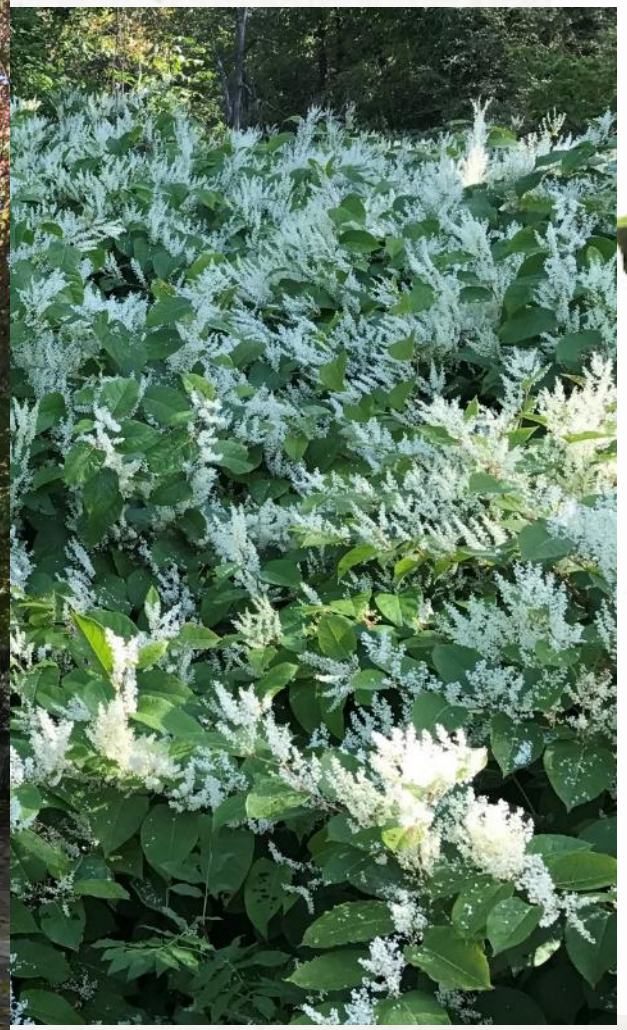
INVASIVE SPECIES, WHY SHOULD WE CARE?

MARK RENZ UNIVERSITY OF WISCONSIN-MADISON

EXTENSION WEED SPECIALIST

VASIVE 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

WHICH OF THESE SPECIES ARE CONSIDERED INVASIVE?

WHAT ABOUT HONEY BEES?

HOW DO INVASIVE SPECIES CAUSE HARM?

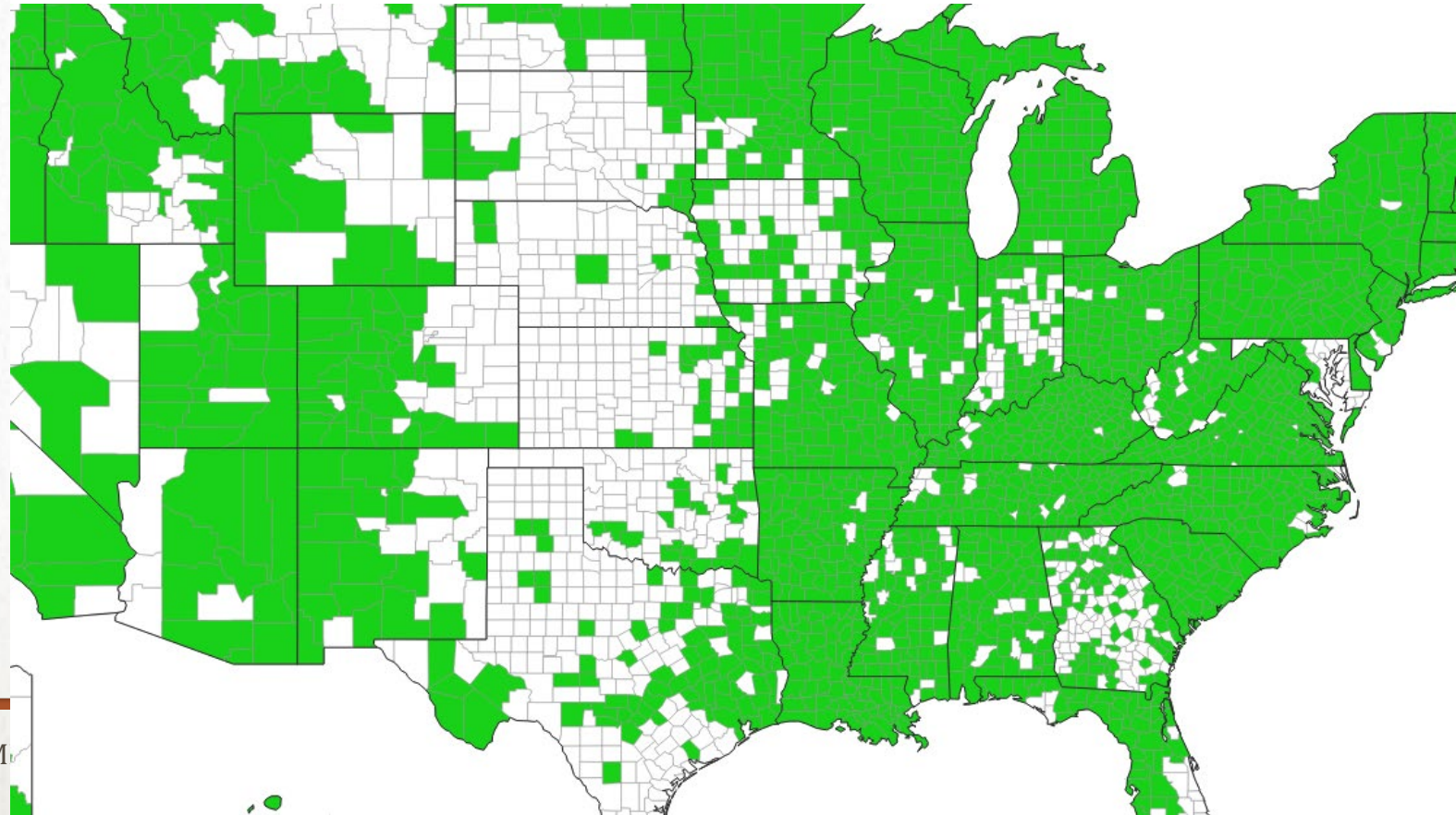
- Causing impact or the potential to cause impact

- Types of impact
  - Economic
  - Environment
  - Human health

AN EXAMPLE OF POTENTIAL IMPACTS
BUSH HONEYSUCKLE

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

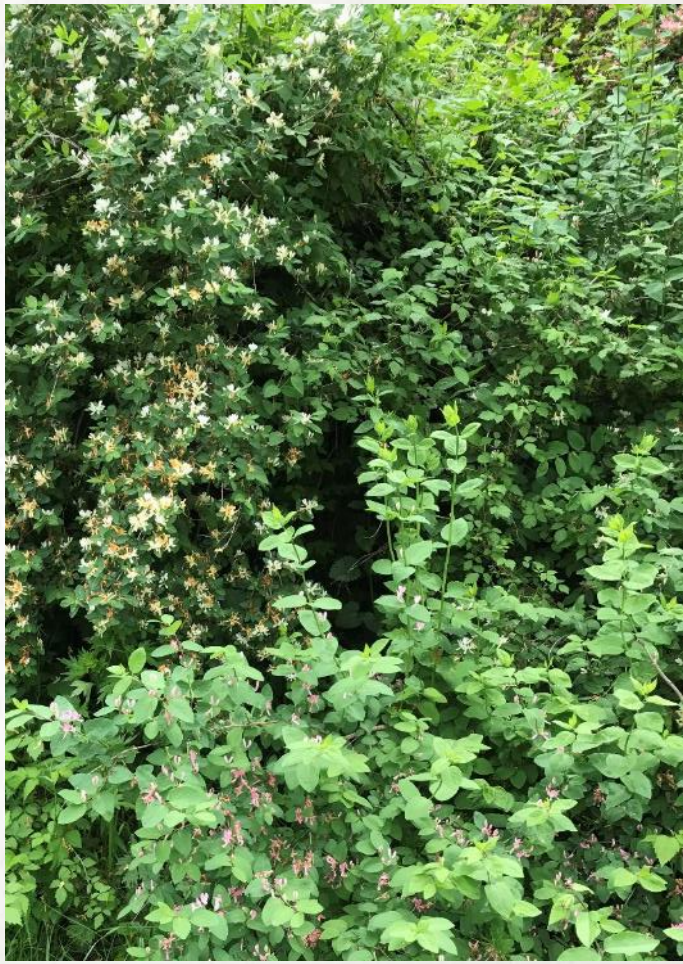
Distribution of bush honeysuckles by county 2018 (www.eddmaps.org)



