



WISCONSIN DEPARTMENT OF NATURAL RESOURCES

INVASIVE SPECIES REPORT 2022

*OUTREACH
PREVENTION
DISCOVERIES
MANAGEMENT*

About this report



The goal of this report is to provide updates on the Department of Natural Resources' invasive species programs and progress in managing invasive species from July 1, 2020, to June 30, 2022. During this time the department engaged partners in early detection, management, and control, implemented a coordinated response framework, and provided training and outreach for businesses and other stakeholders.

The legislature has defined invasive species as “non-indigenous species whose introduction causes or is likely to cause economic or environmental harm or harm to human health.”

These species can be aquatic or terrestrial weeds, insect pests, nuisance animals, or disease-causing organisms.

The impact of invasive species.

Invasive species can occur in all types of habitats and affect both urban and rural areas throughout Wisconsin. The negative effects on our environment and citizens include damage to natural resources, alteration of aesthetic values, harm to wildlife and human health and a strain on our economy. The costs to manage and control invasive species can be reduced or avoided if invasions are anticipated and prevented.

Why does this matter?

The Invasive Species Identification, Classification and Control Rule (Chapter NR 40, Wis. Adm. Code) classifies invasive species in Wisconsin as Prohibited or Restricted and regulates their transportation, possession, transfer and introduction. It also establishes “Preventative Measures” to slow the spread of invasive species. This rule applies to over 245 species and affects everyone in Wisconsin.

Species Monitoring and Control

Pathway to Success. A Pathways approach is a newer concept in aquatic invasive species (AIS) management and is being adopted throughout the Great Lakes states. For the past few years, Wisconsin has operated under the “pathway lens” to fulfill Goal #1 of the Wisconsin AIS Management Plan which is to “prevent the introduction of new AIS into Wisconsin.” This new way of thinking aims to take a proactive approach by exploring specific pathways that are applicable to the state and then to provide the outreach and resources needed to close these gaps. The seven Pathways include recreational activities and service providers, non-recreational fishing and aquaculture, organisms in trade, transportation and utility corridors, state and federal agencies, maritime commerce, and canals, dams and diversions.



Marinette County LWCD and WDNR staff manually removing European frogbit on the Peshtigo River.



AIS North Regional Coordinator Alex Selle performing an Early Detection Survey, holding up the native species coontail.

Citizen Scientist Success. Landowners in Sheboygan County attended an invasive species presentation given by the Lake Monitoring Protection Network (LMPN) Program’s County AIS Coordinator, Matt Brauer, where they learned of a Prohibited Aquatic Invasive Species, Yellow floating heart. They soon recognized they had it growing in their water garden. Matt coordinated with the landowners and the Regional AIS Coordinator to obtain samples for verification. Matt is presently working closely with the landowners to control the Yellow floating heart in their pond. Through education and outreach events from the LMPN Program partners, we hope to see more success stories of awareness of invasive species.

DNR Property Management by the Numbers

- Over **3983** State Natural Areas volunteer hours for invasive species control and conducting prescribed fires impacting **338** acres on **43** different sites.
- Pesticides were used as part of an integrated pest management approach for invasive plant control across over **36,000** acres of state lands.

Modified Unified Method (MUM) was Conducted in 2021 for Invasive Carp Removal in the Mississippi River. The Wisconsin Department of Natural Resources participated in three intensive invasive carp (bighead, black, silver, and grass carp) removal efforts in Pool 8 of the Mississippi River near La Crosse, Wisconsin since April of 2021. This work was conducted in partnership with the Minnesota Department of Natural Resources, U.S. Geological Survey (USGS), National Park Service, and the U.S. Fish and Wildlife Service.

Developed by the USGS, the innovative MUM combines netting and herding techniques to drive and concentrate invasive carp from large open water areas into small discrete sampling zones for removal. Large block nets, electrofishing gear, seines and sound are used to herd and capture carp. During an event crews use block nets to create compartments or “cells” from which the fish can be driven. The team then uses electrofishing gear and boats outfitted with underwater speakers to herd carp out of each cell. Carp are extremely sensitive to sound and tend to swim away from loud stimuli. Once a cell is cleared, another net is used to close the cell. This process is repeated until all fish are in an area small enough to seine. Then contract commercial fishers assist to seine the zone and remove any carp captured. Native fish are also captured during these surveys but do not seem to respond in the same way as carp, preferring to hide, rather than run, from the sound stimulus. Native fish captured are enumerated and released immediately.

The MUM exercises were designed as part of a response to the commercial capture of 39 invasive silver carp and 12 invasive grass carp in Pool 8 in March 2020. The goal of this work is to remove invasive carp present in Pool 8, curb the potential for carp reproduction, and prevent the establishment of invasive carp in Wisconsin and Minnesota waters. This work takes place in backwaters and side channels and has no impact on the main channel of the Mississippi River or to commercial navigation.

To date, crews have captured 34 carp in April 2021, no carp in October 2021 (seven fish escaped the gear), and six in April 2022. In addition, five carp are tagged with acoustic transmitters to help locate carp habitat and determine fish movement patterns.

eDNA Sampling for Invasive Carp. In June 2021, routine monitoring for invasive carp environmental DNA (eDNA) by the US Fish and Wildlife Service resulted in one positive detection out of 100 sample locations for bighead carp in the Milwaukee River. As a result, additional eDNA samples were collected in September which again resulted in a single positive detection out of 150 samples collected. The sample detected invasive carp DNA, indicating either bighead or silver carp DNA was present. The Wisconsin Department of Natural Resources AIS and Fisheries staff coordinated with the US Fish and Wildlife Service to intensively search the Milwaukee River for invasive carp using nets and electroshocking. No live carp were found. US Fish and Wildlife Service collected 160 samples in May 2022 and no detections of any invasive carp were detected. Routine eDNA sampling will continue from the US Fish and Wildlife Service through their annual eDNA sampling program which monitors the upper Mississippi River, the St. Louis River (Lake Superior tributary), and the Fox and Milwaukee Rivers (Lake Michigan tributaries).

