

MANAGEMENT OF INVASIVE PLANTS BEGINS WITH IDENTIFICATION



MARK RENZ UNIVERSITY OF WISCONSIN-MADISON



THE UNIVERSITY
of
WISCONSIN
MADISON

EXTENSION WEED SPECIALIST





INVASIVE SPECIES?



WHAT IS AN INVASIVE SPECIES?

- Many definitions, most emphasize two main points
 - *Not native to the area*
 - *Capable of causing harm*
 - USDA definition (2010): “an **alien species** whose introduction does or is likely to cause economic or environmental **harm** or harm to human health”
 - Wisconsin (2009): A **nonnative species** including hybrids, cultivars, subspecific taxa, and genetically modified variants whose introduction causes or is likely to cause economic or environmental **harm** or harm to human health”
-

WHAT DO WE MEAN BY NOT NATIVE?

- Species that was not present pre-European settlement to the United States

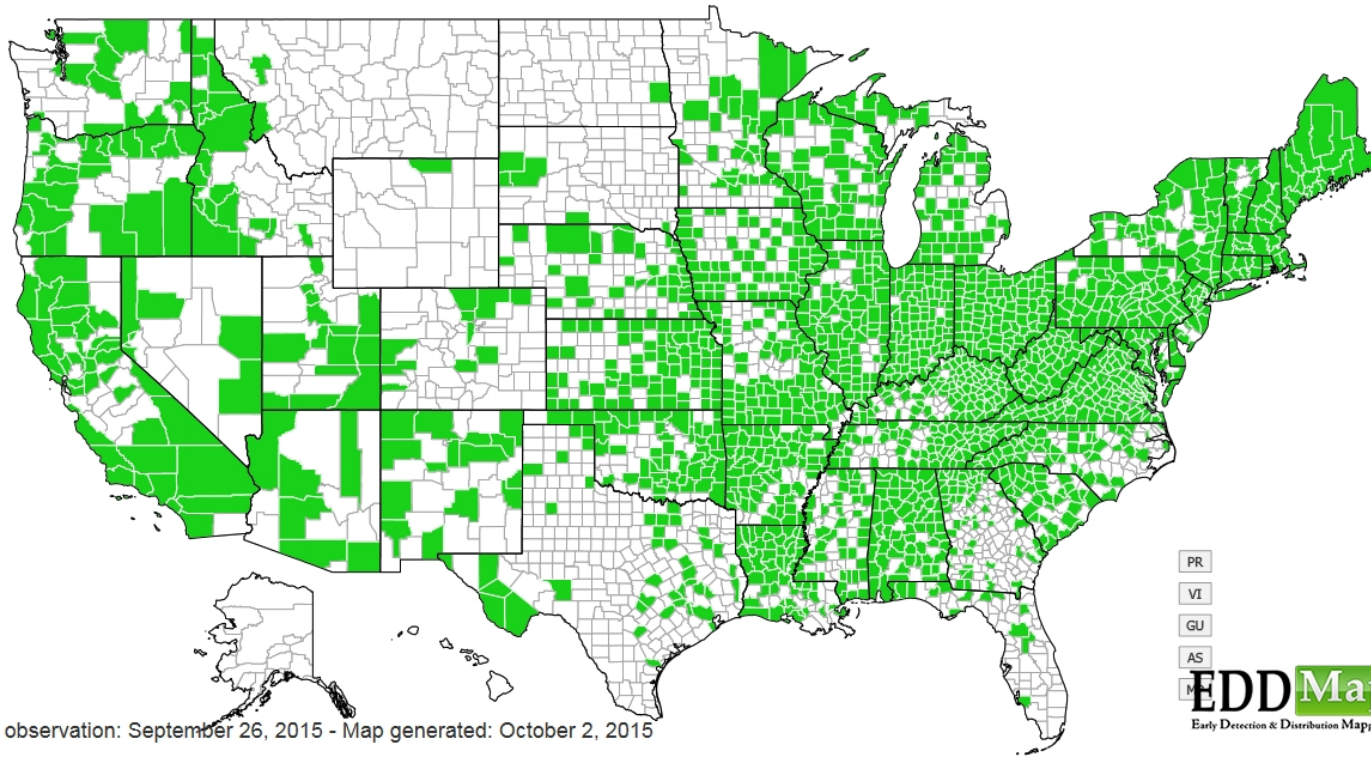


EXAMPLE OF AN INVASIVE SPECIES NATIVE TO PARTS OF THE US

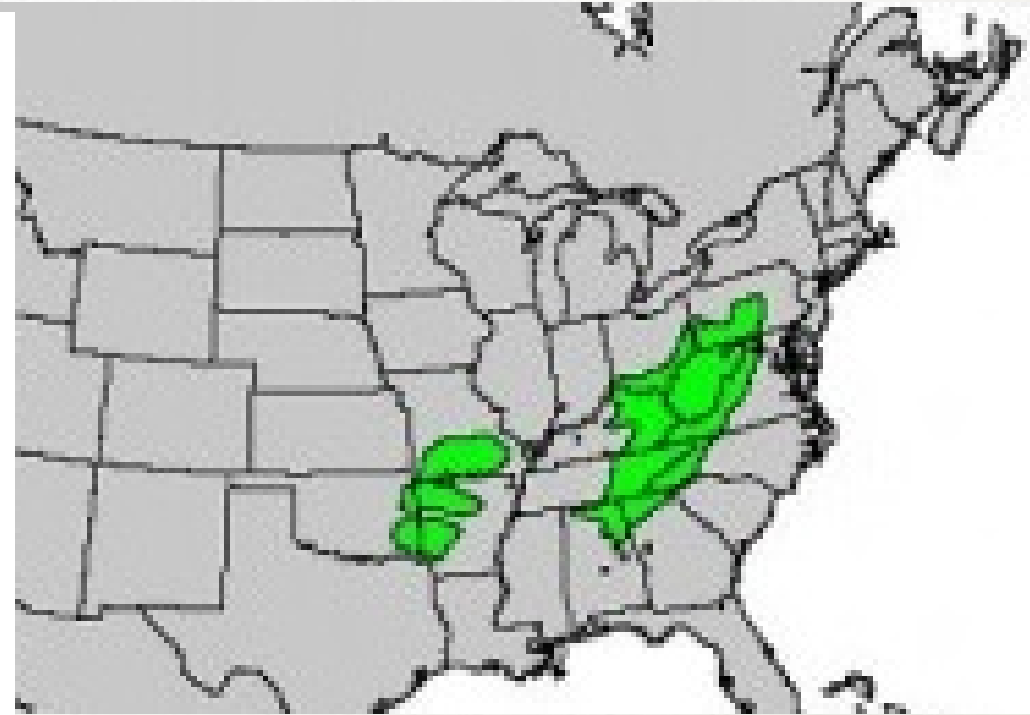
- Black Locust:
- Native to parts of United States