Images courtesy of UW-SP Herbarium and M

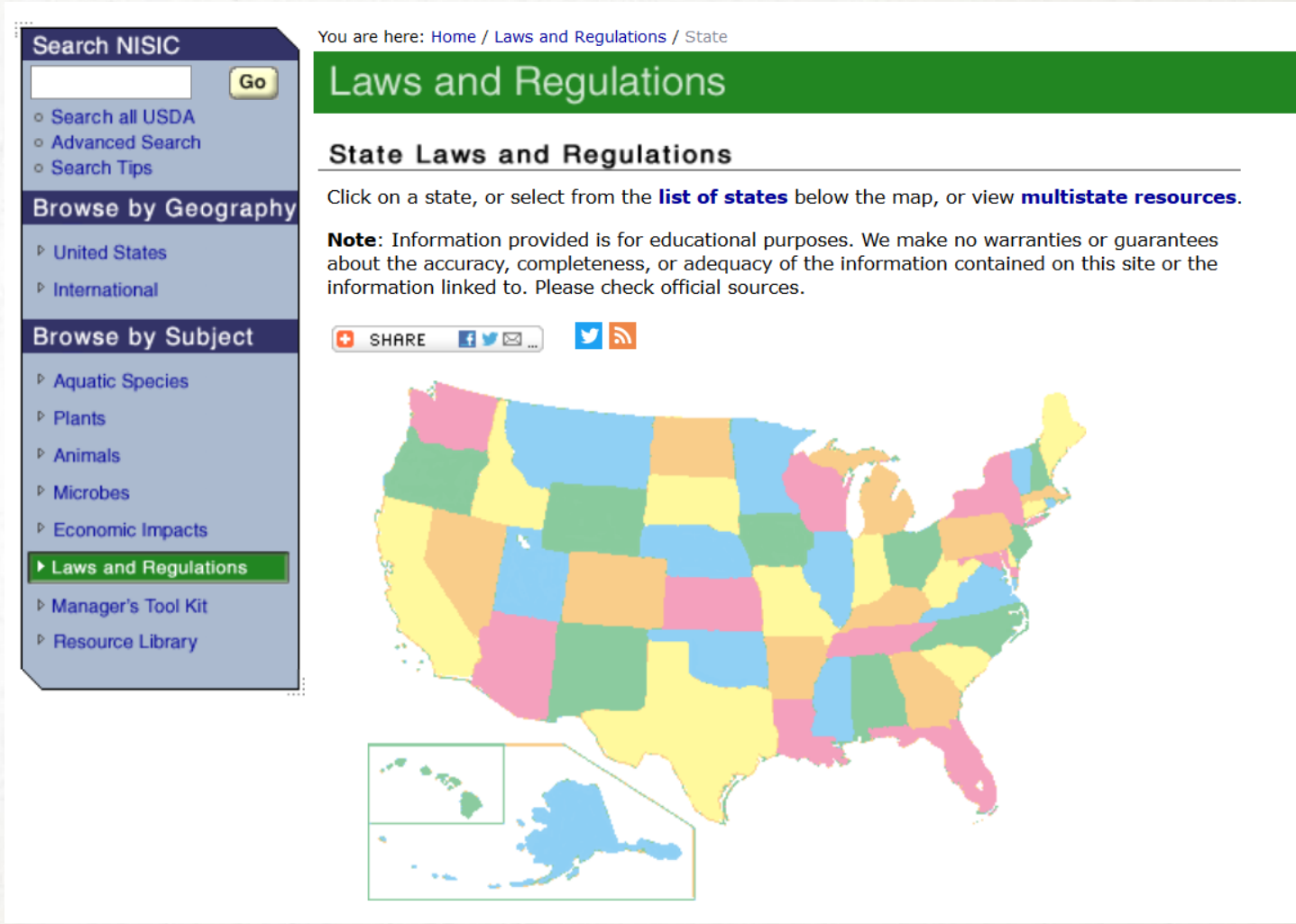
IMPACTS OF BUSH HONEYSUCKLE

- 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**



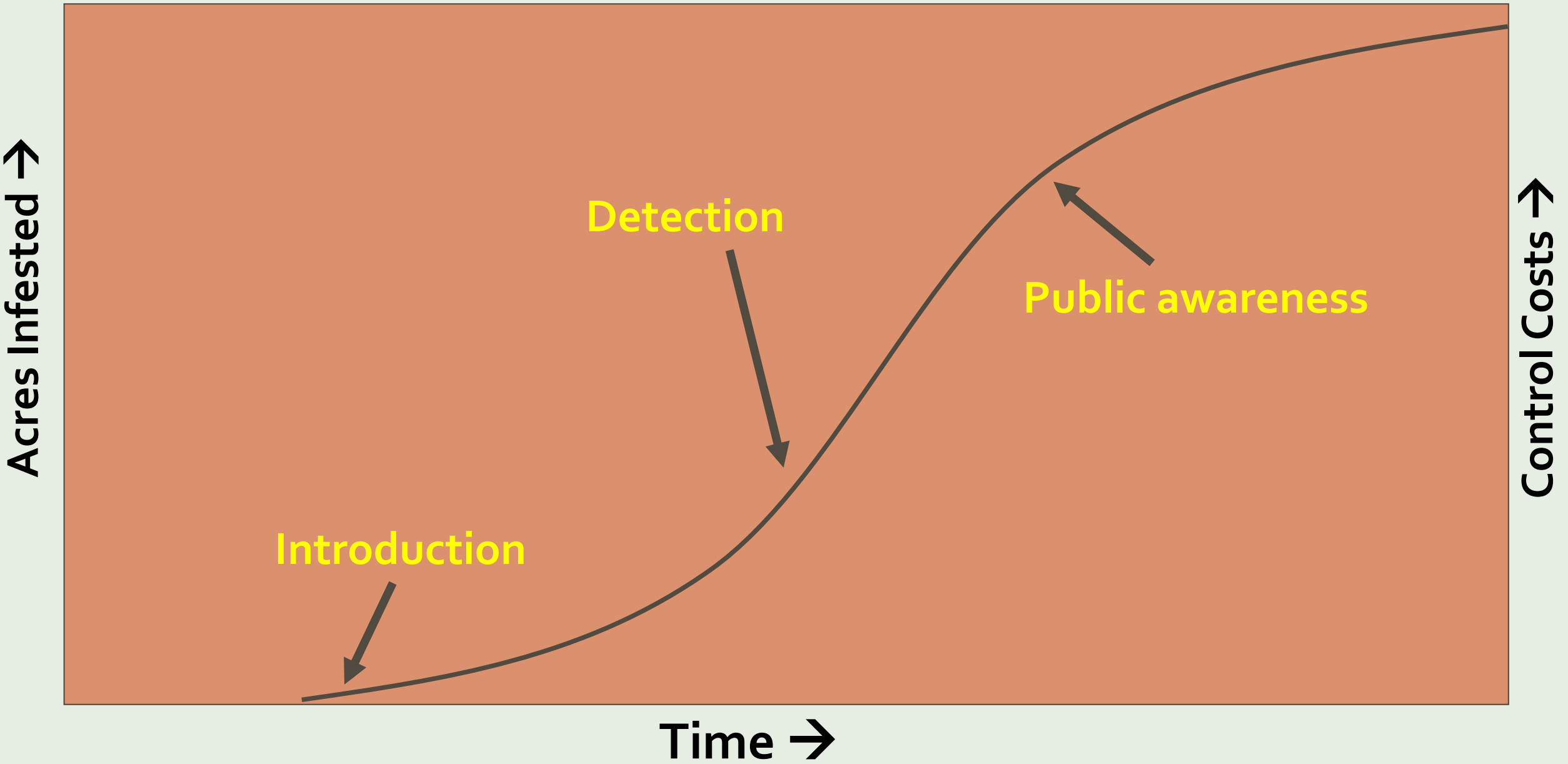
REGULATION OF INVASIVE SPECIES

- Federal
  - Federal Noxious weed
- **State**
  - **WI DNR = NR-40**
- Local
  - State noxious weed



https://www.invasivespeciesinfo.gov/laws/statelaws.shtml

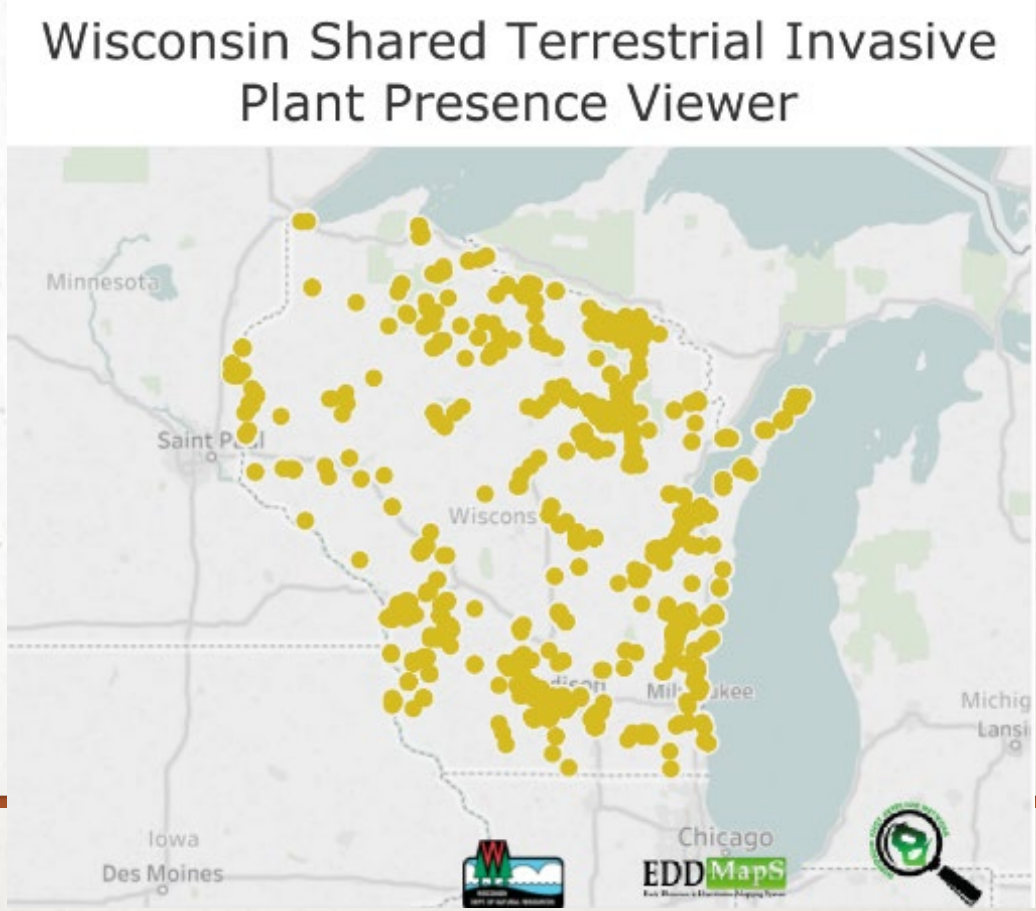
The Invasion Curve



EXAMPLE OF A WIDESPREAD INVASIVE SPECIES IN WISCONSIN

GARLIC MUSTARD WIDESPREAD

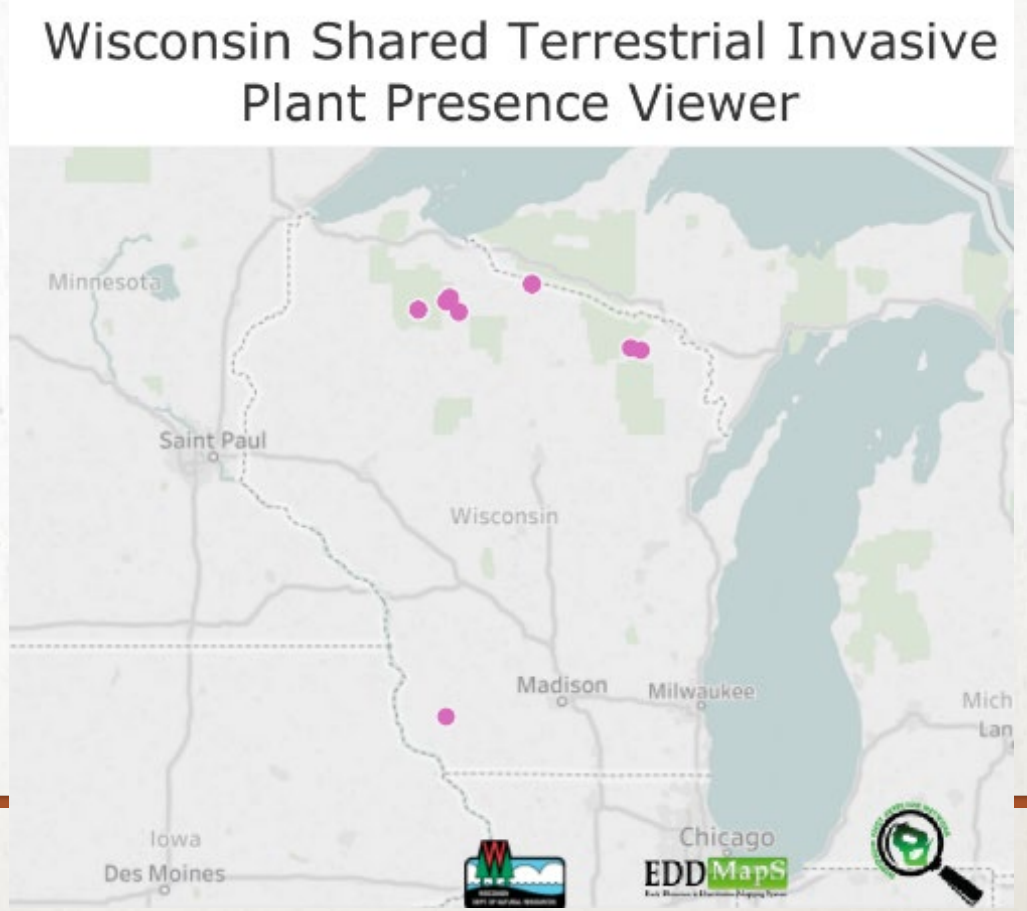
MORE THAN 5,000 KNOWN LOCATIONS IN WISCONSIN



