

Invasive Species ID and Management



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Presentation Overview

- Introduction to the MISG Program
- Plant ID and Management
- Resources
- Prevention
- Questions

**What is the most common
invasive species you see
impacting the RoW?**

Introduction to the MISPP

What's an Invasive Species?

A species that is not native and whose introduction causes, or is likely to cause, economic or environmental harm or harm to human health.



Native

Poison ivy

© Healthwise, Incorporated



Non-native, no
harm

StreetWill.co



Non-native, does
harm

ISN

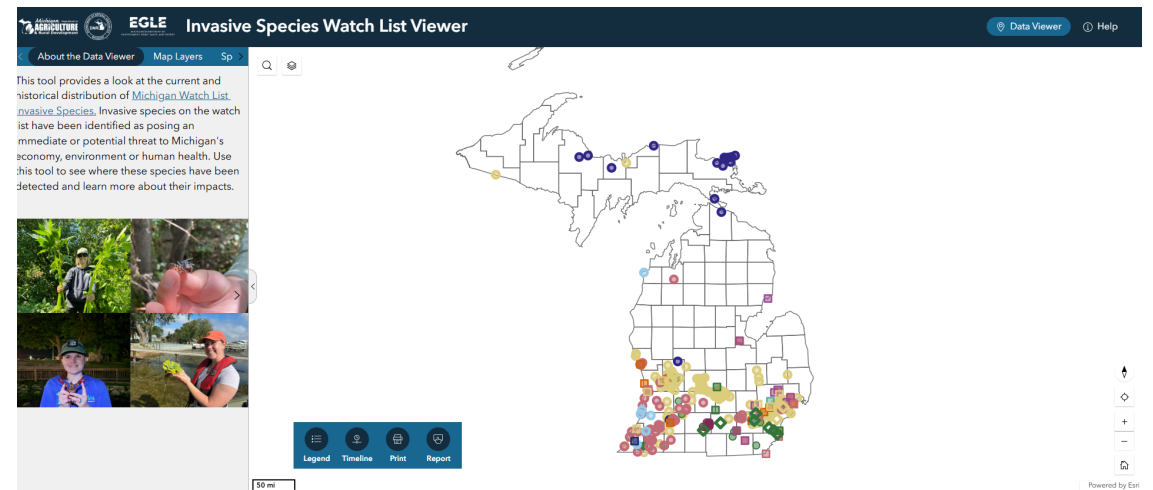
Prohibited and Restricted Species

- If a species is prohibited or restricted, it is unlawful to possess, introduce, import, sell or offer that species for sale as a live organism, except under certain circumstances
- Examples: giant hogweed, phragmites, and Japanese knotweed



Watch List Species

- Identified as posing an immediate or potential threat to Michigan's economy, environment or human health
- These species either have never been confirmed in the wild in Michigan or have a limited known distribution
- 8 terrestrial species and 10 aquatic species
- <https://experience.arcgis.com/experience/2f896039d5344019b78e5c50aab114a5/page/Data-Viewer->



Watch List Species



Prohibited

Silver Carp



Prohibited

European Frog-bit



Mile-a-minute weed

Yellow floating heart



European Water Clover



Prohibited

New Zealand Mudsnaill



Prohibited

Himalayan balsam

MI Invasive Species Program

- QOL - “Quality of Life” departments
 - EGLE, DNR, MDARD
 - MDOT, MSP, others
- Goals:
 - Prevent new invasive species
 - Limit dispersal of established invasive species
 - Develop statewide Early Detection & Response program
 - Manage and control invasive species to minimize harmful effects from established invasive populations
 - Environmental, economic, public health
- Outreach, coordination, collaboration



Michigan Invasive Species Program



EGLE

MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

[Michigan.gov/Invasive](https://www.Michigan.gov/Invasive)

- Watch List
- Regulated Species Lists
- Education & Outreach resources
- Annual Report
- Michigan Invasive Species Grant Program
- State Management Plans
 - Aquatic and terrestrial