The eDNA sampling cannot specify if the detected DNA was from a live fish or from another source, such as bird feces, water transported in the live well of a recreational boat recently in invasive carp-infested waters, or melted ice used to store invasive carp at fish markets that flowed into storm sewers. However, repeated detections of eDNA over time increase the concern that the genetic material may have come from fish living in the area where the sample was collected.

Prevention remains the most effective tool to protect the Great Lakes from invasive carp. Through campaigns such as Clean Boats/Clean Waters, Drain Campaign and Landing Blitz, the WI DNR and AIS partners continue to educate the public on the importance of clean, drain and dry.

European frogbit

Photos by Amanda Smith



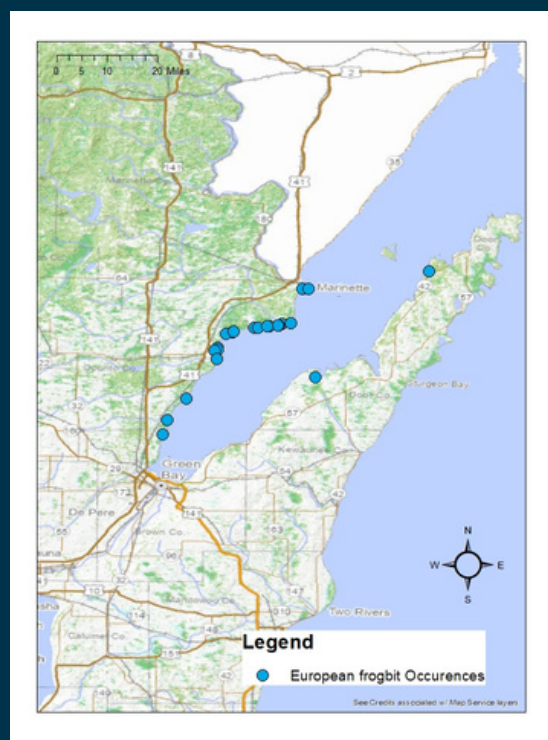
Discoveries

European frogbit (*Hydrocharis morsus-ranae*)

In July of 2021, European frogbit (EFB) was documented for the first time in Wisconsin. EFB is a Prohibited invasive species in Wisconsin because it is a free-floating species with the potential to outcompete and eliminate habitat for native species of plants, and have devastating impacts on local wildlife and fish by restricting fish passage upstream to critical Northern Pike spawning sites. It can also reduce the amount of surface water for waterfowl and migratory bird species. Not only are there immediate negative impacts of EFB, but the area where the EFB was first reported contains 50 percent of all remaining wetlands on Lake Michigan and global ecological significant ecosystems such as diverse emergent wetlands, shrub swamps, lowland forests, a river delta, sandspits, and embayments.



Map of verified locations of European frogbit throughout the Lake Michigan Basin in Northeastern Wisconsin.





Floating marsh pennywort
Photo by Chris Evans

Floating marsh pennywort (*Hydrocotyle ranunculoides*)

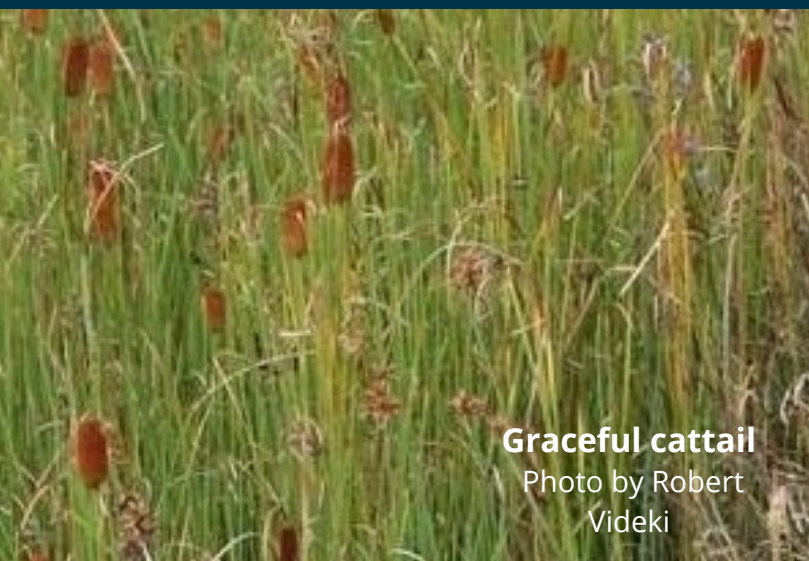
Discovered by DNR staff at the Horicon Wildlife Area in 2020. The Regional AIS Coordinator and Statewide Monitoring Lead surveyed the site to verify the identity of the species. Floating marsh pennywort is classified as a Prohibited species in Wisconsin, which states it is illegal to transport, sell and possess, but the local distribution, suggests this is an introduced population. Given the limited ability to assess the full population distribution within the Horicon Marsh State Wildlife Area, the Aquatic Invasive Species Team worked with the DNR Forestry Aeronautics Team to use drones. They were able to assess the flight height needed to detect pennywort and drones were deployed to delineate the presence of the pennywort. No new populations have been found in Wisconsin.

Butterfly dock (*Petasites hybridus*)

Two populations of butterfly dock were discovered on opposite ends of the state, in Dane County and Douglas County. The unusually large leaves of this unique plant attract the eye of horticulturalists and plant enthusiasts and has resulted in intentional plantings in Wisconsin and the Midwest. This plant can spread rapidly along road and streams, jeopardizing soil stability. The Dane County population was discovered by a citizen, and the Douglas County population was discovered by a DNR partner. The Dane County government will fund the control of the population with coordination by the Upper Sugar River Watershed Association. The Douglas County population was awarded an AIS Early Detection grant.



Butterfly Dock
Photo by William M. Ciesla



Graceful cattail
Photo by Robert Videki

Graceful cattail (*Typha laxmannii*)

The Regional AIS Coordinator and CISMA Coordinator identified a small population of graceful cattail in a private Marinette County pond during a routine visit to assess the removal of a long-term population of yellow floating heart. The local Cooperative Weed Management Area, Wild River Invasive Species Coalition, was assisting with control. Control methods included cutting of the plant below the water line to drown out the plant.