EXAMPLES OF AN EARLY INVASIVE SPECIES IN WISCONSIN

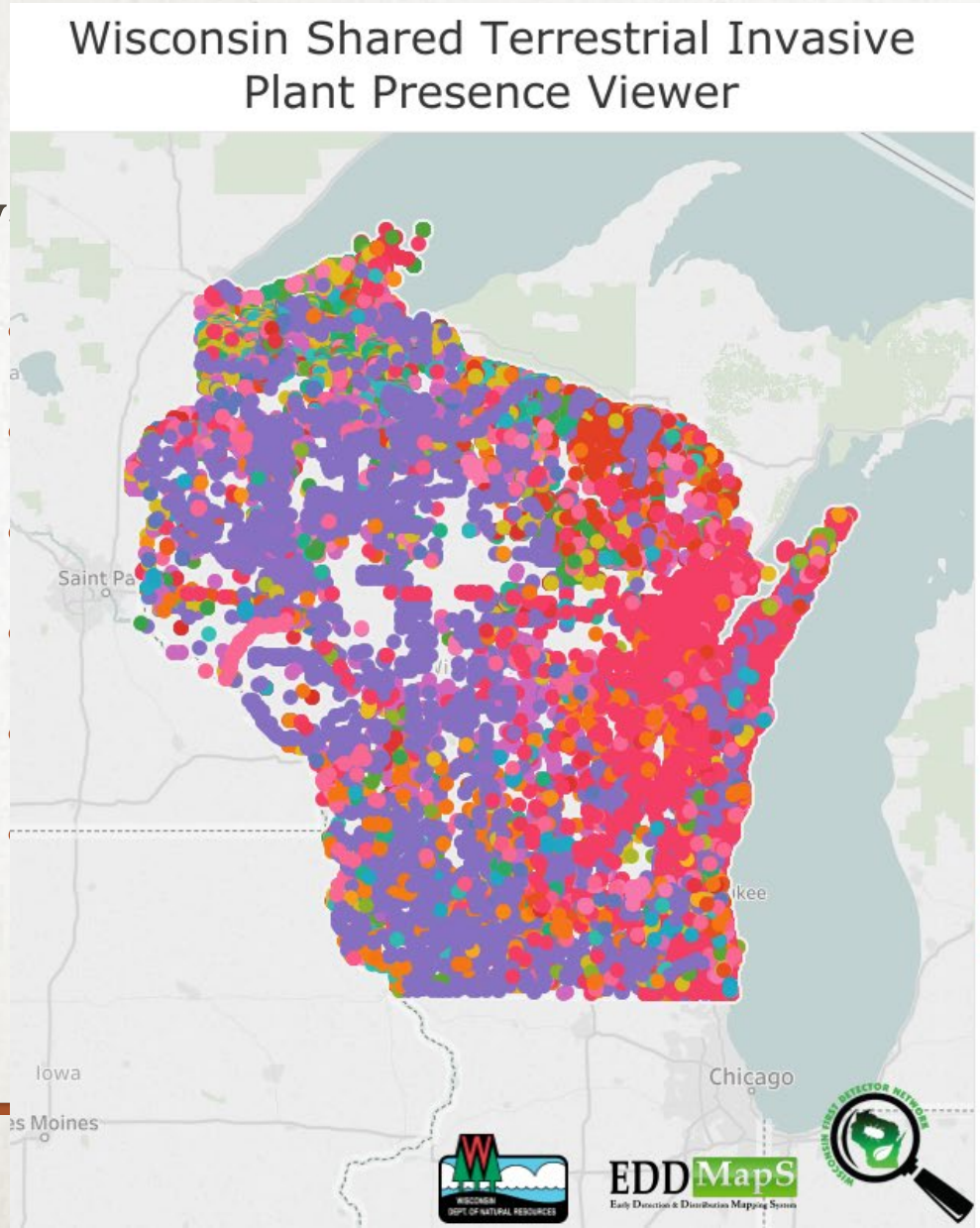
SMOOTH BEDSTRAW EARLY DETECTION

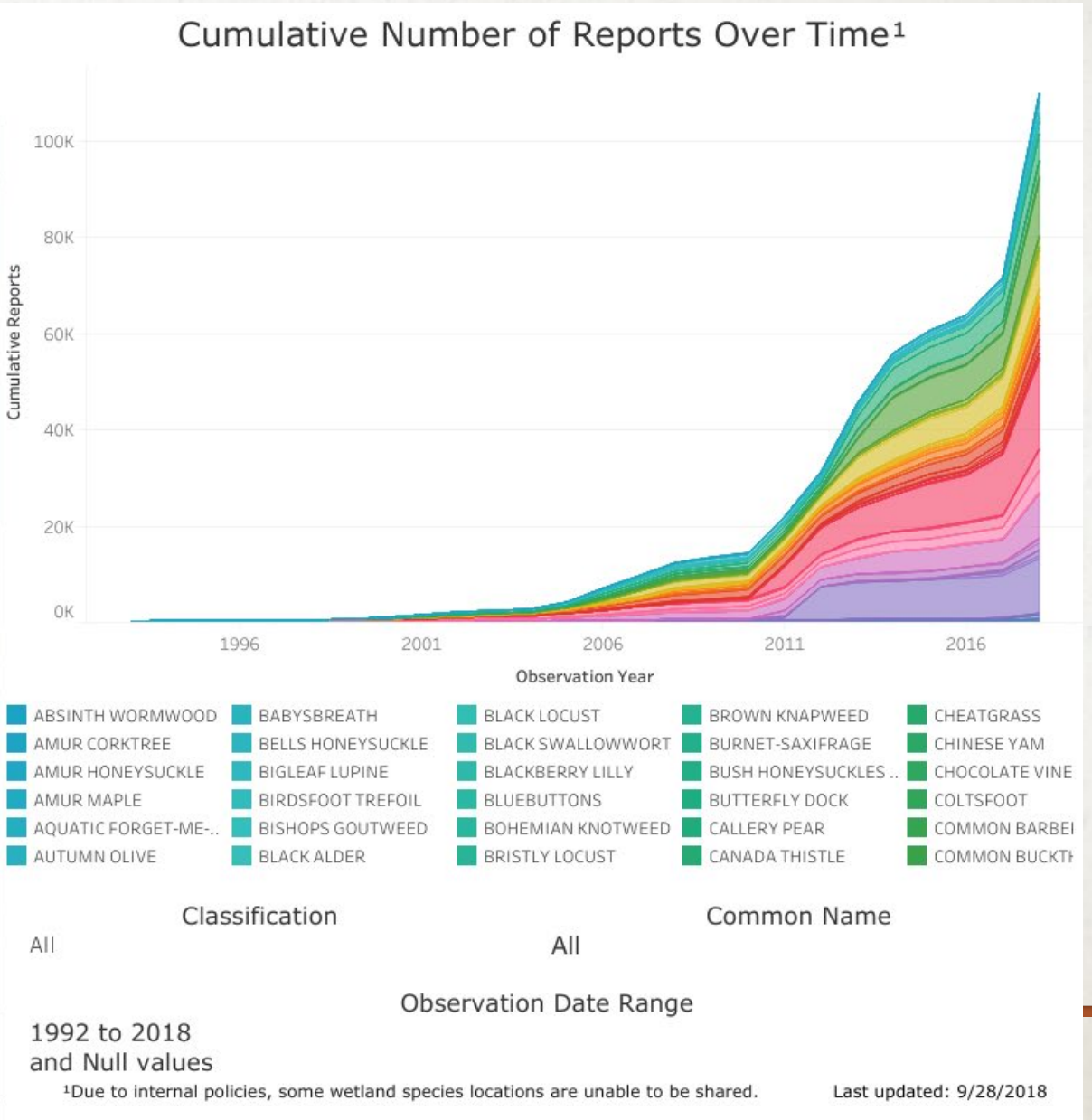
LESS THAN 50 KNOWN LOCATIONS



HOW BIG IS THIS PROBLEM?

W

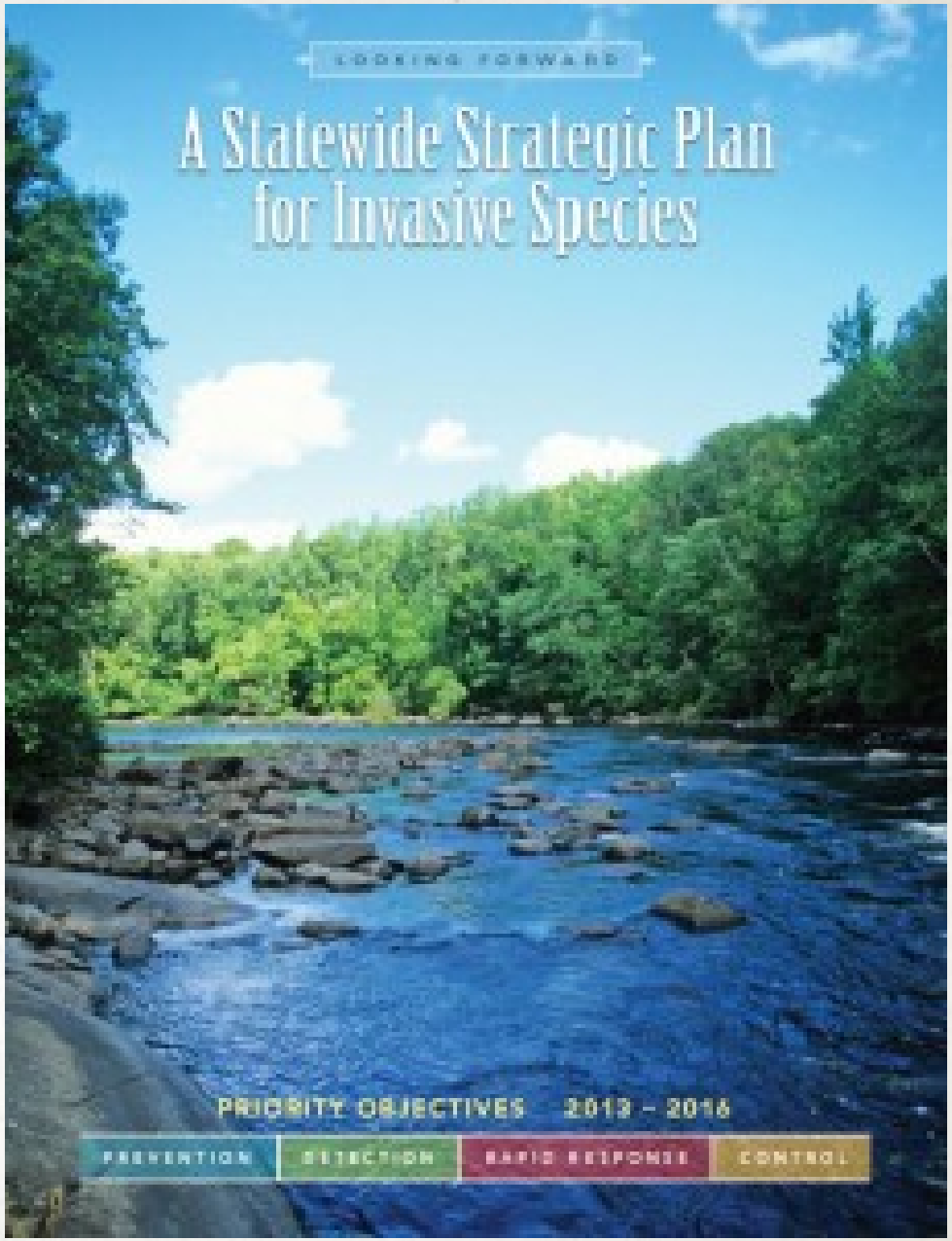




ALL IS NOT LOST……

Many parts of WI are not invaded

- Efforts have been to
  - prevent further spread
  - minimize impacts
- Limited $$$ is available to conduct most of this work
  - Need to coordinate efforts among organizations/agencies
  - Train citizen scientists to help



WHAT CAN YOU DO TO MINIMIZE THE IMPACT OF INVASIVE SPECIES?