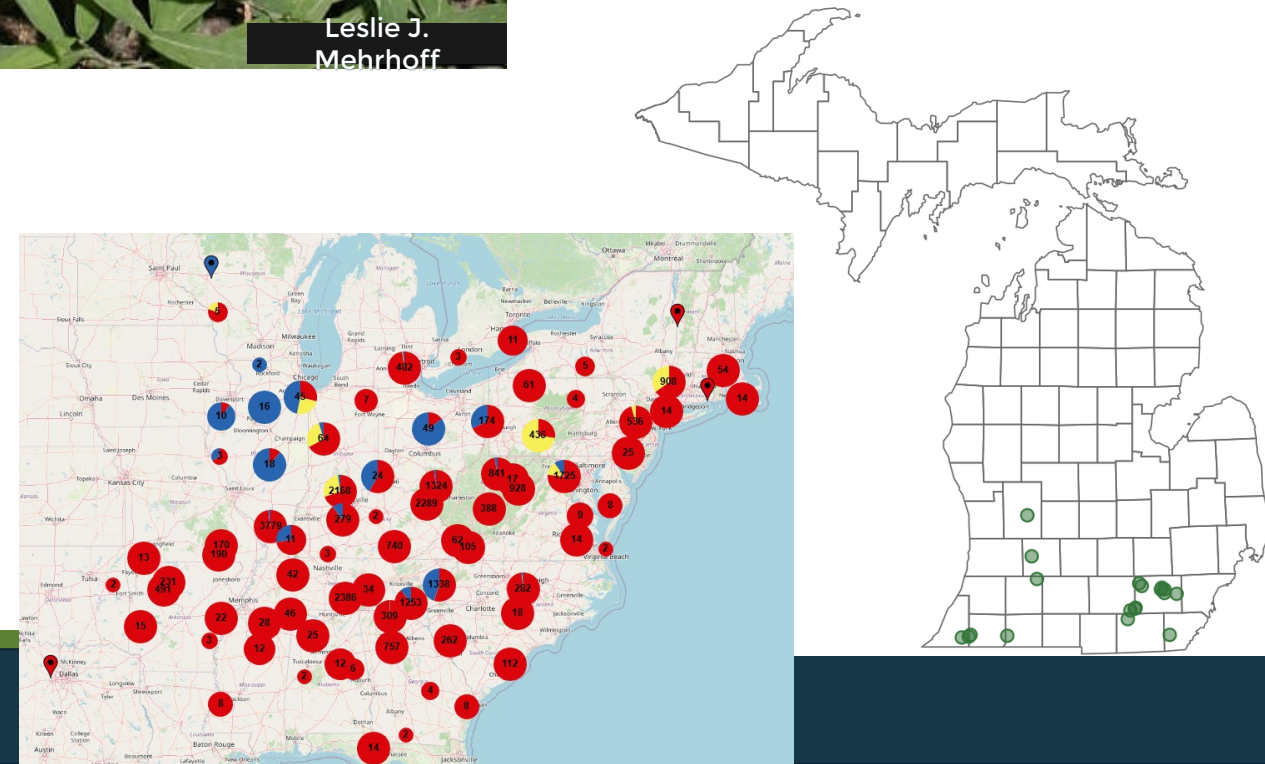


Plant ID and Management

Stiltgrass

Microstegium vimineum

- ▶ Annual grass
- ▶ Forested floodplains preferred
- ▶ Deep shade to full sun
- ▶ Spreads by seeds
- ▶ Sprawling habit, shallow roots
- ▶ Off-center silvery stripe on wide-ish leaf blades
- ▶ Stems turn purple-brown after frost
- ▶ Management:
 - ▶ Mechanical - small populations
 - ▶ Chemical - before flowering
 - ▶ Pre-emergent



Japanese Stiltgrass

(*Microstegium vimineum*)

Treatment method:
Chemical and manual

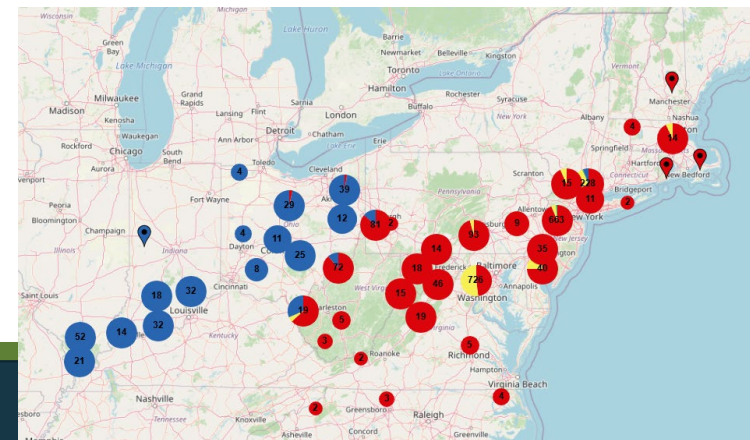
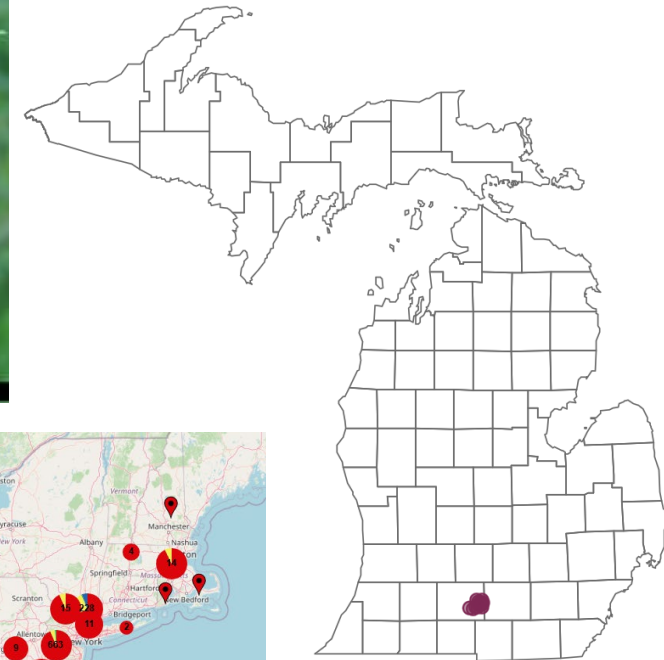
- Glyphosate
- Add adjuvant
- Foliar spray, hand pull
- Apply herbicide after leaf blades are fully grown
- Address infestations as soon as possible
- Hand pull small sprouts if ground is moist



Mile-a-Minute Weed

Persicaria perfoliata

- ▶ Annual vine
- ▶ Open/disturbed areas; prefers wet soil
 - ▶ Increased climate match
- ▶ Fast-growing; spreads by seeds
 - ▶ Multiple generations per year
- ▶ Triangular leaves, circular ocreae, recurved prickles on stems
- ▶ White flowers lead to multicolored, pea-sized fruits
- ▶ Management:
 - ▶ Mechanical - when seedlings (small pop)
 - ▶ Chemical - careful timing
 - ▶ Pre-emergent for established populations



Invasive Bittersweet

Celastrus orbiculatus

- Twining vine
- Yellow fruits (red inside) in fall
- Over-tops trees (and utility poles!)
- Covers open areas



Bittersweet Vine

Treatment method: Cut stump and foliar spray.