Water lettuce
Photo by Leslie
Mehrhoff

Water lettuce (*Pistia stratiotes*)

A DNR warden received a call from the DNR Tip Hotline about water lettuce in a private pond in Milwaukee County. The warden worked with the landowner to remove all the plants from the pond. Follow-up monitoring has been performed the past two years in surrounding streams to verify none had been accidentally introduced. No new populations have been identified from this find.

Starry stonewort (*Nitellopsis obtusa*)

In early September 2020, a local partner identified a small population of starry stonewort at a boat landing in Marquette County. The survey that detected this population was the result of a response effort to search lakes following another proximal discovery. The Regional AIS Coordinator continues to work with the lake group to assess the population and expand prevention efforts. After yearly monitoring, the population has stayed localized within the lake. In 2021, two new populations were discovered, one in Shawano County and the other in Kenosha County. Wisconsin does currently have 16 lakes and the Green Bay proper with populations of Starry stonewort.



Starry stonewort
Photo by Paul
Skawinski



Japanese stilt grass
Photo by Wisconsin DNR

Japanese stiltgrass (*Microstegium vimineum*)

A citizen from the DNR Rare Plant Monitoring Program identified Japanese stiltgrass in the Coulee Experimental Forest in La Crosse County. The next nearest population is in Iowa and northeast Illinois. Given the colonization of this species in other states and ability to spread rapidly along streams, a team of DNR Forestry, Natural Heritage Conservation, and Water Resources quickly gathered on site with rubber boots, steam cleaners and field guides to assess the population. The population was limited to a trailhead and roadsides. Forestry is coordinating management and will continue to monitor.

Response

Wisconsin's Response to Zebra Mussels Found on Moss Balls. In March of 2020, a report from Western states stated Zebra mussels were being found in a favorite aquarium item, moss balls. The moss balls that were carrying the zebra mussels were being sold in major pet chains across the United States. Wisconsin was proactive in the search for this item in pet stores throughout the state. The Regional AIS Coordinator took the lead in this project and overnight developed a monitoring plan for across the state. In one week, all partners across the state were trained in monitoring pet stores, identification, and data management of the event. After the major pet store chains in Wisconsin were notified, all moss balls were taken off shelves and destroyed. With the help of the partners, no new moss balls with zebra mussels were detected.

Wisconsin's Response to European Frogbit. There was an extensive effort by a Response Team comprised of state and local agencies and partners. Early Detection monitoring in 2021 revealed approximately 21 miles of tributaries, ditches, and wetlands contained EFB in varying degrees of densities. With the help of the WI DNR, Oconto and Marinette Counties received funding to hire 4 seasonal EFB techs who solely monitor and control EFB. From the first documentation to date, June 30, 2022, 103 Early Detection surveys have been performed, approximately 20 acres chemically treated, and 2,907 lbs. have been removed by hand.

Beyond monitoring and control, the Response Team coordinated EFB-specific outreach and education to prevent the spread. Recognizing the numerous invasion pathways that exist in and among the infested areas such as waterfowl hunters, anglers (both shoreline and boating), and the general public, outreach was performed through many different avenues such as media coverage, printed material, and personal contact through our Clean Boats Clean Waters Program.



Photo of European frogbit taken by Amanda Smith in Northeastern Wisconsin along the lake Michigan shoreline .

Enforcement

Conservation Wardens within DNR's law enforcement program -the Division of Public Safety and Resource Protection (DPSRP) – are law enforcement officers responsible for enforcing natural resource laws, recreational safety laws, and traditional policing through community involvement, education, and patrol. One of these is the invasive species law. Such enforcement can include traditional patrol-based enforcement like ensuring boaters are not leaving lakes and rivers with boat trailers full of invasive plants or zebra mussels, but it can also include the illegal trade of invasive species. Conservation Wardens have significantly increased efforts into investigating the illegal trade of invasive species over the past several years. In addition to the traditional patrol-based invasive species work, approximately 50 wardens received additional training on invasive species in trade issues on a larger scale. The DPSRP successfully obtained federal grant funding to support working on this important issue. Below are several examples of this work.

Self-Cloning Marbled Crayfish Nationwide Distribution.

Conservation Wardens investigated a Green Bay man who was raising hundreds of marbled crayfish in his basement, selling them on eBay, then shipping them around the country through the US Postal Service. Marbled crayfish (*Procambarus fallax forma virginalis*), also known as "Marmorcrebs", are the world's only known self-cloning crayfish. They can reproduce without having to find a mate, therefore, the release of a single marbled crayfish can start an entirely new population. Wardens notified natural resource agencies in 12 other states where the seller shipped these to and many of those states began their own investigations. This included notification to Ohio about a supplier from that state. This case resulted in the seizure of over 1,000 marbled crayfish, three convictions for the Green Bay supplier, convictions of others in other states, and based on follow-up by the Ohio DNR, the Ohio supplier was convicted of a federal crime.



Close-up of one of the marbled crayfish carrying over 100 eggs.



Connected tanks in basement.

