

# Control & Management Grant Projects

Michigan Invasive Species Grant Program

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[Link to MISGP story map](#)

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Invasive species are more than a nuisance. Established or widespread infestations can change the make-up of whole ecosystems. The negative effects on native plant and animal populations include displacement, diminishing food and habitat and species reduction. The recreational value of lakes, dunes, fields and forests is degraded by the presence of invasive species. Invasive species are also taking a toll on Michigan’s fisheries, agriculture and timber industries. Both large-scale management efforts and innovative treatment methods are making strides in managing invasive species populations in the state.

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# Phragmites

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## Life after phragmites: Wetland restoration and landowner stewardship

Upper Peninsula Resource Conservation and Development

Award year: 2018

Status: **In process**

Coalition partners will restore 200 acres of coastal and interior wetlands by functionally eradicating phragmites and managing secondary invasive and watch list species that have infested previously treated sites. The project will utilize a cost share model for sustainable management, and early detection and response and best management practices to respond to new detections.

Grant award: **\$191,600**

**Contact:** Darcy Rutkowski, [darcy.rutkowski@uprcd.org](mailto:darcy.rutkowski@uprcd.org)

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## Comprehensive invasive phragmites management planning

Michigan Tech University

Award year: 2015

Status: **Completed**

[Final report](#)

The main goal of this project was to create an adaptive management plan for invasive phragmites control that applies specific treatment techniques and time intervals (e.g., herbicide and cutting/burning schedule, and riparian buffering) based upon specific site conditions. We did this by integrating local and regional knowledge, high-resolution maps from remote sensing data, and modeling of nitrogen (N) loading and hydrological connectivity to identify the best phragmites treatment and monitoring strategies. The outputs of this grant are products of multi-disciplinary integrative efforts between four universities (U Michigan, MSU, Texas A&M and U Northern Iowa), USFWS, DNR and the SB-CISMA.

Grant award: **\$203,177**

**Contact:** Laura Bourgeau-Chavez, [lchavez@mtu.edu](mailto:lchavez@mtu.edu)

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## Upper Peninsula Phragmites Coalition

Upper Peninsula Resource Conservation and Development

Award year: 2015

Status: **Completed**

[Final report](#)

Upper Peninsula Phragmites Coalition partners surveyed for non-native phragmites and 12 additional high threat invasive species along the Lake Michigan shoreline, many interior wetlands and 4,300 miles of right-of-way throughout the entire Upper Peninsula of Michigan. Partners mapped 3,168 new invasive species locations and treated 1,329 acres of infestation in prioritized areas. Landowners, land managers and local units of government became highly engaged in detection and treatment of phragmites and lakeshore stewardship through an active education and outreach program that included 2,651 direct mailings and numerous outreach efforts. As a result, 1,162 landowners directly engaged in treatment. The project will be sustained by six new landowner stewardship entities and a landowner cost share program. The success of this project has allowed UP Phragmites Coalition partners to leverage additional funds to continue response and sustain the landowner cost share program for two more years.

Grant award: **\$210,282**

Contact: Darcy Rutkowski, [darcy.rutkowski@uprcd.org](mailto:darcy.rutkowski@uprcd.org)

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### **Restoration of inner Saginaw Bay coastal ecosystems and community socio-cultural connections through phragmites treatment, control and sustainable long-term eradication**

Bay County

Award year: 2015

Status: **In process**

The project will treat and control invasive phragmites on 725 acres of Saginaw Bay shoreline with an integrated, adaptive, long-term monitoring system for the purpose of restoring coastal wetlands and native shorelands to their natural conditions and re-establishing socio-cultural connections between community residents and the Saginaw Bay.

Grant award: **\$346,398**

Contact: Laura Ogar, [ogarl@baycounty.net](mailto:ogarl@baycounty.net)

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### **Delta County phragmites eradication project**

Delta Conservation District

Award year: 2014

Status: **Completed**

[Final report](#)

The Delta County phragmites eradication project resulted in the successful survey and treatment of a total of 1,290 initial acres of infested coastal and wetland areas in Delta County. Multiple workshops and presentations, delivered by the District and partners such as UPRC&D and Alger Conservation District, provided landowners with information on how to accurately identify phragmites, options for control and management and the monitoring of new growth and regrowth. Through these outreach sessions and treatment activities, the Delta Conservation District became the preeminent reporting and control center for invasive

phragmites in Delta County.