Robinia pseudoacacia



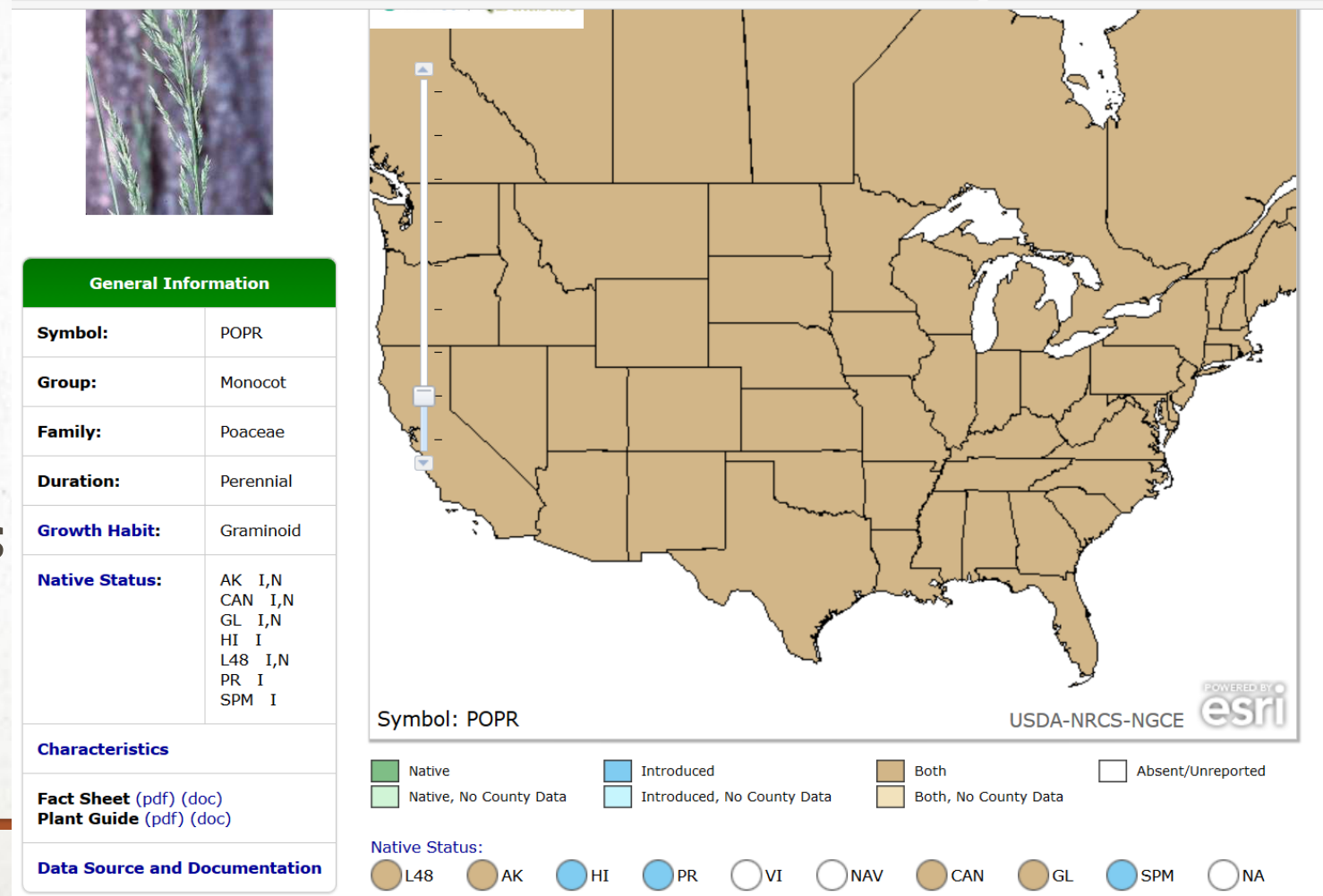
Last observation: September 26, 2015 - Map generated: October 2, 2015



WITH OTHER SPECIES WE CAN'T AGREE IF THEY ARE NATIVE TO THE UNITED STATES

EXAMPLE: KENTUCKY BLUEGRASS

- Wikipedia says: “Although the species is spread over all of the cool, humid parts of the U.S., it is not native to North America.”
- USDA PLANT DATABASE states we have both native and non-native biotypes in US
 - All lower 48 states



HOW DO INVASIVE SPECIES CAUSE HARM?

IMPACT

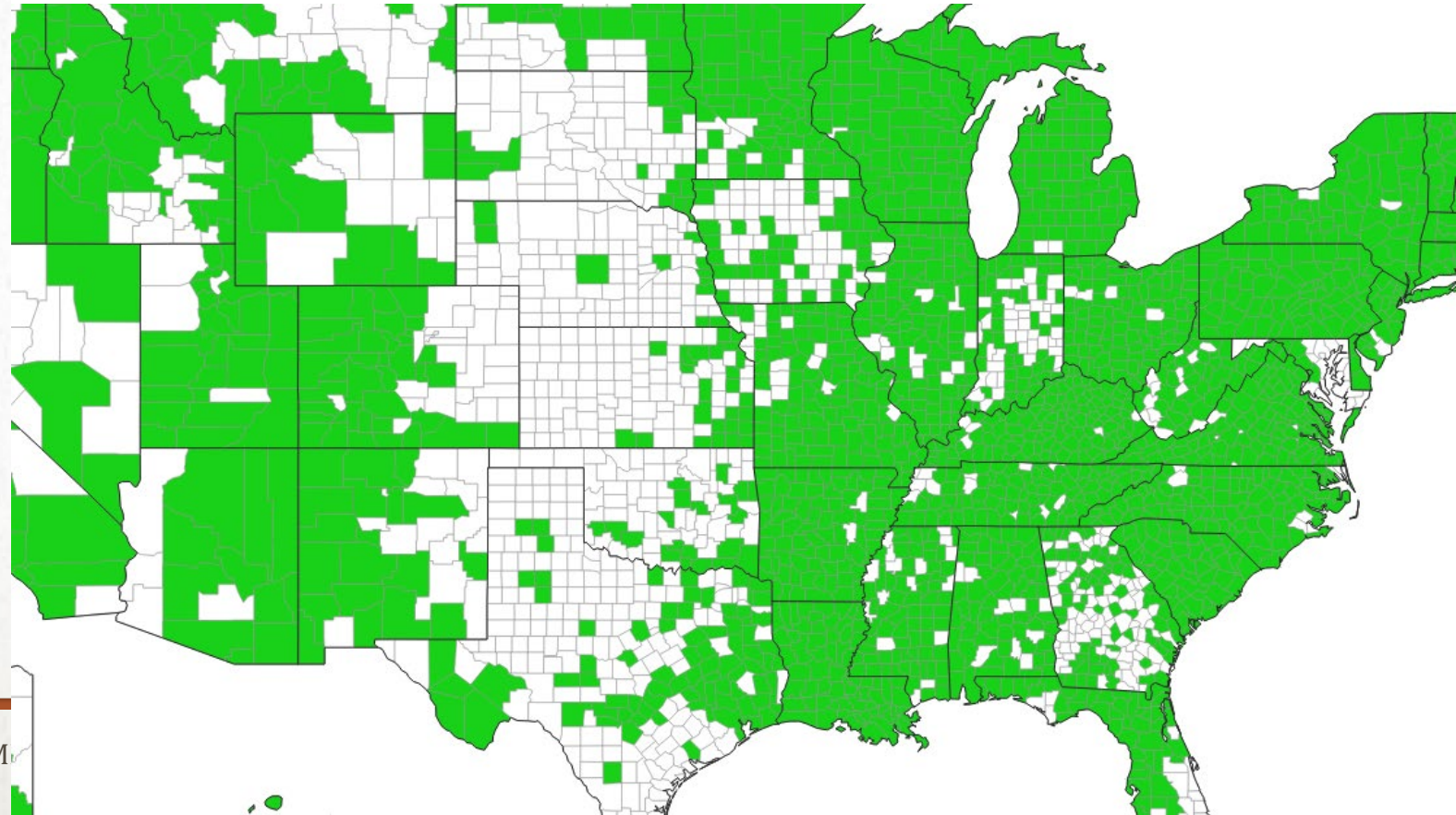
- Causing impact or the potential to cause impact
 - EXAMPLE Causing
 - Wild Parsnip is burning people's skin throughout Midwestern US
 - EXAMPLE potential: Federal noxious weed
 - Types of impact
 - Economic
 - Environment
 - Human health
-

AN EXAMPLE OF POTENTIAL IMPACTS

BUSH HONEYSUCKLE

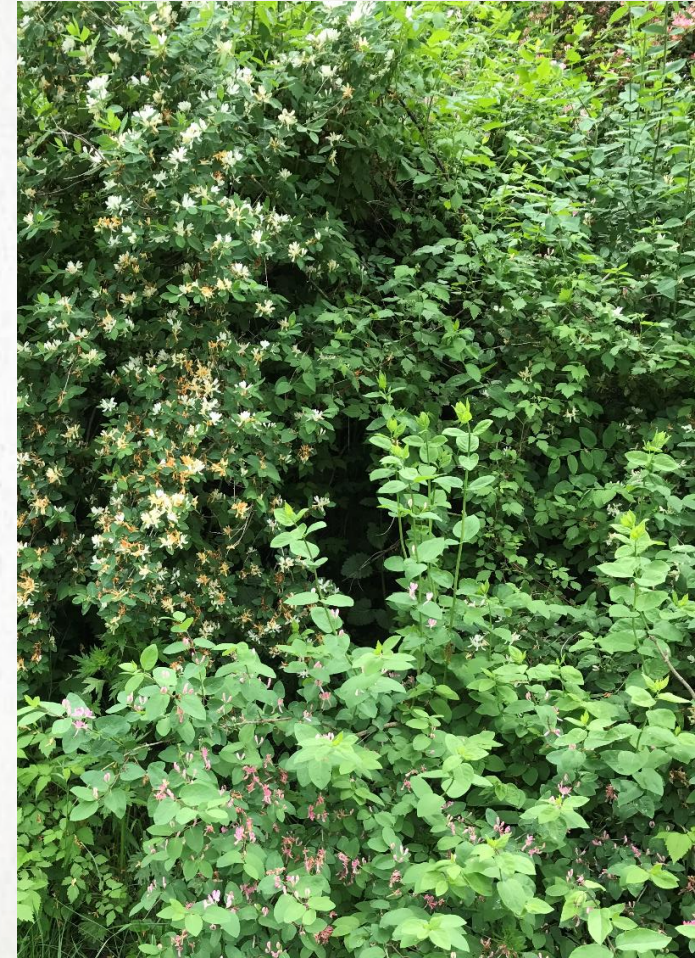
- Introduced late 1890s
- Dominates forest understories
- Cause many impacts