- Glyphosate and Triclopyr
- Add adjuvant
- Herbicide should be applied after spring sap flow to actively growing plants
- Cut stumps should be treated within 5 minutes of being cut
 - Follow up cut stump and foliar spray treatments with spot spraying the following year to get any resprouts.
 - Cut stump follow up be sure to treat every stem to prevent resprouting



Tree-of-Heaven

Ailanthus altissima

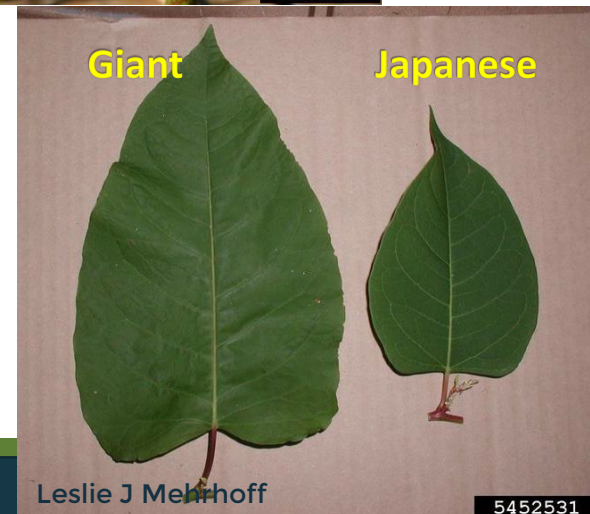
- Fast-growing, stinky, weak wood
- Compound leaves with glands at leaflet base
- Spreads by seeds & suckers; allelopathic
- Spotted lanternfly
- Difficult to control!



Invasive Knotweeds

Reynoutria japonica, *R. sachalinensis*,
R. x bohemica
(Prev. *Fallopia*, *Polygonum*)

- Bamboo-like hollow, jointed stems
- Large, heart/spade-shaped leaves
- 5-20 ft tall, deep roots
- Spreads by rhizomes & disturbance
- Do NOT mow or dig up
- Chemical treatment required



Japanese Knotweed

Fallopia japonica

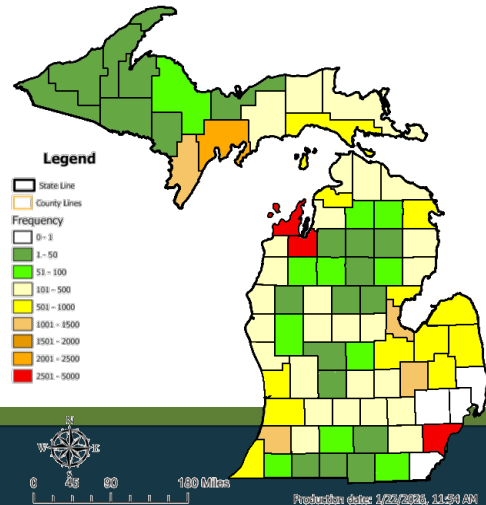
Treatment method: Chemical

- Glyphosate, Aminopyralid, Triclopyr, Imazapyr, and Imazamox
- Add adjuvant
- Foliar spray, injection, hand-swipe
- Best results occur in the fall, when the plant is translocating resources to its rhizomes to prepare for dormancy
- Monitoring and follow-up treatments required for 4 to 10+ years depending on the size and age of population



Phragmites

- Tall grass species-6-13 feet
- Aggressive in wet to moderately wet conditions
- Spreads by seed and rhizomes
- Native phragmites species in Michigan



Phragmites

Phragmites australis

Treatment method: Chemical and mechanical

- Glyphosate and Imazapyr
- Add adjuvant
- Foliar spray
- Apply herbicide after Phragmites has flowered(August-October)
 - Mechanically remove stems no early than 2 weeks after herbicide treatment



Miscanthus Grass

- *Miscanthus sinensis* and *Miscanthus sacchariflorus*;
- Chinese/Amur silvergrass, silver banner grass, maiden grass, flame grass
- Grows up to 8 ft
- Ornamental grass



Wild Parsnip

Pastinaca sativa

- Garden escapee
- Burn hazard
- Yellow flowers, weird leaves
- Mowing times



Swallow-worts

Vincetoxicum nigrum,
V. rossicum

- Fine, twining vines
- Small flowers
- Milkweed-like pods
- Habitat impacts



Black/Pale Swallow-wort

Treatment method: Chemical and manual

- Glyphosate, Triclopyr
- Add adjuvant-Pinnacle Elite
- Foliar spray, hand-swipe
- Apply herbicide in June to early July
- Remove seed pods post-chemical treatment



Kudzu

Pueraria montana

- Treatment method:
Chemical or manual
- Imazapyr, Triclopyr, 2,4-D
- Add adjuvant
- Foliar spray
- Depending on density/age of stand, could use methylated seed oil
- Apply herbicide in the mid summer



