

# Oriental Bittersweet Vine

## Identification & Management



*The Trespasser's Garden.  
Color-Reduction Woodcut*

*Artist Emily Gray Koehler  
[www.studioegk.com](http://www.studioegk.com)*

Oriental  
Bittersweet  
Vine

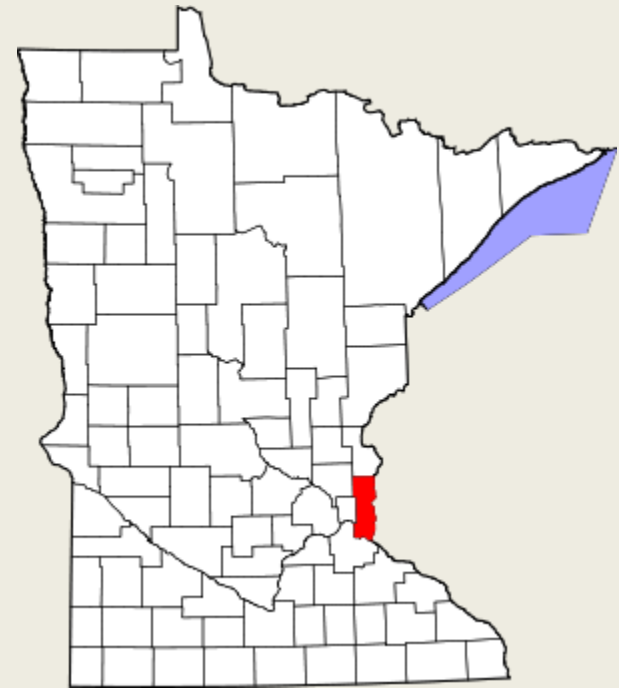
Tara Kline & Lauren Haydon | October 10th, 2019





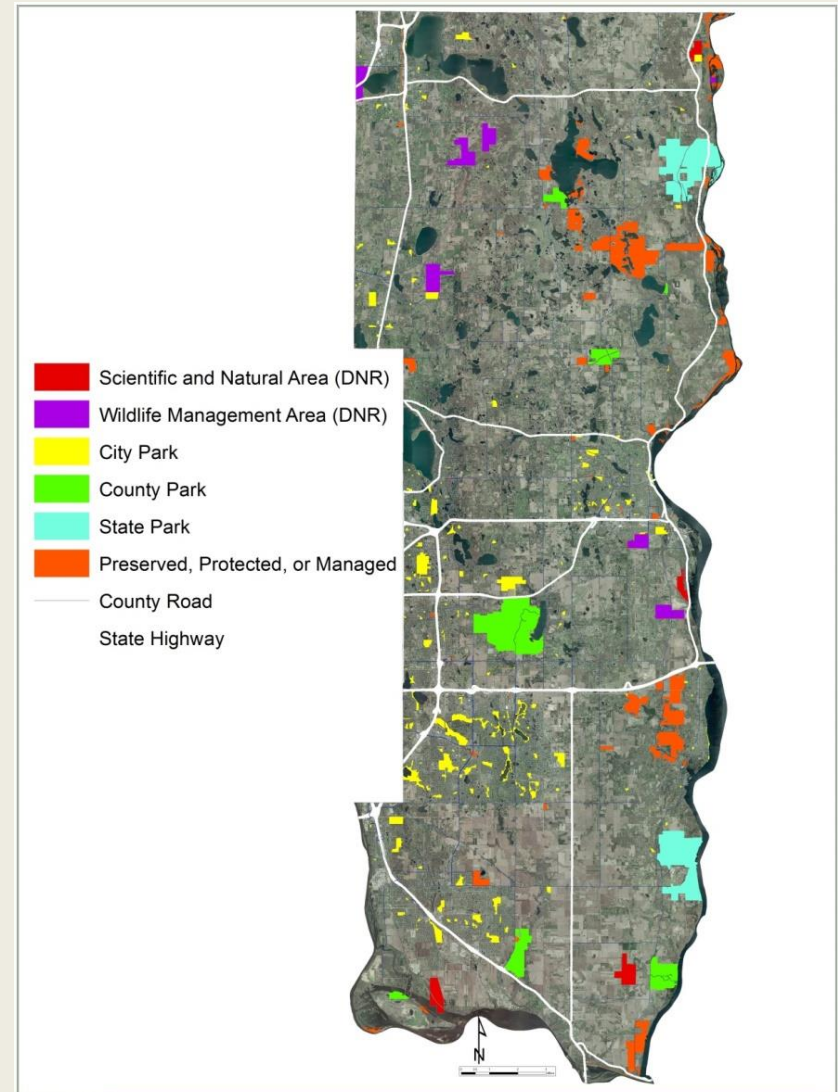
*Mission Statement: To enhance, protect, and preserve the natural resources of Washington County...since 1942.*

- **Free Site Visits** to landowners in Washington County
  - Water quality improvement, habitat restoration, & invasive species management
- **Apply for grants** to help off set cost to landowners.
  - Minnesota Department of Agriculture
  - MN Board of Water and Soil Resources
  - Native Plant Grant (Watershed Funding)
- **Host workshops** throughout the year on native landscaping, invasive species, family events, and much much more!
- Connect landowners who have invasive species on their property with Minnesota Dept. of Agriculture (MDA)



# Cooperative Weed Management Areas

- A partnership of federal, state, and local government agencies, tribes, individuals, and various groups that manage noxious weeds or invasive plants in a defined area.
- Annual Meeting with partners
- Partnering on multiple grants to manage invasive species on the noxious weed list, along with emerging threats (ex. Grecian Foxglove, Japanese Raspberry)
- Host partner workshops to educate landowners about early detection



# What is an invasive plant?

## Definitions:

### **Invasive:**

A non native species whose introduction does or is likely to cause economic harm, environmental harm, or harm to human health.

### **Exotic/non-native/alien:**

Those that occur outside their natural range boundaries, most often mediated by humans either deliberately or unintentionally.