Distribution of bush honeysuckles by county 2018
(www.eddmaps.org)



IMPACTS OF BUSH HONEYSUCKLE

- Economic
 - Slows timber regeneration 15-30%
- Environment
 - Outcompetes native species (extinct after 20 yrs invasion)
 - Poor resource for wildlife (trout and nesting birds)
- Human health
 - Good habitat for the lone star tick
 - Lone star tick carries disease ehrlichiosis



WHY IS IT IMPORTANT TO KNOW ABOUT THE DEFINITION?

- Many laws exist
 - Federal
 - **State**
 - Local
- You may be required to
 - manage specific species
 - not spread specific species

Search NISIC

- Search all USDA
- Advanced Search
- Search Tips

Browse by Geography

- United States
- International

Browse by Subject

- Aquatic Species
- Plants
- Animals
- Microbes
- Economic Impacts
- **Laws and Regulations**
- Manager's Tool Kit
- Resource Library





You are here: [Home](#) / [Laws and Regulations](#) / [State](#)

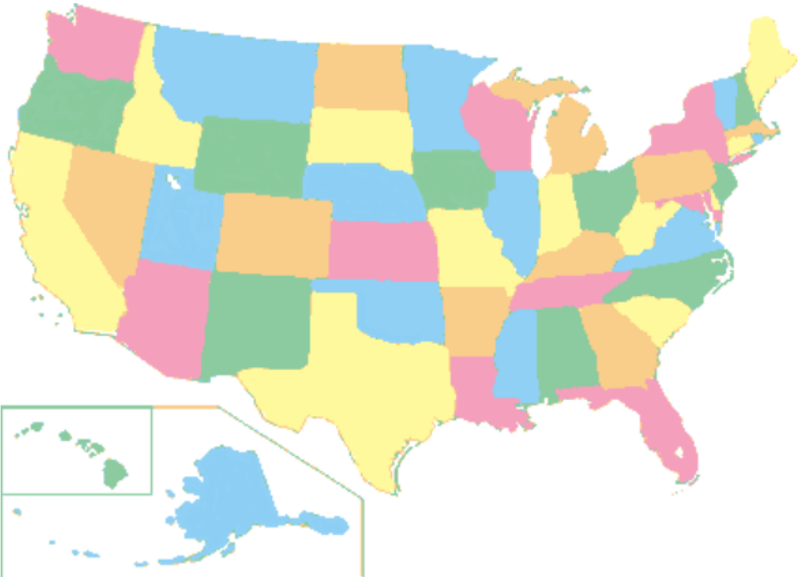
Laws and Regulations

State Laws and Regulations

Click on a state, or select from the **list of states** below the map, or view **multistate resources**.

Note: Information provided is for educational purposes. We make no warranties or guarantees about the accuracy, completeness, or adequacy of the information contained on this site or the information linked to. Please check official sources.

SHARE    



Midwest Invasive Plant List

Over 300 plant species are considered to be invasive, noxious, or pests by one or more jurisdictions in the Midwestern U.S. The following regional list compiles all the plant species regulated through state law and/or listed as invasive by a state agency or invasive plant council in the eight-state region that MIPN serves. The list is presented alphabetically by Latin name but is easily searchable by common or Latin name – just start typing in the search box! You can also sort the database by listing status by clicking the carrot next to each column header.

Links to the appropriate state laws or agency/plant council webpages are provided in the index below. If you are aware of an updated list or amended law, please help us keep this list up to date by emailing MIPN's Coordinator at mipn@mortonarb.org.

Last updated January 2018. Please find a downloadable Excel workbook of this [list here](#).

Illinois Law

Aq = [Illinois Aquatic Injurious Plant Species](#)

N = [Illinois noxious weed](#)

E = [Illinois exotic weed](#)

[Illinois list](#)

A = General invasive plant list

Indiana Law

N = [Indiana noxious weed](#)

P = [Prohibited plant species](#)

Pe = [Pest species](#)

[Indiana List](#)¹

Michigan Law

N = Noxious weed

P = Prohibited plant species

R = Restricted plant species

[Michigan list \(Appendix C\)](#)

A = Widespread distribution in 1 or more of MI's ecoregions

B = Local distribution in 1 or more of MI's ecoregions

C = Isolated distribution in 1 or more of MI's ecoregions

W = Watch List

Minnesota Law

[MN Aquatic Plants](#)

Missouri Law

A = General noxious weed list

[Missouri List](#)

A = [General invasive plant list](#)

Aq = [Aquatic nuisance species](#) (Appendix C)

Ohio Law

P = Prohibited noxious weed

R = Restricted invasive plants

[Ohio List](#)⁶

A = Invasive

B = Pending further review

SOMETIMES NATIVE SPECIES ARE NOT DESIRABLE!

- Consider managing other vegetation when conflicts with goals/objectives



APPROACH TO MANAGING INVASIVE PLANTS

Step 1: Plant identification

Step 2: Distribution of population

Step 3: Select appropriate control tactic(s)

Step 4: Apply control method(s)

Step 5: Monitor and adapt management



STEP 1: PLANT IDENTIFICATION

- Management techniques are usually species specific

Black locust



Callery pear



STEP 1: PLANT IDENTIFICATION

- Techniques for controlling black locust will differ Callery pear

Black locust girdling



<http://scuppernongspringsnaturetrail.com/tag/hartland-marsh/>

Callery pear control recommendations

Callery Pear - Control

- Small trees can be removed by hand in areas of light infestation in moist soils
- For heavier infestations of small trees, foliar applications of 2-5% of glyphosate or triclopyr in mid to late summer have been effective
- Medium to large trees should be cut down and (immediately) stump treated with glyphosate or triclopyr at 25 to 50% solution
- Basal bark treatment can be used for trees up to 6" in diameter; 20% triclopyr solution in a 12" band around the entire circumference; late winter/early spring or mid-summer is most successful



http://www.slideshare.net/mdc_online/the-plague-of-pears

STEP 1: PLANT IDENTIFICATION

- Many resources available, pick the one that fits your needs!
 - Books, guides, factsheets
 - Online resources
 - Mobile Apps
 - Expert opinion



3.2924-11

Japanese knotweed (*Polygonum cuspidatum*)

Japanese knotweed is an herbaceous perennial, growing up to 10 tall. Hollow, reddish, arching bamboo-like stems are smooth and stout, and they can persist after plant dies back each year. The base of the stem above each joint is swollen and surrounded by a membranous sheath (nodes).

Legal status: It is a noxious weed in Wisconsin.

Leaves: Alternate, egg-shaped to almost triangular, 4-6" long, 3-4" wide. Dark green on upper surface and pale green on lower surface.

Flowers: Blooms in late summer. Flowers are numerous, highly branched, tiny, creamy white or greenish and found where the leaf attaches to the stem (axils) near the tip of stems.

Fruit and seeds: Small, winged, triangular nuts carry very small, shiny seeds.

Roots: Plants arising from seed have a taproot up to 6" deep. Rhizomes can reach 45' or more from parent plants and give rise to new stalks. Plants arising from seed and rhizomes also have fibrous roots.

Similar species: Giant knotweed (*P. sachalinense*) is also invasive, but grows up to 12' tall with larger leaves. The two species are known to hybridize.

Ecological threat:

- Invades upland and lowland sites that are disturbed and undisturbed.
- Poses a significant threat to riparian areas, where it can rapidly spread.
- It tolerates shade, high temperatures, high salinity, and drought.
- It can be transported to new sites as a contaminant in fill dirt or on equipment.

During floods, it spreads downstream by shoot fragments, rhizomes, or occasionally by seeds. Escape from neglected gardens and discarded outgrains are common routes of dispersal from urban areas.