Autumn Olive

Elaeagnus umbellata



- Widespread
- Silvery/bronzey scales
- Fragrant flowers
- Red berries

Buckthorns

Rhamnus cathartica

Frangula alnus

- Black berries
- Glossy leaves
- Yellow-orange under-bark
- Amphibian impacts



Glossy



Common



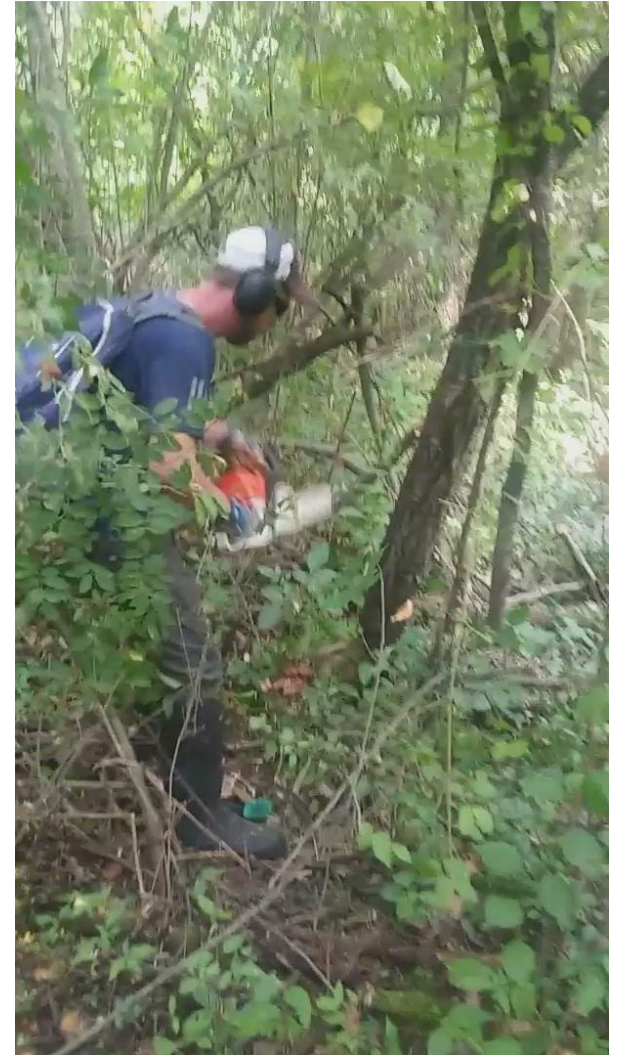
Woody Species Treatment

Chemical Treatment:

- Cut-stump with triclopyr or glyphosate
 - Most effective late summer through fall
 - Can be performed any time other than spring
- Follow up on seedlings with foliar treatment

Mechanical Treatment:

- Cut at base and cover stump with “buckthorn baggies”
- Seedlings can be managed with controlled burns



Garlic Mustard

Alliaria petiolata



- Widespread
- Kidney/spade-shaped leaves
- 4-petal flowers
- Smelly (edible!)
- Allelopathic



Spotted Knapweed

Centaurea stoebe

- Widespread
- Pink-purple flowers
- Green-grey plant
- Allelopathic
- Dune, grassland impacts
- Livestock vs. bees



And More!



Purple loosestrife

Invasive honeysuckles



5542789



UGA0016203

Black locust

Japanese barberry



5569655

Spongy moth

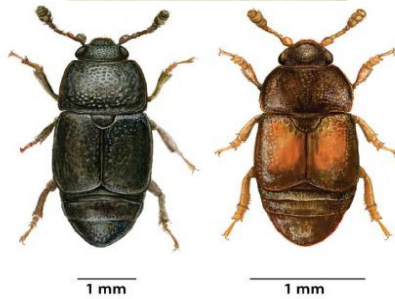


5457060

Oak Wilt – A disease that kills healthy red oaks

Transmission:

- * Above ground Beetles carry spores from infected trees to wounds



- * Below ground through root grafts



UGA3226028

No pruning or wounds: April 15 - July 15



If you must prune, immediately cover wound with barrier like latex paint

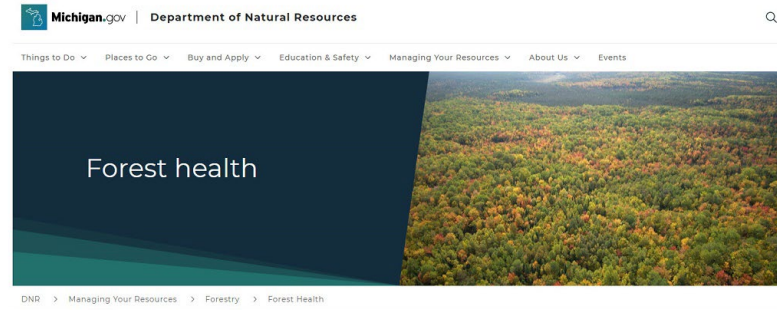


- Flagging leaves / leaf drop: July/August
- Same year wound on initial flagging tree
- Tree dies within 6 weeks
- Below-ground root grafts will kill adjacent trees



www.michigan.gov/foresthealth

Click on: **View and report oak wilt locations**



Protecting Michigan's forests

Protecting the health of Michigan's forests is a challenging task that requires collaboration. Our forest health professionals work with other state and federal agencies and universities to prevent, evaluate and manage the occurrence and impacts of both native and exotic forest insects and diseases.



2020 Forest Health Highlights
Read the annual Forest Health Highlights Report.



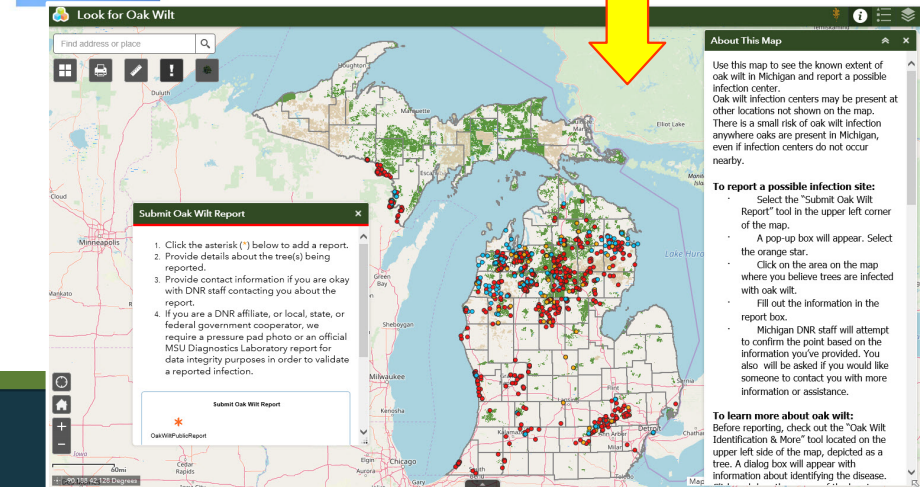
Plant and pest quarantines
See quarantines issued by the Department of Agriculture and Rural Development.