Kudzu (*Pueraria montana*)

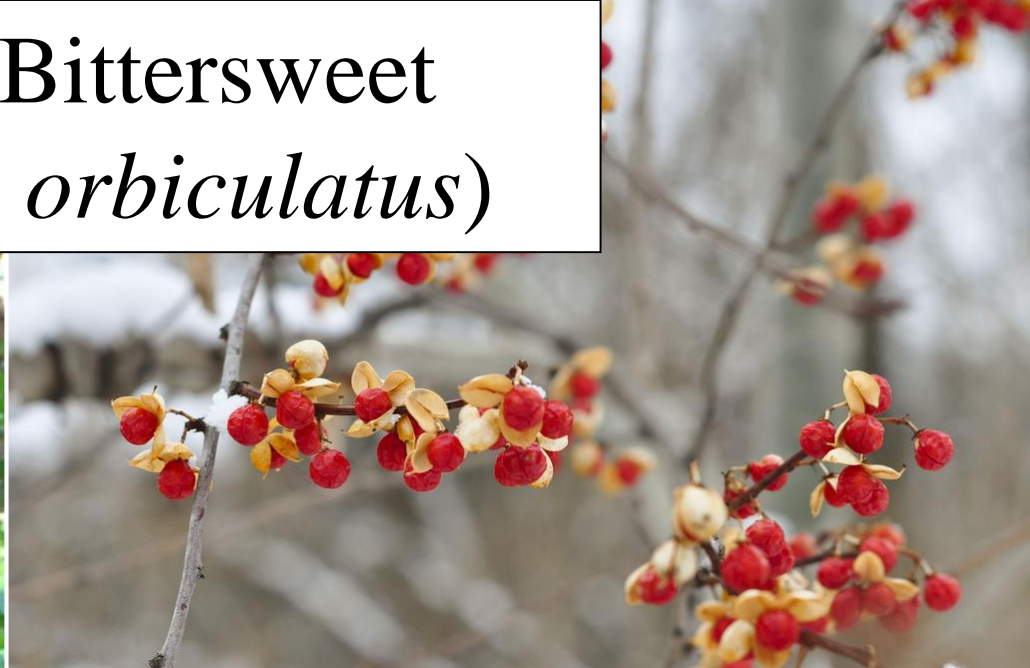


Japanese knotweed (*Polygonum cuspidatum*)

# Why Should I Care?



# Oriental Bittersweet (*Celastrus orbiculatus*)



## Mapping Minnesota's Noxious Weeds

Choose your species to see reported location points or "clusters". Click on a cluster to zoom in closer.

Oriental bittersweet

Scientific Name:  
**Celastrus orbiculatus**

Weed Category:  
**Eradicate**

Minnesota Area reports\*:  
**216**

North American reports\*:  
**9626**

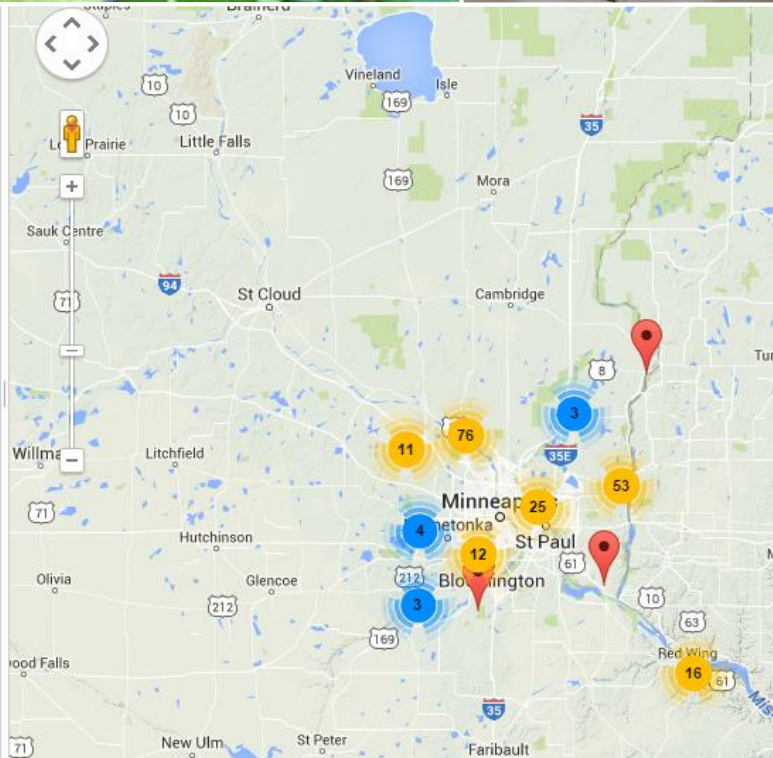
\*The "Minnesota Area" is defined as the State of Minnesota Boundary plus about 20 miles. Reports beyond this area are not shown on the map. See [EDDMapS map](#) for all [Oriental bittersweet](#) reports.

### Related Links:

- [MDA Oriental bittersweet](#) page.
- [EDDMapS Oriental bittersweet](#) page.
- [Invasive.org Oriental bittersweet](#) page.

Our map partner: [EDDMapS](#)