Although reported to not produce viable seed, several studies have shown that populations of knotweed in the United States can produce viable seed that readily germinates and survives in field conditions.



A Field Guide to Invasive Plants of the Midwest



University of Wisconsin - Weed Identification & Management

W

Weed Identification & Management


Home
Weed ID Tool
Weed Selector Tool

Weed Information - UW Madison

Welcome to University of Wisconsin's Weeds Information website. Weeds are defined as undesirable plants or plants that oppose the management objective of the land. This project conducts research and education activities designed to provide useful information to the public that is specific to weedy plants of the midwest, specifically Wisconsin.

Weeds of Concern:

Perennial pepperweed (*Lepidium latifolium* L.) is an invasive creeping herbaceous perennial weed first found in Wisconsin in 2007. This plant is a member of the mustard family and is capable of invading pastures, alfalfa fields, roadsides and many other upland sites, as well as riparian areas, drainage ditches, floodplains, and wetlands. Plants emerge early in the spring, forming a rosette and persist for several weeks. By late spring, plants bolt and produce a flowering shoot. After seed production, flowering shoots die back, although in moist soils new rosettes can emerge in the fall. [Link to factsheet](#)



Tube

Search



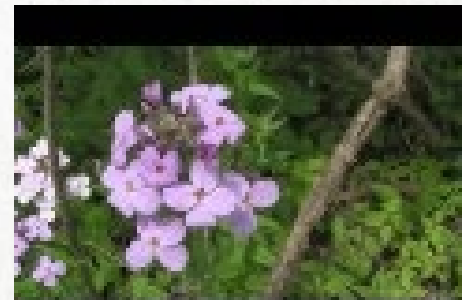
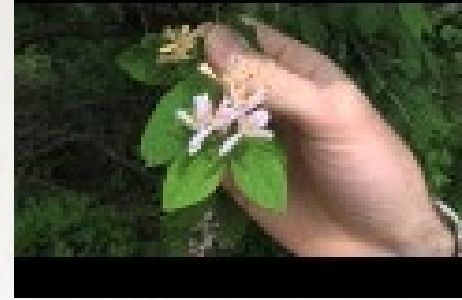
1:07 / 2:10

Leafy Spurge, identification of the Wisconsin Invasive Species *Euphorbia esula*

INVASIVE PLANT ID VIDEOS

[HTTP://FYI.UWEX.EDU/WEEDSCI](http://fyi.uwex.edu/weedsci)

- Black swallow-wort
- Bull thistle
- Bush honeysuckles
- Canada thistle
- Creeping bellflower
- Crown vetch
- Dame's rocket
- Garden valerian
- Garlic mustard
- Hill mustard
- Japanese hedge parsley
- Japanese hop
- Leafy spurge
- Perennial pepperweed
- Plumeless thistle
- Poison hemlock
- Spotted knapweed
- Teasels
- Wild chervil
- Wild parsnip



Wild Chervil

Anthriscus sylvestris

A listed invasive plant
found on roadsides in Wisconsin

The logo for the University of Wisconsin Extension, featuring the letters "UW" in blue above the word "Extension" in a stylized blue and black font.
University of Wisconsin-Extension



COLLEGE OF
AGRICULTURAL & LIFE SCIENCES
University of Wisconsin-Madison

STEP 2: DISTRIBUTION OF POPULATION

Critical for selection of management techniques

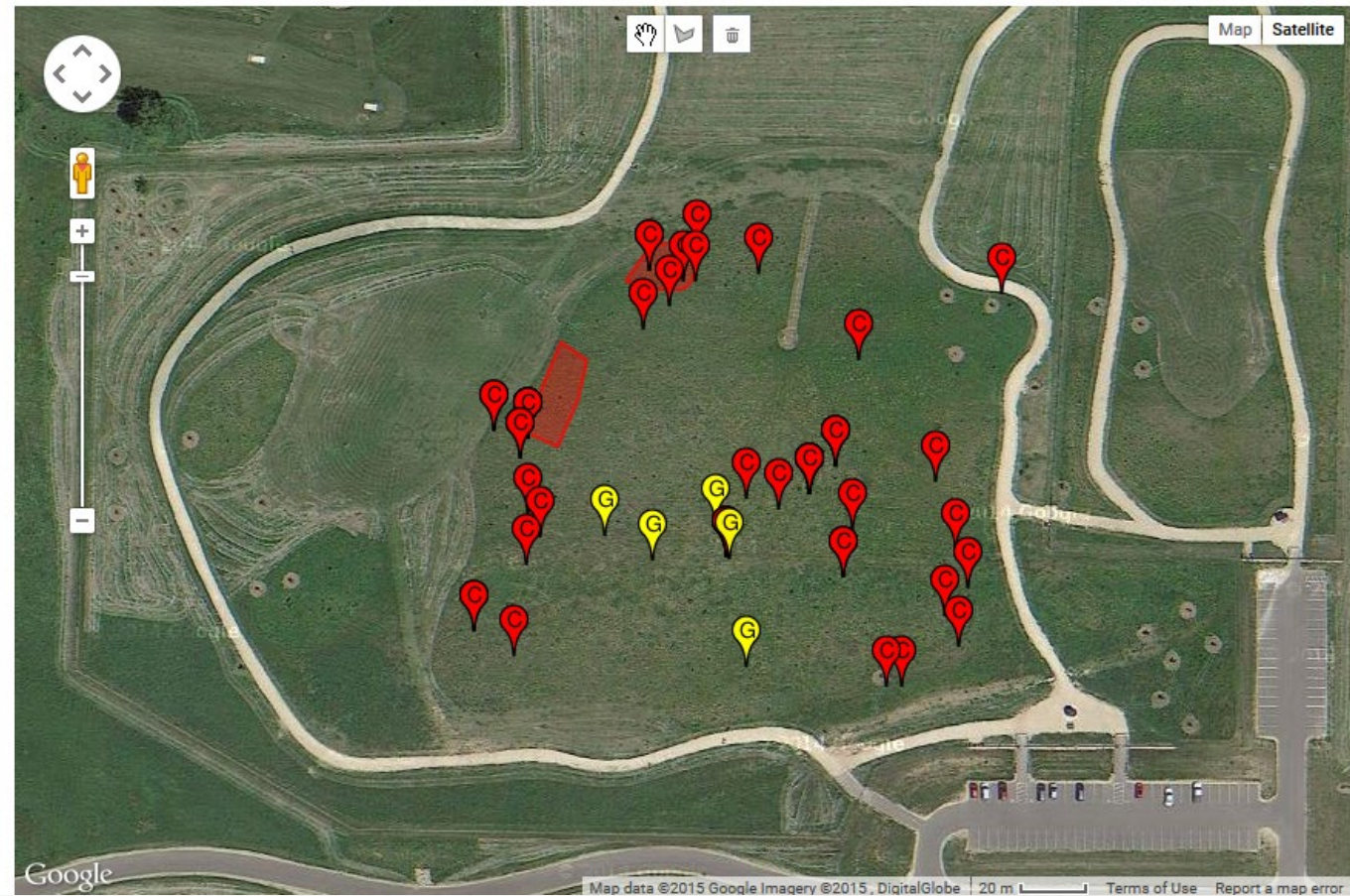
- Map if possible
- Look for source of population



STEP 2: DISTRIBUTION OF POPULATION

Tools for monitoring:

