



The Keweenaw Invasive Species
Management Area (KISMA) Strategic Plan
2020-2025

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Mission

Facilitating cooperation and education among federal, state, tribal, and local groups and landowners to prevent and manage invasive species across land ownership boundaries and to foster native aquatic and terrestrial communities.

Geographic Scope

KISMA works within Baraga, Houghton, and Keweenaw Counties in the Upper Peninsula of Michigan. This is a total area of 2447.4 sq. miles (633,892 ha) with a total population of 47,644 people as of 2010 census. KISMA encompasses 470 miles of Lake Superior shoreline and 239 named inland lakes with numerous publicly assessable lands including: part of the Ottawa National Forest, Isle Royale National Park, Keweenaw National Historical Park lands, state forests (Baraga Forest Management Unit), five state parks (Fort Wilkins, McClain, Twin Lakes, Baraga, and Craig Lake), 22 Michigan Nature Association Sanctuaries, Michigan Technological University forests, three Nature Conservancy Reserves, Keweenaw Land Trust Properties including the Pilgrim River Watershed Project, several city parks and preserves, and many miles of recreational trail systems, both non-motorized and motorized (e.g., Nara Nature Trails, Trail systems Michigan Technological University Recreational Trail System, Maasto Hiito, Chassell Trails, Swedetown Trails, Keweenaw Trails in Copper Harbor area, and the Bill Nichols multi-use trail.

Background

KISMA is one of 21 Cooperative Invasive Species Management Areas (CISMAs; Figure 1), covering all the counties of the state of Michigan. We had our first meeting in 2011 and completed our first [Memorandum of Understanding](#) in 2013, with 22 signed members. Since its inception KISMA has received funding from the State of Michigan, USDA Forest Service, and the Great Lakes Restoration Initiative. Fiscal agents have included the Houghton Keweenaw Conservation District, Keweenaw Land Trust, and Michigan Technological University.



Figure 1. Cooperative Invasive Species Management Areas in Michigan ([Michigan Invasive Species Coalition; https://www.michiganinvasives.org/managementareas/](https://www.michiganinvasives.org/managementareas/)). Refer to [Appendix D](#) for full description.

KISMA Structure

As of December 2019, KISMA includes 22 partner organizations, a steering committee, two fiduciary managers (i.e., Keweenaw Land Trust and Michigan Technological University), a paid coordinator (20 hours/week) and a paid invasive species crew during the growing season. The KISMA Partners are defined as signatories of the MOU and comprise organizations with shared goals to synergistically decrease the impact of invasive species on our landscapes. The steering committee provides direction, identifies opportunities, and generally furthers the common goals of KISMA.

Personnel and responsibilities:

Coordinator

- proposal writing
- grant administration
- reporting, tracking match and expenditures
- coordinate partner contacts, efforts, projects
- training/supervising invasive species crews
- outreach/education
- restoration and scientific approach
- education program development
- website, brochures, presentations
- training, workshops
- work with partners on educational needs
- work on all other activities of KISMA as needed

Invasive Species Crew

- landowner contacts
- invasive species mapping and management
- assist partners
- assist private landowners
- work on KISMA funded projects
- outreach/education

Fiduciary Managers

- provide documentation to coordinator for reporting to funding agencies
- bookkeeping, accounting, banking

Partners

- meet annually
- participate as needed in ad hoc committees organized for a limited, purposeful event
- communicate with coordinator about assistance with invasive species needs and activities
- proposal collaboration
- cost share for KISMA grants

Steering Committee

- representatives of the KISMA partners
- high level perspective with diverse viewpoints
- develops strategic management and annual operating plans
- establishes priorities
- track trends and emerging issues
- documents progress
- financial review, help with grants and in-kind shortfalls/planning

Goals and Objectives

Goal 1: Build KISMA Capacity

The long-term success of KISMA is dependent on the structure and strength of the organization and Partnership. As such, one of KISMA's goals will be to maintain and strengthen our collaboration, which will expand our capacity to accomplish our other goals.

Objective 1.1: Strengthen KISMA structure

Strategies

1. Support Steering Committee effectiveness with meetings three times a year to prioritize annual plan of KISMA grant deliverables, evaluate progress and metrics and adapt plan accordingly
2. Review KISMA Strategic Plan annually to check progress

3. Maintain Memorandum of Understanding (MOU), with renewal every 5 years
 - Prepare a new MOU in 2020, current MOU expired 12/31/2017

Objective 1.2: Engage and support current KISMA Partners

Strategies

1. KISMA Partners communicate through annual meetings, emails, and hosted invasive species events
2. Annually identify and address barriers to partner engagement
3. Provide a website with link to KISMA calendar and information on invasive species of concern in the Keweenaw region along with a list of native plant alternatives

