to apply herbicide to aquatic systems in Minnesota. Over the years, the use of herbicide has been reduced in favor of biocontrol methods. Herbicide application is a useful tool in some situations and was used to manage a few new purple loosestrife sites in 2014. Cooperators also applied herbicide to limited areas around the state.

Research

The Minnesota Aquatic Invasive Species Research Center (MAISRC) at the University of Minnesota hosted a meeting in November to identify and prioritize research needs for Minnesota related to high-priority aquatic invasive species. The DNR's Coordinator of Aquatic Invasive Species Management participated in this effort, which included a review of possible research projects to improve management of invasive aquatic plants. In addition, MAISRC is in the process of hiring 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 is a member of the search committee for this new position.

The ERDC continued studies designed to improve selective control of Eurasian watermilfoil with herbicide. Experiments conducted in tanks at a research facility in Texas showed that early season treatment over a broad range of concentrations of the herbicide triclopyr can effectively control Eurasian watermilfoil (Netherland and Glomski 2014). Effective treatments produced exposures lasting more than a week; exposures of three to six days or less produced less control by comparison with those of longer duration.

The ERDC continued studies begun in 2006 on Lake Minnetonka to evaluate the potential of bay-wide treatments with herbicide to provide selective, long-term control of Eurasian watermilfoil. In 2014, ERDC researchers prepared a manuscript on the effects of past applications of triclopyr herbicide to two enclosed bays with narrow inlets, St. Albans and Grays, and an open bay, Gideon's. Treatment of the enclosed bays exposed Eurasian watermilfoil to triclopyr for a longer period of time than did treatment of the open bay. Results indicate that bay-wide treatments with low rates of triclopyr can provide up to two years' control of Eurasian watermilfoil without reducing the distribution or abundance of native aquatic plants.

In 2014, ERDC researchers continued to monitor the aquatic vegetation in bays of Lake Minnetonka where bay-wide treatments were done.

In 2014, ERDC researchers reported new results from continuing studies of the effects on non-target aquatic plants of exposure to auxin-mimic herbicides (Glomski and Netherland 2014). They evaluated potential effects of treatments to control Eurasian watermilfoil on water lilies and bulrush. White water lily, *Nymphaea odorata,* experienced injury that was visually evident across a range of concentrations of triclopyr, though reductions in biomass of the plants were observed only at the higher exposures. It would be useful to conduct additional evaluations of the potential of these native plants to recover following exposure to triclopyr in water depths greater than those in the shallow tanks used in these experiments.

Another recent study by researchers from the ERDC provided additional evidence that foliar applications of 2,4-D, another auxin-mimic herbicide, can reduce the biomass of bulrush species (Mudge and Netherland 2014).

In 2014, 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. 2014). The research was done in two low-fertility lakes in northern Wisconsin. Treatments produced concentrations of herbicide in the lakes that lasted longer than was expected. This resulted in long-term control of Eurasian watermilfoil and reductions in several native monocotyledonous and dicotyledonous aquatic plants.

In 2014, 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 (Madsen et al. 2014). 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 significant support to an evaluation of late-season treatments of flowering rush with herbicide (Wersal et al. 2014).

Students at Concordia College analyzed DNR data on purple loosestrife and biocontrol agents. Jensen et al. (2014) reported a positive relationship between the time since release of beetles and the presence of beetles as well as the grade given to the site to indicate the level of control. Gessler and Marko (2014) reported a relationship between damage by beetles and characteristics of the inflorescence.

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 2014 to issuance of IAPMP (see page 39 and Table 9).

The Invasive Species Program hosted a meeting with stakeholders in the west metro in March 2014, 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.

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

Highlights

New infestations

A complete list of new zebra mussel infestations by region can be found in the Prevention and Containment 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 four lakes.
- 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 a presentation to a lake association on zebra mussel life cycle, biology, and habitat.
- 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 2015.

Region 2

- AIS specialists assisted MAISRC researchers in collecting zebra mussel veligers and adults from Cross Lake (Crow Wing County), Gull 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 work 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 2014.

- The zebra mussel populations in Sand and Little Sand lakes (Itasca County) were monitored with significant help from local residents.