1. Educate yourself on invasive species
2. Report new invasive species observations
3. Work with policy makers to develop management plans for species of concern

fyi.uwex.edu/wifdn

A statewide citizen science network for invasive species detection and education

Main goals:

1. Educate citizens
2. Facilitate their involvement in volunteer activities related to invasive species

WIFDN RESOURCES

FYI.UWEX.EDU/WIFDN

- Detailed information
  - Invasive species identification/management
  - Recorded webinars
  - Tools to help
- Newsletter
- In person workshops
- Volunteer opportunities

FYI.UWEX.EDU/WIFDN

Wisconsin First Detector Network

Awareness of the Unusual

UW Extension
University of Wisconsin-Extension

Home | WISTIPP Viewer | Learn » | Get Involved » | Pond Watchers » | 2018 Video Series | Report a Pigweed | Who We Are

Welcome to the Wisconsin First Detector Network!

The Wisconsin First Detector Network (WIFDN) is a citizen science network that empowers people to take action against invasive species through invasive species monitoring, management, and outreach. WIFDN provides training and resources through a combination of webinars, instructional videos, and hands-on workshops, in addition to providing volunteer opportunities to citizen scientists.

News

October GLEDN Challenge

October is the last month of the 2018 GLEDN Monthly Challenge. **October's challenge is to submit 3 or more reports of ANY invasive species observed in Wisconsin**. You can submit reports via the **GLEDN app**, on the **EDDMapS website**, or by emailing WIFDNcoordinator@gmail.com.

The **GLEDN County Challenge** continues! Complete the County Challenge by being the first person to submit a report from a Wisconsin county! The map below shows counties from which we've received first reports in January – August 2018; counties in red had first reports in September.

I WANT TO:

- Report invasive species
- Access fact sheets and I.D. videos
- Report a Pigweed

SUBSCRIBE TO WIFDN UPDATE

Click the image above to subscribe to the WIFDN Update email newsletter. You will learn about upcoming events, species alerts, and invasive species news.

WIFDN Update

September 20th, 2018

In this update:

1. Species Alert- Callery Pear
2. September GLEDN Challenge
3. GLEDN County Challenge
4. More Fall Invasive Species
5. Announcements from Partners

Wisconsin First Detector Network

Awareness of the Unusual

Home | WISTIPP Viewer | Learn » | Get Involved » | Pond Watchers » | 2018 Video Series | Report a Pigwe

- What are invasive species?
- Invasive Species I.D. and Impacts
- Priority Invasive Species Story Map
- Managing Invasive Species
- Invasive Plant Organizations

Welcome to the Wis rk!

The Wisconsin First Detector ork that empowers people to take action a
invasive species through inva d outreach. WIFDN provides training and
resources through a combin d hands-on workshops, in addition to prov
volunteer opportunities to ci

Terrestrial Plants

Use the UW Online Weed Key to help identify invasive plants: **video** – **website**

Visit this **story map** to access species distribution maps, additional I.D. information, and priority species in your county

Common Name	Scientific Name	Video	Fact Sheet
Biennial thistles		–	**fact sheet**
Bird's-foot trefoil	*Lotus corniculatus*	–	**fact sheet**
Black locust	*Robinia pseudoacacia*	–	**fact sheet**
Black swallow-wort	*Vincetoxicum nigrum*	**video**	**fact sheet**
Buckthorns		–	**fact sheet**
Bush honeysuckles	*Lonicera sp.*	**video**	**fact sheet**
Canada thistle	*Cirsium arvense*	**video**	**fact sheet**
Common tansy	*Tanacetum vulgare*	**video**	**fact sheet**
Creeping bellflower	*Campanula rapunculoides*	**video**	**fact sheet**
Crown vetch	*Securigera varia*	**video**	**fact sheet**
Dame's rocket	*Hesperis matronalis*	**video**	**fact sheet**
Field bindweed	*Convolvulus arvensis*	–	**fact sheet**
Garden valerian	*Valeriana officinalis*	**video**	–
Garlic mustard	*Alliaria petiolata*	**video**	**fact sheet**
Hill mustard	*Bunias orientalis*	**video**	**fact sheet**

Japanese Hop, identification of the Wisconsin Invasive Species Humulus j

4,019 views

LIKE DISLIKE SHARE

Japanese Hop, identification of the Wisconsin Invasive Species Humulus japonicas

Japanese Hop, identification of the Wisconsin Invasive Species Humulus japonicas

DETAILED CONTROL INFORMATION

MANAGEMENT OF

INVASIVE PLANTS IN WISCONSIN

A3924-34

Japanese barberry
(Berberis thunbergii)

Brendon 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 expected effectiveness.

Japanese barberry is a round, dense, spiny shrub, typically 2–3' tall, though it may grow up to 6' tall and 6' wide. The branches are reddish brown and deeply grooved with a single, sharp spine at each node. The wood beneath the bark is yellow. It spreads vegetatively through branches that root freely when they touch the ground.

Legal classification in Wisconsin: All wild plants are restricted. Select varieties/hybrids are also restricted. Consult Wisconsin's invasive species rule (NR 40) for details.

Leaves: Alternate, 0.5–1.5" long, entire, and shaped liked a spatula with a narrow base and wide end (spatulate). Color varies depending on the cultivar, but includes green, bluish-green, or dark reddish-purple. Leaves are arranged in clusters above a spine.

Flowers: Mid-spring. Yellow, umbrella-shaped, 0.25" across with 6 petals. Flowers are found along the stem individually or in clusters of 2–4.

Fruits and seeds: Bright-red, oblong berries, 0.3" long. Fruit are found on narrow stalks along the stem individually or in clusters of 2–4. Fruit mature in mid-summer and can persist on shrub into winter.

Roots: Shallow root system. When scratched, the inner layer of the root is yellow.

Similar species: European barberry (*Berberis vulgaris*) is another introduced species that is sometimes invasive. European barberry spines occur in sets of 3, while Japanese barberry spines occur singly.

Ecological threat:

- Invades open and closed canopy forests, woodlands, oak savannas, wetlands, pasture, and meadows. Grows more vigorously on well-drained soils.
- Seeds are readily dispersed by birds.
- Sites infested with Japanese barberry have significantly more deer ticks (*Ixodes scapularis*) than sites where Japanese barberry control efforts have taken place or where barberry is not present.

Non-chemical control

Removal

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

Pulling or digging up small- to medium-sized barberry any time of the year is an effective individual plant control strategy if soil conditions are amenable. Remove the root crown, as Japanese barberry resprouts from that area. Small bushes can be pulled by hand and larger bushes can be pulled using a leverage tool. Digging up soil surrounding larger bushes can facilitate plant removal. If fruiting, avoid movement unless material can be transported without spreading fruit to other locations.

UW Extension
University of Wisconsin-Extension
NPM

Detailed info on

1. Identification
2. Methods
3. Effectiveness
4. Warnings

Mowing

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

Mow or cut when flowering but prior to fruit production. Mow or cut plants as close to the ground as possible. Mowing or cutting will need to be repeated for a number of years to reduce established populations. Mowing resprouting barberry after initial removal of a plant can prevent reestablishment of the resprouting plant.

Prescribed burning

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

Spring burns can kill germinating seedlings and suppress aboveground growth of established plants, depending on fire intensity. After fire, established plants will quickly resprout and reinvade areas. Cutting barberry in spring, followed by a summer burn is the most effective burning regime. Burns must be repeated annually for 2–5 years to suppress established populations. A hand-held propane torch can be effective for treating seedlings or barberry plants that are less than 4" in diameter.

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 surfactant at 0.25–0.5% can alleviate any potential reduction. If infestations are mixed with desirable vegetation, applications of herbicide without soil activity in the early spring or late fall can reduce injury to desirable plants, as barberry leafs out earlier and drops leaves later than most desirable vegetation.

dicamba + 2,4-D*

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

Common name: Outlaw

Rate:
broadcast: 28–44 fl oz/A (dicamba: 0.2–0.4 lb a.e./A + 2,4-D: 0.3–0.5 lb a.e./A)
spot: 0.8% (dicamba: 0.01 lb a.e./gal + 2,4-D: 0.01 lb a.e./gal)

Timing: Apply when target species is actively growing and fully leafed out. While plant is fruiting is the most effective treatment time.

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 severe injury to plants. Rates > 16 oz/A (0.5 lb a.e./A) may cause stunting and discoloration of sensitive grasses, such as smooth brome.

glyphosate*

Effectiveness in season: 70–90%
Season after treatment: 50–70%

Common name: Roundup

Rate:
broadcast: 1.5–3 lb a.e./A
spot: For a 3 lb a.e./gal product. 1–2% (0.03–0.06 lb a.e./gal)

Timing: Apply when target species is actively growing and fully leafed out. While plant is fruiting is the most effective treatment time.

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.

metsulfuron*

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

Common name: Escort

Rate:
broadcast: 1.0–2.0 oz/A (0.6–1.2 oz a.i./A)
spot: 0.04 oz/gal (0.02 oz a.i./gal)

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

Caution: Do not apply directly to water or to areas where surface water is present. Remains in the soil for months depending on application rate. Overspray or drift to desirable plants should be avoided as even minute quantities of the spray may cause severe injury to plants.

triclopyr*

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

Common name: Element 4

Rate:
broadcast: 16–32 fl oz/A (0.5–1.0 lb a.e./A)
spot: 1–2% (0.04–0.08 lb a.e./gal)

Timing: Apply when target species is actively growing and fully leafed out. While plant is fruiting is the most effective treatment time.