Objective 1.3: Engage broader community

Strategies

1. Develop and maintain a Five-Year Strategic Plan that will guide and prioritize collaborative management of terrestrial and aquatic invasive species over the next 5 years
2. Foster volunteerism by providing a calendar of invasive species management efforts to the public and by hosting volunteer work days in cooperation with Partner events and needs

Objective 1.4: Expand KISMA partnership

Strategies

1. Recruit new partners when appropriate such as when high priority lands are identified and are owned or managed by non-partner entity who show interest in expanding invasive species monitoring and/or treatments
2. Steering Committee will annually update prospective partner list

Goal 2: Education and Outreach

Education and outreach are defined here as direct (or ‘face-to face’) and indirect contact with constituents. Direct contact occurs with people who come to a specific event or request KISMA to come to a specific location to enhance their knowledge (i.e., seminars, classes, workshops, hands-on training). Indirect contact involves enhancement of knowledge through multi-venue options such (i.e. websites, traditional media such as newspaper and television, and information booths). Both education and outreach are the critical first line of defense in the prevention and early detection of invasive species, but they also provide the backbone of knowledge for any constituent of a community to identify and work together to coherently manage invasive species once they are already in an area.

Objective 2.1: Increase public participation with invasive species identification, mapping, and management

Strategies

1. Increase direct education with the KISMA constituency by continuing to provide invasive species identification, mapping, and management events that will result in an annual increase in volunteer hours, attendance at events, and new reports to MISIN
2. Increase indirect contact with the KISMA constituency through outreach such as creation and maintenance of a KISMA website, informational signage at trail systems, articles in local newspapers, and posting to social media accounts

Objective 2.2: Support programming to prevent the spread of new invasive species

Strategies

1. Use Early Detection and Response (EDR) to educate, identify, and control new invasive species and new areas of invasion with the following actions measurable by increased volunteer hours, event attendance, and MISIN reports by constituents:

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- Coordinate with and support regional programs and partner efforts for the prevention and detection of priority and watch list species (such as Clean Boats Clean Waters, Stop Aquatic Hitchhikers, Play Clean Go, etc.).
- Provide EDR training, including mapping and reporting techniques using MISIN and KISMA contact information to general public and partners.
- Conduct public education on prevention measures, identifying new species, and inviting the public to report sites to KISMA staff or members.

Goal 3: Management of priority and locally significant invasive species and areas where those species occur

Because resources are limited, a comprehensive plan for invasive species management must include a method of evaluating what species are or should be of concern and where efforts should be focused to best mitigate the problem.

Objective 3.1: Prioritize KISMA efforts

Strategies

1. Identify high value locations for mapping and control (Steering Committee)
2. Provide and update list of high priority species (Appendix B) and watch list species (Appendix C) for our area informed by local, federal, and state of Michigan lists
3. Develop strategy for prioritizing KISMA's assistance to partners and the general public (Steering Committee)
4. Use accepted protocol (i.e. Midwest Invasive Species Information Network (MISIN)) to collect invasive species location data and encourage partners to share location data they have collected
5. Maintain an internal database of invasive species locations and share with partners and the general public through uploads to MISIN

Objective 3.2: Use an integrated approach of best management practices with protocols to manage current invasive species populations on private and public lands

Strategies

1. Ensure that KISMA staff, partners, and the general public are informed about Best Management Practices (BMPs) for managing individual species (website, workshops)
2. Implement appropriate pre- and post-treatment monitoring
 - Use protocol for monitoring effectiveness of treatment (e.g., MISIN treatment tracking, vegetation plot monitoring, data collection app (e.g., EpiCollect, ESRI Collector, or similar), MISIN reporting, spreadsheet of treated sites with work done each year)
3. Train all KISMA personnel and volunteers to follow regulations on property ownership, herbicide application, if applicable, and equipment use

Objective 3.3: Coordinate and support efforts by partners to manage priority invasive terrestrial and aquatic species

Strategies

1. Utilize KISMA Invasive Species Crew to assist KISMA partners and landowners with invasive species activities.
2. Encourage KISMA partners to share resources and work across boundaries to manage infestations
3. Provide networking opportunities for KISMA partners which encourage partner collaboration and sharing of expertise (e.g., in addition to annual meeting provide one field day event at a partner's site to share success)

4. Develop proposals for funding joint work on specific species as opportunities arise and partner willingness allows
5. Encourage partners and landowners to assume responsibility for continuing stewardship of their ongoing infestations and of restored sites (e.g., create a “contract for continued stewardship” and/or provide training to Partners when Partners request KISMA’s help on Partner lands)

Goal 4: Restoration

Ample evidence exists that often just removing invasive species is not enough to reestablish native populations of species due to reinvasions of original invasive species or secondary invasions of different invasive species^{1,2}. Combine management efforts with native plantings and soil augmentation to initiate or accelerate the recovery of the ecosystem with respect to its health, integrity, sustainability, and resiliency.

Objective 4.1: Address desired end condition when controlling invasive species with the goal to return the ecological system to a stable, healthy, and sustainable state in areas that have been degraded, damaged, or destroyed.