Region 3

- The discovery of zebra mussels in single locations of Christmas Lake and Lake Independence (Hennepin County) provided a unique opportunity for the DNR to attempt to kill the zebra mussels using pesticides. Extensive surveys documented the limited area of infestation, and in cooperation with local partners (Minnehaha Creek Watershed District, Three Rivers Park District, and MAISRC), the DNR treated < 1 acre with the following pesticides: Zequanox (Christmas Lake), EarthTec QZ (Christmas Lake and Lake Independence), and potassium chloride (potash; Christmas Lake). Extensive pre- and post-treatment monitoring (over 200 hours) by the DNR and partners helped assess the short-term efficacy of the treatments, and monitoring in these lakes will continue to help determine if the treatments were successful in eradicating the zebra mussels.

- Laboratory and field trials by the DNR and partners helped assess mortality of the pesticides to zebra mussels. Variable results were seen with the different treatments, and this data will help direct future efforts. Both Zequanox and EarthTec QZ appeared to have caused significant mortality. Due to the approval process, potassium chloride was not applied until late in the season and efficacy will not be known until next season.

- Invasive species specialists drafted and finalized requests for US EPA FIFRA Section 24c Special Local Needs permit for use of EarthTec QZ and FIFRA Section 18 Emergency Quarantine Exemption for use of potassium chloride to control zebra mussels on Christmas Lake and Lake Independence. Both requests were approved.

Region 4

North District:

- AIS specialists conducted multiple surveys and veliger samples to confirm the zebra mussel infestation on Green Lake (Kandiyohi County) and to document spread within the lake. Public dock and shoreline searches on other lakes were negative for zebra mussels.

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. This research will continue in 2015. Preliminary results from the research were presented at the 2014 Upper Midwest Invasive Species Conference.

In a single trial, water samples were collected from pre- and post-filtration in the decontamination units used by DNR's Level 2 inspectors. Water that had not yet been filtered contained zebra mussel veligers, zooplankton, and algae, but post-filtration water contained no veligers or other organic or inorganic particles. These results, while limited in scope, indicate that the filtration in the decontamination units is effective.

DNR staff participated in the MAISRC Technical Planning Workgroup to prioritize future research priorities for MAISRC scientists.

The DNR's efforts to control zebra mussels in Christmas Lake and Lake Independence (see Region 3 activities on page 45), provided unique opportunities to investigate the feasibility and efficacy of zebra mussel control in natural waters.

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 field work. DNR staff also coordinated with watershed districts and county park staff to carry out experimental pesticide applications and related monitoring efforts in Christmas Lake and Lake Independence.

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

Future Needs

We plan to continue research on residual water and veliger transport in recreational watercraft, increasing the scope to include more types of watercraft. 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

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 12. In 2014, seven adult invasive carp were captured using these methods:

Location	Species	Date	Number Caught	Type of Gear
Mississippi River - Pool 5a	Grass Carp	4/06/14	2	commercial
Mississippi River - Pool 2	Silver Carp	7/17/14	1	Contracted commercial
Mississippi River - Pool 2	Bighead Carp	7/17/14	1	Contracted commercial
St. Croix River	Bighead Carp	9/16/14	1	Contracted commercial
Mississippi River - Pool 2	Silver Carp	10/01/14	1	Contracted commercial
Mississippi River - Pool 2	Bighead Carp	10/23/14	1	commercial

The DNR received 18 encounter reports from the public. All reports were followed up in person, by phone, or via email. Four of the reports were confirmed not to be invasive carp based on photographs, ten were unlikely to be invasive carp based on discussions, and a determination could not be made on four encounters. The DNR performed follow-up sampling to attempt to capture a specimen to verify four of the reports, but no invasive carp were captured in these cases.

Upper St. Anthony Falls Lock

The DNR believes that the best way to keep invasive carp out of the upper Mississippi River watershed is to close the Upper St. Anthony Falls Lock, which is administered by the United States Army Corps of Engineers (USACE). The Water Resources Reform and Development Act (WRRDA), which was signed into law on June 10, 2014, requires that the Upper St. Anthony Falls Lock will be closed no later than June 10, 2015 (Public Law 113-121, section 2010).