Grant award: **\$255,300**

Contact: Diane Mattson, [dianemattson@deltacd.org](mailto:dianemattson@deltacd.org)

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## Oak Wilt

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### **Belle Isle oak wilt control**

Belle Isle Land Conservancy

Award year: 2016

Status: **Completed**

[Final report](#)

When oak wilt – a disease deadly to trees in the red oak family – was discovered in fall 2016 in trees at Belle Isle Park, the Michigan Department of Natural Resources quickly drafted a plan to contain and manage the disease in order to protect the historic forest and some of the state’s last remaining Shumard’s oaks. In late December, crews completed the first management phase, severing the roots between infected and healthy trees using a plow outfitted with a special cutting blade. In February 2017, the dead oaks were cut down and removed. Selected oaks in or near areas of known oak were injected with a fungistat to prevent infection. The DNR will continue to monitor for infected trees throughout the year.

Grant award: **\$194,000**

Contact: Katy Wyerman, [wyermank@belleisleconservancy.org](mailto:wyermank@belleisleconservancy.org)

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### **Epidemiology, biology and population genetics of oak wilt**

Michigan State University

Award year: 2016

Status: **In process**

Our work will refine Michigan-specific oak wilt control and detection measures designed to reduce spread and improve detection confidence and speed. We will determine key high-risk periods of insect vector activity, fungal spore production and host tree susceptibility and evaluate molecular methods for identification and source of spread.

Grant award: **\$388,733**

Contact: Monique Sakalidis, [sakalidi@msu.edu](mailto:sakalidi@msu.edu)

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### **Slowing and preventing oak wilt**

Manistee Conservation District

Award year: 2015

Status: **Completed**

[Final report](#)

The overall objective of this project was to slow and prevent oak wilt by implementing treatments in a 10-county area in west and northwest Michigan, providing the public with information to prevent oak wilt and using treatment data to guide future treatments across the state. Project metrics include 19,484 acres surveyed, 4,404 individuals reached through site visits and events, and 199,297 individuals reached via information distribution. Twenty-one high priority sites were treated across eight counties. Fifteen different combinations of oak wilt treatments were implemented, and data collected from these treatments resulted in an oak wilt treatment model that can be modified as additional data are collected in subsequent years. All sites will continue to be monitored by Forestry Assistance Program foresters and contractors.

Grant award: **\$115,025**

**Contact:** Susan Spencer, [susan.spencere@macd.org](mailto:susan.spencere@macd.org)

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### **Mapping and treating oak wilt**

Dickinson Conservation District

Award year: 2014

Status: **Completed**

[Final report](#)

Private landowners in Dickinson, Menominee and Alpena counties have benefited from oak wilt management through this project. Over 60,000 linear feet were trenched and almost 1,100 acres were treated to stop the spread. Professionals and landowners were educated on oak wilt at over 80 outreach events and eight oak wilt training events. 307 twig samples were sent to Michigan State University Extension for testing. Of these, 118 were confirmed to have the fungus. All project data was sent to the DNR to be included in a statewide database to better understand where oak wilt is present across the state.

Grant award: **\$138,500**

**Contact:** Ann Hruska, [ann.hruska@mi.nacdnet.net](mailto:ann.hruska@mi.nacdnet.net)

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# Hemlock Woolly Adelgid

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## **UP multi-CISMA HWA survey project**

Alger Conservation District

Award year: 2018

Status: **In process**

Three Upper Peninsula CISMAs will collaborate to survey for hemlock woolly adelgid in high-risk and high-priority sites, primarily within 20 miles of the Lake Michigan shore, and will incorporate hemlock woolly adelgid identification and prevention into outreach programs.