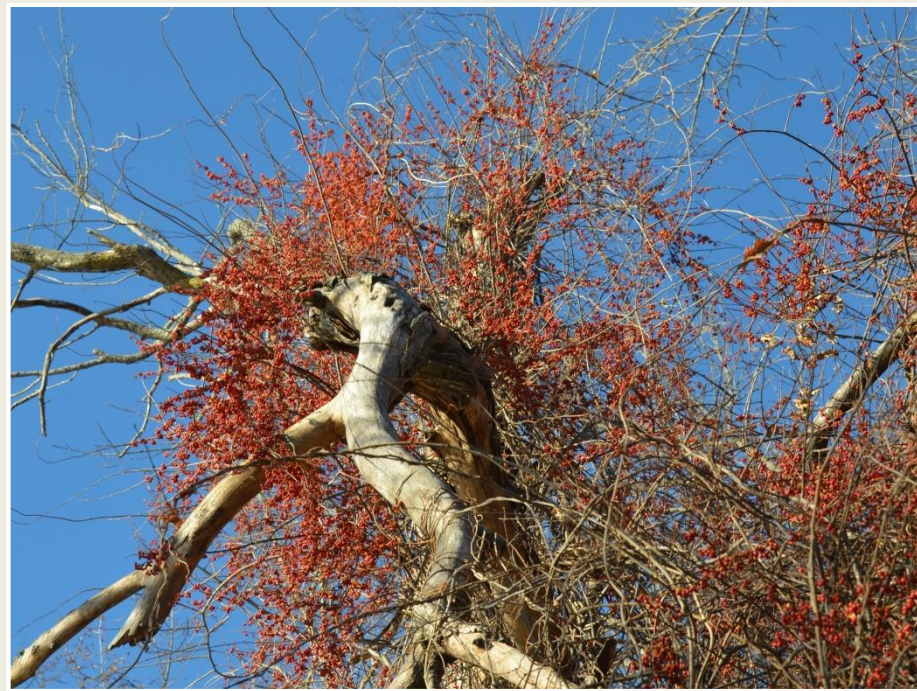
**EDDMapS**



- Native to Asia
- Escaped cultivation
- Deciduous vine, up to 66' in length
- Flowers are small and greenish yellow.
- Fruit turn bright red with a yellow capsule

# Oriental Bittersweet (*Celastrus orbiculatus*)

Strangles trees



Alternate,  
oblong leaves  
Small white flowers



**Oriental Bittersweet**  
*Celastrus orbiculatus*

Fruit has yellow capsules and  
is at leaf axils along branch



**American Bittersweet**  
*Celastrus scandens*

Fruit has orange capsules and  
is at terminal ends of branches



If it's **Yellow**, **YELL** for help! (Oriental Bittersweet)  
If it's **Orange**, it's **OK!** (American Bittersweet)





# Distinguishing bittersweets

Fruit  
capsule  
color



Fruit  
position



American

Oriental

# Common Native Vines

**Virginia Creep**  
(*Parthenocissus quinquefolia*)



**River Grape**  
(*Vitis riparia*)



The Minnesota Noxious Weed Law (Minnesota Statutes 18.75-18.91) defines a noxious weed as an annual, biennial, or perennial plant that the Commissioner of Agriculture designates to be injurious to public health, the environment, public roads, crops, livestock, or other property. The purpose of the law is to protect residents of the state from the injurious effects of noxious weeds.

There are currently forty-two plant species regulated as noxious weeds in Minnesota. Twenty-three plants are listed as [Prohibited Noxious Weeds](#) which consist of two regulatory lists – 14 plants listed on the [Prohibited Eradicate List](#) and 9 plants listed on the [Prohibited Control List](#). Fifteen species are listed as [Restricted Noxious Weeds](#) and four species are listed as a [Specially Regulated Plants](#) that can be enforced under specific conditions. **Years following a species name designate when it was listed.**

**A. Prohibited Noxious Weeds** – Attempts must be made by all landowners to control or eradicate species on these lists. These species cannot be transported illegally or sold in Minnesota.

**Eradicate List** – must be eradicated by killing the above and belowground parts of the plant.

1.	Palmer Amaranth - 2014	<i>Amaranthus palmeri</i> S.Watson
2.	Oriental Bittersweet - 2010	<i>Celastrus orbiculatus</i> Thunb.
3.	Diffuse Knapweed - 2014	<i>Centaurea diffusa</i> Lam.
4.	Brown Knapweed - 2012	<i>Centaurea jacea</i> L.
5.	Yellow Starthistle* - 2010	<i>Centaurea solstitialis</i> L.
6.	Meadow Knapweed - 2012	<i>Centaurea x moncktonii</i> C.E. Britton
7.	Poison Hemlock - 2017	<i>Conium maculatum</i> L.
8.	Black Swallow-wort - 2012	<i>Cynanchum louiseae</i> Kartesz & Gandhi
9.	Grecian Foxglove - 2010	<i>Digitalis lanata</i> Ehrh.
10.	Common Teasel - 2011	<i>Dipsacus fullonum</i> L.
11.	Cutleaf Teasel - 2011	<i>Dipsacus laciniatus</i> L.
12.	Giant Hogweed* - 2011	<i>Heracleum mantegazzianum</i> Sommier & Levier
13.	Japanese Hops - 2011	<i>Humulus japonicus</i> Siebold & Zucc.
14.	Dalmatian Toadflax - 2011	<i>Linaria dalmatica</i> (L.) Mill.

**\*Species not known to be in Minnesota, but have been determined to be a threat to invade the state.**

**Control List** – must be controlled preventing the maturation and spread of propagating parts.

1.	Common Barberry - 2016	<i>Berberis vulgaris</i> L.
2.	Narrowleaf Bittercress - 2011	<i>Cardamine impatiens</i> L.
3.	Plumeless Thistle - 1975	<i>Carduus acanthoides</i> L.
4.	Spotted Knapweed - 2001	<i>Centaurea stoebe</i> L. ssp. <i>micranthos</i> (Gugler) Hayek
5.	Canada Thistle - 1872	<i>Cirsium arvense</i> (L.) Scop.
6.	Leafy Spurge - 1992	<i>Euphorbia esula</i> L.
7.	Purple Loosestrife - 1992	<i>Lythrum salicaria</i> L., <i>L. virgatum</i> L.
8.	Wild Parsnip - 2010	<i>Pastinaca sativa</i> L. (Except for non-wild cultivated varieties)
9.	Common Tansy - 2010	<i>Tanacetum vulgare</i> L.

**B. Restricted Noxious Weeds** - may not be sold, transported illegally, or intentionally planted in Minnesota.

1.	Tree of Heaven - 2016	<i>Ailanthus altissima</i> (Mill.) Swingle
2.	Garlic Mustard - 2013	<i>Alliaria petiolata</i> (M. Bieb.) Cavara & Grande
3.	Porcelain Berry - 2016	<i>Ampelopsis brevipedunculata</i> (Maxim.) Trautv.
4.	Crown Vetch - 2016	<i>Securigera varia</i> (L.) – Formerly known as <i>Coronilla varia</i> L.
5.	Wild Carrot/Queen Anne's Lace - 2016	<i>Daucus carota</i> L.
6.	Glossy Buckthorn (and all cultivars) - 1999	<i>Frangula alnus</i> Mill.
7.	Amur Honeysuckle - 2016	<i>Lonicera maackii</i> (Rupr.) Herder
8.	Morrow's Honeysuckle - 2016	<i>Lonicera morrowii</i> A. Gray
9.	Bell's Honeysuckle - 2016	<i>Lonicera x bella</i> Zabel
10.	Common Reed (non-native) - 2013	<i>Phragmites australis</i> (Cav.) Trin. ex Steud. ssp. <i>australis</i>
11.	Common or European Buckthorn - 1999	<i>Rhamnus cathartica</i> L.
12.	Black Locust - 2016	<i>Robinia pseudacacia</i> L.
13.	Multiflora Rose - 2011	<i>Rosa multiflora</i> Thunb.
14.	Tatarian Honeysuckle - 2016	<i>Lonicera tatarica</i> L.
15.	Japanese Barberry Cultivars** - 2017	<i>Berberis thunbergii</i> DC.