Strategies

1. Replace invasive plant species with appropriate native plant species on at least one new site a year with the following
 - Collect and propagate native species for transplanting to sites where invasive species are being removed. Whenever possible:
 - i. Use native species from local sources
 - ii. Plant species that would normally exist at the site
 - iii. Use native species functionally similar to the removed invasive species
 - Couple restoration efforts with other habitat improvement goals (i.e., wildlife habitat, assisting beneficial pollinating insects, greater diversity)

Objective 4.2: Develop and expand partnerships to address restoration in KISMA area

Strategies

1. Work with partners to develop new habitat that links existing sites with healthy native plant/pollinator areas where possible
2. Collaborate with partners to grow native plants for restoration

Possible implementation:

- Find partners with greenhouse space to share (i.e. KBIC, local plant nurseries, MTU Forestry Greenhouses, area k-12 schools, Keweenaw Greenhouses in L’Anse)
- Establish plants on partner lands so seed sources can be collected or naturally spread
- Collect ‘before’, ‘during’ and ‘after’ images for educational purposes showing invaded and diminished communities versus restored communities

Goal 5: Funding

Invasive species education, outreach, management, and the restoration of resilient native plant communities all require monetary and human capital. Funding is paramount to maintain basic personnel and services to partners and the community, as well as personnel and services for additional projects that align with this Five-Year Action Plan. Funding assistance needs to be pursued from all

¹ Kettenring, K.M., Adams, C.R., 2011. Lessons learned from invasive plant control experiments: a systematic review and meta-analysis. *Journal of Applied Ecology* 48, 970–979. doi:10.1111/j.

² Pearson, D.E., Ortega, Y.K., Runyon, J.B., Butler, J.L., 2016. Secondary invasion: The bane of weed management. *Biological Conservation* 197, 8–17. doi:10.1016/j.biocon.2016.02.029

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possible sources including local, community-based funding and private match, as well as regional, state, and national sources.

Objective 5.1: Submit MISGP proposals to continue KISMA core funding. MISGP core program funding requires additional funding from non-state sources

Strategies

1. Apply for core funding and additional project funding annually or as needed to maintain KISMA continuity and meet the needs of KISMA partners

Objective 5.2: Pursue additional KISMA funding through known and new sources

Strategies

1. Submit at least one new proposal a year with KISMA or an entity working with KISMA as the primary investigator but with funding for KISMA included in the budget

Objective 5.3: Establish an avenue for accepting local monetary donations, match, and funding for services rendered, related to invasive species education and management activities

Strategies

1. Contact Michigan Tech, KLT, other partners and other CISMAs to determine the possible pathways to allow this to happen

Goal 6: Adaptive Management

Invasive species activities cannot be successful without the ability and flexibility to adapt to new knowledge, species, locations, interactions, climate, etc. As KISMA moves forward with invasive species activities as outlined in this Five-Year Action Plan, we will reevaluate invasive species activities to ascertain the success of the outlined activities.

Objective 6.1: Improve invasive species control methods

Strategies

1. Put together the collective knowledge base of all partners in successes and failures in attempts to control invasive species in KISMA area to better plan future control and prevention actions. (e.g., Partner workshop of successes and failures and alternative treatment strategies)
2. Gain knowledge from other CISMA's work to bring back to KISMA partners through the use of the MISC forum and KISMA Coordinator attendance at MISC annual meeting
3. Set up plots with different control techniques for invasive species to monitor local success. Re-evaluate success through time
4. Share information with the Midwest Invasive Species Information Network (MISIN) database and MISIN Treatment Tracking GIS layer

Objective 6.2: Monitor areas where invasive species have been removed

Strategies

1. Apply a monitoring protocol (see Objective 3.2) for high value areas of invasive species management to improve techniques and to evaluate native community restoration success

Objective 6.3: Funding shortfalls

Strategies

1. When funding shortfalls occur (e.g., rapid response needed for newly discovered infestation, unexpected budget cuts), request assistance from other partners to cover match or apply for other funding sources

Objective 6.4: Emerging issues and new opportunities

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Strategies

1. As new problem species arise, get information to partners to address. As new needs arise, partners share requests for assistance
2. Use partner relationships to create new pathways for assistance

Appendix A: KISMA Partners as of March 2021

1. Copper Country Chapter of Trout Unlimited—needs to added to MOU as an update
2. Gratiot Lake Conservancy
3. Houghton Keweenaw Conservation District
4. Iron Baraga Conservation District
5. Isle Royale National Park
6. Isle Royale & Keweenaw Parks Association
7. Keweenaw Bay Indian Community
8. Keweenaw Land Trust
9. Keweenaw National Historical Park
10. Lyme Great Lakes Timberlands
11. Michigan DNR: Forest Resource Division
12. Michigan DNR: Parks and Recreation Division (Craig Lakes, Fort Wilkins, McLain, and Twin Lakes SPs)
13. Michigan Nature Association
14. MSU Extension, Houghton\Keweenaw County Extension Michigan Technological University
15. Michigan Technological University
16. Molpus Woodlands Group, LLC
17. Swedetown Trails Club
18. The Nature Conservancy
19. Upper Peninsula Resource Conservation & Development Council
20. USDA Forest Service, Ottawa National Forest
21. USDA, Natural Resources Conservation Service