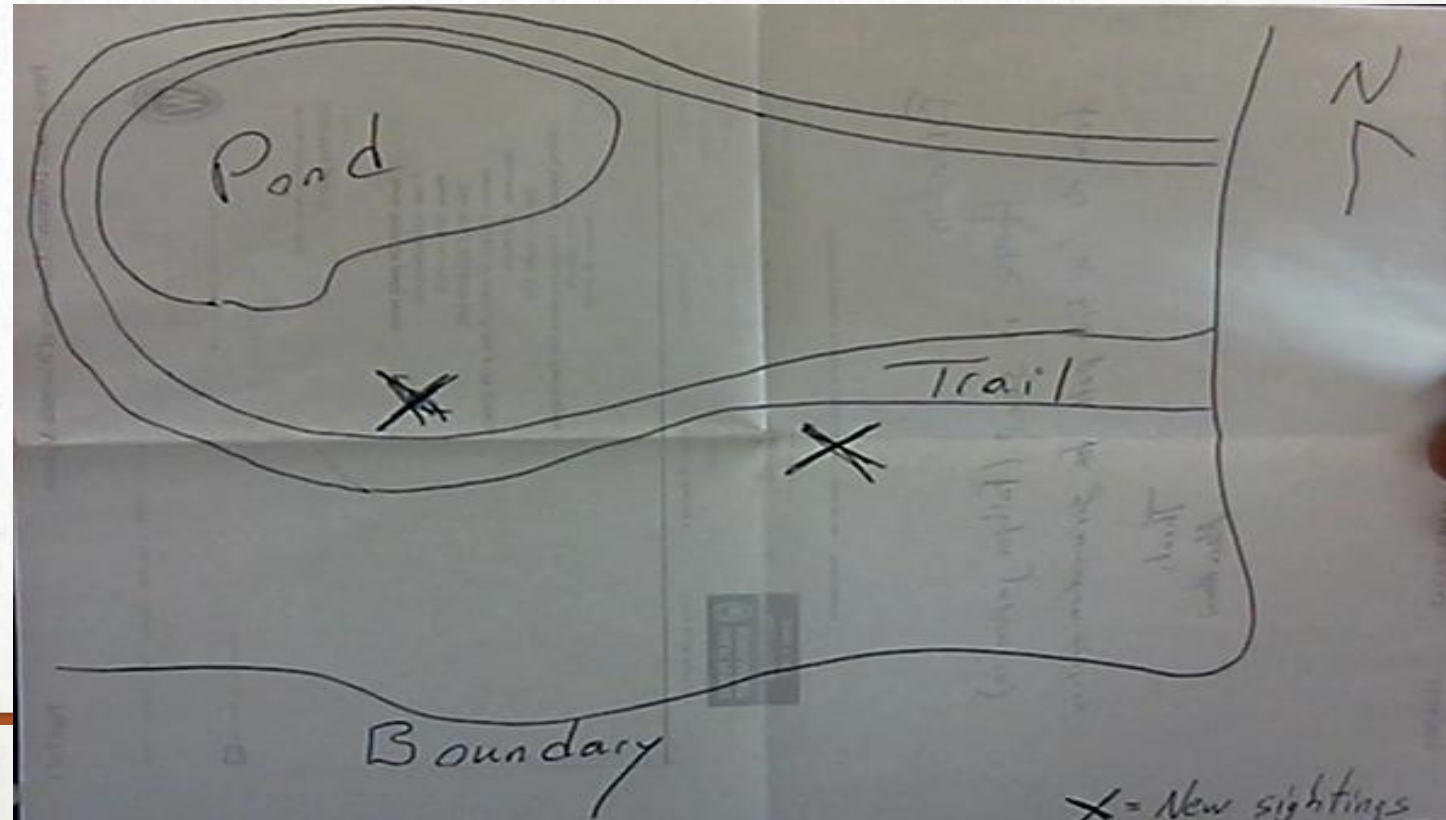
- Many choices/options
- Pick the option that fits
 - Cost range
 - Skillset
 - Management goal



Map created from www.ISMtrack.org (Only available in WI/MN)

STEP 2: DISTRIBUTION OF POPULATION

- Nothing wrong with graphite/ink
 - Need to periodically update



STEP 2: DISTRIBUTION OF POPULATION

Things to consider when monitoring/mapping

- Tool/resource for mapping
 - Do I have support and \$\$\$ to use online resources?
 - Plant species to map
 - Invasive or include desirable plants
 - How should I map?
 - Point vs area (polygon)
 - Presence/absence vs density/cover of plants
 - How often should I monitor after control?
-

STEP 3: SELECT APPROPRIATE CONTROL TACTIC

- Evaluate options based on info from Step 1 and 2
 - Search trusted sources for control recommendations
 - effectiveness
 - cost
 - impact plant species present/ planted?
 - Is it appropriate for the site/goal of the land?
-

STEP 3: SELECT APPROPRIATE CONTROL TACTIC

- Manipulation of the environment
- Physical/mechanical management
- Prescribed fire
- Biological control
- Herbicide



RESOURCES ARE AVAILABLE TO HELP

- Factsheets
- Online guides
- Experts



Brandon Panke and Mark Renz

Invasive plants can thrive and aggressively spread beyond their natural range, disrupting ecosystems. The *Management of Invasive Plants in Wisconsin* series explains how to identify invasive plants and provides common management options. Management methods recommend specific timings for treatment, as well as expert effectiveness. For more information, go to: ui.wisc.edu/weeds/category/invasive-plants-of-wisconsin.

A3304-11

Japanese knotweed (*Polygonum cuspidatum*)

Japanese knotweed is an herbaceous perennial, growing up to 10' tall. Hollow, reddish, arching, bamboo-like stems are smooth and stout, and they can persist after plant dies back each year. The base of the stem above each joint is swollen and surrounded by a membranous sheath (ocrea).

Legal classification in Wisconsin:
Restricted

Leaves: Alternate, egg-shaped to almost triangular, 4-6" long, 2-4" wide. Dark green on upper surface and pale green on lower surface.

Flowers: Bloom in late summer. Flowers are numerous, highly branched, tiny, creamy white or greenish and found where the leaf attaches to the stem (axils), near the tips of stems.

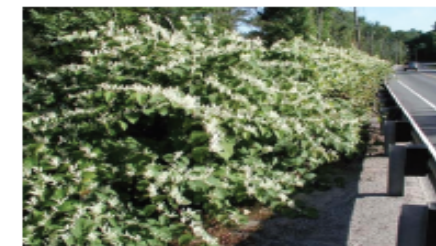
Fruit and seeds: Small, winged, triangular nuts carry very small, shiny seeds.

Roots: Plants arising from seed have a taproot up to 6' deep. Stout rhizomes can reach 4" or more from parent plants and give rise to new stalks. Plants arising from seed and rhizome also have fibrous roots.

Similar species: Giant knotweed (*P. sachalinense*) is also invasive, but grows up to 12' tall with larger leaves. The two species are known to hybridize.

Ecological threat:

- Invades upland and lowland sites that are disturbed and undisturbed.
- Poses a significant threat to riparian areas, where it can rapidly spread.
- It tolerates shade, high temperatures, high salinity, and drought.
- It can be transported to new sites as a contaminant in fill dirt or on equipment. During floods, it spreads downstream by shoot fragments, rhizomes, or occasionally by seeds. Escapes from neglected gardens and discarded cuttings are common routes of dispersal from urban areas.
- Although reported to not produce viable seed, several studies have shown that populations of knotweed in the United States can produce viable seed that readily germinate and survive in field conditions.



RESOURCES TO ASSIST IN CONTROL

University of Wisconsin Extension (UWEX)

- <https://fyi.uwex.edu/wifdn>
- Google UWEX invasive factsheet

Midwest Invasive Plant Network

- (www.mipn.org)
- google mipncontroldatabase



MANAGEMENT OF
INVASIVE PLANTS
IN WISCONSIN
Brandon Finkbeiner and Mark Renz

A3524-11

Japanese knotweed (*Polygonum cuspidatum*)

Japanese knotweed is an herbaceous perennial, growing up to 10' tall. Hollow, reddish, arching, bamboo-like stems are smooth and stout, and they can persist after plant dies back each year. The base of the stem above each joint is swollen and surrounded by a membranous sheath (ocrea).

Legal classification in Wisconsin:
Restricted

Leaves: Alternate, egg-shaped to almost triangular, 4-6" long, 3-4" wide. Dark green on upper surface and pale green on lower surface.

Flowers: Bloom in late summer. Flowers are numerous, highly branched, tiny, creamy white or greenish and found where the leaf attaches to the stem (axils), near the tips of stems.

Fruit and seeds: Small, winged, triangular fruits carry very small, shiny seeds.

Roots: Plants arising from seed have a taproot up to 6' deep. Stout rhizomes can reach 4' or more from parent plants and give rise to new stalks. Plants arising from seed and rhizome also have fibrous roots.

Similar species: Giant knotweed (*P. sachalinense*) is also invasive, but grows up to 12' tall with larger leaves. The two species are known to hybridize.




Ecological threat:

- Invades upland and lowland sites that are disturbed and undisturbed.
- Poses a significant threat to riparian areas, where it can rapidly spread.
- It tolerates shade, high temperatures, high salinity, and drought.
- It can be transported to new sites as a contaminant in fill dirt or on equipment. During floods, it spreads downstream by shoot fragments, rhizomes, or occasionally by seeds. Escapes from neglected gardens and discarded cuttings are common routes of dispersal from urban areas.
- Although reported to not produce viable seed, several studies have shown that populations of knotweed in the United States can produce viable seed that readily germinate and survive in field conditions.