## Oriental Bittersweet (*Celastrus orbiculatus*)



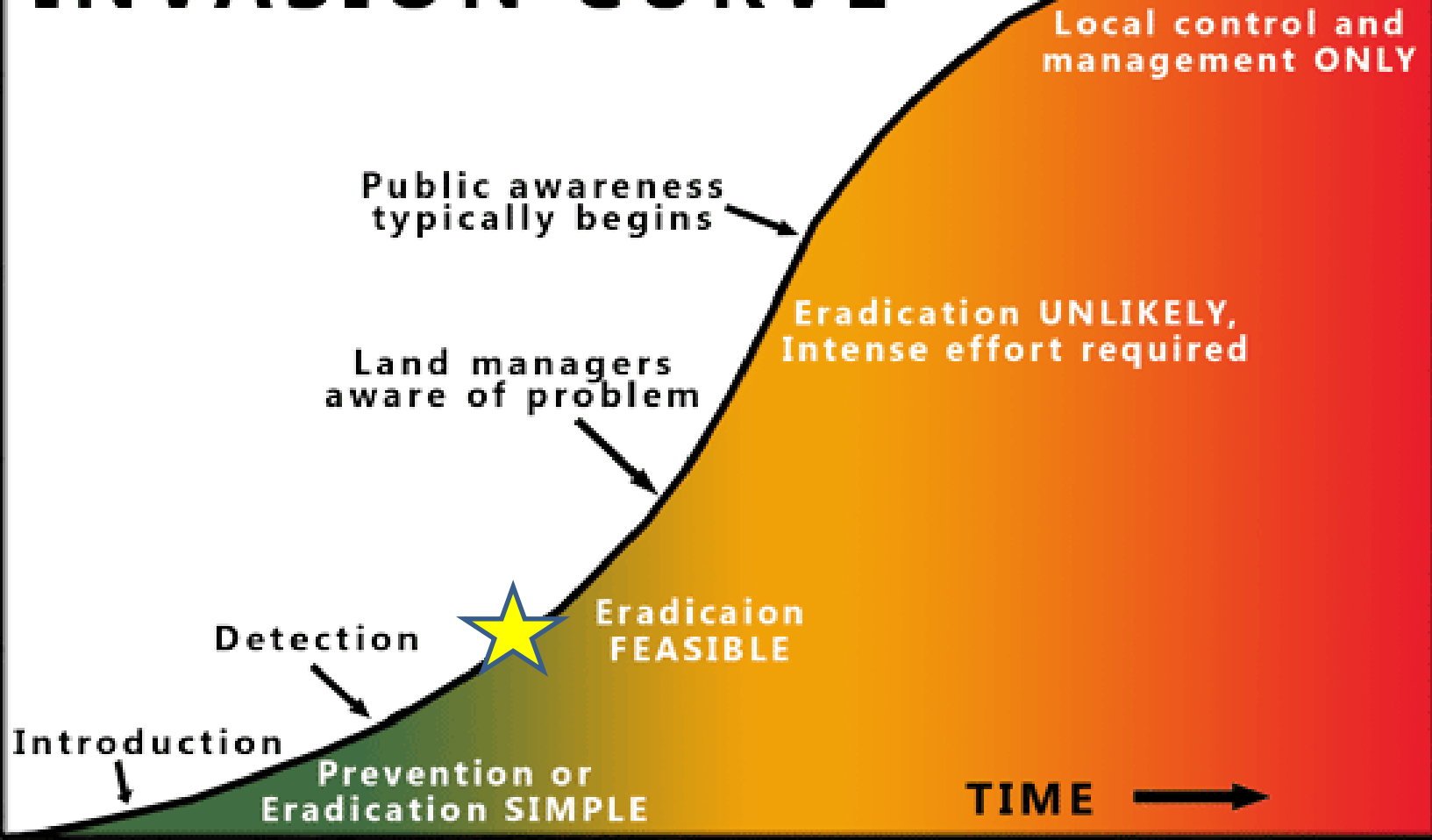
### Two simple guidelines to follow when dealing with noxious weeds on an individual property:

1. Kill but do not remove weeds from an infested area when possible
2. If removal of weed plant materials from an infested site is necessary, properly contain and transport the materials to a disposal site that will accept and properly dispose of noxious weed materials.

# INVASION CURVE

AREA INFESTED ↑

CONTROL COSTS ↑



TIME →

Lag Phase

Exponential Growth

Carrying Capacity



O.B. Located in this area  
Main infestation area.  
Select areas around park  
also have small amounts.

