



# Michigan's Invasive Species Newsletter

Michigan's Invasive Species Program is cooperatively implemented by the Michigan Departments of Environmental Quality (MDEQ), Natural Resources (MDNR), and Agriculture and Rural Development (MDARD).



## Invasive Species Eradication—Success Stories

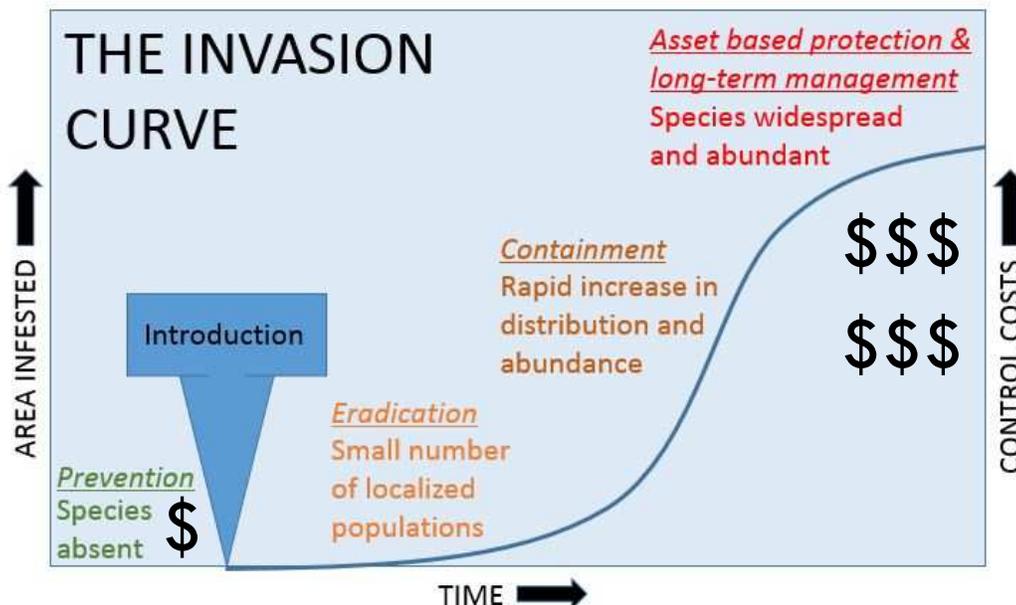
Eradication, as defined by Merriam-Webster, means to do away with completely as if by pulling up by the roots. In the context of invasive species, eradication typically implies that an invasive species has been removed entirely from an invaded area such that the species will not come back without a separate reintroduction.

Worldwide, at least \$21.5 billion is spent annually on biodiversity conservation. Seeing direct impacts from those efforts is sometimes difficult, but with invasive species eradication, positive effects on native flora and fauna restoration is often blatantly apparent.

Eradication success is easiest to achieve at small spatial scales, such as the total removal of an invasive species from a particular property or waterbody, but even successful large scale (e.g., statewide) eradications are possible as evidenced by some of the stories in this newsletter.

Successful eradication, as with many conservation goals, is dependent upon available time, money, and resources. When considering eradication as a goal for dealing with invasive species, we should not only ask whether we have the time, money, and resources to attempt an eradication, but also ask if we can afford NOT to eradicate. To that end, it is important to remember that by definition invasive species can cause harm not only to native species and habitats, but also to human health, agriculture, infrastructure, and the economy. Long-term control and management is expensive and can be exponentially more so than what may initially seem like a very costly eradication effort.

The invasion curve below illustrates the importance of the brief window of time available for successful eradication after initial prevention fails. Prevention should remain a priority, but eradication, particularly early during the invasion process, can also be a realistic management goal.



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Visit Michigan's new invasive species Web page at [www.michigan.gov/invasives](http://www.michigan.gov/invasives)

## Important Lessons Learned from Hydrilla Eradication in Indiana

The invasive aquatic plant, hydrilla, was discovered in Lake Manitou, a 735-acre natural lake in Rochester, Indiana, during a routine aquatic plant survey conducted by the Indiana Department of Natural Resources (IDNR) in August 2006. Hydrilla can form dense mats and shade out native vegetation and drastically alter the ecology of a waterbody, so timely action is critical. At the time of discovery, hydrilla had never been confirmed in a body of water in the Midwest. When found, the plant was scattered throughout a large portion of the northern basin of Lake Manitou indicating it had probably been present for a few years.



In response to the initial discovery, a small treatment was performed within just a few weeks of discovery to reduce hydrilla biomass in the most heavily infested areas. An aggressive eradication plan using aquatic herbicides was initiated at the beginning of the 2007 growing season and continued through the 2016 season at total cost of \$2.6 million including planning, monitoring, and control. As a result of intensive controls, tuber abundance was reduced by >99.9% compared to pretreatment levels by the end of the 6th year of the eradication effort. As of the end of the 10th year of herbicide application, IDNR has stopped treatments in 2017 and instigated additional intensive surveys to monitor the plant community to be certain of the eradication success.