Lock and Dam 1 Electronic Barrier

In early 2013, the DNR began exploring alternative barrier technologies to prevent upstream movement of invasive carp. The agency took this approach because it was unknown at that time whether the Upper St. Anthony Falls Lock would be closed by federal action.

In May 2013, the DNR contracted with Smith-Root, an electrical barrier engineering firm, to design a barrier utilizing new technology for Lock and Dam 1. This technology, referred to as "sweeping" electrical, uses electricity to move fish away from the lock chamber. The DNR received the completed design and report in December, 2014. Because the Upper St. Anthony Falls Lock will be closed by WRRDA, the DNR will not pursue construction of a barrier at Lock and Dam 1.

Invasive Carp Prevention Projects in Southwest Minnesota

In fiscal year 2013, the DNR received funding from the Outdoor Heritage Fund to place additional barriers in southwest Minnesota. Minnesota DNR's Windom area fisheries office identified seven sites for new projects to prevent the spread of invasive carp into high-value lakes or between watersheds. Because populations of invasive carp are already present in the lower Rock River and Little Sioux River watersheds, these projects were a high priority.

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.

- Okabena Creek - Des Moines River Watershed Breach: The DNR acquired a flowage easement and removed two road culverts. With these culverts removed, the township gravel road acts as a physical berm to separate the watersheds.

- Okabena Creek Barrier: The DNR installed an electric barrier by removing two small culverts and installing a 12 foot by 6 foot electrified culvert. The barrier prevents upstream movement of fish.

- Little Sioux River - Des Moines River Watershed Breach: The DNR worked with the Jackson County Soil and Water Conservation District and a private landowner to build up an earthen dike berm to disconnect the watersheds at this point.

- Little Sioux River - Des Moines River Watershed Breach: The DNR worked with the Jackson County Highway Department and the Minnesota Department of Transportation to install a grate system and tile line caps to prevent fish from moving across a watershed boundary via the tile line system.

- Minnesota River - Des Moines River Watershed Breach: An earthen plug was installed in a ditch to reestablish the historical watershed disconnection.

- Little Sioux River - Rock River Watershed Breach: An earthen plug was installed in a ditch and an outlet structure was modified to reestablish watershed disconnection.

- Illinois Lake Protective Barrier: The DNR is currently in the construction phase for an electric barrier on a wildlife management area downstream of the outlet of Illinois Lake.

Coon Rapids Dam

In 2011, the Minnesota Legislature approved $16 million to fund improvements to the Coon Rapids Dam, including features to make it a more effective barrier against invasive carp movement upstream. Five steel, hydraulically-operated crest gates on the Anoka County side, Phase 1, are installed and operational. Four steel, hydraulically-operated crest gates on the Hennepin County side, Phase 2, are installed and will be operational by the end of March 2015. Based on a 79-year flow record, fish passage by the dam would be possible an average of 4-5 days every ten years, so the Coon Rapids dam may be passable by invasive carp in rare high-water conditions, but it provides redundancy to the barrier at Upper St. Anthony Falls. Three Rivers Park District, which currently owns the dam, will continue to own and operate it.

Partnerships

The Minnesota Aquatic Invasive Species Research Center (MAISRC) received funding from the Legislative-Citizen Commission on Minnesota Resources to examine methods, velocity, and lock chamber deterrents to slow the northward movement of invasive carp. This is the best proposal thus far to potentially limit or slow the spread of invasive carp into the St. Croix and/or Minnesota rivers. The center installed acoustic speakers in lock chamber 8 in spring of 2014. Field investigations and evaluations will continue in 2015. USACE and the DNR are partnering on this project.

The U.S. Fish and Wildlife Service is the lead agency on eDNA sampling for invasive carp. In 2014, 500 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. Only one sample came back positive for bighead carp and zero for silver carp. The positive sample came from Wisconsin waters near La Crosse, Wisconsin.

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 are, or can become, connected during high-water events.

The DNR partnered with the Minnesota Center for Environmental Advocacy on a six-month project to begin developing a process for identifying watershed breaches, or instances where two watersheds that are usually hydrologically separate become temporarily connected during floods or other conditions. If watersheds become

eDNA or environmental DNA (deoxyribonucleic acid) is genetic material collected from the environment, such as a water sample from a lake, instead of a tissue sample from an organism. eDNA is being developed for its potential as a surveillance tool for aquatic invasive species.

connected, even for a short duration, there may be the potential for aquatic species transfer between the two basins. The researcher is using real life examples and GIS data to determine if it is possible to predict where these watershed breaches may be occurring on the landscape. Once identified, field reconnaissance is used to determine the risk of invasive carp movement and the need to establish separation. A report is due in early 2015.