# Oakdale Discovery Center Workshop



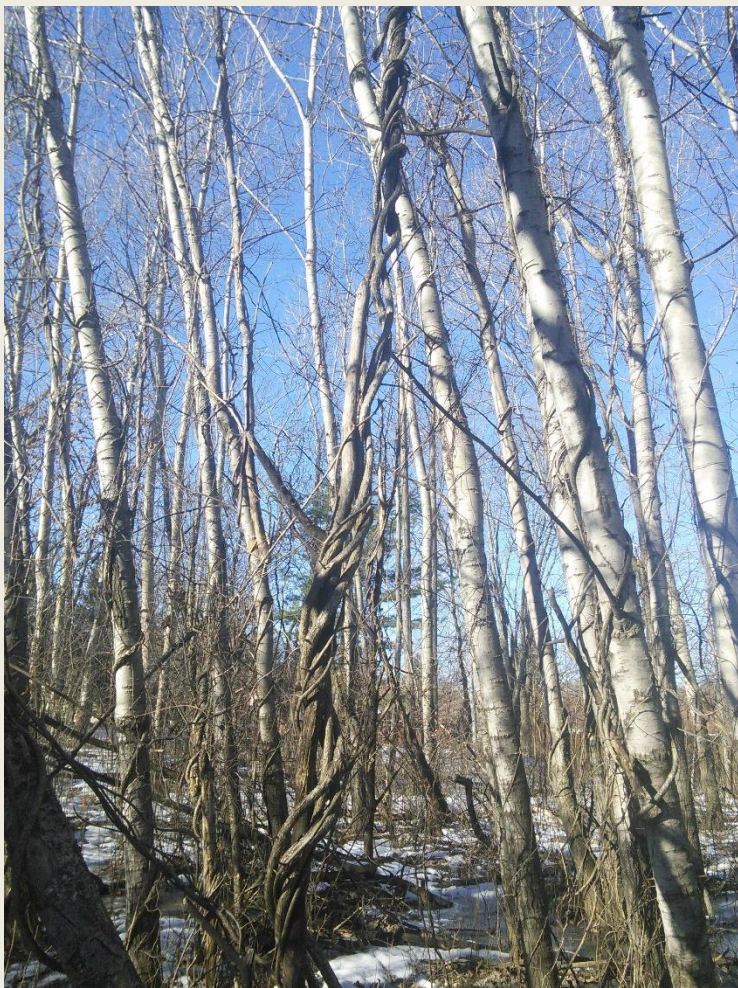
## KEY TO FEATURES



Oakdale Park  
4444 Hadley Ave  
Oakdale  
PIN: 0702921430001

2016 Aerial Photo





**Before**

**After**

- Oriental Bittersweet Vines, 2016
- City of Oakdale received \$1,000 from Washington Conservation District to help with removal efforts. (BWSR CWMA grant)
- Grant went toward hiring Minnesota Conservation Corps Crew
- Basal treatment and cut stump



**First OB Discovery in the metro area by MNDOT  
( Location: Hwy 36/Dale)**



# MN Department of Transportation: Noxious Weed Roadside Management

## Herbicide 'MacGyver' Tool: Homemade Wick Applicator



Photo: MNDOT

- 7 people for 7 County Metro Area
- Small populations ( Dig, Pull, Regular mowing)
- Basal treatment or Cut stems and treat with glyphosate or triclopyr (Garlon 3A)
- Do Not Burn, only encourages growth

		April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.-Mar	
Herbicide	Burn	Burning is not recommended									
	Basal Bark	█	█	█	█	█	█	█	█	█	
	Foliar		█	█	█	█	█				
	Cut stem				█	█	█	█	█	█	
	Mow	Mowing is not recommended.									
	Don't mow										
Flowering Period			█	█							

← MNDOT Management Chart



# Herbicide Application Methods

## Basal Bark:

Saturate bark up to 18" from bottom to girdle tree.



## Cut Stump:

Cut stump down and apply herbicide around outside ring (cambium) within 1 hour of cutting.



# NEW Eradicate Species found in Oakdale!

## Black Swallow-Wort

(*Cynanchum louiseae*)

- Native to Europe
- Herbaceous perennial vine in Milkweed Family.
- Concern of harming monarch butterfly populations. Limited survival after feeding on plant
- Dig manually or herbicide application to reduce populations





# Reporting, Tracking and Funding Bittersweet Management

Monika Chandler | Noxious and Invasive Weed Program

10/10/19

# Reporting Invasive Plants

## App for Mobile Devices

Arrest the Pest

[Arrest.The.Pest@state.mn.us](mailto:Arrest.The.Pest@state.mn.us)

1-888-545-6684



Available on the  
**App Store**




ANDROID APP ON  
**Google play**

# Mapping Invasive Plants



Home Report Sightings Distribution Maps Species Information Tools & Training My EDDMapS About [sign out](#)



**How Can I Access the Data?**

- State and County Distribution Maps
- Point Maps
- Using GIS software such as ArcGIS
- Custom Queries and Downloads to XLS, KML and Shapefiles



**BRING THE POWER OF EDDMAPS TO YOUR SMARTPHONE**

Introducing BugwoodApps - comprehensive mobile applications that engage users with invasive species, forest health, natural resource and agricultural management

iPhone | iPad | Android

**Recent Reports**

**giant reed (*Arundo donax*)**  
Bonnie Smolinski  
Gwinnett Master Gardeners  
October 10, 2019  
DeKalb County, Georgia



**Projects**

- ✓ Wild Spotter
- ✓ EDDMapS IPM
- ✓ Southeast Early Detection Network
- ✓ EDDMapS West
- ✓ EDDMapS Midwest
- ✓ Mid-Atlantic Early Detection Network
- ✓ Invasive Plant Atlas of New England
- ✓ Florida Invasive Species Partnership
- ✓ EDDMapS Alberta - Alberta Invasive Species Council
- ✓ EDDMapS Ontario
- ✓ EDDMapS Prairie Region - Manitoba and Saskatchewan
- ✓ Biological Control Agents of Weeds
- ✓ Appalachian Trail Conservancy
- ✓ Invaders of Texas
- ✓ Alaska Exotic Plant Information Clearinghouse
- ✓ New Invaders Watch Program

**Supporters**

# EDDMapS Midwest Includes Training

The screenshot shows the EDDMapS Midwest website homepage. At the top left is the logo, which consists of a stylized green leaf icon followed by the text "EDDMapS Midwest". Below the logo is a navigation menu with the following items: Home, Report Sightings, Distribution Maps, Species Information, Tools & Training, My EDDMapS, and About. To the right of the navigation menu is a "sign out" button. The main content area is divided into several sections. On the left, there is a large image of green leaves with a white text box overlaid. The text box contains the heading "What are Invasive Species?" and a paragraph: "Any species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. These non-native species may compete with and displace the associated flora and fauna communities." Below the image is a "Welcome to the EDDMapS Midwest!" section with a paragraph of text. On the right side, there are three smaller sections: "Statistics" showing 1,179,969 County Reports, 988,120 Point Reports, and 1,694 Species; "Recent Reports in EDDMapS Midwest" listing several reports with checkmarks; and "Training Power Points" listing training resources, which is highlighted with a green border.