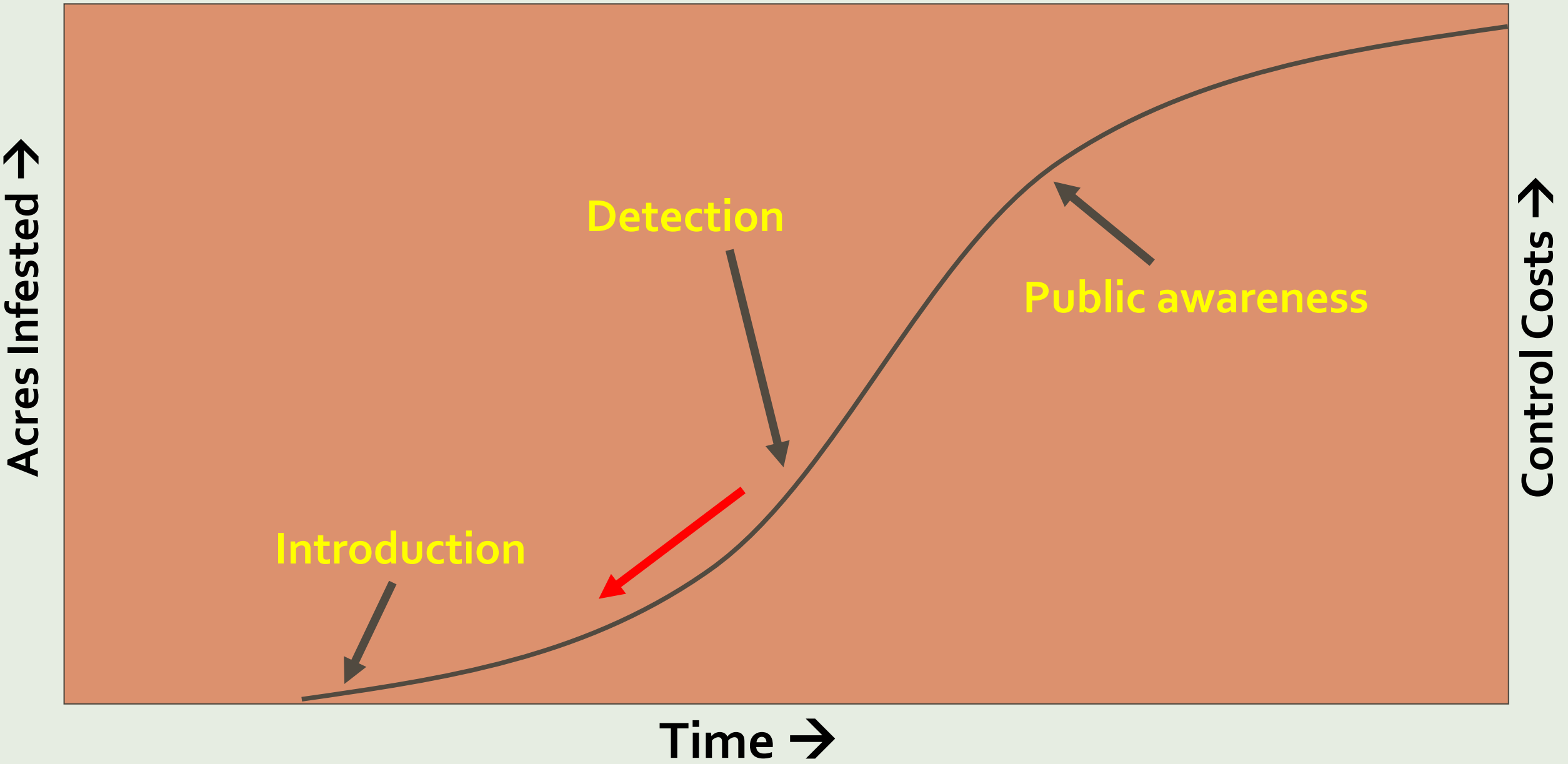
Caution: Use product labeled for aquatic use if potential exists for solution to contact surface waters. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Overspray or drift to desirable plants should be avoided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

SPECIES WITH FACTSHEETS

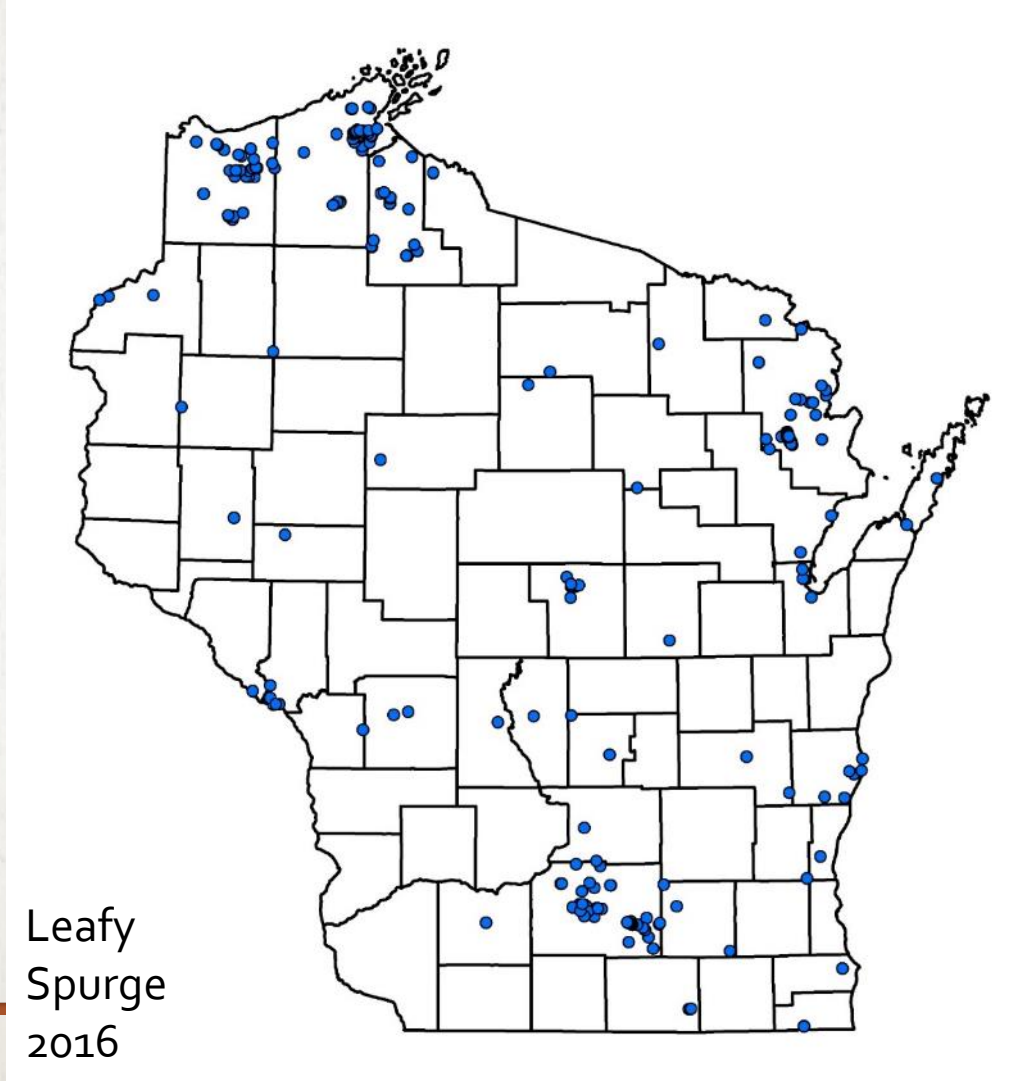
- Amur honeysuckle
- Asian bittersweet
- Bell's honeysuckle
- bird's-foot trefoil
- black locust
- black swallowwort
- border privet
- bull thistle
- Canada thistle
- common buckthorn
- common privet
- common tansy
- common teasel
- creeping bellflower
- crown vetch
- cut-leaved teasel
- dame's rocket
- 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