FACTSHEETS ON INVASIVE PLANTS MIDWEST

- UWEX has 49 species with detailed factsheets
- Information collected and summarized
 - Research
 - Experts
- Summarizes common and effective control methods
 - Effectiveness
 - Details on how to apply

   <https://fyi.uwex.edu/wifdn/learn/inv>

Common Name

Biennial thistles

Bird's-foot trefoil

Black locust

Black swallow-wort

Buckthorns

Bush honeysuckles

Canada thistle

Common tansy

Creeping bellflower

Crown vetch

Dame's rocket

Field bindweed

Garden valerian

Garlic mustard

Hill mustard

Japanese barberry

Japanese hedge-parsley

Japanese honeysuckle

MANAGEMENT OF INVASIVE PLANTS IN WISCONSIN

Mowing

Effectiveness in season: 50–70%
Season after treatment: < 50%

Mowing for 2–3 years will decrease the vigor of a stand and suppress, but not control, crown-vetch. Begin mowing in the late spring and repeat at least three times a year as plants regrow. To be sure that mowing will prevent seed production, mow before plants flower.

Prescribed burning

Effectiveness in season: 50–70%
Season after treatment: < 50%

Late spring burns can kill germinating seedlings and can suppress above-ground growth of established plants, depending on fire intensity. After the fire, established plants will quickly resprout and reinvade areas; this management method is not recommended unless integrated with other techniques. Low-intensity and short-duration burns can increase the germination rate of vetch seeds. Fire may benefit other species well-adapted to this management (e.g., prairie grasses), resulting in improved competition with crown-vetch. A handheld propane torch can be effective for treating seedlings.

Grazing

Effectiveness in season: < 50%
Season after treatment: < 50%

Crown-vetch is very palatable to a number of grazing animals. Crown-vetch tolerates grazing, but heavy grazing can reduce stands. This typically results in invasion by other non-native species. If using grazing as a control method, the area should be overseeded with desirable species or grazing should be used as part of an integrated control program. Grazing can be an effective method to prepare a site for later herbicide application.

Chemical control

Foliar

Apply directly to individual plants or broadcast across an infested area. Broadcasted foliar applications are typically the most cost-effective treatment in dense infestations. Use lower rates on smaller plants and less dense populations and higher rates on larger plants and denser populations. Absorption of herbicide can be limited with this species, resulting in reduced effectiveness. Including a recommended surfactant at 0.25–0.5% can alleviate any potential reduction in effectiveness.

2,4-D*

Effectiveness in season: 50–70%
Season after treatment: < 50%

Common name: Many

Rate:

broadcast: 2.0–4.0 lb a.e./A
spot: Equivalent to broadcast rates.

Timing: Apply when plant is fully leafed out and actively growing.

Caution: Use aquatically labeled product if potential exists for solution to contact surface water. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants.

aminopyralid*

Effectiveness in season: 90–100%
Season after treatment: 70–90%

Common name: Milestone

Rate:

broadcast: 5–7 fl oz/A
(0.08–0.1 lb a.e./A)

spot: Equivalent to broadcast rates.

Timing: Apply before flowering.

Remarks: 14 fl oz/A can be used as long as less than half of the area is treated. Depending on the volume of solution applied per acre, typical mixtures for spot treatments are 2–8 mL Milestone per gallon of water.

Caution: Do not apply directly to water or to areas where surface water is present. Remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

clpyralid*

Effectiveness in season: 70–90%
Season after treatment: 70–90%

Common name: Transline

Rate:

broadcast: 16–21 fl oz/A
(0.4–0.5 lb a.e./A)

spot: 0.25–0.4% (0.008–0.01 lb a.e./gal)

Timing: Apply when plant is fully leafed out and actively growing.

Caution: Do not apply directly to water or to areas where surface water is present. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not

INVASIVE PLANT CONTROL DATABASE



Midwest Invasive Plant Network

WELCOME TO THE INVASIVE PLANT CONTROL DATABASE

This website contains information on how to control many invasive plants common to the Midwestern United States. Information was collected from both scientific literature and expert opinions and summarized by the Midwest Invasive Plant Network (MIPN), in partnership with the Mark Renz lab from the University of Wisconsin-Madison. Methods that are uncommon, do not provide sufficient control, or lack information for determining effectiveness on target species are omitted. For each species, information was reviewed by four individuals, including two identified as experts on control of that species. Information is searchable by several fields to improve the user's ability to find pertinent information. To view the search feature, you must first select an invasive plant. Additionally, users have the option of entering personal experiences with managing specific species (see "add new case studies" under search results). These case studies will be visible to all users once verified by MIPN staff.

We make no representations or warranties of any kind, express or implied, about the completeness, accuracy, reliability, suitability, or availability with respect to the information or products on the website. Any reliance you place on such information is therefore strictly at your own risk. References to pesticide products on this website are for your convenience and are not an endorsement or guarantee of one product over another.

[Start Search](#)

INVASIVE PLANT CONTROL DATABASE



WELCOME TO THE INVASIVE PLANT CONTROL DATABASE

This website contains information on how to control many invasive plants common to the Midwestern United States. Information was collected from both scientific literature and expert opinions and summarized by the Midwest Invasive Plant Network (MIPN), in partnership with the Mark Renz lab from the University of Wisconsin-Madison. Methods that are uncommon, do not provide sufficient control, or lack information for determining effectiveness on target species are omitted. For each species, information was reviewed by four individuals, including two identified as experts on control of that species. Information is searchable by several fields to improve the user's ability to find pertinent information. To view the search feature, you must first select an invasive plant. Additionally, users have the option of entering personal experiences with managing specific species (see "add new case studies" under search results). These case studies will be visible to all users once verified by MIPN staff.

We make no representations or warranties of any kind, express or implied, about the completeness, accuracy, reliability, suitability, or availability with respect to the information or products on the website. Any reliance you place on such information is therefore strictly at your own risk. References to pesticide products on this website are for your convenience and are not an endorsement or guarantee of one product over another.

Step 1: Select Plant

Step 1: Select a species by choosing a common or scientific name from the list, or by typing a name in the search box.

☒ Free Form Search ☐ Common Name List ☐ Scientific Name List

a

Select Plant

tree-of-heaven (*Ailanthus altissima*)
garlic mustard (*Alliaria petiolata*)
wild chervil (*Anthriscus sylvestris*)
hill mustard (*Bunias orientalis*)
creeping bellflower (*Campanula rapunculoides*)
plumeless thistle (*Carduus acanthoides*)
musk thistle (*Carduus nutans*)
Asian bittersweet (*Celastrus orbiculatus*)
spotted knapweed (*Centaurea stoebe*)
Canada thistle (*Cirsium arvense*)

For more information, contact MIPN via e-mail: mipninfo@gmail.com

SPECIES PRESENT IN THE DATABASE

- Amur honeysuckle
- Asian bittersweet
- Bell's honeysuckle
- bird's-foot trefoil
- black locust
- black swallowwort
- border privet
- bull thistle
- Canada thistle
- common buckthorn
- common privet
- common tansy
- common teasel
- creeping bellflower
- crown vetch
- cut-leaved teasel
- dame's rocket
- European marsh thistle
- field bindweed
- garlic mustard
- glossy buckthorn
- hill mustard
- hybrid cattail
- Japanese barberry
- Japanese hedge parsley
- Japanese honeysuckle
- Japanese hop
- Japanese knotweed
- Japanese stiltgrass
- leafy spurge
- Morrow's honeysuckle
- multiflora rose
- musk thistle
- narrow-leaved cattail
- plumeless thistle
- poison hemlock
- purple loosestrife
- quackgrass
- sericea lespedeza
- spotted knapweed
- spreading hedge parsley
- Tatarian honeysuckle
- tree-of-heaven
- white sweetclover
- wild chervil
- wild parsnip
- yellow sweetclover

accuracy, reliability, suitability, or availability with respect to the information or products on the website. Any reliance you place on such information is therefore strictly at your own risk. References to pesticide products on this website are for your convenience and are not an endorsement or guarantee of one product over another.

Step 1: Select Plant

Step 1: Select a species by choosing a common or scientific name from the list, or by typing a name in the search box.

☒ Free Form Search ☐ Common Name List ☐ Scientific Name List

Alliaria petiolata

Select Plant

[Reset Search](#)

Step 2: Select Search Parameters

Step 2: Select search parameter(s) of interest. If no parameters are selected all control methods will be displayed. For effectiveness ratings, methods that meet or exceed the criteria selected will be displayed.