Because of the intensive whole lake management for 10 years and the last few year's efforts to contain treatment to the northern 50% of Lake Manitou where hydrilla was detected, native plant diversity and, more important, quantity has been drastically reduced as a byproduct of the eradication of hydrilla. The return of native plants to the entire lake will almost certainly take several years after the completion of this eradication effort. Because of the length of time that this lake has been under complete aquatic vegetation management, the return of the former diverse native plant community is uncertain and the plant community will need to be evaluated so that any plant reintroduction can be performed with a strategic plan

in mind. Because the herbicide treatment of the lake is no longer required there will be IDNR-funded intensive plant surveys performed at least twice a year for multiple seasons to monitor the plant community.

Efforts like this one taken by IDNR to prevent the spread of hydrilla help protect thousands of Michigan's inland lakes and underline the importance of prevention, detection, and response at multiple spatial scales by a variety of partners.

For more information about this story, please contact Eric Fischer, IDNR, at 317-234-3883 or [efischer@dnr.in.gov](mailto:efischer@dnr.in.gov)

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Visit [www.michigan.gov/invasives](http://www.michigan.gov/invasives), click on the red envelope on the right hand side, enter your e-mail address, select "Invasive Species," and hit submit.



## Asian Longhorned Beetle in Chicago: Swift, Sustained Action Leads to Success

Around the time of the 1998 July 4th holiday weekend, Barry Albach accepted some firewood from a fellow park district worker in Chicago who had trimmed the branches that were hanging over his swimming pool. Albach put the logs in the back of his truck and forgot about them until a few days later when he noticed a strange beetle crawling on the driver's sideview mirror. When he opened the back of his truck, several other beetles were flying around the pile of wood. At the time, Chicago was only the second city in the country to experience an Asian longhorned beetle (ALB) infestation when it was first detected by Albach in 1998.

Several days later, federal officials confirmed that the insects in the firewood were indeed ALBs. Federal, state, and local officials wasted little time taking action as they were well aware of the devastation this invasive insect had wrought on the urban forests in New York.

Much of the initial efforts were aimed at discovering the extent of the infestation and formulating a plan to contain the damage and stop the spread. But officials also wanted to know how the beetle first arrived in the area. Knowing that ALB had probably traveled to this country on packing material from its native China, officials began checking local businesses that may import such goods.

Between July and the end of 1998, survey teams found about 450 infested trees. After waiting until

*"The key to our success in eliminating exotic pests is early detection, and early detection depends on cooperation and the participation of State and local governments, as well as the public and landowners who have day-to-day interaction with the tree resource."*

- Kenneth Knauer, Ph.D.,  
USDA

February of 1999 to prevent spread during warmer months, all 450 street trees were cut down in a matter of days. Over 1,500 mature trees were taken down during the entire course of the eradication.

In 1999 a new chemical treatment using an insecticide was developed by USDA APHIS scientists in China and tested in Illinois and New York and then used operationally in the spring of 2000 in selected areas of Chicago. The protocols developed from the testing recommended that all uninfested trees within 1/8-mile of known infested trees be either treated or removed. The idea of removing healthy trees proved very unpopular among residents and so treatment using the insecticide was carried out. By the end of 2003, Chicago was in its fourth year of treatment with all host trees within a 1/2-mile radius of the Illinois ALB infestation receiving treatment. In all, about 92,000 trees were treated.

The restoration process was vital for both neighborhood landscaping and the emotions of residents. Tree

replacement focused on non-ALB host trees and fostering diversity of tree species. Street trees and trees in public areas were replaced on a one-to-one basis. Where trees were removed on private land, property owners were offered three options. One was a tree-replacement-only option that was based on the diameter at 4.5 feet of the tree that was lost. The second option was a combination of tree and woody landscaping. The third option was to not replace the tree at all.

Surveys conducted under the emergency response guidelines for four consecutive years after the last sign of active ALB presence were negative and eradication was declared in 2008.

Adapted from *Chicago vs. The Asian Longhorned Beetle: A Portrait of Success* by Judy Antipin and Thomas Dilley, USDA MP-1593, October 2004.



Adult Asian Longhorned Beetle

## Beaver Island: A Community Approach to Invasive Phragmites Eradication

Whether they trace their roots back several generations on the island or are recent settlers, residents share a love of Beaver Island's natural beauty. The island's economy is heavily reliant on tourism, and islanders are known for welcoming visitors with open arms. Some years ago, one traveler showed up that was definitely not welcome – invasive phragmites.