**EDDMapS Midwest**

Home Report Sightings Distribution Maps Species Information Tools & Training My EDDMapS About [sign out](#)

### What are Invasive Species?

Any species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. These non-native species may compete with and displace the associated flora and fauna communities.

### Welcome to the EDDMapS Midwest!

EDDMapS Midwest (formerly the Great Lakes Early Detection Network) is a collaboration among multiple stakeholders working to rapidly respond to new invasive species sightings in the Great Lakes and Midwestern states (Minnesota, Wisconsin, Illinois, Indiana, Iowa, Michigan, Missouri, and Ohio). To accomplish this, we have developed this website and associated smartphone and tablet app to make it easy to report locations of invasive species. We have developed a web-based alert system that emails users when new sightings for species or areas of interest are entered into our member data management systems. As new sightings are

### Statistics

1,179,969 County Reports  
988,120 Point Reports  
1,694 Species

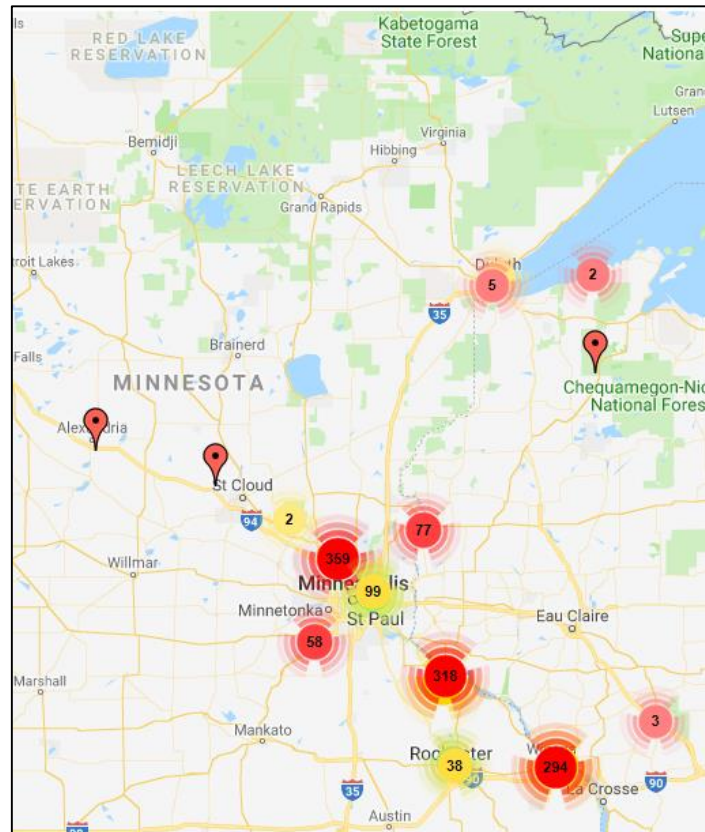
### Recent Reports in EDDMapS Midwest

- ✓ tree-of-heaven by Anne Hughes-wagner in Cook County, Illinois
- ✓ Japanese hop by Caleb McCann in Marion County, Indiana
- ✓ wine raspberry by Caleb McCann in Marion County, Indiana
- ✓ Southern corn rust by Darcy Telenko in Benton County, Indiana
- ✓ tar spot of corn by Darcy Telenko in Benton County, Indiana
- ✓ More Reports

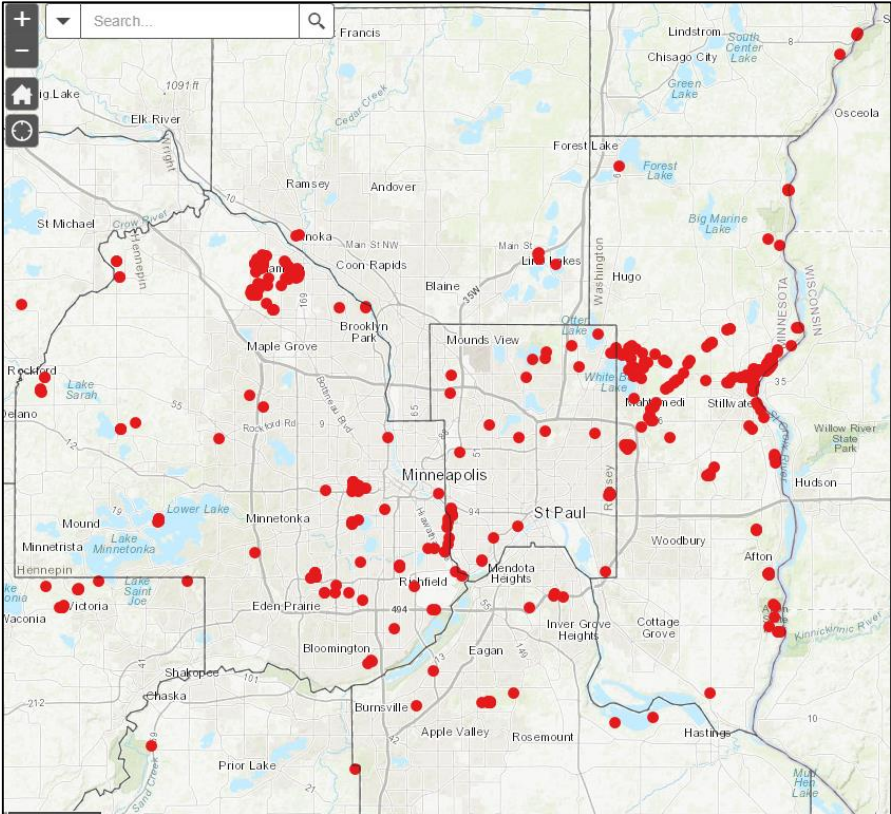
### Training Power Points

- ✓ EDDMapS Midwest Training Revisits and Edits
- ✓ EDDMapS Midwest Training Bulk Data
- ✓ EDDMapS Midwest Training Smartphone App
- ✓ EDDMapS Midwest Training Using the Website
- ✓ EDDMapS Midwest Advanced Training