Under the Search Results you will find

- Plant Identification information – information on species identification, including photographs and a current distribution map.
- Ecological Threats – threats posed to natural ecosystems by this species.
- Case Studies – Detailed success (and failures) on how to control specific species contributed by experienced personnel.
- Non-chemical and chemical control methods that fit the selected search criteria. **Please note you are responsible for using pesticides in accordance with the label directions and state and federal laws.** Herbicide availability and registered uses vary from state to state. Contact your state department of agriculture for information on the correct use and licensing required for any pesticide application.

You may reset the search criteria or the species you have selected at any time by selecting the corresponding links on the right hand side of the page.

Are you a novice?:

- ☐ Yes
☐ No

Habitat Type:

- ☐ Aquatic
☐ Forest
☐ Pasture/CRP
☐ Prairie
☐ Right of Way
☐ Riparian/Wetland

Seasons:

- ☐ Winter
☐ Spring
☐ Summer
☐ Fall

Effectiveness (in season):

☆☆☆☆

Effectiveness (year after treatment):

☆☆☆☆

Search Control Methods

Search Results

[Plant Identification information >](#)

[Display Ecological Threats >](#)

[Display Case Studies >](#)



[Add new user Case Study](#)

Non-Chemical controls

New (Type)	Description
<p>Type - Mowing</p> <p>User Type - Professional</p> <p>Effectiveness - in season ★★★★☆ year after treatment ★☆☆☆☆</p>	<p>Mowing as low as possible timed before the emergence of flowers can suppress garlic mustard. Plants may resprout and still flower. Monitor populations and repeat mowing if concerned about seed production. Care must be taken not to mow when mature seeds could be present as this will spread the seed. Mowing will not eradicate first year plants as they resprout. While mowing has been reported as an effective means of suppression there is no data on how many years of mowing are required to control a population.</p>
<p>Type - Prescribed burning</p> <p>User Type - Professional</p> <p>Effectiveness - in season ★★★☆☆ year after treatment ★☆☆☆☆</p>	<p>Burn in spring before desirable vegetation begins growing, but after garlic mustard seedlings have emerged. Burning will control seedlings, but survival of second-year plants is variable depending upon fire intensity. Burning can stimulate germination of seedlings, but intensive management of these seedlings after the burn can dramatically reduce garlic mustard seeds in the soil. A hand-held propane torch can be effective for treating seedlings.</p>
<p>Type - Removal</p>	<p>Pulling or cutting the root from the stem before flowering are effective individual plant control. Pull if soil conditions allow for the removal of the tap root. Pulling second-year plants is effective.</p>

<p>Type - Foliar</p> <p>User Type - Novice</p> <p>Effectiveness - in season ★★★★★ year after treatment ★☆☆☆☆</p>	<p>Active Ingredient (A.I.): glyphosate</p> <p>Common product name: Roundup Pro; many others (Aquatic: Rodeo; AquaNeat)</p>	<p>Rate - (broadcast) 0.75 - 1.5 lb a.e./A (spot) For a 3 lb a.e./gal product. 1 - 3% (0.03 - 0.09 lb a.e./gal)</p> <p>Timing - Apply to rosettes in fall or spring, bolting, or flowering plants. Use higher rates when air or soil temperatures drop below 40°F to maintain control.</p> <p>Remarks - Fall applications will only control rosettes and will not control seedlings that emerge in the spring.</p> <p>Caution - Use product labeled for aquatic use if potential exists for solution to contact surface waters. Applications can result in bare ground as glyphosate is not selective. Overspray or drift to desirable plants should be avoided, as even minute quantities of the spray may cause severe injury to plants.</p>
<p>Type - Foliar</p> <p>User Type - Professional</p> <p>Effectiveness - in season ★★★☆☆ year after treatment ★☆☆☆☆</p>	<p>Active Ingredient (A.I.): bentazon</p> <p>Common product name: Basagran; Basagran T/O</p>	<p>Rate - (broadcast) 16 - 32 fl oz/A (0.5 - 1 lb a.e./A) (spot) Equivalent to broadcast rates.</p> <p>Timing - Apply to rosettes in fall or spring to bolting plants.</p> <p>Caution - Do not apply directly to water or to areas where surface water is present. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Overspray or drift to desirable plants should be avoided, as even minute quantities of the spray may cause injury to plants.</p>
<p>Type - Foliar</p> <p>User Type - Novice</p>	<p>Active Ingredient (A.I.): triclopyr</p> <p>Common product name: Garlon 4; Element 4 (Aquatic: Garlon 34; Element 424)</p>	<p>Rate - (broadcast) 16 - 32 fl oz/A (0.5 - 1 lb a.e./A) (spot) 1 - 2% (0.04 - 0.08 lb a.e./gal)</p> <p>Timing - Apply to rosettes in fall or spring, bolting, or flowering plants. Use higher rates when air or soil temperatures drop below 40°F to maintain control.</p>

entering personal experiences with managing specific species (see "add new case studies" under search results). These case studies will be visible to all users once verified by MIPN staff.

We make no representations or warranties of any kind, express or implied, about the completeness, accuracy, reliability, suitability, or availability with respect to the information or products on the website. Any reliance you place on such information is therefore strictly at your own risk. References to pesticide products on this website are for your convenience and are not an endorsement or guarantee of one product over another.

Step 1: Select Plant

Step 1: Select a species by choosing a common or scientific name from the list, or by typing a name in the search box.

☒ Free Form Search ☐ Common Name List ☐ Scientific Name List

Alliaria petiolata

Select Plant

[Reset Search](#)

Step 2: Select Search Parameters

Step 2: Select search parameter(s) of interest. If no parameters are selected all control methods will be displayed. For effectiveness ratings, methods that meet or exceed the criteria selected will be displayed.

Under the Search Results you will find

- Plant Identification information – information on species identification, including photographs and a current distribution map.
- Ecological Threats – threats posed to natural ecosystems by this species.
- Case Studies – Detailed success (and failures) on how to control specific species contributed by experienced personnel.
- Non-chemical and chemical control methods that fit the selected search criteria. **Please note you are responsible for using pesticides in accordance with the label directions and state and federal laws.** Herbicide availability and registered uses vary from state to state. Contact your state department of agriculture for information on the correct use and licensing required for any pesticide application.

You may reset the search criteria or the species you have selected at any time by selecting the corresponding links on the right hand side of the page.

Are you a novice?: 

☒ Yes

☐ No

Habitat Type:

☐ Aquatic

☐ Forest

☐ Pasture/CRP

☐ Prairie

☐ Right of Way

☐ Riparian/Wetland


Seasons:

☒ Winter

☐ Spring

☐ Summer

☐ Fall

Effectiveness (in season): 

★★★★☆

Effectiveness (year after treatment): 

★☆☆☆☆

Search Control Methods

**Non-Chemical controls**

No non-chemical controls match search criteria.

Chemical controls

New (Type)	Ingredients	Directions
Type - Foliar User Type - Novice Effectiveness - in season ★★★★★ year after treatment ★☆☆☆☆	Active Ingredient (A.I.): glyphosate Common product name: Roundup Pro; many others (Aquatic: Rodeo; AquaNeat)	Rate - (broadcast) 0.75 - 1.5 lb a.e./A (spot) For a 3 lb a.e./gal product. 1 - 3% (0.03 - 0.09 lb a.e./gal) Timing - Apply to rosettes in fall or spring, bolting, or flowering plants. Use higher rates when air or soil temperatures drop below 40°F to maintain control. Remarks - Fall applications will only control rosettes and will not control seedlings that emerge in the spring. Caution - Use product labeled for aquatic use if potential exists for solution to contact surface waters. Applications can result in bare ground as glyphosate is not selective. Overspray or drift to desirable plants should be avoided, as even minute quantities of the spray can cause severe injury to plants.



CASE STUDIES

- Land manager experience is valuable information and not captured in published literature
- Case studies allow users to contribute their own experiences to the database



LIMITATIONS OF THIS DATABASE

- Methods that take multiple years to reach full effectiveness are rated as providing poor control.
 - Biological control
 - Revegetation and other cultural methods
- Combining multiple control methods may be most effective strategy.



CAVEATS

- The database does not determine if a control measure is suitable for your specific site.

STEP 3: SELECT APPROPRIATE CONTROL TACTIC

**We killed it...., but
is this what we
wanted?**



STEP 3: SELECT APPROPRIATE CONTROL TACTIC

We killed it, but is this what we wanted?