MIPN.org
Midwest Invasive Plant Network

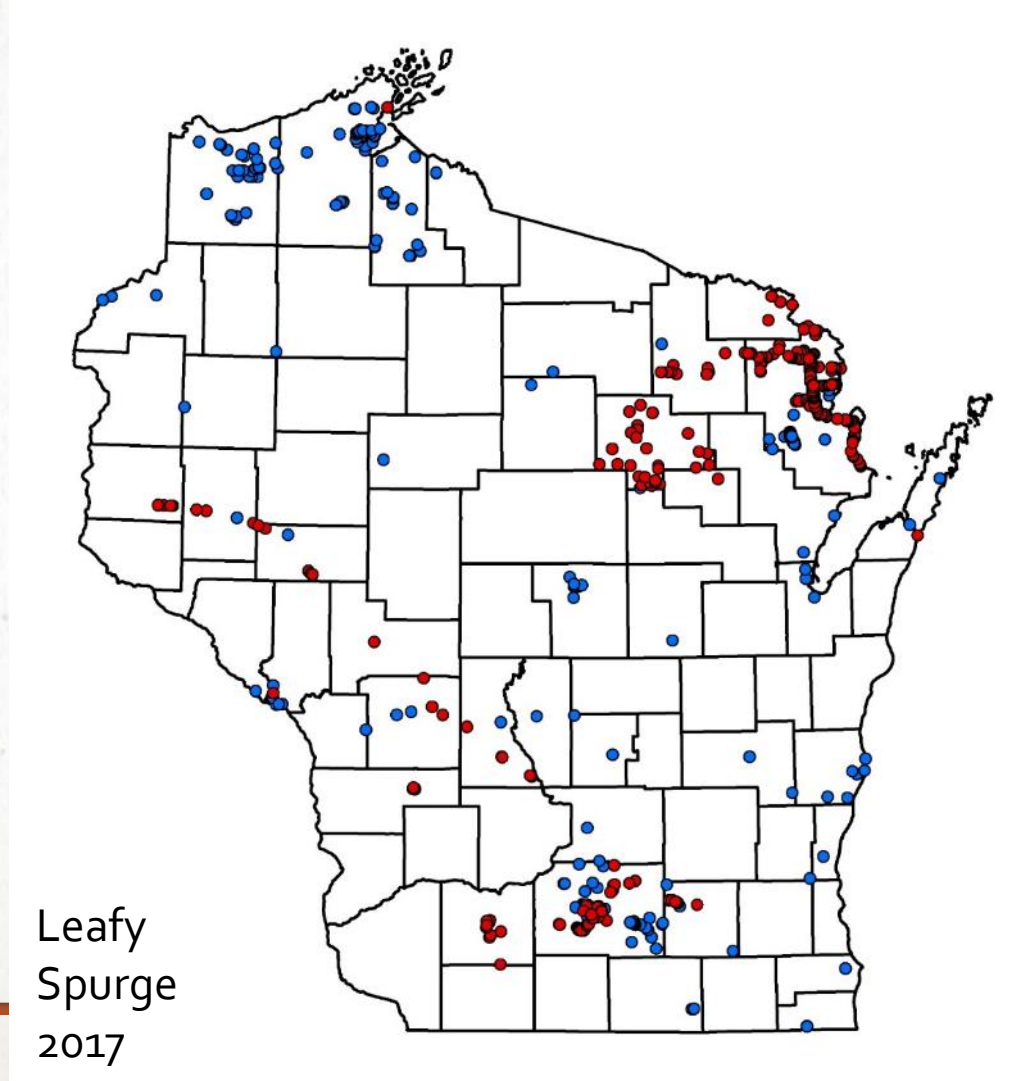
The Invasion Curve



IMPROVE KNOWLEDGE OF DISTRIBUTION



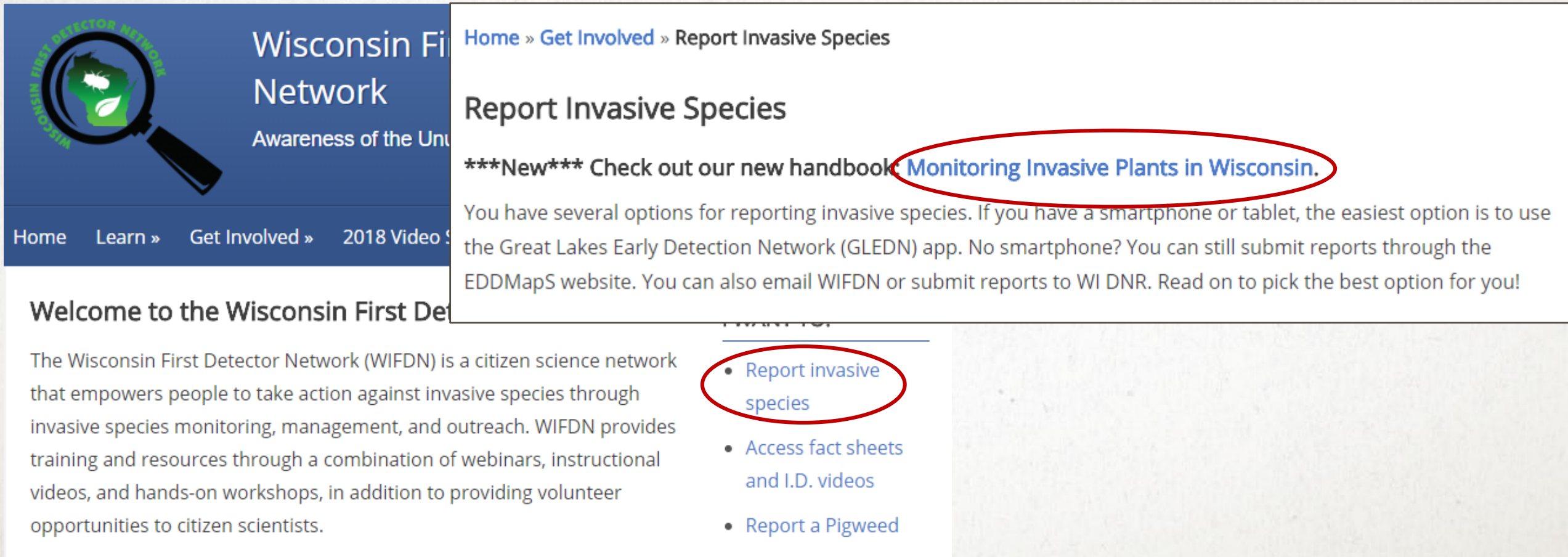
Leafy Spurge 2016



Leafy Spurge 2017

HOW TO REPORT INVASIVE SPECIES

MONITORING HANDBOOK AT FYI.UWEX.EDU/WIFDN



MONITORING INVASIVE PLANTS IN WISCONSIN

Wisconsin First Detector Network + Dane County Parks

Contents

INFORMATION TO REPORT

- Species name
- Date of observation
- Location
- Pictures of observed infestation

THREE WAYS TO REPORT

1) Online form on EDDMapS website
2) Great Lakes Early Detection Network (GLEDN) app
3) Email report to WIFDNcoordinator@gmail.com

GLEDN FEATURES

- Free!
- Maps invasive species
- Built-in field guide
- Reports verified
- Integrated with EDDMapS

SEND AN EMAIL TO WIFDNCOORDINATOR@GMAIL.COM WITH THE FOLLOWING INFORMATION:

- Species name
- Date of observation
- Location (lat/long, or show on map)
- Pictures of observed infestation

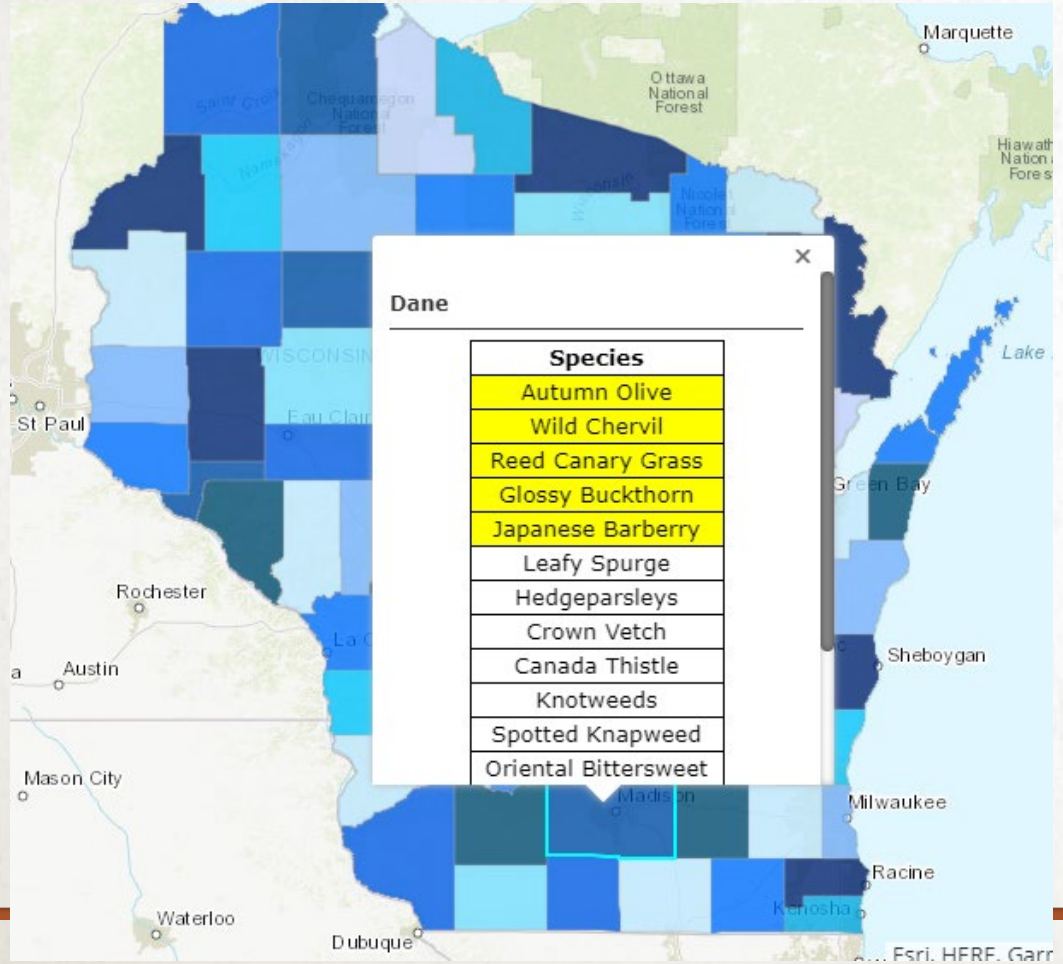
CITIZEN SCIENCE PROJECTS WITH WIFDN

1. REPORT ANY INVASIVE SPECIES

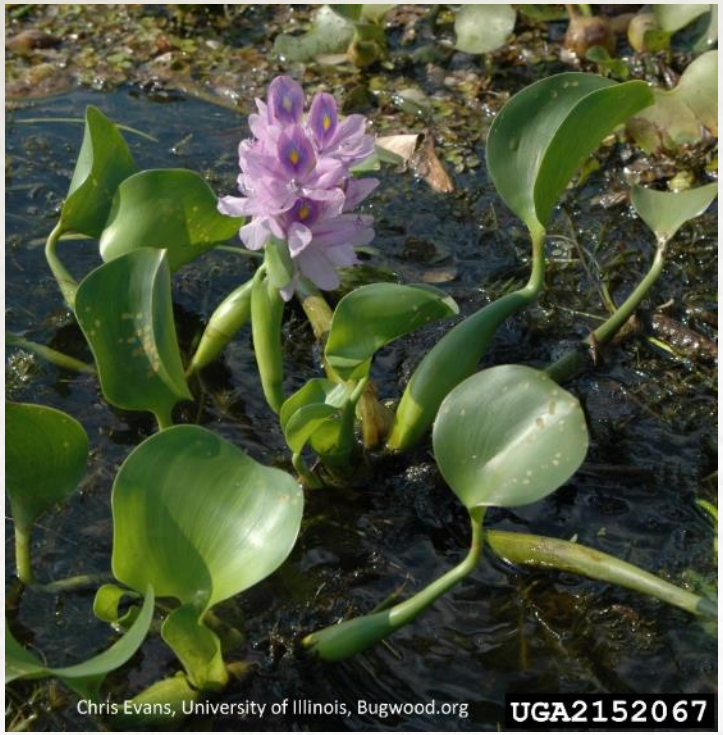
- Plants that have naturalized; i.e. they weren't planted on purpose
- 3 options
  - Fill out form on EDDMapS website
  - Use GLEDN app
  - Email WIFDNcoordinator@gmail.com

More information on reporting provided at **fyi.uwex.edu/wifdn**

2. REPORT COUNTY PRIORITY SPECIES



- Access story map at fyi.uwex.edu/wifdn
  - Click on “Learn” tab, then on “Invasive Species Priority Map”
- Click on your county to view list of priority species
- Report species via EDDMapS, GLEDN, or email



3. POND WATCHERS

- Look for high priority aquatic invasive plants in park ponds
- Report efforts to WIFDN
  - WIFDN shares with AIS team at DNR
- Visit Pond Watchers page at fyi.uwex.edu/wifdn

4. REPORT A PIGWEED

- Learn about and report Palmer amaranth and waterhemp
- Visit Report a Pigweed page at fyi.uwex.edu/wifdn

5. CREATE YOUR OWN PROJECT

- WIFDN is here to help you!
- Developing project
- Training participants
- Managing data

ADDITIONAL RESOURCES

Identification and Management of Invasive Plants in Wisconsin

Invasive plants can thrive and aggressively spread beyond their natural range, disrupting ecosystems. The *Identification and Management of Invasive Plants in Wisconsin* video and fact sheet series explains how to identify invasive plants and provides common management options. Management methods recommend specific timings for treatment, as well as expected effectiveness. For more information, go to: fyi.uwex.edu/wifdn/learn/invasive-species-i-d-and-impacts

Autumn olive (*Elaeagnus umbellata*)
Russian olive (*Elaeagnus angustifolia*)

Biennial thistles (bull, European marsh, musk, plumeless)

Black locust (*Robinia pseudoacacia*)

Bird's-foot trefoil (*Lotus corniculatus*)

Black swallow-wort (*Vincetoxicum nigrum*)

Common buckthorn (*Rhamnus cathartica*)

Glossy buckthorn (*Frangula alnus*)

Bush honeysuckles (*Lonicera* spp.)

Canada thistle (*Cirsium arvense*)

Common tansy (*Tanacetum vulgare*)

Creeping bellflower (*Campanula rapunculoides*)

Crown vetch (*Securigera varia*)

Dame's rocket (*Hesperis matronalis*)

Field bindweed (*Convolvulus arvensis*)

Garden valerian (*Valeriana officinalis*)

Garlic mustard (*Alliaria petiolata*)

Hedge-parsleys (*Torilis* spp.)

Hill mustard (*Bunias orientalis*)

Japanese barberry (*Berberis thunbergii*)

Japanese honeysuckle (*Lonicera japonica*)

Japanese hop (*Humulus japonicas*)

Japanese knotweed (*Polygonum cuspidatum*)

Bohemian knotweed (*P. x bohemicum*)

Giant knotweed (*P. sachalinense*)

Japanese stiltgrass (*Microstegium vimineum*)

Leafy spurge (*Euphorbia esula*)

Multiflora rose (*Rosa multiflora*)

Oriental bittersweet (*Celastrus orbiculatus*)

Perennial pepperweed (*Lepidium latifolium*)

Poison hemlock (*Conium maculatum*)

Privet (*Ligustrum* spp.)

Purple loosestrife (*Lythrum salicaria*)

Quackgrass (*Elymus repens*)

Sericea lespedeza (*Lespedeza cuneata*)

Spotted knapweed (*Centaurea stoebe*)

Sweetclovers (*Melilotus* spp.)

Teasels (*Dipsacus* spp.)