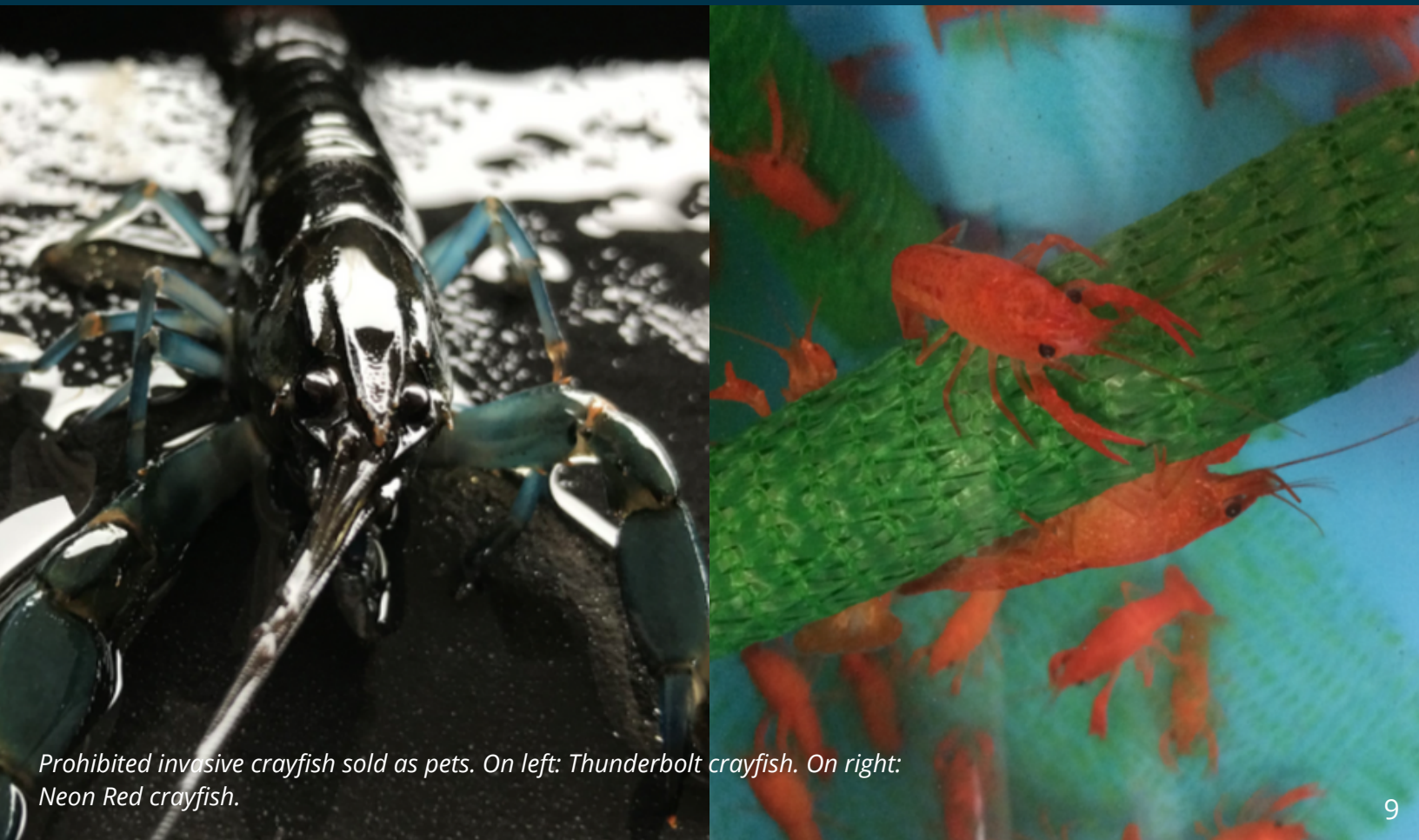


Marbled crayfish packaged for sale to customer.

Fish Market Travels Out of State to Smuggle Red Swamp Crayfish Back to Wisconsin.

Conservation Warden staff have worked with partners across the Great Lakes Basin to educate the crayfish-as-food industry about the red swamp crayfish being illegal to have as a live species in Wisconsin and other states. However, we continue to receive information about various people and businesses having them shipped to Wisconsin. In several cases in the past two years escaped/released red swamp crayfish have been found roaming neighborhoods and have been shown to have come from a nearby crayfish boil where they escaped from. Luckily, no established populations have been discovered since 2009. However, in a 2021 case, the owner of a fish market – which was also the owner of a fish farm – ordered 200 lb. of live red swamp crayfish online from a southern US distributor. The southern US distributor had been educated by our staff about the live species being illegal, so it would not ship the 200 lb. to Wisconsin. But instead, the distributor arranged with the buyer to ship them to Indiana where the Wisconsin buyer drove to, picked the crayfish up, and brought them back to Wisconsin where he sold them in his fish market. Both he and the fish market were convicted of possessing a prohibited invasive species.

Operation Crusty Crab. Conservation Wardens investigated a citizen complaint about an invasive red swamp crayfish for sale in a Milwaukee pet store in 2019. The investigation concluded in 2021 and revealed several wholesale pet distributors had provided 900+ invasive crayfish to pet stores throughout Wisconsin, ranging from Rice Lake to Beloit to Milwaukee to Appleton, even after some of those distributors and stores had been notified of the crayfish being prohibited. One store owner had also previously received a warning for an invasive aquatic plant, but they were still selling that species when contacted during this investigation. Common names of these crayfish included red swamp, Mexican dwarf, Florida, thunderbolt lobster, black sapphire, Texanus mini, and neon red. This case resulted in approximately 145 convictions for the more egregious violations, along with over 1500 warnings.



Prohibited invasive crayfish sold as pets. On left: Thunderbolt crayfish. On right: Neon Red crayfish.

Invasive Bighead, Silver, and Grass Carp for Sale.

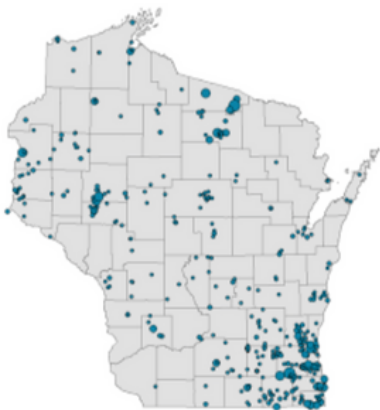
Conservation Wardens were contacted by a citizen concerned about potentially live invasive carp for sale in a Madison store. Invasive carp are required to be eviscerated or have the gill covering severed to ensure they are dead since they can be revived after long periods out of water. Wardens purchased intact invasive carp from the business, which led them to the supplier of the illegal fish – a wholesale fish dealer from southwest Wisconsin. The wholesale fish dealer was found to be picking up thousands of pounds of invasive carp at a time from commercial fishers in Illinois, then transporting them intact back to Wisconsin, sometimes within hours of them being caught. He sold them in Wisconsin and Illinois, but his records could not account for 56,000 pounds of invasive carp. He also had not marked his transport vehicle with his business name or that it was carrying fish. He was convicted on 19 charges (criminal and civil) with total penalties of \$12,504.