View and report Heterobasidion root disease locations
View and enter a report into our interactive map.

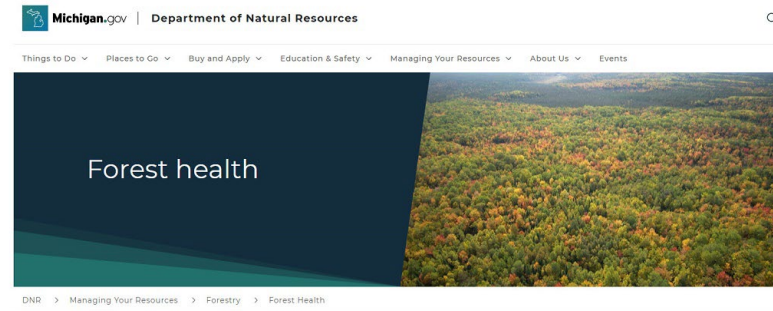


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FYI - Heterobasidion Root Disease (HRD)

- Native fungus
- A severe disease of actively managed conifer plantations.
- Affects many conifers but red, white, and mixed pine plantations are most impacted in Michigan
- Stumps of recently-cut trees offer a place for infection to start
- HRD spreads to other living trees through underground root contact



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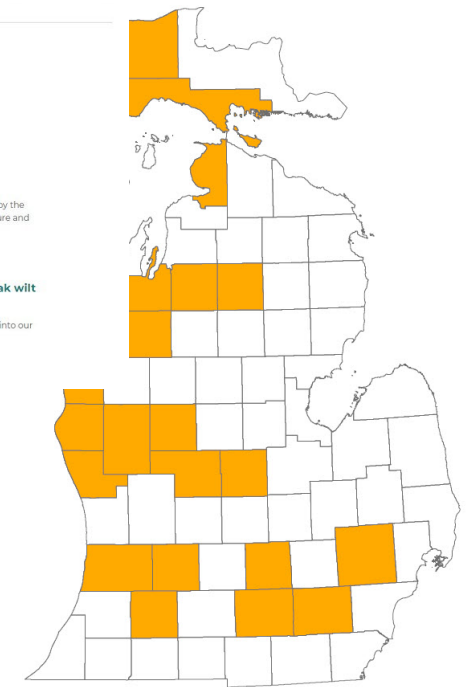
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Heterobasidion Root Disease Conditions Report Map



European Frog-bit

ID

- Free-floating
- Round to heart-shaped leaves
- Leaves 0.5-2.25" across

Harm

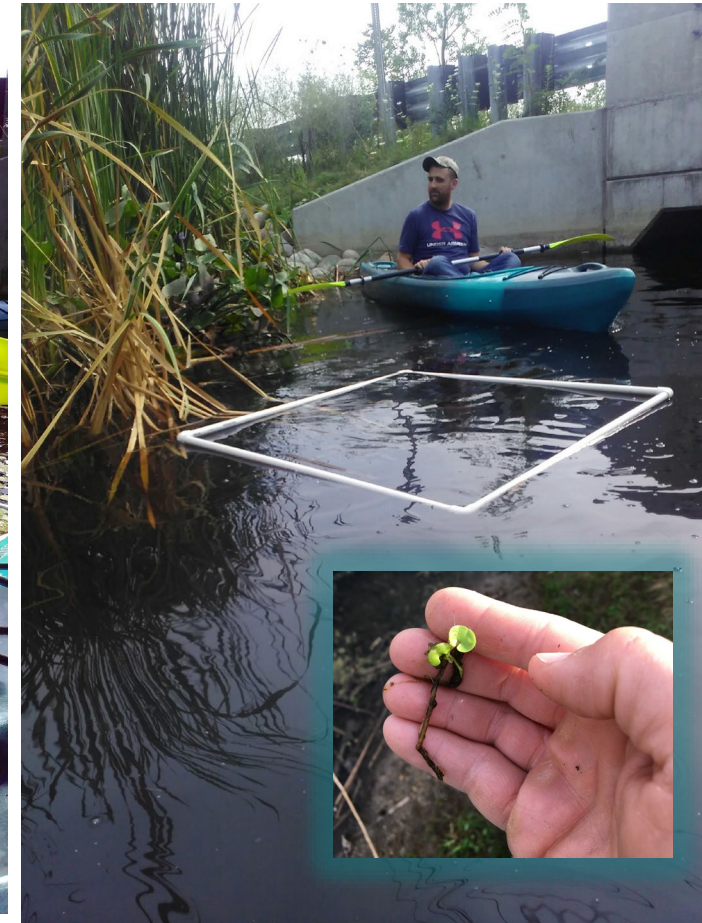
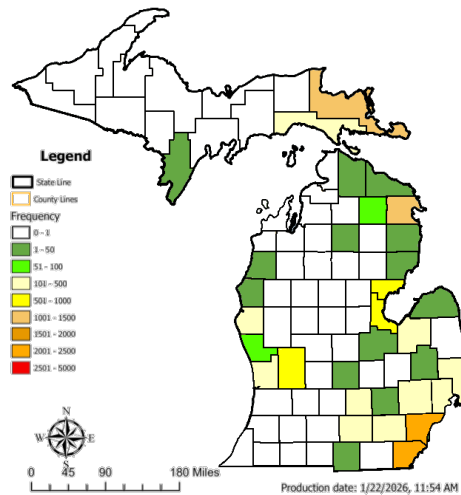
- Ecosystem
- Economy
 - Recreation