Future Needs

The Minnesota Asian Carp Action Plan[1], finalized in November 2011, was developed by an informal task force that included state and federal agencies, local governments, and other interests. The plan lays out a step-wise approach to assess the threat posed by invasive carp, and focuses on actions to slow their spread and minimize their impact. Since August 2013, a 12-member work group including representatives from government agencies, non-government organizations, scientists, and citizens has been working on an update. The work group solicited comments on the updated plan through a public forum in December 2014. The work group anticipates that a finalized plan will be completed in early 2015, and that some of the plan's recommended actions may require funding sources outside the DNR.

[1]The report was finalized prior to the 2014 statute requiring the use of the term "invasive carp" (Laws of Minnesota 2014 chapter 289, section 67)

Terrestrial Invasive Species Program

Goals

- 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.

A costumed voyageur demonstrates how to brush off boots during a *PlayCleanGo* Day event at Wild River State Park.

- 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.

- Through outreach and education with the public, worked to prevent the introduction of terrestrial invasive species to state-managed lands.

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 to less than one third of its high in 2010.

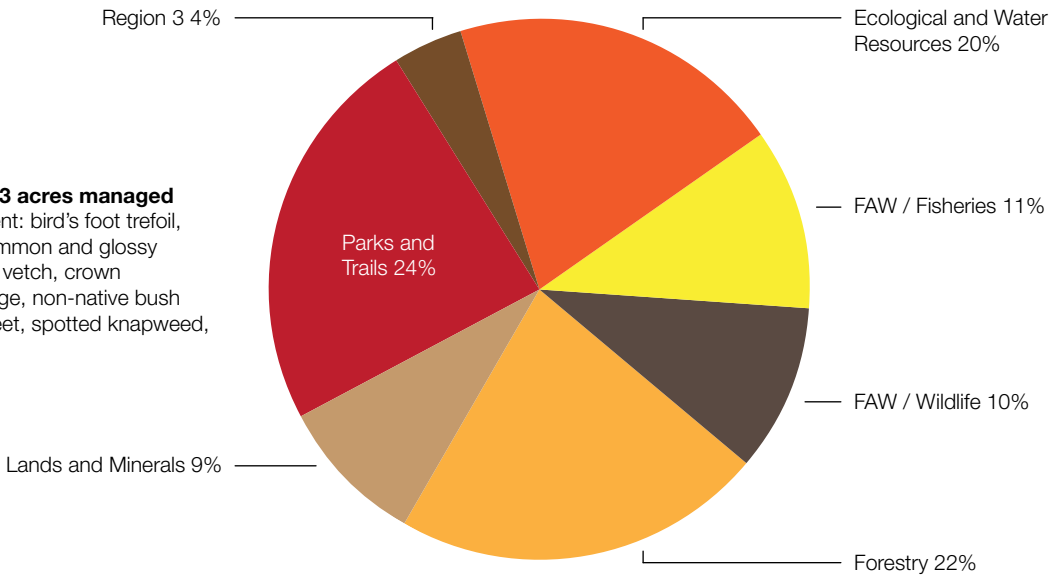
- Fiscal Year 2015: Thirty-six proposalsfor projects on state-managed lands, totaling $341,687, were received; $180,000 was awarded for 26 projects.

Table 13. Funding History for Terrestrial Invasive Species Program.