Appendix B: Invasive species priority lists

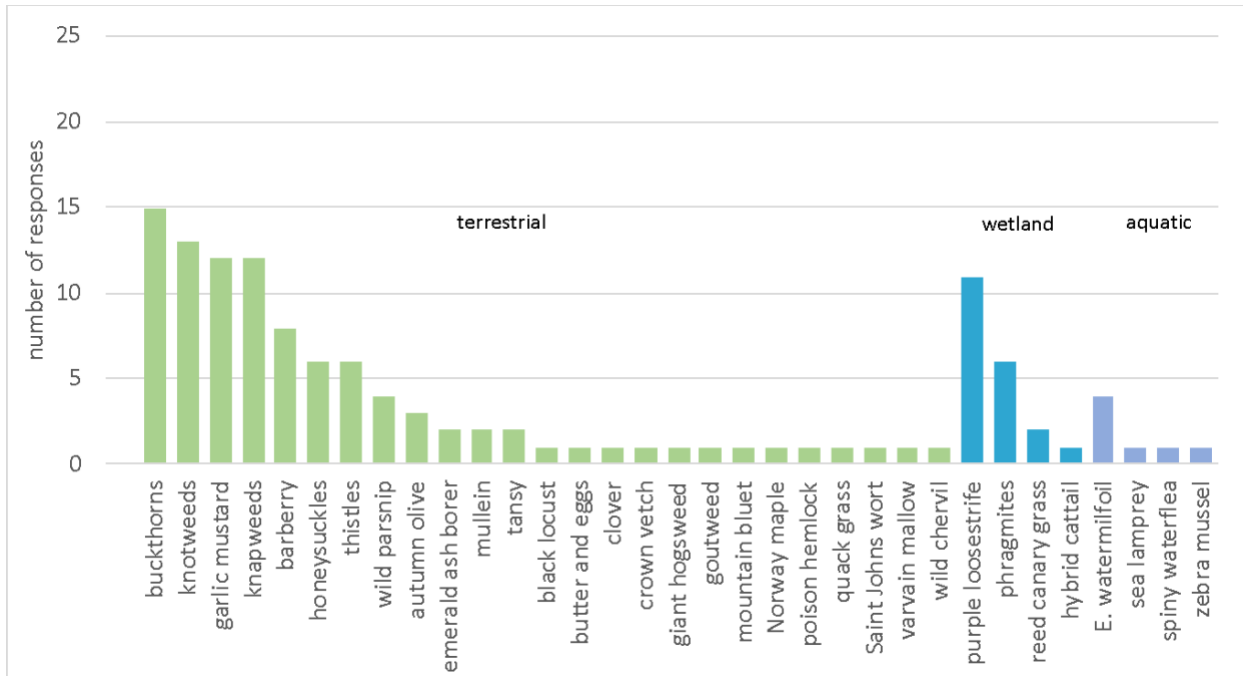


Figure B.1. Priority invasive species identified by KISMA Partners in the KISMA Partner Survey, Fall 2017 for “Question 2: Please list up to ten invasive species you consider a priority on the lands you manage or work with.” [Refer to Appendix D for full description.](#)