European Frog-bit

Control

- Physical removal
- Herbicide application
- Biocontrol (being researched)



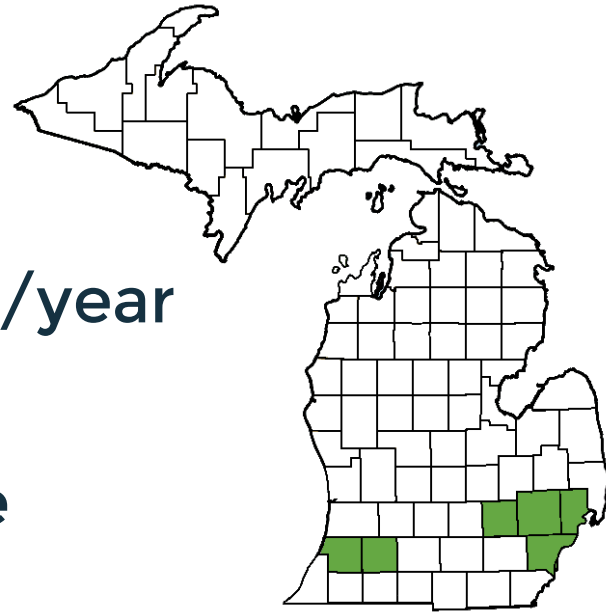
Red Swamp Crayfish

ID

- Dark Red with bright red spots
- 2-5" long

Harm

- Ecosystem
 - >1,000 young/year
- Economy
 - Infrastructure



Red Swamp Crayfish

Control

- DNR Fisheries Division Leads efforts
- Trapping, chemical, habitat alteration



Report to: QuebedeauxK@Michigan.gov

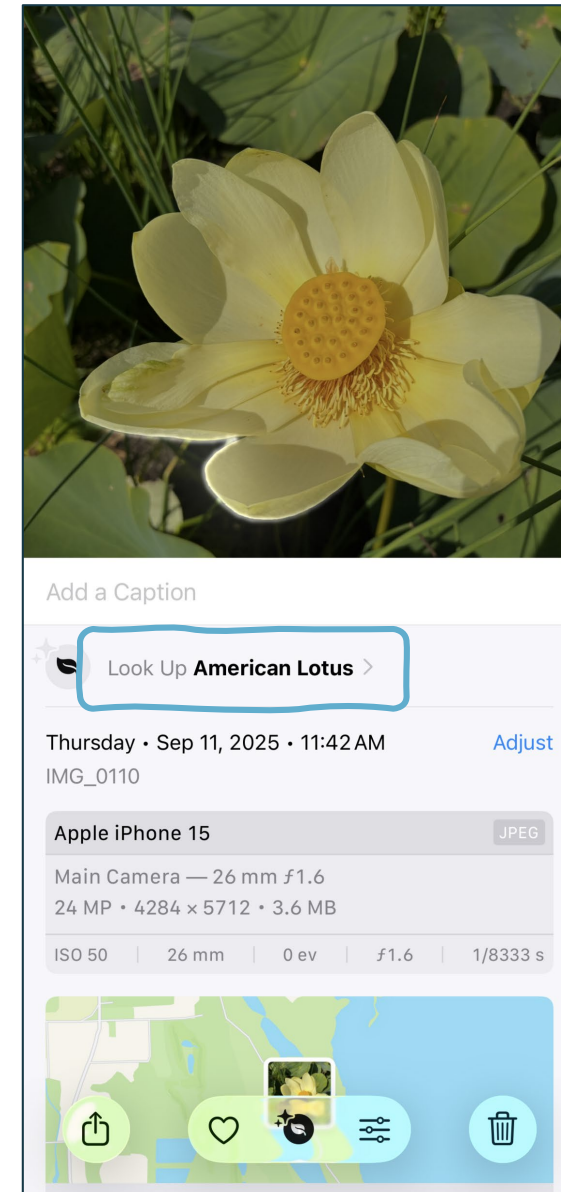
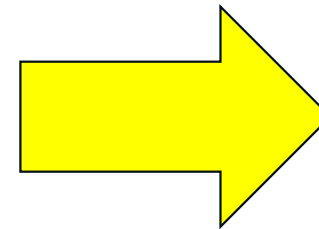


Resources

ID Resources

Technology

- Smart phones
 - AI... already built-in
- Internet
 - [Michigan Flora](#)
 - [MISIN](#)
 - [iNaturalist](#)



ID Resources

Midwest Invasive Species Information Network

← → ↻ 🏠 misin.msu.edu

Bureaucracy Resources Partners Sharepoint Links Various DNR links CDC CDC COVID CDC Commlvl

MISIN

 Midwest Invasive Species Information Network

European frog-bit (*Hydrocharis morsus-ranae*)

Common Names: Frogbit, European frog's-bit

Description: This species is listed as a prohibited noxious weed by the Michigan Department of Agriculture; most plants are dioecious and many populations consist of only one sex; in mixed populations, most plants are male and little seed is produced.

Habit: Perennial, free-floating aquatic herb that forms large colonies, creating dense mats with tangled roots.

Leaves: Usually floating, kidney shaped with long stems, dark purple below, resemble tiny water lilies, 1-6 cm (0.5-2.25 in) across.

Stems: Strong; cord-like stolons.

Flowers: White in color, cup-shaped, three-petaled with yellow dots at the base.