DNR – DATCP Collaboration Halts the Sale of Invasive Plants.

Department of Agriculture, Trade, and Consumer Protection staff have the responsibility of inspecting licensed nurseries. As part of their work with nurseries, DATCP educates them on state-regulated invasive species and if found, has those species removed from sale. Overall, the green industry has heard the message and has a high level of compliance with NR 40, however, various retail stores showed a pattern of repeated violations over numerous years. The DNR has the responsibility to enforce NR 40 violations and the Conservation Warden staff took enforcement actions in the form of citations on several repeat offenders.



2015-2021 NR 40 Nursery Findings



Year	Number of Findings
2015	262
2016	283
2017	238
2018	146
2019	123
2020	64
2021	50

An invasive grass carp purchased during the investigation.

Grants

Fisheries EPA Focus Area Projects. Two fisheries projects have been funded by the US Environmental Protection Agency related to the Focus Area 2 initiative on invasive species. In Bayfield County, a headwater tributary to the White River has been the focus of invasive buckthorn removal to improve vegetative diversity and habitat quality in the riparian corridor. The entire stream lies within the White River Fishery Area, established in 1961 to ensure public access to the self-sustaining brook trout and brown trout in this stream. This project is currently funded through 2024. In Sheboygan County, invasive buckthorn, honeysuckle, and multiflora rose are being mapped and controlled within the riparian zones of several trout streams. The project is mainly centered on sections of the Onion River Fishery and Streambank Protection Area, a premier trout fishing property in the region. Nichols Creek Wildlife Area and Schuett Creek Fishery Area are also included in the project, which is anticipated to continue into 2023. The project augments past and ongoing in-stream improvements to the Onion River system and will improve critical riparian habitat while also increasing access for recreational uses of the properties.

The Lake Monitoring & Protection program. The Surface Water Grant program allocates just over \$1M annually to support a network of county staff and their designated agents to coordinate and direct a statewide AIS prevention and lake monitoring program. The Lake Monitoring & Protection Network (LMPN) program is in its second full year of implementation. It has successfully grown to cover 83 percent of Wisconsin counties. Using a new funding model, each county receives an annual non-competitive funding allocation to help support a local AIS monitoring and prevention program consistent with the Department's AIS Plan. LMPN participants work to implement a set of core activities selected in cooperation with DNR's AIS coordinators to address their region's priority prevention needs. By 2023 we anticipate statewide participation will cover 90 percent or more of the state including all counties of the Great Lakes basin.



Garlic mustard workday at Neighborhood House of Milwaukee as part of their WMA grant project.

The Weed Management Area-Private Forest Grant Program (WMA-PFGP) awarded \$57,392 to 5 different partner groups in fiscal year 2022. Projects include, inventory, control and monitoring of invasive plants on private land, along with education and outreach events for school groups and the public.

National Fish and Wildlife Foundation (NFWF) Sustain our Great Lakes (SOGL) 2020 project. This project focuses habitat management, restoration and invasive species control on State Natural Areas (SNAs) and surrounding lands in the Lake Michigan Basin. SNAs are outstanding examples of Wisconsin's native landscape and natural communities. Targeted SNAs are within Conservation Opportunity Areas (COAs), which contain significant ecological features, natural communities and habitat for Species of Greatest Conservation Need (SGCN) identified in the state's Wildlife Action Plan. Many targeted SNAs contain natural communities of global importance (e.g., Kohler Park Dunes and Dunbar Barrens). This project helps fund restoration on 12 SNAs, surrounding DNR lands, and private and public lands close to these properties. Focal ecosystems include prairie, barrens, savanna, forest, rare wetland and dune habitats within SNAs. Major activities include the use of prescribed fire, herbicides, brush removal, seed collecting, selective forest stand thinning and invasive species control. Partnerships with conservation NGOs including Cooperative Invasive Species Management Areas (CISMAs), Watershed Organizations (WOs), and Resource Conservation and Development Councils (RC&Ds) are the primary method to encourage landowners to expand habitat and invasive species monitoring, control and management on their properties, and provide technical assistances and education. The benefits of this project will improve habitat for SGCNs within the SNAs, reduce invasive species which impair habitat quality, and improve connectivity between habitat reserves.

Forest Health

Garlic Mustard Research. A sea of garlic mustard stretches on for as far as you can see in areas of the Langlade County Forest and it's tough to get hardwood tree species to compete and grow into merchantable timber. This is the problem that many foresters are facing once this small mustard becomes established. Traditional control includes broad leaf and pre-emergent herbicides. If there's plenty of time and able bodies to do the manual labor, hand pulling can also be an effective control method. Garlic mustard outcompetes native plants by exuding a chemical through its roots to keep other plants from growing too close. Those same chemicals impact the soil microbiota and that too may have an impact on tree regeneration. Researchers with the Applied Forestry Bureau are working to determine which method of control has the most impact. More details will be available in the next report as this is a long-term study and the first field season has just begun.



A DNR forester checks on the regeneration of hardwoods in a garlic mustard infested stand.



Jake Williams from Regenerative Ruminants stands with the herd of goats and guard dog, Rubus on the Brule River State Forest.

Goat Grazing on the Brule River State Forest. A new project to reduce buckthorn within a red pine plantation on the Brule River State Forest began in May 2022. These hungry goats employed by Regenerative Ruminants in Bayfield County will cycle through the stand three times and devour common buckthorn effortlessly. The project is part of an integrated pest management plan to reduce pesticide use on state land.



Sign posted to mark goat grazing area.

Invasion of the Spongy Moth. In 2022, spongy moth populations increased dramatically in eastern Wisconsin, released by last year's dry, hot weather which favored caterpillar survival. In the Southeast, this pest, formerly known as gypsy moth, increased most rapidly in areas dominated by oaks, especially in landscaped areas where the oaks are grown in turf and human activity is high: parks, picnic areas, campgrounds, and near homes. Defoliation in these situations was intense but localized, and about 2,000 acres of moderate to heavy defoliation were mapped in Walworth and Jefferson Counties. In the Bayfield Peninsula, spongy moth caused ~80,000 acres of contiguous defoliation of aspen stands. Forest health staff saw evidence of spongy moth's introduced fungal and viral diseases of spongy moth but neither caused significant mortality, partly because of relatively dry weather this growing season. Because survival of caterpillars was good except at sites with the most intense and early defoliation, we expect the population of the pest will be high again in 2023, and feeding damage may spread from the most favorable sites that were defoliated this summer.