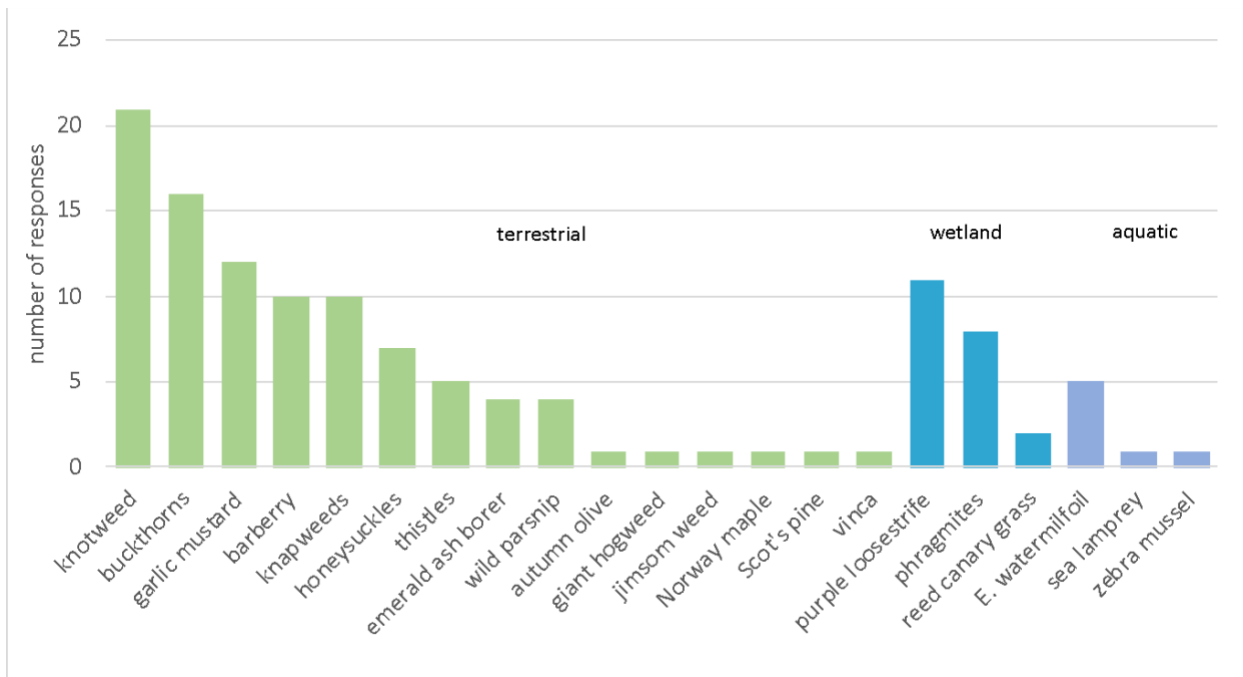


Figure B.2. Priority invasive species identified by KISMA Partners in the KISMA Partner Survey, Fall 2017 for “Question 3: Putting your own priorities aside, please list the invasive species you are most concerned about within the entire three-county (Baraga, Houghton, Keweenaw) KISMA service area.” [Refer to Appendix D for full description.](#)

Table B.1. Priority invasive plant species identified by the Ottawa National Forest as of January 27, 2021

Priority	Common name	Scientific name
High	Garlic mustard	<i>Alliaria petiolata</i>
High	Japanese barberry	<i>Berberis thunbergii</i>
High	Bell's honeysuckle	<i>Lonicera × bella</i>
High	Morrow's honeysuckle	<i>Lonicera morrowii</i>
High	Tartarian honeysuckle	<i>Lonicera tartarica</i>
High	Purple loosestrife	<i>Lythrum salicaria</i> *
High	Eurasian watermilfoil	<i>Myriophyllum spicatum</i> *
High	Common buckthorn	<i>Rhamnus cathartica</i>
High	Glossy buckthorn	<i>Rhamnus frangula</i>
New Invader/High	Siberian peashrub	<i>Caragana arborescens</i>
New Invader/High	Houndstongue	<i>Cynoglossum officinale</i>
New Invader/High	Cutleaf teasel	<i>Dipsacus laciniatus</i>
New Invader/High	Autumn olive	<i>Elaeagnus umbellata</i>
New Invader/High	Leafy spurge	<i>Euphorbia esula</i>
New Invader/High	Giant hogweed	<i>Heracleum mantegazzianum</i> **,*
New Invader/High	Dames rocket	<i>Hesperis matronalis</i>
New Invader/High	Paleyellow iris	<i>Iris pseudacorus</i>
New Invader/High	Purple moor grass	<i>Molinia caerulea</i>
New Invader/High	Common reed	<i>Phragmites australis</i>
New Invader/High	Burnet-saxifrage	<i>Pimpinella saxifraga</i>
New Invader/High	Japanese knotweed	<i>Fallopia japonica</i> *
New Invader/High	Giant knotweed	<i>Fallopia sachalinensis</i>
New Invader/High	Curlyleaf pondweed	<i>Potamogeton crispus</i> *
New Invader/High	Tansy ragwort	<i>Senecio jacobaea</i>
New Invader/High	Japanese hedgeparsley	<i>Torilis japonica</i>
Medium	Bishop's goutweed	<i>Aegopodium podagraria</i>
Medium	Wild chervil	<i>Anthriscus sylvestris</i>
Medium	European swamp thistle	<i>Cirsium palustre</i>
Medium	Flat pea	<i>Lathyrus sylvestris</i>
Medium	Sweet-clover	<i>Melilotus officinalis</i>
Medium	Wild parsnip	<i>Pastinaca sativa</i>
Medium	Reed canarygrass	<i>Phalaris arundinacea</i>
Medium	Scots pine	<i>Pinus sylvestris</i>
Medium	Crown-vetch	<i>Securigera varia</i>
Medium	Garden valerian	<i>Valeriana officinalis</i>
Low	Burdock	<i>Arctium minus</i>
Low	Hoary alyssum	<i>Berteroa incana</i>
Low	Smooth brome	<i>Bromus inermis</i>
Low	Spotted knapweed	<i>Centaurea stoebe</i>
Low	Canada thistle	<i>Cirsium arvense</i> *
Low	Bull thistle	<i>Cirsium vulgare</i>
Low	Orchard grass	<i>Dactylis glomerata</i>