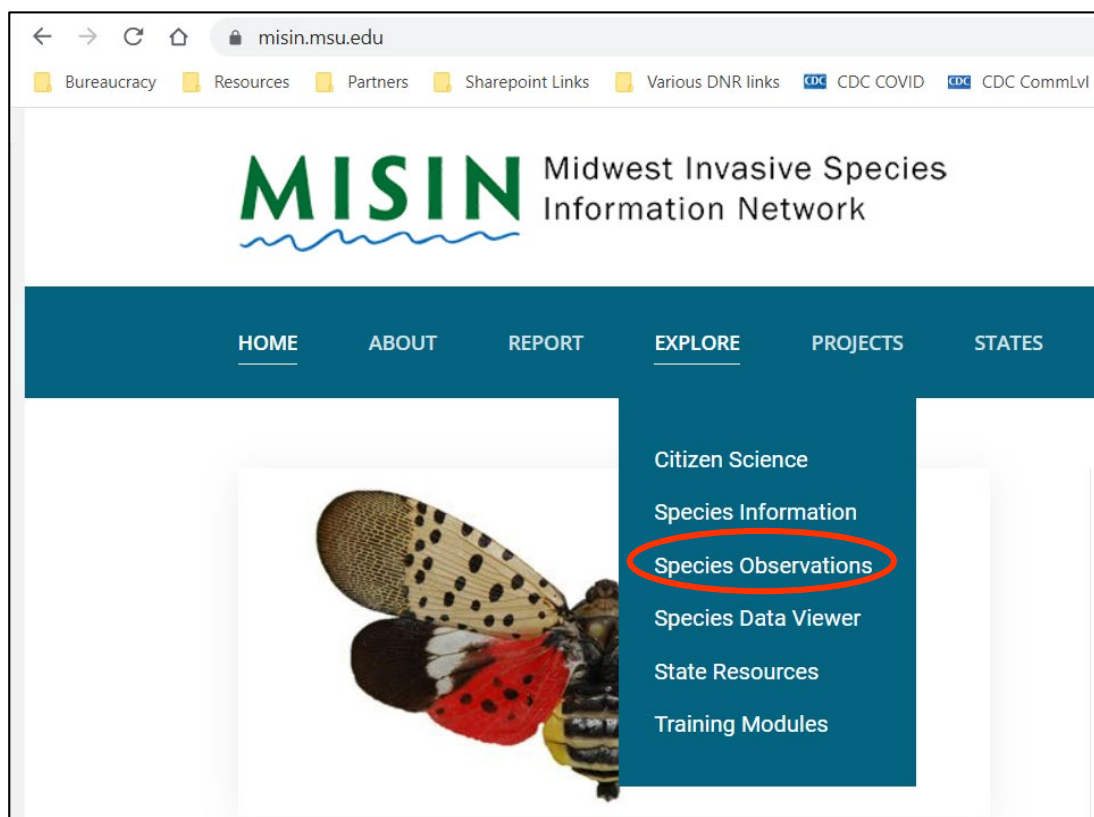
Fruit and seeds: Fruit is a globose berry, fruit / seed set uncommon.

Habitat: Occurs in shallow, slow-moving water on the edges of lakes, rivers, streams, swamps, marshes and



ID Resources

Species Observations



The screenshot shows the MISIN website interface. The browser address bar displays 'misin.msu.edu'. The navigation menu includes 'HOME', 'ABOUT', 'REPORT', 'EXPLORE', 'PROJECTS', and 'STATES'. The 'EXPLORE' menu is open, listing 'Citizen Science', 'Species Information', 'Species Observations' (highlighted with a red circle), 'Species Data Viewer', 'State Resources', and 'Training Modules'. A large image of a spotted dragonfly is visible on the left side of the page.



ID Resources

Learning and Reporting



Dashboard > Courses > Species Identification > "Watch List" Training > Spotted lanternfly

Identification

Instructions

Welcome to the Spotted Lanternfly short course

To complete this course:

- View the Spotted lanternfly course package.
- Pass the quiz at the end of the ID module with a grade of 80% or above.