Spongy moth caterpillars resting on tree trunks.

Last fall, forest health staff alerted the public and DNR property managers of the increasing spongy moth population and urged them to survey the number of egg masses in areas they would protect if threatened with defoliation. Directions on how to do a predictive survey, control options, and links to arborists and aerial applicators are available at the Wisconsin Spongy Moth Portal, a site cooperatively maintained by DNR, DATCP and UW Extension. Surveys at two state properties showed the need to suppress populations of spongy moth in areas of high use by the public: the day use and campground areas of Devil's Lake State Park and the John Muir Trailhead on the Southern Unit of the Kettle Moraine State Forest (SUKM SF). It is not practical or environmentally justifiable to treat the entire property with insecticide. Instead, protection is focused on areas of high use by the public, where the loss of shade trees is not tolerable. Forest health staff arranged an aerial spray of the bacterial insecticide *Bacillus thuringiensis kurstaki* (Btk) at both properties.

For trees that had especially high numbers of egg masses, where the hatching caterpillars might have defoliated the trees before the aerial spray, we added ground-based treatments to reduce the initial population. At Devil's Lake, these trees were either treated by oiling egg masses with Golden Pest Spray Oil or with soil injections of Lepitect, a systemic insecticide. Trunk injections of ArboMectin were done at the SUKM SF. Defoliation in the treated areas was suppressed enough to prevent significant stress to the trees, though some trees had more feeding damage than was hoped for after spraying. On both properties, there were areas of heavier feeding damage outside of the protected areas. Forest health staff also guided the Janesville city forester who arranged for an aerial spray of Btk by helicopter at Lustig Park.

This summer, forest health staff have responded to an increased number of calls and emails requesting guidance on the management of spongy moth, and we will be doing extra outreach to encourage and enable communities and landowners to be able to manage the damage from spongy moth in 2023.



Spongy moth caterpillar.

Outreach

Pet Store Check-ups. The DNR continues to work with its partners to develop monitoring, education, and enforcement policies regarding Organisms in Trade. A pet store working group has developed a standardized protocol and visit log, with plans to conduct pilot visits to pet stores in 2022. Additionally, the DNR has continued its relationship with DATCP to monitor invasive species in licensed nurseries, educate the public, and provide enforcement where necessary.

Wisconsin's Clean Boats, Clean Waters Landing Blitz. A boater education event focused on AIS prevention has taken place every 4th of July holiday week or weekend since 2010. Its success helped inspire the Great Lakes Regional Landing Blitz which now takes place throughout Great Lakes states and provinces. Boat inspectors visited over 350 landings in Wisconsin from July 1-5, 2022. To date, data in the WDNR SWIMS database reports that about 10,000 boats were inspected and over 22,000 people reached with prevention messaging at the launches where they were also given boat towels with the Stop Aquatic Hitchhikers logo as a handy reminder.

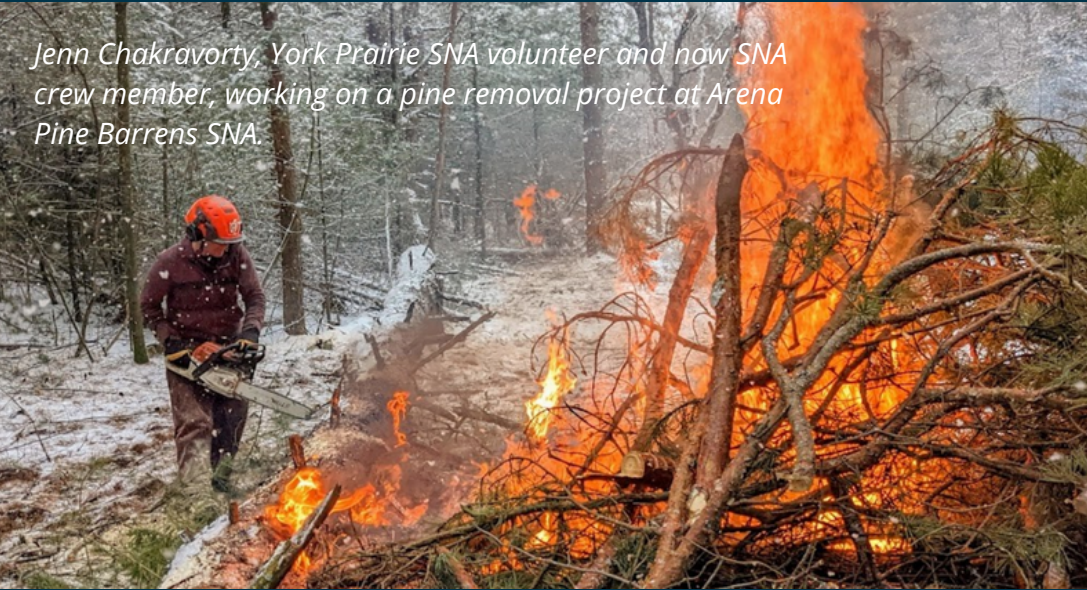
Garden Friends and Fiends. Many invasive species, both aquatic and terrestrial, arrived on the landscape through home gardening. Thousands of gardeners with rain, shoreline and water gardens are being reached through the UW Madison Division of Extension Natural Resource's AIS Program's partnership with Melinda Myers, LLC. Melinda, a former Extension Master Gardener Educator, is nationally known for her gardening expertise. She uses her platforms (e-newsletters, webinars, events including the State Fair, videos, tv and radio appearances) to bring prevention messaging directly to gardeners. At the State Fair alone, she provides invasive species ID and prevention materials directly to 3000 gardeners in gift bags. She speaks directly to fairgoers at 40 appearances and includes invasive species topics whenever appropriate. Just as face to face education for boaters is more impactful than just literature at a boat launch, Melinda's events provide powerful knowledge for gardeners to prevent the spread of AIS.