Tree-of-heaven (*Ailanthus altissima*)

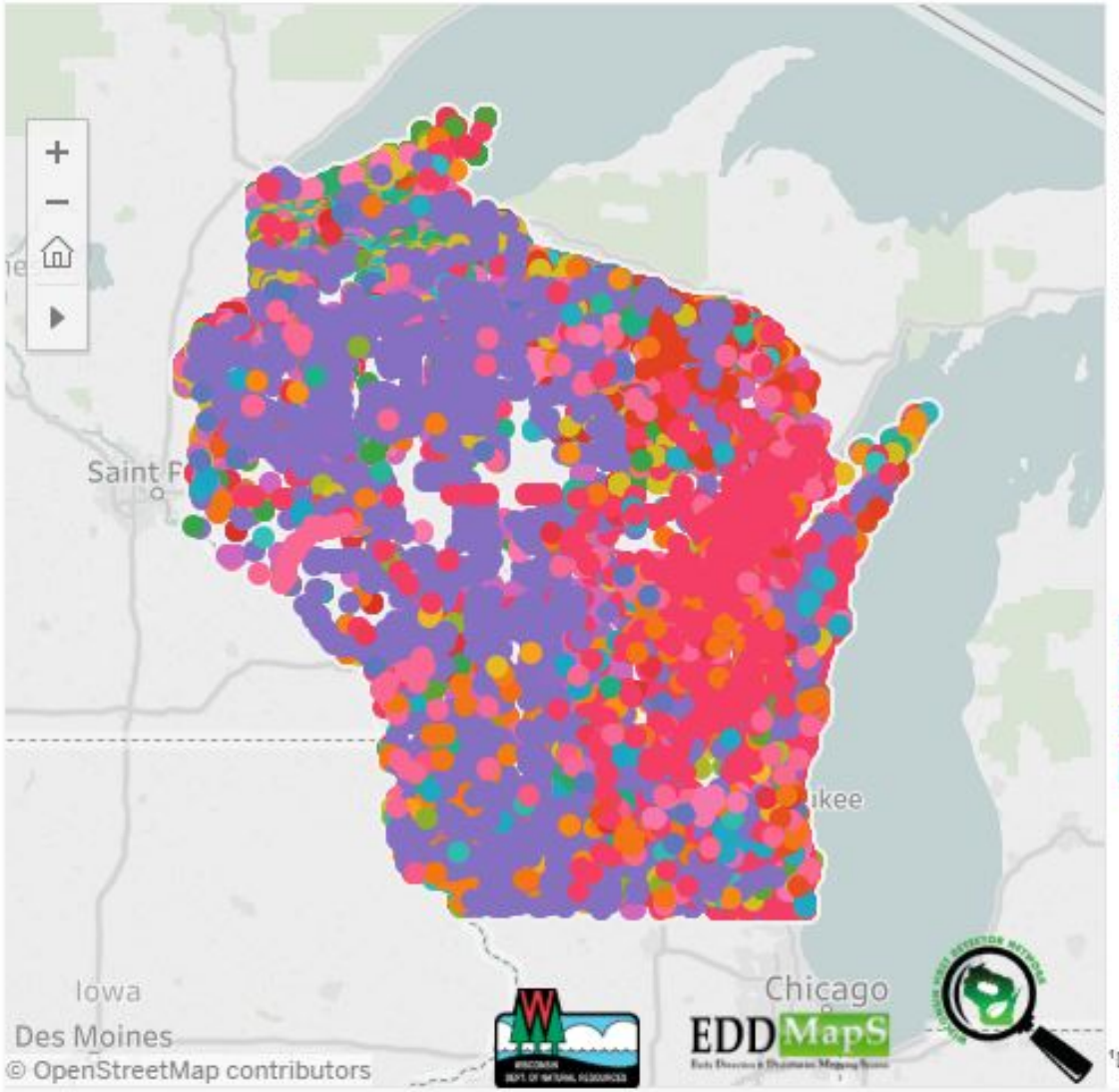
Wild chervil (*Anthriscus sylvestris*)

Wild parsnip (*Pastinaca sativa*)

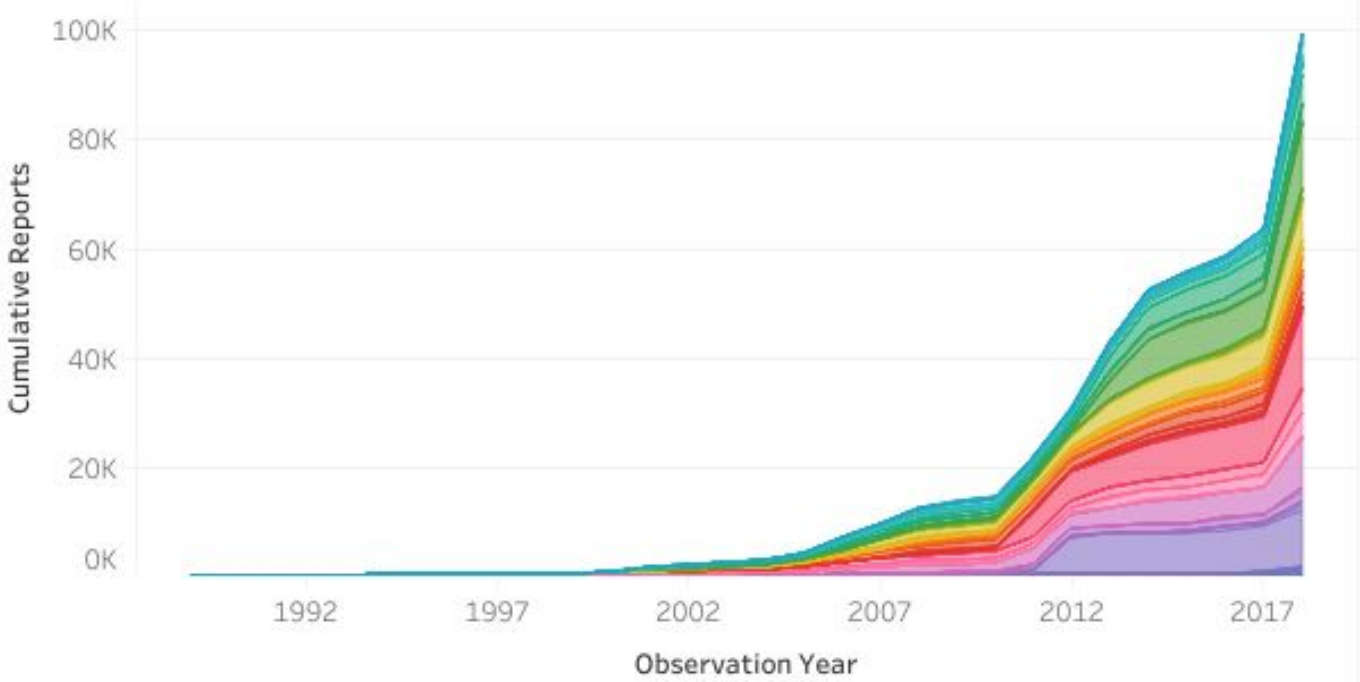
WISCONSIN FIRST DETECTOR NETWORK

UW Extension
University of Wisconsin-Extension

Wisconsin Shared Terrestrial Invasive Plant Presence Viewer



Cumulative Number of Reports Over Time[1]



ABSINTH WORMWOOD
AMUR CORKTREE
AMUR HONEYSUCKLE
AMUR MAPLE
AQUATIC FORGET-ME-..
AUTUMN OLIVE
BABYSBREATH
BELLS HONEYSUCKLE
BIGLEAF LUPINE
BIRDSFOOT TREFOIL
BISHOPS GOUTWEED
BLACK ALDER
BLACK LOCUST
BLACK SWALLO
BLACKBERRY LI
BLUEBUTTONS

Classification
(All)

Common Name
(All)

Observation Date Range
1988 2018

[1]Due to internal policies, some wetland species locations are unable to be shared.

Last updated: 7/24/2018

tableau

Priority Invasive Species Lists in Wisconsin

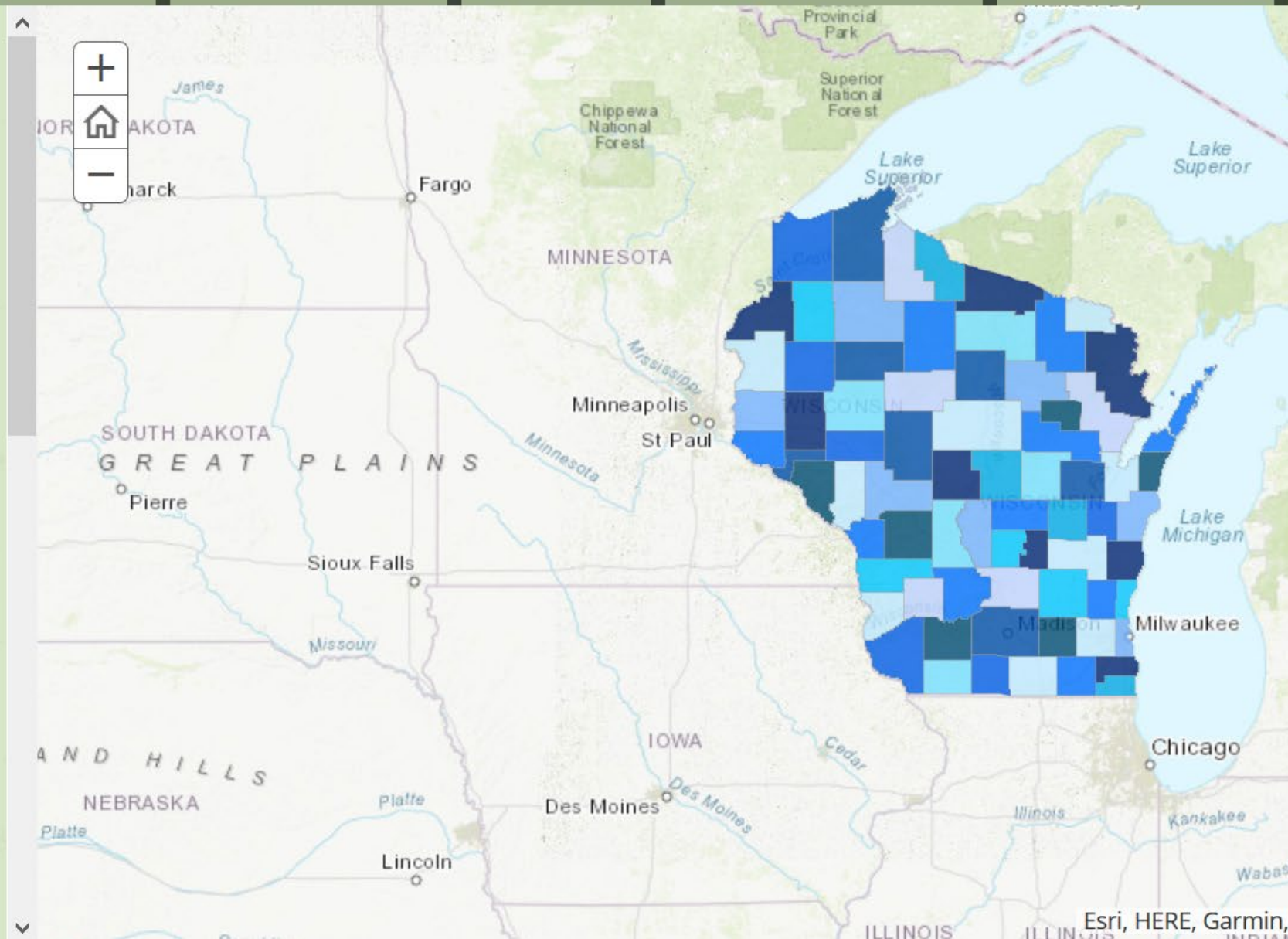
An Invasive Plants Story

County Specific Priority Lists | Autumn Olive | Canada Thistle | Common Buckthorn | Crown Vetch | European Marsh Thistle | Exotic Honeysuckles