As early as 2005, residents along the Lake Michigan shoreline began noticing patches of tall, reed-like grass sending long runners across the sand. Visiting botanists confirmed the bad news – invasive phragmites had taken hold.

Pam Grassmick of the Beaver Island Association has been involved in the fight against invasive phragmites since the beginning. She shared the experience of bringing the community together to eradicate the species at a 2016 Charlevoix, Antrim, Kalkaska, and Emmet County Cooperative Invasive Species Management Area (CAKE CISMA) conference on the island.

Because Beaver Island is also home to native phragmites



*Pam Grassmick leads a tour of invasive species treatment sites on Beaver Island.*

populations, residents relied on the expertise of Dr. Bernd Blossey at Cornell University to analyze plant samples taken from interior lakes and wetlands as well as the lakeshore. Results showed that inland populations were native phragmites, but the growth along the Lake Michigan shoreline was invasive.

Low water levels meant that the plant spread quickly, blocking views and access to the lake. Individual landowners attempted to take the problem into their own hands - digging, mowing, burning, and applying various herbicides to try to stop the spread. This proved, in most cases, to make the situation worse.

In order to tackle the problem head-on, islanders formed a steering committee, including representatives from the county health department, Central Michigan University's biological station, realtors, township leaders, the Beaver Island Association, and the MDNR. This group developed an organized method for surveying and treating phragmites across the island. They launched a multipronged educational campaign to help residents understand the importance of eradicating this invasive shoreline menace.

Landowners were asked to provide permission for survey and treatment of their properties and to make a minimal donation for treatment. In 2007 the steering committee raised over \$29,000 and treated more than 27 acres of shoreline.

## Beaver Island: A Community Approach to Invasive Phragmites Eradication, *cont.*

Using a single chemical application permit from the MDEQ and hiring one certified herbicide applicator to complete the treatments, provided a significant cost saving over individual landowner efforts. In addition, oversight and assistance from the MDEQ and MDNR assured that the herbicide treatment was legal, safe, and protected native shoreline vegetation.

Participating landowners were concerned that untreated phragmites on neighboring properties would reinfest their lots. After careful research and a review by Michigan's Attorney General, the two townships on Beaver Island passed an ordinance outlining procedures for inclusion of private property in "phragmites eradication zones."

The first year's treatment was so successful that only 3 acres needed treatment in 2008, and these were completed using funds left over from 2007. Since that time, ongoing education, surveys, and treatment have kept invasive



phragmites in check – so much so that no treatments were needed in 2016.

Outreach and treatment efforts are now focused on other invaders, including Japanese knotweed, marsh thistle, and garlic mustard. What made the Beaver Island phragmites program a success?

According to Grassmick, it's the personal touch. "I have met or had calls with hundreds of property owners,"

Grassmick said. "No one has declined treatment when

approached." Anyone who has met Grassmick would say there is another element at work – her sincere and contagious passion for Beaver Island, a true jewel of the Great Lakes.

For more information, contact Joanne Foreman, MDNR, at 517-284-5814 or [foremanj@michigan.gov](mailto:foremanj@michigan.gov).

### Resource Spotlight

Download the Midwest Invasive Species Information System mobile app to report and map invasive species where you live and travel:

**MISIN** Midwest Invasive Species Information Network  
[www.misin.msu.edu](http://www.misin.msu.edu)

## Red Swamp Crayfish in Wisconsin— An Integrated Pest Management Approach

The Wisconsin Department of Natural Resources (WDNR) received a report in late August 2009 about “giant lobsters” wandering around a residential neighborhood in Germantown, Wisconsin. The WDNR investigated and found a large population of red swamp crayfish (*Procambarus clarkii*) had established itself in a 6-acre residential storm water pond. Red swamp crayfish are not native to Wisconsin (or Michigan) and pose a threat to native crayfish and other organisms because of their aggressive temperament and feeding behavior. The red swamp crayfish were also found in a nearby 0.5-acre pond and in the channel connecting the two ponds. The resulting publicity led the WDNR to find another established population in a 0.65-acre urban fishing pond in Kenosha, Wisconsin.

The findings in Germantown and Kenosha were the first reports of this crayfish species occurring in Wisconsin. Both populations were located near tributary rivers that drained into Lake Michigan. The WDNR decided to attempt a large scale management project to prevent the movement of red swamp crayfish into the nearby riverine systems. The initial containment efforts included erecting a nicotarp fence around the perimeters of all three ponds and intensive trapping using modified Gee



*Applying insecticide (Pyronyl 303) to control invasive crayfish*

Minnow traps. The initial control efforts included treating the ponds and the shorelines with San-I-King (12.5% bleach solution) and drawing the ponds down for the winter. The use of the bleach was authorized by a Special Local Needs Approval by the EPA under FIFRA.