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Low	Queen Anne's lace	<i>Daucus carota*</i>
Low	Hemp-nettle	<i>Galeopsis tetrahit</i>
Low	Orange hawkweed	<i>Hieracium aurantiacum</i>
Low	Tall hawkweed	<i>Hieracium piloselloides</i>
Low	Common St. Johnswort	<i>Hypericum perforatum</i>
Low	Nipplewort	<i>Lapsana communis</i>
Low	Oxeye daisy	<i>Leucanthemum vulgare</i>
Low	Butter-and-eggs	<i>Linaria vulgaris</i>
Low	Bird's-foot trefoil	<i>Lotus corniculata</i>
Low	Bigleaf lupine	<i>Lupinus polyphyllus</i>
Low	True forget-me-not	<i>Myosotis scorpioides</i>
Low	Tall buttercup	<i>Ranunculus acris</i>
Low	Black locust	<i>Robinia pseudoacacia</i>
Low	Curly dock	<i>Rumex crispus</i>
Low	Crack willow	<i>Salix fragilis</i> & <i>S. X rubens</i>
Low	Bouncingbet	<i>Saponaria officinalis</i>
Low	Climbing nightshade	<i>Solanum dulcamara</i>
Low	Field sowthistle	<i>Sonchus arvensis*</i>
Low	Common tansy	<i>Tanacetum vulgare</i>
Low	Common periwinkle	<i>Vinca minor</i>
Watch List	Flowering rush	<i>Butomus umbellatus</i>
Watch List	Poison hemlock	<i>Conium laculatum</i>
Watch List	Paradise plant	<i>Daphne mezereum</i>
Watch List	Common teasel	<i>Dipsacus fullonum</i>
Watch List	European frogbit	<i>Hydrocharis morsus-ranae</i>
Watch List	False spiraea	<i>Sorbaria sorbifolia</i>

LOW PRIORITY: *Arctium minus* (burdock), ***Berteroia incana* (hoary alyssum)**, *Bromus inermis* (smooth brome), *Centaurea stoebe* (spotted knapweed), *Cirsium arvense** (Canada thistle), *Cirsium vulgare* (bull thistle), *Dactylis glomerata* (orchard grass), *Daucus carota** (Queen Anne's lace), *Galeopsis tetrahit* (hemp-nettle), *Hieracium aurantiacum* (orange hawkweed), *Hieracium piloselloides* (tall hawkweed), *Hypericum perforatum* (common St. Johnswort), *Lapsana communis* (nipplewort), *Leucanthemum vulgare* (oxeye daisy), *Linaria vulgaris* (butter-and-eggs), *Lotus corniculata* (bird's-foot trefoil), ***Lupinus polyphyllus* (bigleaf lupine)**, *Myosotis scorpioides* (true forget-me-not), *Ranunculus acris* (tall buttercup), ***Robinia pseudoacacia* (black locust)**, *Rumex crispus* (curly dock), ***Salix fragilis* & *S. X rubens* (crack willow)**, ***Saponaria officinalis* (bouncingbet)**, ***Solanum dulcamara* (climbing nightshade)**, *Sonchus arvensis** (field sowthistle), ***Tanacetum vulgare* (common tansy)**, ***Vinca minor* (common periwinkle)**.

WATCH: *Butomus umbellatus* (flowering rush), *Conium laculatum* (poison hemlock), *Daphne mezereum* (paradise plant), *Dipsacus fullonum* (Common teasel), *Hydrocharis morsus-ranae* (European frogbit), *Sorbaria sorbifolia* (false spiraea).

* Michigan listed noxious weed, or Michigan prohibited or restricted species. ** Federally listed noxious weed.

Blue text are low priority species we may still track in GIS, especially if the infestation is somehow noteworthy. We generally don't track locations of three medium priority species: *Cirsium palustre*, *Melilotus officinalis*, and *Phalaris arundinacea*.

Priority guidelines

High priority: Record and map all sites, treat most sites.

New invaders/High: Record and map all sites, treat most sites.

Watch: Record and map all sites, treat most sites. None of these are known on the Ottawa.

Medium priority: Record and map sites in natural areas (i.e. not on roadsides); map larger sites anywhere.

Treat under selected circumstances (for example, crown vetch in a gravel pit, smaller isolated sites).

Low priority: Map only large infestations in natural areas. Treat only under special circumstances.

Equipment cleaning clause under timber sale contracts ([BT6.35](#)) generally apply to high and new invader categories.

The ONF invasive plant priority list was developed using the Alien Plants Ranking System (Hiebert 2001), a computer program developed by the National Park Service, Northern Arizona University, Ripon College, University of Minnesota, and the U.S. Geological Survey. The list was approved by the ONF Management Team on April 13, 2005 and again on May 23, 2017. Comments and questions on the list are welcome.