# Information Sharing Across North America



# Local Information Sharing





# Funding for Assistance with Control Efforts

Grant funds only, no long-term program funding

- Environment and Natural Resources Trust Fund – Crews for control work
- Cooperative Weed Management Area – Washington Conservation District
- MN Dept of Ag Noxious Weed Grants – Local government units




# Bittersweet Management

- Control work could be done by the landowner
- Landowner could hire a contractor
- Landowner could request help
- Landowner may be contacted with an offer to help



# Agreements with Landowners

DocuSign Envelope ID: 77EEB425-C62C-412C-83F6-664517088751



**DEPARTMENT OF AGRICULTURE**

625 Robert Street North, Saint Paul, MN 55155-2538  
www.mda.state.mn.us

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**PLANT PROTECTION DIVISION 651-201-6537**

**LANDOWNER AGREEMENT**

Agreement Number: JEPHET0001      Agreement Period: Start 6/19/2018      End 12/31/2023

Landowner: \_\_\_\_\_ Phone: \_\_\_\_\_

Address 1: \_\_\_\_\_

Address 2 (mailing address if different from physical address): \_\_\_\_\_

City: Whalan      State: MN      Zip: 55949

Township/Range/Section: \_\_\_\_\_

County: Hillmore      Coordinates: 43.732642, -91.929993

*This Agreement is between the Minnesota Department of Agriculture (MDA) and the above named landowner. The purpose is to eradicate and prevent the spread of harmful or dangerous plant pests and is authorized by MN Statute 18G.03 subd. 1(a) (2008).*

**Description of the goals and objectives for this Agreement**

The parties agree as follows:  
The MDA and/or its designees/cooperators will implement the following treatment. A detailed treatment plan may be attached.

**Total Estimated Treatment Cost:** \$2000/Acre

**Treatment Cost Responsibility:** \$0 CCM

Target Plant Species	Number of Acres	Treatment	Estimated Application Dates	Estimated Completion Date
Japanese Hop	2	Foliar Spray, Torch	Summer 2018	12/31/2023
Poison Hemlock	2	Foliar Spray, Cut Seed Head, Hand Pull	Summer 2018	12/31/2023

**Practice Lifespan:** The Landowner is responsible for ensuring that no impacts from other activities will affect the lifespan of the practices applied under this agreement; thereby assuring that the management objective of these practices is met and the effective lifespan is achieved. If title to this property is transferred to another party before expiration of the aforementioned life, it shall be the responsibility of the Landowner who signed this contract to advise the new owner that this agreement is in force.

**Monitoring:** Landowner agrees to monitor for and control any re-sprouting and seedling emergence for three years after MDA's practices are implemented. In the event the infestation becomes too severe for Landowner to manage, Landowner agrees to notify MDA.

**Access:** The Landowner agrees to grant the MDA or its designees/cooperators access to the parcel(s) under management for the purpose of implementing practices described in this Agreement. The parcel(s) shall be subject to inspection at all reasonable times by the duly authorized representatives of the State during the effective lifespan of these practices.

**Liability:** The Landowner must indemnify, save, and hold the State, its agents, and employees harmless from any claims or causes of action, including attorney's fees incurred by the State, arising from the performance of these practices by the MDA or its designees/cooperators.

**Termination:** The State may cancel this Agreement at any time, with or without cause, upon 30 days written notice to the Landowner.

I, \_\_\_\_\_ agree to all of the conditions of this Agreement.

Signature of Landowner: \_\_\_\_\_

Signature of MDA Plant Protection Weed Program Coordinator: Christina Basch

Signature of MDA Plant Protection Weed Unit Supervisor: Anthony Cortlet

Signature of MDA Plant Protection Division Director: Mark Abrahamson

Signature of MDA Designee/Cooperator: Doug Ekstrom

Printed Name: \_\_\_\_\_

Date: 7/5/2018

Printed Name: Christina Basch

Date: 7/9/2018

Printed Name: Anthony Cortlet

Date: 7/9/2018

Printed Name: Mark Abrahamson

Date: 7/9/2018

Printed Name: Doug Ekstrom

Date: 7/9/2018

In accordance with the Americans with Disabilities Act, this information is available in a transitive form of communication upon request by calling 651-363-6930. TTY users can call the Minnesota Relay Service at 711. The MDA is an equal opportunity employer and provider.

AG 01179 4/2018  
Page 1 of 1

# Thank you!

**Monika Chandler**

*Monika.Chandler@state.mn.us*

651-201-6537



St. Croix River  
ASSOCIATION

**Oriental Bittersweet Project**

Emily Weiler & Hardt Bergmann

# What is Oriental Bittersweet?

- Invasive vine native to East Asia
- Brought to North America and planted as an ornamental due to its attractive fall fruiting branches
- Sometimes found in floral arrangements



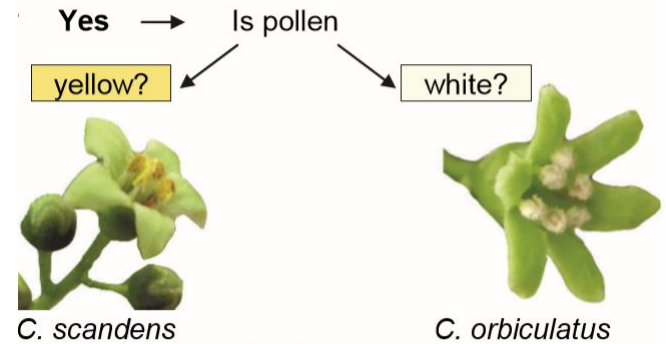
# Why it's a Problem

- Winds tightly around trees as it climbs, girdling and killing them
- Vines can grow large and heavy, weighing down dead trees and making them highly susceptible to blowdown during windstorms
- Can take over and bring down large areas of woods--especially problematic in riparian areas due to increased erosion as a result of vegetation loss