Grant award: **\$159,200**

**Contact:** Teri Grout, [teri.grout@macd.org](mailto:teri.grout@macd.org)

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## **Multi-CISMA Eastern Lake Michigan hemlock woolly adelgid survey**

The Nature Conservancy

Award year: 2017

Status: **In process**

To improve understanding of the distribution and abundance of the high priority terrestrial invasive species hemlock woolly adelgid, this project will implement survey efforts throughout the coastal and near-shore areas of Eastern Lake Michigan to facilitate further threat assessment, prioritization and control efforts and ultimately improve landscape-scale conservation outcomes.

Grant award: **\$363,000**

**Contact:** Shaun Howard, [showard@tnc.org](mailto:showard@tnc.org)

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## **Surveying and mapping the distribution of hemlock woolly adelgid within infested counties**

Ottawa Conservation District

Award year: 2017

Status: **In process**

This project will survey and map hemlock woolly adelgid in West Michigan to provide data for state management decisions.

Grant award: **\$200,000**

**Contact:** Drew Rayner, [drew.rayner@macd.org](mailto:drew.rayner@macd.org)

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## **Treating hemlock woolly adelgid in West Michigan**

Ottawa Conservation District

Award year: 2017

Status: **In process**

This project will treat hemlock woolly adelgid in infested areas on public and private lands in West Michigan. Treatments will be prioritized north to south with the goal of containment.

Grant award: **\$299,400**

**Contact:** Drew Rayner, [drew.rayner@macd.org](mailto:drew.rayner@macd.org)

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## **Projecting hemlock woolly adelgid distribution and risk in Michigan**

Michigan State University

Award year: 2016

Status: **In process**

We will generate critical information to support hemlock woolly adelgid surveys, assess risk and establish a framework for prioritizing HWA management across Michigan. Our science-based approach entails refinement and verification of statewide and fine-scale hemlock models, evaluation of micro- and macro-climatic effects on HWA survival and risk-mapping to project HWA impacts.

Grant award: **\$314,453**

**Contact:** Deborah G. McCullough, [mccullo6@msu.edu](mailto:mccullo6@msu.edu)

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## **Other Terrestrial Invasive Species**

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### **Restoration of forests impacted by invasives using genetic resistance**

U.S. Forest Service

Award year: 2018

Status: **In process**

Naturally occurring genetic resistance will be utilized to develop regionally adapted, genetically diverse planting stock for management and restoration of Michigan forests. New methods will enhance production of beech trees resistant to beech bark disease. Disease-resistant ash trees will be used to develop a seed orchard for future restoration plantings.

**Invasive species managed:** Beech bark disease and emerald ash borer.

Grant award: **\$379,690**

**Contact:** Jennifer Koch, [jennifer.koch@usda.gov](mailto:jennifer.koch@usda.gov)

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## **Initiating a classical biocontrol program against invasive swallow-worts in Michigan**

Michigan State University

Award year: 2018

Status: **In process**

This project will initiate the first classical biological control program against invasive black and pale swallow-wort (*Vincetoxicum spp.*) in Michigan releasing a defoliating moth, *Hyponomeuta opulenta*. We will mass-rear the moth and conduct experimental releases to test the importance of genetic and demographic factors mediating establishment and population growth.

**Invasive species managed:** Black swallow-wort and pale swallow-wort.

Grant award: **\$302,600**

**Contact:** Marianna Szucs, [szucsmar@msu.edu](mailto:szucsmar@msu.edu)

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## **Developing an effective lethal control strategy for feral swine in Michigan**

USDA Wildlife Services

Award year: 2015

Status: **Completed**

[Final report](#)

Wildlife Services made contacts with 218 individuals regarding feral swine activity from July 20, 2016 to April 30, 2018. Only one contact yielded verified new information - a feral swine skull of unknown origin and time of death. Wildlife Services removed 18 feral swine from Michigan during this time. No additional verified evidence of Eurasian/Eurasian hybrid feral swine activity has been found in the Lower Peninsula. Currently, the only evidence of feral swine in Michigan exists in the Upper Peninsula. While two radiocollared sows have been removed from the Upper Peninsula, evidence from trail cameras suggest additional feral swine still exist. Efforts are underway to locate, trap and remove these animals.