Hiebert, Ron. 2001. Prioritizing Weeds: The Alien Plant Ranking System. Conservation Magazine, Volume 2, No. 1.

Appendix C: Michigan's Invasive Species Watch List as of April 14, 2020

[Michigan Invasive Species Watch List](https://www.michigan.gov/invasives/id-report/watchlist) [https://www.michigan.gov/invasives/id-report/watchlist]

Invasive Species "Watch List"

The invasive species included on the watch list are priority species that have been identified as posing an immediate and significant threat to Michigan's natural resources. These species have either never been confirmed in Michigan or have very limited distribution or are localized. Early detection and timely reporting of occurrences of these species is crucial for increasing the likelihood of stopping an invasion and limiting negative ecological and economic impacts. Species are listed below by category. The invasive species below should be reported immediately and directly to staff. Please use the contacts below each category to report a possible detection of a watch list species.

Insects and Tree Diseases (Tree diseases list the scientific name for the pathogen or fungus associated with the disease)

- Asian longhorned beetle (*Anoplophora glabripennis*)
- Balsam woolly adelgid (*Adelges piceae*)
- Hemlock woolly adelgid (*Adelges tsugae*)
- Thousand cankers disease (*Geosmithia morbida*)
- Spotted lanternfly (*Lycorma delicatula*)

Report the species above to Robert Miller – MDARD Plant Health Section, MillerR35@michigan.gov, 517-284-5650.

Mammals

- Nutria (*Myocastor coypus*)

Report the species above to Ryan Wheeler – DNR Wildlife Division, WheelerR5@Michigan.gov, 517-614-1501.

Terrestrial Plants

- Asiatic sand sedge (*Carex kobomugi* Ohwi)
- Chinese yam (*Dioscorea oppositifolia* L.)
- Himalayan balsam (*Impatiens glandulifera*)
- Japanese stiltgrass (*Microstegium vimineum* (Trin.) A. Camus)
- Kudzu (*Pueraria montana* var. *lobata*)
- Mile-a-minute weed (*Persicaria perfoliata*)
- Japanese chaff flower (*Achyranthes japonica*)

Report the species above to Susie Iott, MDARD Pesticide and Plant Pest Management Division, lottS@Michigan.gov, 517-420-0473.

Aquatic Plants

- Parrot feather (*Myriophyllum aquaticum*)
- Yellow Floating Heart (*Nymphoides peltata*)
- European frog-bit (*Hydrocharis morsus-ranae*)
- European Water-clover (*Marsilea quadrifolia*) – This species is currently allowable for sale and possession. Please contact EGLE if these plants are observed outside of

cultivation.

- Brazilian elodea (*Egeria densa*)
- Hydrilla (*Hydrilla verticillata*)
- Water chestnut (*Trapa natans*)
- Water hyacinth (*Eichhornia crassipes*) – This species is currently allowable for sale and possession. Please contact EGLE if these plants are observed outside of cultivation.
- Water lettuce (*Pistia stratiotes*) – This species is currently allowable for sale and possession. Please contact EGLE if these plants are observed outside of cultivation.
- Water soldier (*Stratiotes aloides*)

Report the species above to Aquatic Nuisance Control Program – EGLE Water Resources Division, EGLE-WRD-ANC@Michigan.gov, 517-284-5593.

Fish and other Aquatic Animals

- Invasive carps
 - Silver carp (*Hypophthalmichthys molitrix*)
 - Bighead carp (*Hypophthalmichthys nobilis*)
 - Grass carp (*Ctenopharyngodon idella*)
 - Black carp (*Mylopharyngodon piceus*)
- Northern snakehead (*Channa argus*)
- Red swamp crayfish (*Procambarus clarkii*)
- New Zealand mud snail (*Potamopyrgus antipodarum*)

Report the species above to Lucas Nathan – DNR Fisheries Division, NathanL@Michigan.gov, 517-284-6235 or for invasive carp report electronically at Michigan.gov/AsianCarp.

Appendix D: Figure Descriptions

Figure 1. Cooperative Invasive Species Management Areas in Michigan ([Michigan Invasive Species Coalition](https://www.michiganinvasives.org/managementareas/)) [<https://www.michiganinvasives.org/managementareas/>]