Results of the initial efforts were mixed. The red swamp crayfish were able to burrow under the nicotarp. Approximately 2,600 crayfish were captured and removed from the Germantown ponds. The bleach solution killed thousands of crayfish in the Germantown ponds and hundreds of crayfish in the Kenosha pond. The ability of the red swamp crayfish to develop complex burrowing systems in the banks of the ponds allowed them to survive winter drawdown and shoreline chemical treatment.

The WDNR further experimented with methods to control the crayfish. The Kenosha pond and shoreline was later treated with an insecticide (Pyronyl 303), authorized by a Section 18 emergency exemption by EPA under FIFRA. The insecticide effectively killed crayfish in the water during treatment but, similar to the bleach, failed to kill crayfish in the shoreline burrows. Aqua Block, often used on shorelines near dams, was placed in and around burrows containing crayfish on a section of pond shoreline. The crayfish were able to burrow out through the Aqua Block. Initial containment efforts continued during this time, which included intensive trapping and maintaining the nicotarp.

## Red Swamp Crayfish in Wisconsin— An Integrated Pest Management Approach, *cont.*

The WDNR eventually developed a long-term solution to control the red swamp crayfish. The Kenosha pond and the 0.5-acre pond in Germantown were filled in. The shoreline of the 6-acre pond in Germantown (as well as the channel connecting the two Germantown ponds) was lined with 12-ounce road fabric and then further lined with number 2 stone. After construction activities were completed, the entire 6-acre pond and channel were treated with Pyronyl 303.

The 6-acre Germantown pond was monitored by WDNR for the next three years to see if any crayfish survived. Six crayfish were captured in 2014, 2 crayfish were captured in 2015, and no crayfish were captured in 2016. The installation of a permanent physical barrier on the shoreline greatly reduced the ability of the crayfish to burrow into the banks of the pond. The physical barrier, coupled with the chemical treatment (Pyronyl 303) in water after construction, effectively reduced the population of red swamp crayfish to a level of “no detect.” The WDNR intends to monitor in 2017 to confirm this finding.

For more information, contact Heidi Bunk, WDNR, at 262-574-2130 or [heidi.bunk@wisconsin.gov](mailto:heidi.bunk@wisconsin.gov).



*Erecting the nicotarp fence for invasive crayfish containment*



*Construction around the perimeter of the pond included adding a 12 ounce road fabric and number 2 stone.*

## Parrot Feather Eradication in Michigan

For the last two summers, there's been no sign of invasive parrot feather in the Wayne County detention basin it once dominated. And that is good news. In the fall of 2013 the MDNR's Wildlife Division responded to the first occurrence of this invasive plant in Michigan. The effort is an example of successful eradication using an early detection and response model in Michigan.

Initially arriving at the scene, MDNR staff found a pond choked with the aquatic invasive plant that can crowd out native species and form dense monocultures that negatively impact flora and fauna. Searching nearby streams and ponds verified the invasion had not spread beyond the detention pond. Within a few weeks of the initial report, the proper permits and permissions were obtained and the parrot feather was treated with herbicide.

The timely response, treatment, and follow-up monitoring are a part of the State of Michigan's Early Detection and Response Program, which aims to find and eradicate new populations of invasive species. The program targets a subset of high-risk invasive species that are either not present or rare in the state. Detecting and addressing invasions before they become established and widespread increases the chances of eradication.

Follow-up surveying in 2014 found small bits of parrot feather,

prompting a second smaller treatment. Additional visits in 2014, 2015, and 2016 found the pond to be parrot feather-free.

Parrot feather, an aquatic invasive plant related to Eurasian



*Before (above) and after (below) pictures of the Wayne County parrot feather eradication.*



watermilfoil, is a prohibited species in Michigan due to its potential negative ecological and recreational impacts on Michigan's water ways. As a prohibited species, parrot feather is illegal to buy, sell, or possess.

Two small parrot feather populations, unrelated to the Wayne County infestation, were discovered in Washtenaw and Jackson Counties in 2016. These new sites emphasize the need for early detection efforts, and based on the successful eradication in Wayne County, these sites should soon be clear of parrot feather too.

For more information on parrot feather, visit [www.michigan.gov/invasives](http://www.michigan.gov/invasives) or contact Tom Alwin, MDEQ, at 517-284-5551 or [alwint@michigan.gov](mailto:alwint@michigan.gov).

### ***Announcing Michigan's 4th Annual Aquatic Invasive Species Landing Blitz, July 1—9, 2017***

An opportunity to help protect your local lake from invasive species by providing outreach to boaters and anglers. Visit [www.michigan.gov/invasivespecies](http://www.michigan.gov/invasivespecies) or contact Kevin Walters ([waltersk3@michigan.gov](mailto:waltersk3@michigan.gov)) to sign up.