Mini water garden with AIS flag at WI State Fair, taken by Melinda Myers.

Volunteer Spotlight

Jenn Chakravorty, York Prairie SNA volunteer and now SNA crew member, working on a pine removal project at Arena Pine Barrens SNA.



"I can feel in my mind and body what it means to manage a landscape." - Jenn Chakravorty

"Volunteering has inspired and informed me in the management of our own forest and remnant prairie." - Joerg Kessler

Joerg Kessler, New Volunteer At Maiden Rock Bluff.



Volunteers are a central part of the Wisconsin Department of Natural Resources and are constantly working to help manage and care for our state's natural areas and habitats. Whether it is through citizen-based monitoring, education or adopting a wildlife area, our volunteers do it all. Jenn Chakravorty and Joerg Kessler are just two of our amazing volunteers that found a passion for the outdoors and continuously work to help take care of Wisconsin's precious natural areas.

There are countless opportunities to volunteer all year round with the DNR. Whether is seed-collecting or brush cutting, anyone is welcome and encouraged to come and enjoy the outdoors.

2022 Invader Crusader Awards

The Invader Crusader award winners are selected by the Wisconsin Invasive Species Council as part of Invasive Species Action Month in June. The governor-appointed council advises the DNR and the state legislature on invasive species issues. Each year, the council honors “Invader Crusaders”: individuals, groups or organizations who have made significant contributions to prevent, monitor or control invasive species that can harm Wisconsin’s ecosystems, economy and in some cases, public health.

Nominations come from residents and organizations, and awards are given in several categories. This year’s winners were recognized at an awards ceremony held on June 7th, at the Schmeckle Reserve on the UW-Stevens Point campus.

The 2022 Invader Crusader Award winners and the organizations they volunteer or work for are listed below. Find summaries of their outstanding contributions on the Wisconsin Invasive Species Council website.

Professional Individuals Category Winners

- Jeanne Scherer, Statewide Outreach Coordinator for the University of Wisconsin Division of Extension and Wisconsin DNR
- Jim Elleson, Founder of Quercus Land Stewardship
- Chris Acy, Volunteer & Member Coordinator of the Fox-Wolf Watershed
- Robert “Bob” Stroess, an Administrative Warden at the Wisconsin DNR

Professional Group Category Winners

- Friends of Lapham Peak Unit, Kettle Moraine State Forest, Inc
- Paw Print Park Pack
- Paul Tusler, steward for the Knights Templar Club of Langlade
- The Hansen Family



Recipients of the 2022 Invader Crusader Awards stand with their plaques at the annual awards ceremony held at Schmeckle Reserve on June 7, 2022.

Financials

This section illustrates the funding and spending related to invasive species of DNR programs during the years 2021 and 2022. Two major funding sources are state taxes, and external sources such as federal funds, competitive grants, philanthropy, and gift accounts (Table 1). An example of one of the federal programs that helps fund conservation efforts is the Pittman-Robertson Act, also known as the Federal Aid in Wildlife Restoration Act of 1937, which places an 11 percent excise tax on all ammunition, firearms and archery equipment. Federal programs such as the Pittman-Robertson Act are important sources of revenue that supports conservation efforts throughout Wisconsin.

Expenditures of each program varied, but remained relatively consistent throughout the two reported years (Table 2). These values only represent the amount each program spent on invasive species and does not include all their other expenditures.

Funding Source	2021 Fiscal Year	2022 Fiscal Year	Grand Total
State Taxes	\$1,652,681.08	\$1,695,906.21	\$3,348,587.29
External Sources	\$1,473,642.67	\$1,404,082.51	\$2,877,725.18
2021 & 2022 Total			\$6,226,312.47

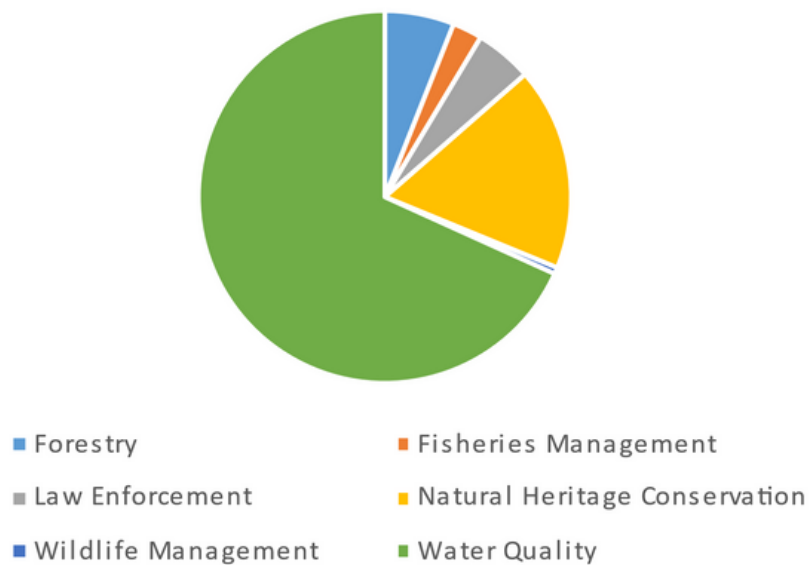
Table 1. Invasive species project funding for 2021 and 2022, by state taxes and external sources of funding including federal funds, competitive grants, philanthropy, and gift accounts