Map of Michigan's counties and the 21 Cooperative Invasive Species Management Areas (CISMAs). There are 5 CISMAs in the upper peninsula which include the following. The Lake to Lake CISMA works in Alger, Delta, Marquette, and Schoolcraft counties. The Keweenaw Invasive Species Management Area works in Houghton, Keweenaw, and Baraga counties. The Three Shores Cooperative Invasive Species Management Area works in Chippewa, Mackinac, and Luce counties. The Western Upper Peninsula Invasive Species Management Area works in Gogebic, Iron, and Ontonagon counties. Lastly, the Wild Rivers Invasive Species Coalition covers Dickinson and Menominee counties in Michigan and Florence, Forest, and Marinette counties in Wisconsin. There are 16 CISMAs in the lower peninsula which include the following. The Barry, Calhoun and Kalamazoo Cooperative Invasive Species Management Area works in Barry, Calhoun, and Kalamazoo counties. The CAKE Cooperative Invasive Species Management Area works in Charlevoix, Antrim, Kalkaska, and Emmet counties. The Central Michigan Cooperative Invasive Species Management Area works in Clare, Gladwin, Gratiot, Isabella, and Midland counties. The Detroit River and Western Lake Erie Cooperative Weed Management Area works in Monroe and Wayne counties. The GILLS Cooperative Invasive Species Management Area works in Genesee, Lapeer, Livingston and Shiawassee counties. The Huron Coastal Invasive Species Network works in Alpena, Cheboygan, Iosco and Presque Isle counties. The Huron Heartland Invasive Species Network works in Crawford, Montmorency, Ogemaw, Oscoda, Otsego and Roscommon counties. The Jackson, Lenawee and Washtenaw CISMA works in Jackson, Lenawee and Washtenaw counties. The Lake St. Clair Cooperative Invasive Species Management Area works in Macomb and St. Clair counties. The Mid-Michigan Cooperative Invasive Species Management Area works in Clinton, Eaton, Ingham and Ionia counties. The North Country Cooperative Invasive Species Management Area works in Lake, Mason, Mecosta, Missaukee, Osceola and Wexford counties. The Northwest Michigan Invasive Species Network works in Benzie, Grand Traverse, Leelanau and Manistee counties. The Oakland County Cooperative Invasive Species Management Area works in Oakland county. The Saginaw Bay Cooperative Invasive Species Management Area works in Arenac, Bay, Huron, Saginaw, Sanilac and Tuscola counties. The Southern Michigan Invasive Species Team works in Branch, Hillsdale and St. Joseph counties. The SW x SW Corner Cooperative Invasive Species Management Area works in Berrien, Cass, and Van Buren counties. Lastly, the West Michigan Conservation Network works in Allegan, Kent, Montcalm, Muskegon, Newaygo, Oceana and Ottawa counties. [Return to Figure 1.](#)

Figure B.1. Priority invasive species identified by KISMA Partners in the KISMA Partner Survey, Fall 2017 for "Question 2: Please list up to ten invasive species you consider a priority on the lands you manage or work with."

Bar chart showing the number of responses, separated by species, to the prompt, "Please list up to ten invasive species you consider a priority on the lands you manage or work with." The number of responses by species for species grouped as terrestrial were: buckthorn got 15 responses, knotweeds got 13 responses, garlic mustard got 12 responses, knapweeds got 12 responses, barberry got 8 responses, honeysuckles got 6 responses, thistles got 6 responses, wild parsnip got 4 responses, autumn olive got 3 responses, emerald ash borer got 2 responses, mullein got 2 responses, tansy got 2 responses. Black locust, butter and eggs, clover, crown vetch, giant hogweed, goutweed, mountain bluet, Norway maple, poison hemlock, quack grass, Saint Johns wort, varvain mallow, and wild chervil all got 1 response. The number of responses by species for species grouped as wetland were: purple loosestrife got 11 responses, phragmites got 6 responses, reed canary grass got 2 responses, and hybrid cattail got 1 response. The number of responses by species for species grouped as aquatic were:

European watermilfoil got 4 responses, sea lamprey got 1 response, spiny waterflea got 1 response, and zebra mussel got 1 response. [Return to Figure B.1.](#)

Figure B.2. Priority invasive species identified by KISMA Partners in the KISMA Partner Survey, Fall 2017 for “Question 3: Putting your own priorities aside, please list the invasive species you are most concerned about within the entire three-county (Baraga, Houghton, Keweenaw) KISMA service area.”

Bar chart showing the number of responses, separated by species, to the prompt, "Putting your own priorities aside, please list the invasive species you are most concerned about within the entire three-county (Baraga, Houghton, Keweenaw) KISMA service area." The number of responses by species for species grouped as terrestrial were: knotweeds got 21 responses, buckthorns got 16 responses, garlic mustard got 12 responses, barberry got 10 responses, knapweeds got 10 responses, honeysuckles got 7 responses, thistles got 5 responses, emerald ash borer got 4 responses, and wild parsnip got 4 responses. Autumn olive, giant hogweed, jimsom weed, Norway maple, Scot's pine, and vinca all got 1 response. The number of responses by species for species grouped as wetland were: purple loosestrife got 11 responses, phragmites got 8 responses, and reed canary grass got 2 responses. The number of responses by species for species grouped as aquatic were: European watermilfoil got 5 responses, sea lamprey got 1 response, and zebra mussel got 1 response. [Return to Figure B.2.](#)

For more information, please visit:

Michigan.gov/Invasives



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