# OB Identification

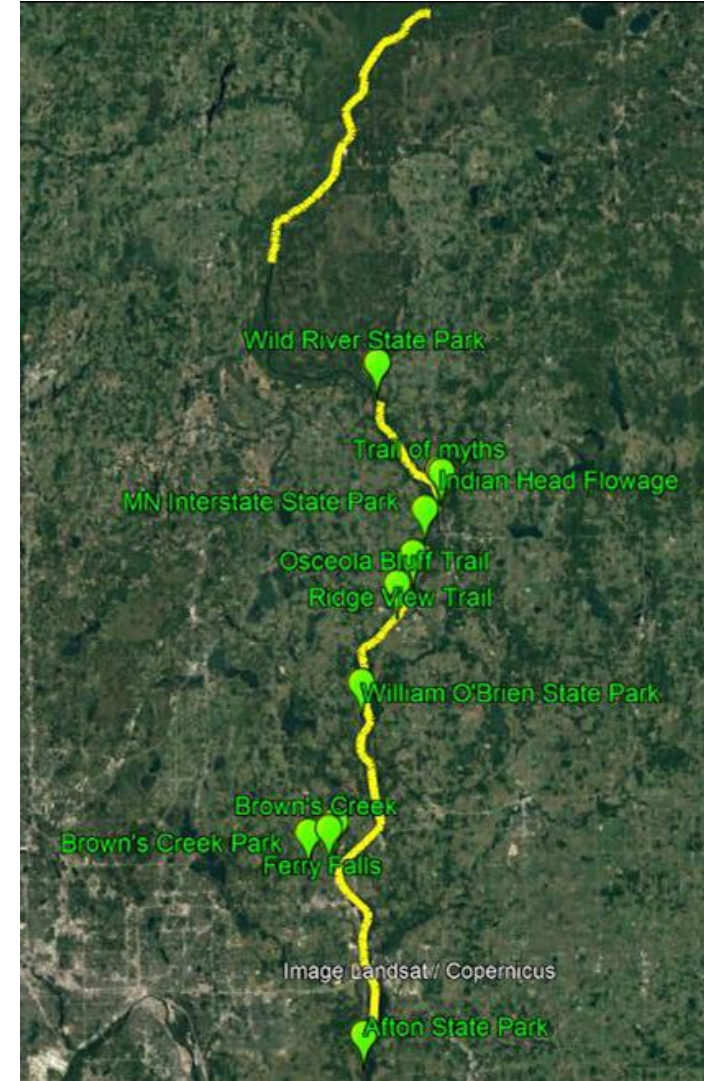
- Oriental Bittersweet (*Celastrus orbiculatus*):
  - Yellow fruit capsules when ripe
  - Fruit hangs off multiple parts of the main stem (axillary cymes)
  - White flowers
  - Leaves tend to fold like Pringles
- American Bittersweet (*Celastrus scandens*):
  - Orange fruit capsules when ripe
  - Fruit hangs off the end of the main stem (terminal panicles)
  - Yellow flowers
  - Leaves tend to curl up along the edges





# SCRA's OB Work

- SCRA contracted by MNDA and WI DNR to inventory OB along both sides of the St Croix from Danbury to the Mississippi confluence (approx 131.7 miles) as well as Brown's Creek
- SCRA coordinated monitoring efforts between state and local agencies, volunteers, the NPS, NPS partners, etc.
- So far, 120 miles of St. Croix and 30 miles of trail in Brown's Creek vicinity have been inventoried
- 38 confirmed OB sites, 30 unknown if oriental or native, 11 treated sites



# Results and Future Efforts

- Last 11 miles of St. Croix (Afton to confluence) to be inventoried in the upcoming weeks
- Sites where oriental vs. native could not be distinguished will be re-checked this fall if timing and weather allows
  - Attempts to do this were made over the summer, but atypical flowering year made it difficult to confirm oriental vs. native
- NPS sites Fairy Falls and Arcola Bluffs have been treated thoroughly, and populations are under control in those areas
- Many new populations appearing in other locations in the St. Croix Valley from St. Croix Falls south, with a couple appearing further north--hard to keep up. Be on the lookout!

# Treatment

- Sites not near water can be treated with herbicide—NPS recommends a Tricolpyr product. Application method depends on size—small plants sprayed (2.5-3% solution), larger ones cut-stumped (15-20% solution)
- For more information on OB control/herbicide use, contact Katie Sickmann (SCRA): [katies@scramail.com](mailto:katies@scramail.com)



## Questions?

Hardt Bergmann (Forest Stewardship Intern): [hardtb@scramail.com](mailto:hardtb@scramail.com)

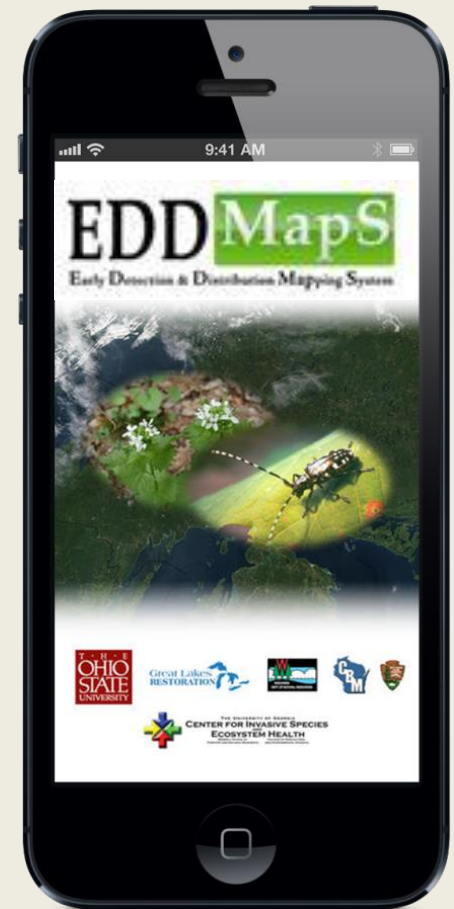
Emily Weiler (Invasive Species Field Lead): [emilyw@scramail.com](mailto:emilyw@scramail.com)

Katie Sickmann (Invasive Species Coordinator): [katies@scramail.com](mailto:katies@scramail.com)

# To Report Infestations:

## Get the word out!

- Help report invasive species on EDD MapS.
- EDD Maps <https://www.eddmaps.org/>
- Report to Minnesota Department of Agriculture by email at [arrest.the.pest@state.mn.us](mailto:arrest.the.pest@state.mn.us)
- or voicemail 1-888-545-6684



**ARREST  
THE PEST**

To report infestations  
of invasive pests

1. Note the exact location
2. Take a photo, if possible, and
3. Contact "Arrest the Pest"