Fiscal Year	Bureau	Staff Salary & Fringe	Supplies & Aids	Grand Total
2021	Forestry	\$104,321.78	\$83,907.32	\$188,229.10
2021	Fisheries Management	\$62,172.05	\$18,355.56	\$80,527.61
2021	Law Enforcement	\$130,785.04	\$24,349.40	\$155,134.44
2021	Natural Heritage Conservation	\$246,452.53	\$305,406.61	\$551,859.14
2021	Wildlife Management	\$0.00	\$17,693.92	\$17,693.92
2021	Water Quality	\$1,444,774.23	\$688,105.31	\$2,132,879.54
2021 Total		\$1,988,505.63	\$1,137,818.12	\$3,126,323.75
2022	Forestry	\$80,397.27	\$101,677.05	\$182,074.32
2022	Fisheries Management	\$63,761.91	\$18,604.60	\$82,366.51
2022	Law Enforcement	\$151,312.22	\$22,835.10	\$174,147.32
2022	Natural Heritage Conservation	\$267,216.59	\$39,017.67	\$306,234.26
2022	Wildlife Management	\$2,357.05	\$15,447.63	\$17,804.68
2022	Water Quality	\$1,670,894.84	\$666,466.79	\$2,337,361.63
2022 Total		\$2,235,939.88	\$864,048.84	\$3,099,988.72
2021 & 2022 Total		\$4,224,445.51	\$2,001,866.96	\$6,226,312.47

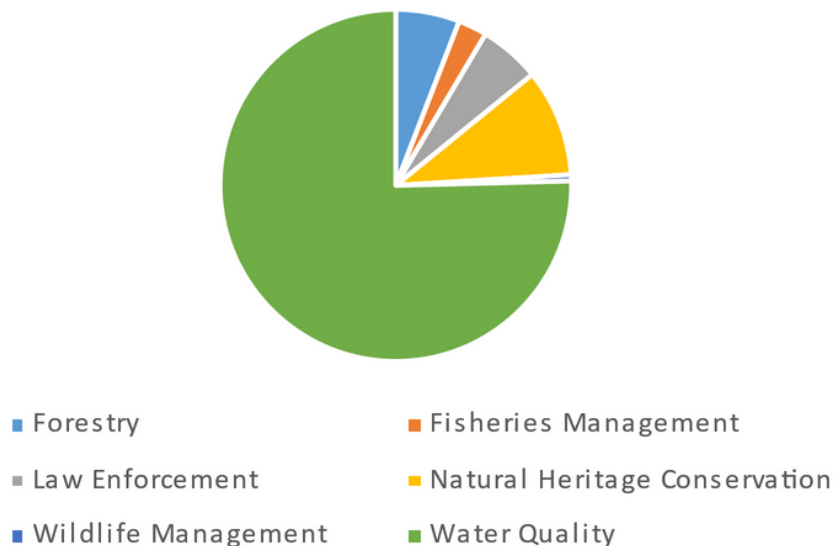
Table 2. The amount spent on work related to invasive species by each DNR program in 2021 and 2022, including the totals for each year as well as throughout the two years.

The grand totals spent by each program are represented visually in the following two pie charts. Water quality had the highest expenditure in both 2021 and 2022, followed by the Natural Heritage Conservation, then Law Enforcement, Forestry and Fisheries Management. In 2021, there was no reported spending from Wildlife Management, but in 2022, there was a small spending sum reported. This proportional spending places an emphasis on the importance of protecting Wisconsin's natural waterways and is funded through an excise tax on gasoline sales estimated to be used in motorboats. Projects like National Fish and Wildlife Foundation's Sustain Our Great Lakes and the Great Lakes Restoration Initiative are reflections of conservation priorities identified by external partners with a focus on Great Lakes aquatic and wetland habitats.

Proportional Spending by DNR Program- 2021



Proportional Spending by DNR Program- 2022



Future Needs

Drone Use: Remote sensing tools are needed to detect invasive species at different spatial scales. Classification algorithms have been used to identify specific species using satellite and aerial imagery. Research has been done to use these tools to identify invasive species in broad landscapes. Remote sensing analysis can help the department understand where invasive species are found across broad landscapes, including large lakes, wetlands, and other DNR-managed lands that could not be easily searched on foot. Advances in drone technology have allowed for herbicide application and biocontrol release. The department currently does not have this capability. Resources for these control platforms will reduce the amount of total herbicide needed and reduce the risk of spraying non-target species.

Continued Funding Needed: Federal Pittman-Robertson funding, which ended in 2020, allowed DNR to work with partners to initiate urgent control of prohibited species. Almost all invasive species require multiple years of regular control work to get the population contained. Further funding is needed to continue this important work to minimize the spread of these newly invading species. CISMAs are critical partners in doing outreach, education, surveying for new invasives and working with landowners to get control work initiated. In 2022, the Lower Chippewa Invasives Partnership ceased field operations due to a lack of funding, and several counties in southern and western Wisconsin lack any regional CISMA partner. Stable funding to establish, maintain, and assist these partners is needed.

Invasive Decontamination Outreach: Funding is needed to expand the department's messaging to help slow the spread of invasive species through promoting voluntary actions by natural resource users in wetland and terrestrial settings. Installing and updating signage, interpretive kiosks, and permanent boot brushes at strategic locations including parks, State Natural Areas, wildlife areas, and forestry resources will help to reinforce messaging. If implemented on a wide scale, this messaging should help to change social norms and practices for those working and recreating in natural places.

Who to contact

General Questions on Invasive Species:

<https://dnr.wisconsin.gov/topic/Invasives>

Wisconsin's Invasive Species Rule:

<https://dnr.wisconsin.gov/topic/invasives/classification.html>

Terrestrial Invasive Plants:

<https://dnr.wi.gov/topic/Invasives/species.asp?filterBy=Terrestrial>

Aquatic Invasive Species-Find your Local AIS Coordinator:

https://dnr.wi.gov/lakes/invasives/Contacts.aspx?role=AIS_POC

Forest Insects or Diseases-Find your Regional Forest Health Specialist:

<https://dnr.wi.gov/topic/ForestHealth/staff.html>

How to get involved

Found an invasive species that you have never seen before? Send photos, details of its location, abundance, and habitat to invasive.species@wi.gov

Reporting an aquatic invasive species? Visit:

<https://dnr.wisconsin.gov/topic/Invasives/report.html>

Want to work with others on invasive species in your area? Join your local Cooperative Invasive Species Management Area (CISMA):

<https://ipaw.org/the-solution/education/cismas/>

Want to control specific invasive species on your land? Find more information here:

<https://dnr.wisconsin.gov/topic/Invasives/control.html>



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