Grant award: **\$250,000**

**Contact:** Anthony Duffiney, [anthony.g.duffiney@aphis.usda.gov](mailto:anthony.g.duffiney@aphis.usda.gov)

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# European Frogbit

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## Assessing habitat characteristics and species assemblages associated with European frogbit

Lake Superior State University

Award year: 2018

Status: **In process**

This project will identify habitat characteristics associated with invasion of European frogbit (*Hydrocharis morsus-ranae*) in Great Lakes coastal wetlands, assess its effects on the ecosystem, quantify how ecosystems respond to hand-harvesting and determine how patches of European frog-bit change through time at sites where removal did and did not occur.

Grant award: **\$188,200**

Contact: Kevin Kapuscinski, [kkapuscinski@lssu.edu](mailto:kkapuscinski@lssu.edu)

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## Statewide risk assessment and adaptive management of European frogbit

Loyola University Chicago

Award year: 2017

Status: **In process**

This project will strategically advance the science and practice of European frogbit (EFB) control in Michigan by scientifically evaluating novel EFB control activities, applying successful treatments to EFB-invaded wetlands, using UAV-collected imagery to remotely detect EFB in targeted regions and creating statewide EFB invasion risk maps.

Grant award: **\$386,100**

Contact: Shane Lishawa, [slishawa@luc.edu](mailto:slishawa@luc.edu)

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## Novel approaches to European frogbit detection and management

Loyola University of Chicago

Award year: 2015

Status: **Completed**

[Final report](#)

In this large-scale European frogbit control experiment in Munuscong Bay on the St. Marys River in Chippewa County, a diverse array of wetland vegetation, including *Typha* stands that are closely associated with EFB, was mapped and classified using multispectral satellite and UAV data. Overall, seven acres of frogbit-invaded marsh were treated while scientifically comparing various treatment methods. We established that below-water cutting is a highly effective management technique for eliminating both *Typha* and EFB. Detailed EFB occurrence

data from 2010-2017 was compiled and published to aid in further habitat suitability modelling of EFB. We have gained a better understanding of the environmental factors important to EFB occurrence including water depth, temperature and exposure to wave action.

**Invasive species targeted:** European frogbit and narrow-leaf cattail.

Grant award: **\$283,510**

**Contact:** Shane Lishawa, [slishawa@luc.edu](mailto:slishawa@luc.edu)

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## Eurasian Watermilfoil

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### Identifying high-risk hybrid Eurasian watermilfoil genotypes to improve control

Montana State University

Award year: 2017

Status: **In process**

This project addresses how best to manage genetically diverse Eurasian and hybrid watermilfoil in light of recent discoveries showing that genotypes differ in herbicide sensitivity properties. We use genetic data to identify high-risk genotypes and test their responses to several potential herbicides to facilitate adaptive management decision making and outcomes.

Grant award: **\$371,300**

**Contact:** Ryan Thum, [ryan.thum@montana.edu](mailto:ryan.thum@montana.edu)

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### Restorative approach using integrative and innovative methods on Chicaugon Lake

Chicaugon Lake Homeowners Association

Award year: 2014

Status: **Completed**

[Final report](#)

The Chicaugon Lake Association utilized funding received from the MISGP to initiate a two-year project that aimed at a restorative approach to Eurasian watermilfoil management. This approach used integrative method including the use of aquatic herbicides, volunteer hand removal and diver assisted suction harvesting (DASH). Treatment effectiveness used qualitative and quantitative methods including lake-wide distribution and abundance mapping and pre- and post-grid sampling which assessed response to the aquatic plant community. Furthermore, herbicide concentration sampling occurred at timed intervals to monitor the level of herbicide concentrations at selected treatment sites.

Grant award: **\$41,900**

Contact: Joe Shubat, [jshubat@gmail.com](mailto:jshubat@gmail.com)

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## **Innovative and multifaceted control of invasive Eurasian and hybrid watermilfoil using integrative pest management principles**

Michigan Technological University

Award year: 2014

Status: **Completed**

[Final report](#)