Invasive plants are a pervasive problem. The ability to detect an invasive species in the early stages of an invasion is critical to control and eradicate populations. The following map series depicts the results of efforts to model the suitable habitat of regulated invasive plants across the state of Wisconsin. This research was performed in the Renz Lab at the University of Wisconsin – Madison in conjunction with UW-Extension. ***Our goals are to:***

1. Provide a platform to investigate the current known distribution of select invasive plants
2. Display county-specific species lists for invasive species likely to be present (***10-15 species***)
3. Encourage reporting invasive species occurrences

If you are interested in getting involved with our project, we need help locating these (and other) species! Click on your county on the map to the right to find out which invasive plant species are of greatest priority. Species highlighted in ***yellow*** (high priority species) have been identified as those with large areas of suitable habitat in the county, but very few, if any, species occurrence records are currently available. If

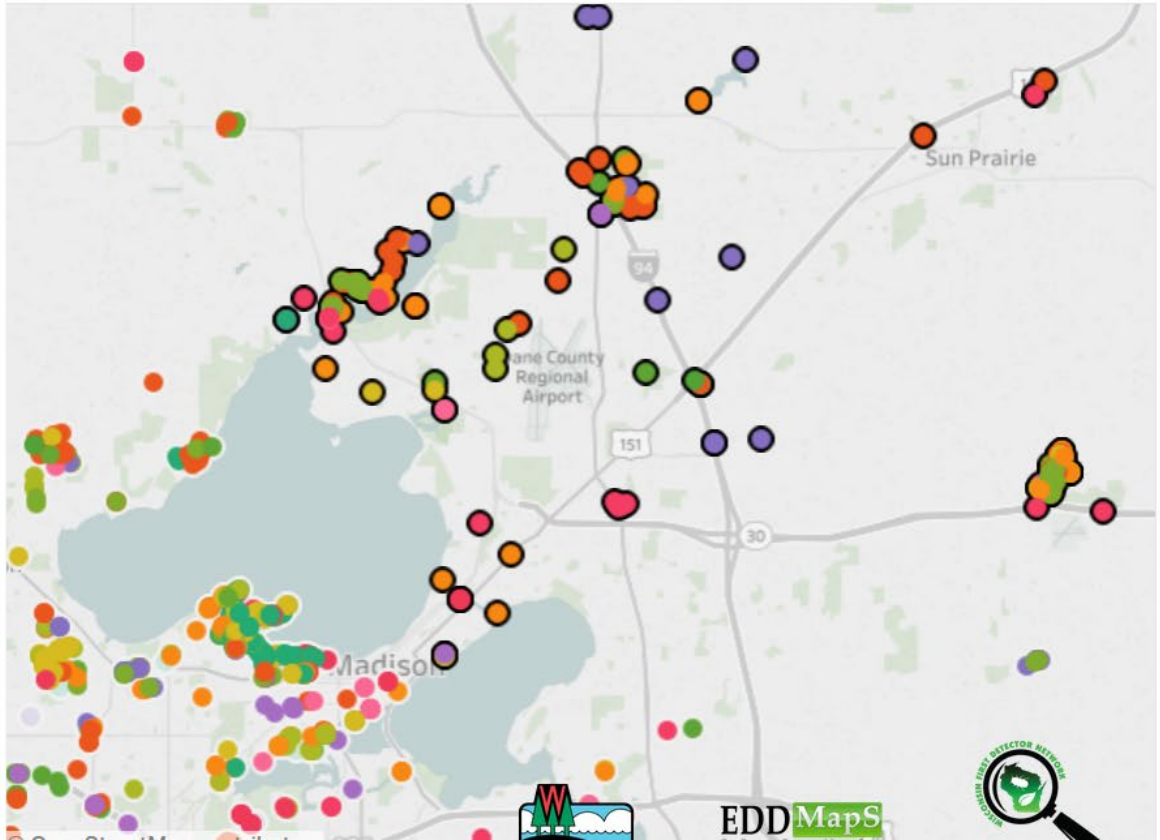


SO WHAT SPECIES ARE COMMON IN NEAR HEADQUARTERS?

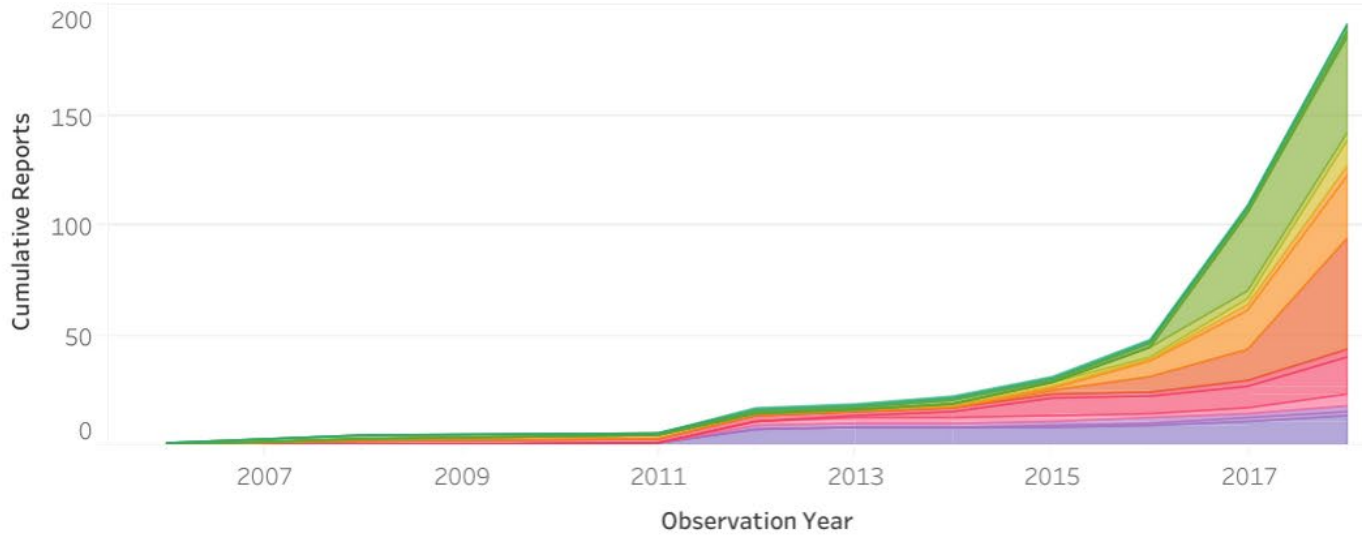
Wisconsin First Detector Network - Profile

Favorite Download Workboo

Wisconsin Shared Terrestrial Invasive Plant Presence Viewer



Cumulative Number of Reports Over Time[1]



BUSH HONEYSUCKLES .. | COMMON TEASEL | DAMES ROCKET | HEDGE-PARSLEYS | KNOTW
CANADA THISTLE | CREEPING BELLFLOWE.. | GARDEN VALERIAN | JAPANESE BARBERRY | LEAFY
COMMON TANSY | CROWN VETCH | GARLIC MUSTARD | JAPANESE HEDGE-PA.. | ORIENT

Classification: (All)

Common Name: (Multiple values)

Observation Date Range

1988 — 201

[1]Due to internal policies, some wetland species locations are unable to be shared

Last updated: 9/28/2018

SO WHAT SPECIES ARE SUITABLE FOR DANE COUNTY?

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An Invasive Plants Story

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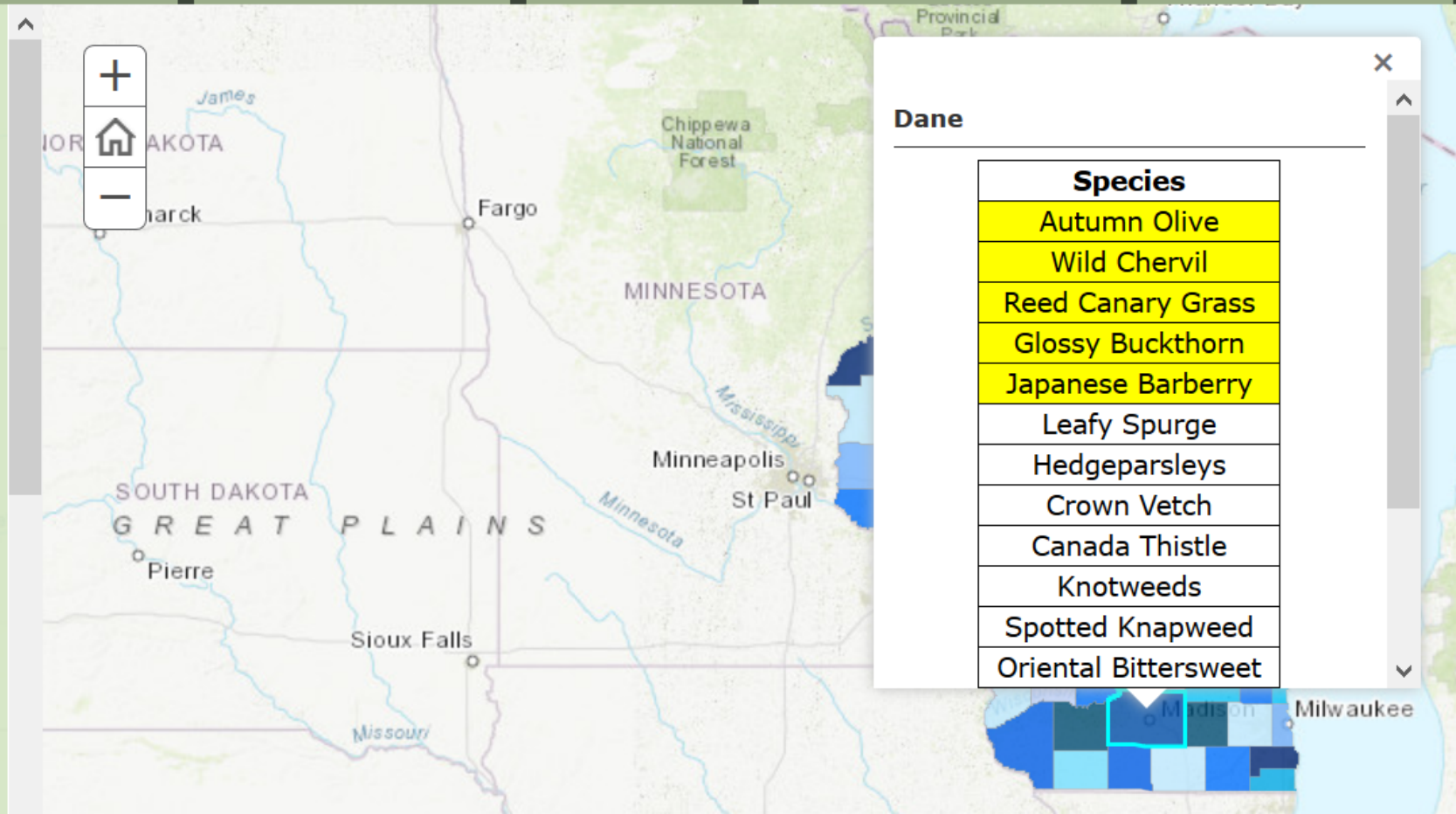

SUMMARY

- 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

SOMETIMES NATIVE SPECIES ARE NOT DESIRABLE!

- Consider managing other vegetation when conflicts with goals/objectives

QUESTIONS

THE UNIVERSITY of WISCONSIN

UW Extension