Fiscal Year/s	Dollars Awarded	Acres	Number of Projects
2006-2007	$365,000	27,375 acres[1]	31
2008	$435,660	26,523 acres	32
2009	$610,807	40,000 est. acres	47
2010	$606,777	27,955 acres[2]	42
2011	$438,000	18,258 acres	33
2012	$178,340	24,989 acres[3]	26
2013	$160,000	7,547 acres	22
2014	$144,249	11,860 acres	18
2015	$180,000	in progress	26

[1] All fiscal years include both inventoried and managed acres
[2] + 40,000 acres from aerial survey
[3] +13,500 acres from aerial survey

Terrestrial Invasive Species Program - Fiscal Year 2014 Funding Distribution



Total $144,249 • 18 projects
11,027 acres inventoried • 833 acres managed
Species targeted for management: bird's foot trefoil, black locust, Canada thistle, common and glossy buckthorn, common tansy, cow vetch, crown vetch, garlic mustard, leafy spurge, non-native bush honeysuckles, Oriental bittersweet, spotted knapweed, and wild parsnip

Outreach and Communication

- In 2014, 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 10,600 people liked the *PlayCleanGo* Facebook page as of November 2014.
- The second annual *PlayCleanGo* Day was held June 14, 2014, at ten Minnesota State Parks and three parks in the Three Rivers Park District. Volunteers shared information materials with visitors and demonstrated steps visitors could take to prevent the spread of invasive species.

Play Clean Go™
STOP INVASIVE SPECIES IN YOUR TRACKS.
PlayCleanGo.org

- 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 for 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 was submitted to the USDA APHIS Technical Advisory Group (TAG). The petition was an additional test plant list of species to undergo host-specificity testing including additional threatened and endangered mustard species as suggested by TAG members. As of November 2014, no response to the petition had been received from TAG.
  - The U.S. Forest Service publication "Biology and Biological Control of Garlic Mustard" was published with a DNR staff member as co-author (Becker et al. 2013) and was made available online.
  - In July 2014, a $140,000 grant to the DNR began for three years of research on the biological control of garlic mustard. Funding for this effort is from the Environment and Natural Resources Trust Fund as recommended by the Legislative-Citizen Commission on Minnesota Resources.

Partnerships

- The *PlayCleanGo* program is built around bringing in partners to help spread the word by using consistent messaging. As of November 2014, *PlayCleanGo* had 45 partners within Minnesota and 40 partners in other states and Canada (www.playcleango.org/partners).

A partner photographs the invasive vine Japanese hops along the Root River.

- The Minnesota Invasive Species Advisory Council (MISAC) continues to provide a mechanism for interagency and interorganization communication and collaboration on invasive species issues (www.mda.state.mn.us/misac). The DNR was an active participant in 2014. MISAC produced a 2014 wall calendar highlighting 12 invasive species and issues of concern to Minnesotans.

- The DNR is a member of the Noxious Weeds Advisory Committee convened by the Minnesota Department of Agriculture (MDA) to evaluate plant species for invasiveness, difficulty of control, cost of control, benefits, and amount of injury caused by the species. For each species evaluated, the committee recommends to the MDA commissioner whether or not the species should be placed on a noxious weed list.

- The Terrestrial Invasive Species Program partnered with staff from DNR, MDA, University of Minnesota Extension, Conservation Corps of Minnesota, and Minnesota Department of Transportation to survey for invasive Japanese hops, Japanese knotweed, and Oriental bittersweet along the Root and Cannon rivers.

Future needs

- Within the DNR, there is a need to expand the amount of awareness, data, tools, and resources to reduce impacts caused by invasive plants 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 need for outreach materials, data, tools, and resources to reduce the impacts of invasive species on state-managed 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

Vacant
Communications

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
Southern Region, New Ulm

Keri Hull
Watercraft Inspection Program Supervisor
Northeast Region, Brainerd

Phil Hunsicker
AIS Prevention Planner
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Conservation Officer
Enforcement, New Ulm

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April Rust
Training Coordinator

Dan Swanson
Invasive Species Specialist
Northeast Region, Brainerd

Justin Swart
Watercraft Inspection Program Assistant
Northeast Region, Brainerd

Laura Van Riper
Terrestrial Invasive Species Coordinator

Chip Welling
Invasive Aquatic Plants Management Coordinator

Tina Wolbers
AIS Prevention Planner
St. Paul

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 Contacts
Invasive Species Program Coordinator Susan Burks 651-259-5251
Metro/Southern Forest Health Specialist Brian Schwingle 651-259-5821
Northeast Forest Health Specialist Mike Albers 218-327-4115
Northwest Forest Health Specialist Jana Albers 2 18-327-4234
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