The goals of this project were to better detect and predict invasions of Eurasian watermilfoil, analyze watermilfoil genetic diversity and its linkage to efficacy of control and explore alternative treatment approaches, all of which will guide management strategies for the control of invasive watermilfoil. Although we detected variation in sensitivity to three different herbicides (2,4-D, Triclopyr and Fluridone) by some watermilfoil individuals within a waterbody, that variation was not significantly explained by genotype or genotype class (hybrid or not). However, sensitivity to two of the three herbicides examined did relate to the history of herbicide treatment in the waterbodies with individuals from herbicide-treated lakes showing less susceptibility to herbicides. We examined the feasibility of growing mats of native aquatic macrophytes to be planted as a post-treatment approach to rehabilitate the area; however, we were unable to develop mats of sufficient integrity and plant density to be useful. Initial results of our evaluation of diver assisted suction harvesting to manage small patches of invasive submerged aquatic plants show it is an effective method of selectively removing watermilfoil, and we are in the process of examining the long-term efficacy. Given these difficulties in controlling watermilfoil once it has invaded, prevention and early detection are thus important areas of focus, and we have made great progress toward developing remote approaches to detect watermilfoil using satellite imagery and unmanned aerial vehicles equipped with various optical sensors. These monitoring approaches could be employed to survey lakes with boat launches and near other invaded lakes, which have a high threat of invasion by watermilfoil as highlighted by our modeling efforts.

Grant award: **\$332,000**

Contact: Carol Wiitanen, [cawitan@mtu.edu](mailto:cawitan@mtu.edu)

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# Other Aquatic Invasive Species

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## **Effects of *Didymosphenia geminata* blooms on salmonid production in Michigan waters**

Lake Superior State University

Award year: 2018

Status: **In process**

Nuisance levels of *Didymosphenia* (didymo) were first reported in Michigan waters (St. Marys River) in 2015, but research on didymo's effects on fish reproduction is lacking. This pilot project will determine if didymo blooms alter salmonid spawning site selection and fry emergence, and it will inform management techniques.

Grant award: **\$40,600**

Contact: Ashley Moerke, [amoerke@lssu.edu](mailto:amoerke@lssu.edu)

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## **Evaluating management actions to control invasive grass carp in Lake Erie**

Michigan State University

Award year: 2017

Status: **In process**

We propose to evaluate sampling design and gear efficacy for the control of grass carp in Lake Erie. We will use an experimental adaptive management approach, building off of an ongoing structured decision making process for grass carp, to reduce key uncertainties related to management actions for grass carp control.

Grant award: **\$250,400**

Contact: Kelly Robinson, [kfrobins@msu.edu](mailto:kfrobins@msu.edu)

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## **Integrated invasive aquatic plant management: Evaluating, refining and expanding the management toolbox**

Central Michigan University

Award year: 2014

Status: **Completed**

[Final report](#)

The project developed an integrated, adaptive weed management framework to provide DNR/DEQ and lake managers with a better understanding of the mechanisms behind successful and failed herbicide treatments, provide additional treatment options and inform best management practices. Field trials were conducted to test the efficacy of a suite of management strategies on Eurasian watermilfoil, Carolina fanwort and starr

stonewort. Project results have been disseminated and shared with stakeholders through multiple presentations, trainings, newsletters and online platforms. Several additional technical documents, manuscripts and presentations are submitted or in preparation.

**Invasive species targeted:** Carolina fanwort, Eurasian watermilfoil and starry stonewort.  
Grant award: **\$391,700**

**Contact:** Anna Monfils, [monfi1ak@cmich.edu](mailto:monfi1ak@cmich.edu)

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**Control Sea Lamprey in the Pigeon, Sturgeon and Maple rivers with sterile males instead of lampricide - step 1 toward eradication of sea lamprey from Michigan's Inland Waterway**

U.S. Geological Survey  
Award year: 2016  
Status: **In process**

We will eliminate the need for the next scheduled lampricide treatment in the Pigeon, Sturgeon, and Maple rivers by releasing sterilized male sea lamprey (a novel and integrated approach). If successful, the sterile male release technique will be cheaper than traditional lampricide control, have less environmental impact and would constitute the first step in eradicating sea lamprey from Michigan's Inland Waterway.

**Invasive species targeted:** Sea lamprey.  
Grant award: **\$122,100**

**Contact:** Nicholas Johnson, [njohnson@usgs.gov](mailto:njohnson@usgs.gov)

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