STEP 3: SELECT APPROPRIATE CONTROL TACTIC

Fire is a popular tool, but does it fit every situation?



STEP 3: SELECT APPROPRIATE CONTROL TACTIC

Grazing can suppress many invasive plants, but does this technique fit these sites?



STEP 3: SELECT APPROPRIATE CONTROL TACTIC

Herbicides will control purple loosestrife, should I apply a non-selective one in this situation (glyphosate/imazapyr)?



YOU WILL NEED TO DECIDE WHICH PRACTICES ARE APPROPRIATE FOR THE SITE

- Use land management goals as a guide to assist in making this decision



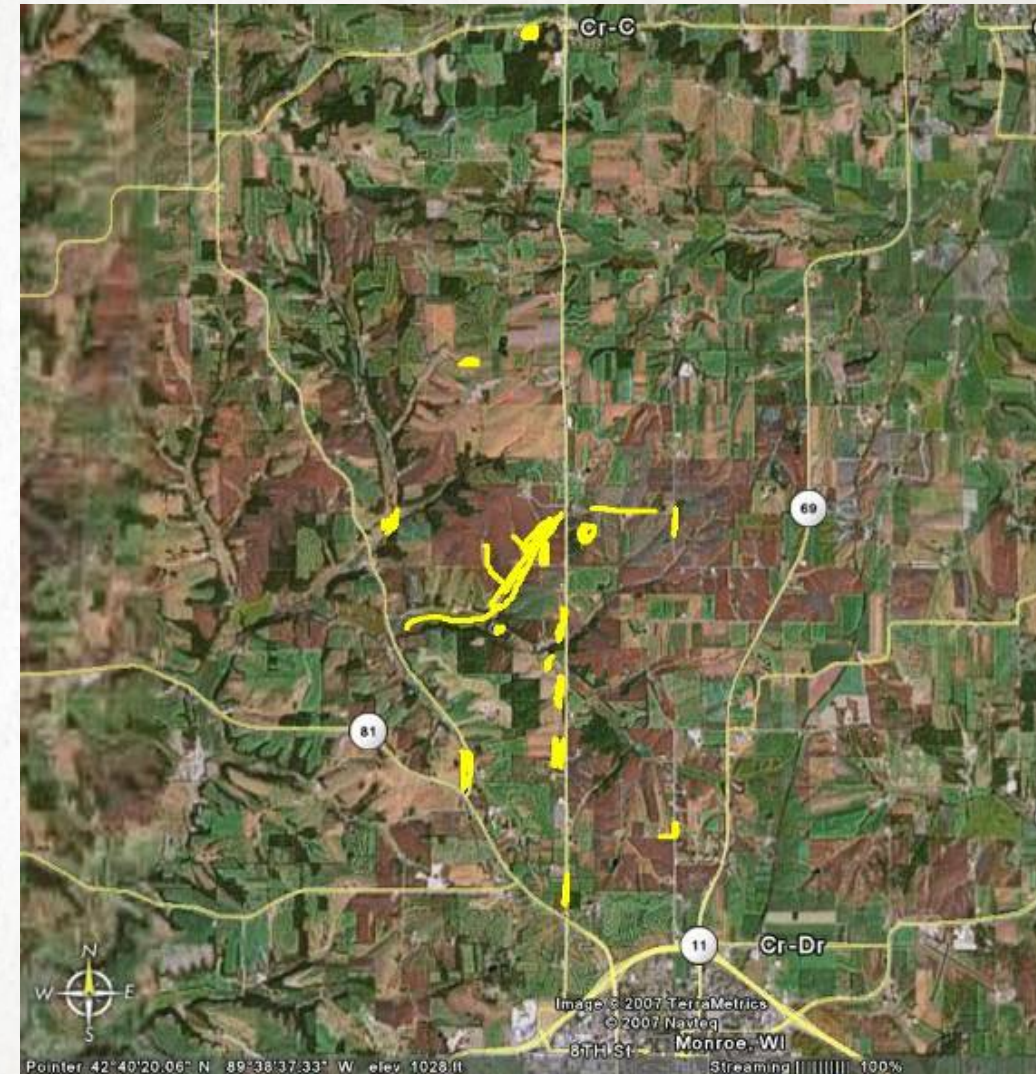
STEP 4: APPLY CONTROL METHOD(S)

- Follow the directions provided
 - Pay close attention to details
 - **What timing** is needed to conduct to maximize control?
 - Can I minimize non-target impacts if I apply at a different timing?
 - What restrictions are associated with the method(s)?



STEP 4: APPLY CONTROL METHOD(S)

- What if I have too much to treat in a year?
 - Be strategic
- Year 1
 - Treat leading new infestations
- Year 2
 - treat escapes
 - treat further into population



STEP 5: MONITOR AND ADAPT MANAGEMENT

- Periodically assess success
 - In season:
 - 1 year after and on
- What to assess
 - Level of control
 - Area infested
 - Injury to non-target plants



STEP 5: MONITOR AND ADAPT MANAGEMENT

- When should you retreat?
 - Dependent on goals of land
 - suppression vs eradication
- Often it is expensive in first year
- If effective cost is much lower in subsequent years
 - Example Japanese knotweed



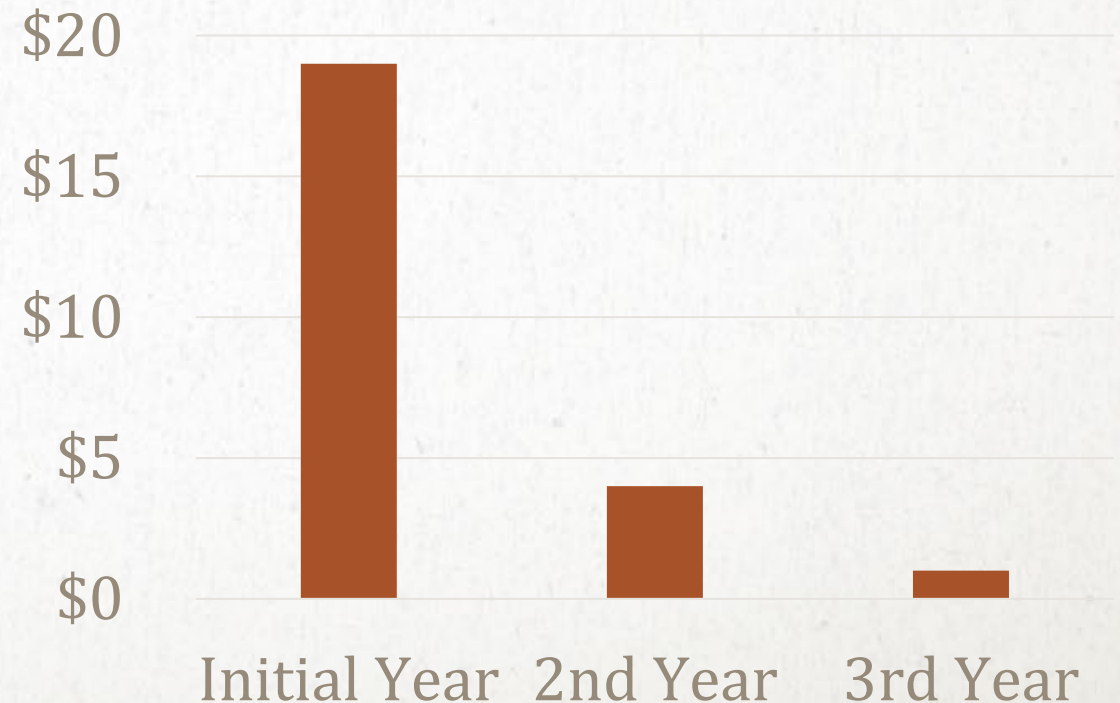
SUMMARY OF KNOTWEED CONTROL AND COST TO CONTROL IN WISCONSIN

METHODS

- Year one: mowed, applied Milestone to resprouts
- Year two: if cover >20%, spot trt plants with milestone
- Year three: if cover >20%, spot trt plants with milestone

COST OF TREATMENT

Cost per 1000 ft²



■ Cost per 1000 ft²

SUMMARY

- Invasive plants are not native and have the potential to cause impact to the area
 - Regulation is mostly at the state level and varies widely among states
 - Develop a plan to manage
 - Identification, distribution, selecting and applying control methods, monitoring success and adapting as needed
 - Lots of resources and people available to help
-

QUESTIONS