MDA Pest Mitigation and Biocontrol Unit, Plant Protection Division
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)
Minnesota Department of Agriculture, Lucia Hunt, 2014 Chair, 651-201-6329
USDA Forest Service, Robert Venette, 2014 Co-chair, 651-649-5028
In 2015, Robert Venette is MISAC Chair and Kathy Kromroy (MDA) is MISAC Co-Chair

Minnesota Noxious Weed Advisory Committee
Minnesota Department of Agriculture, Anthony Cortilet, 651-201-6538

Appendix C

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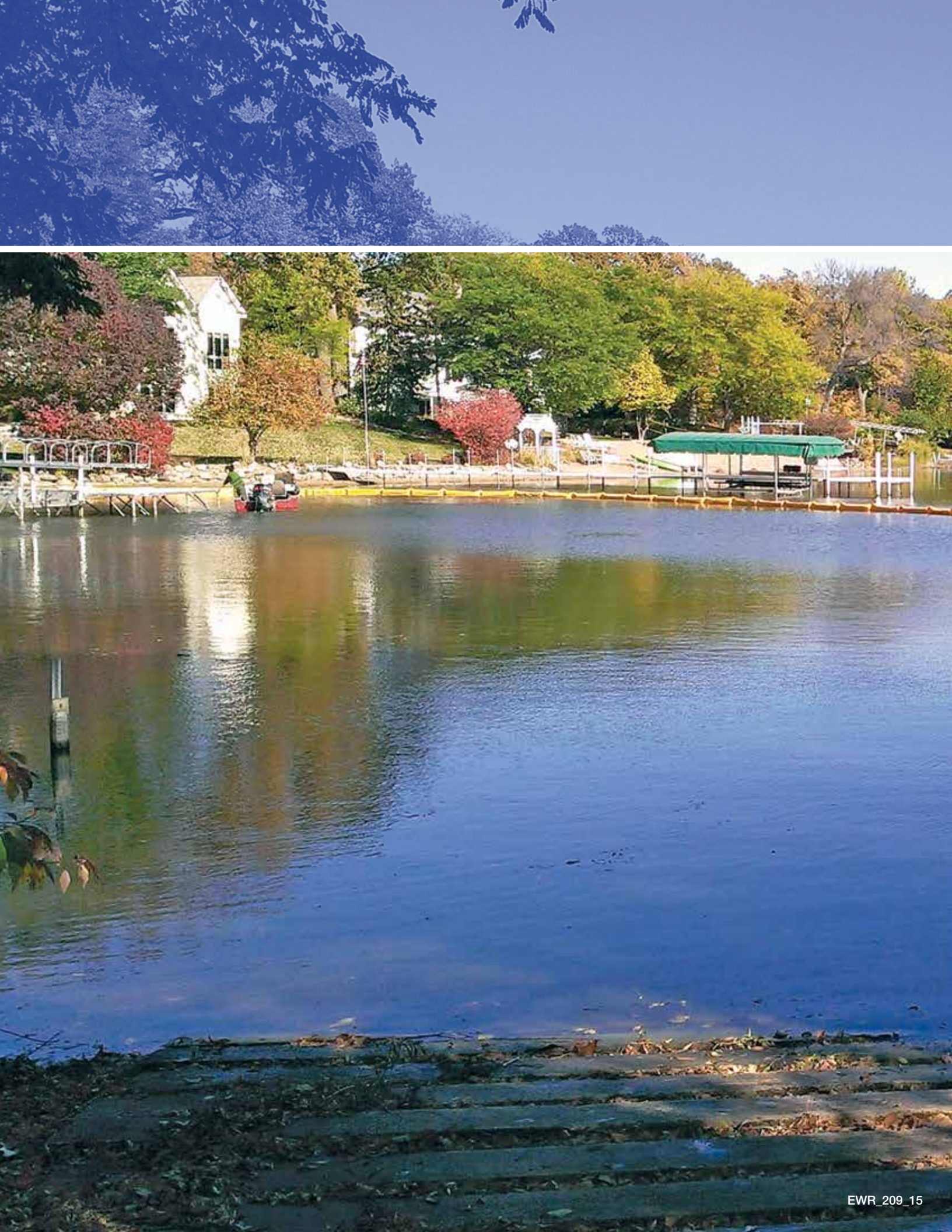

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