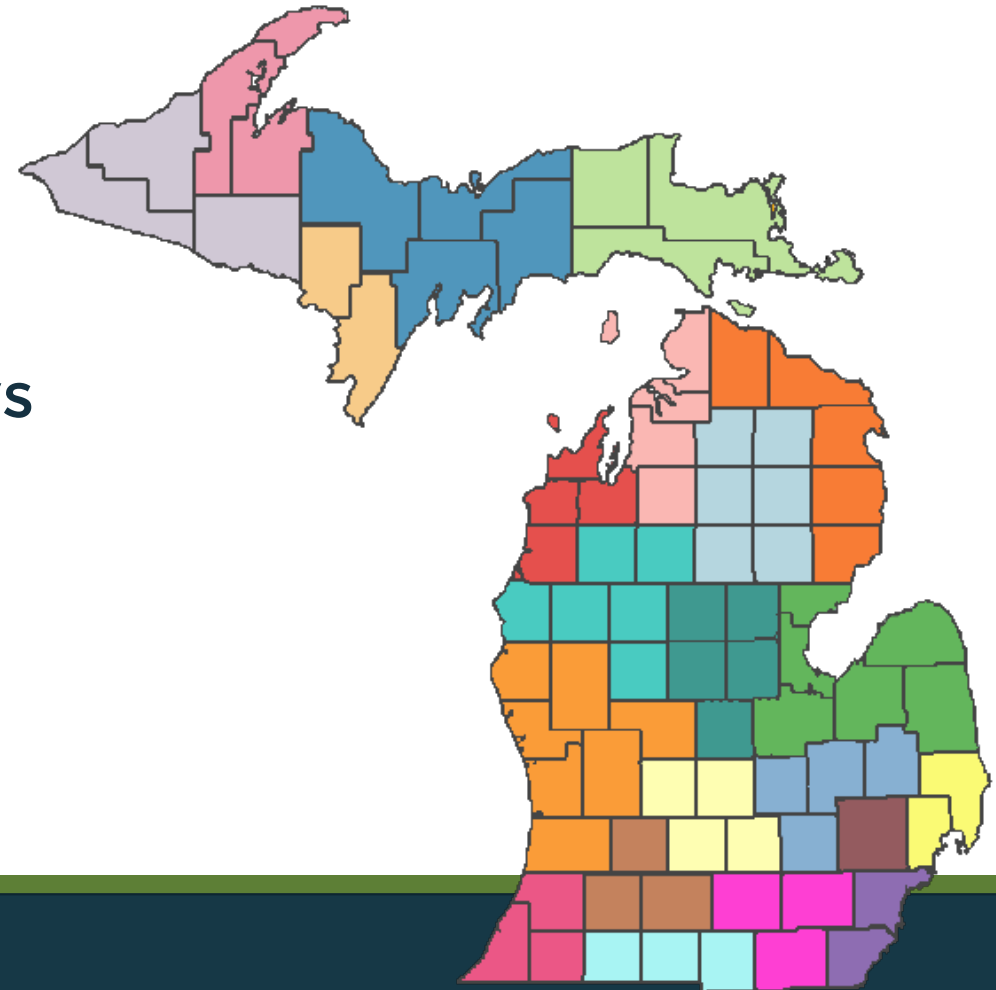
Complete the Course Packages (📁) below



ID Resources

Cooperative Invasive Species Management Areas

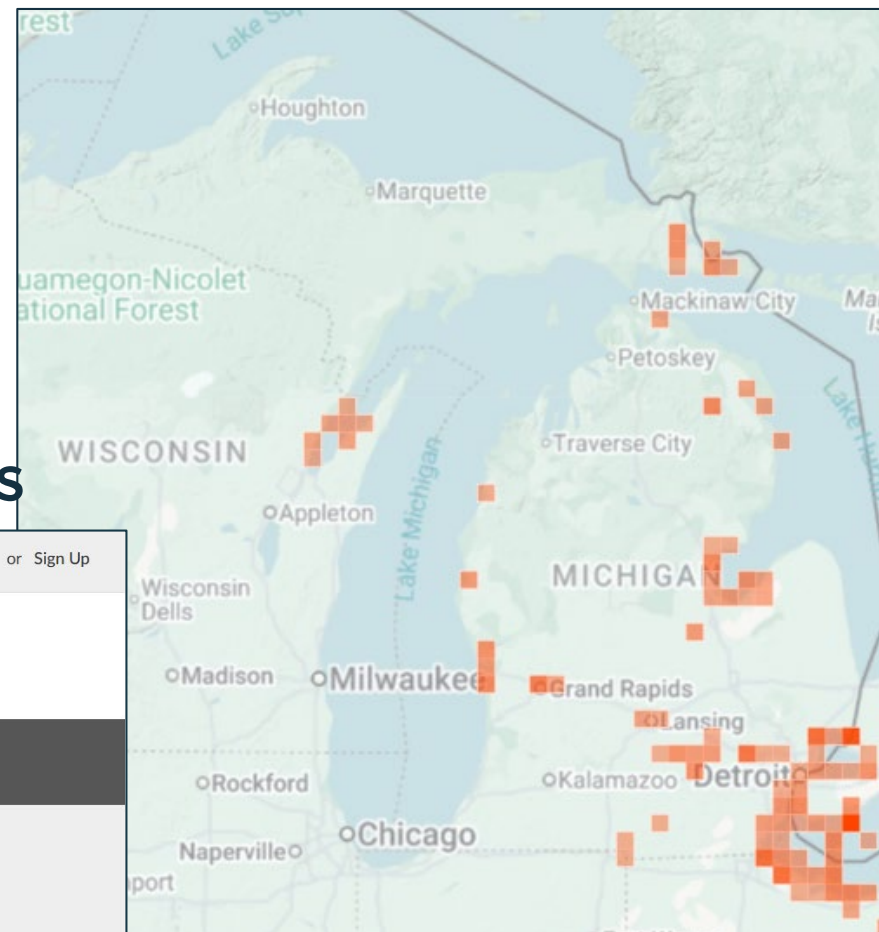
- Each CISMA is different!
 - Outreach
 - Resources
 - Presentations/workshops/field days
 - Control
 - Local experts!
 - www.MichiganInvasives.org



ID Resources

iNaturalist

- World-wide
- Can post observations of unknown species



iNaturalist Explore Community More Donate Log In or Sign Up

Observations Go Filters

The World **9,769** OBSERVATIONS | **1** SPECIES | **980** IDENTIFIERS | **3,979** OBSERVERS

Map Grid List

European Frog-Bit
(*Hydrocharis morsus-ranae*)
Research Grade 3 Jun '25

European Frog-Bit
(*Hydrocharis morsus-ranae*)
Research Grade 2 Aug '25

European Frog-Bit
(*Hydrocharis morsus-ranae*)
Research Grade 2 Aug '23

European Frog-Bit
(*Hydrocharis morsus-ranae*)
Research Grade 2 Aug '11



MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

ID Resources

State of Michigan Staff

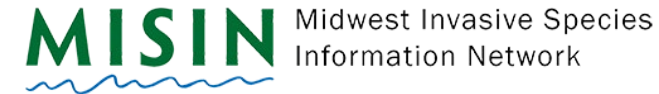
- Michigan Invasive Species Program
 - Department of Natural Resources (DNR)
 - Department of Environment, Great Lakes, and Energy (EGLE)
 - Department of Agriculture and Rural Development (MDARD)
- Department of Transportation



ID Resources

Summary

- Find Your CSIMA
 - www.MichiganInvasives.org
- MISIN
 - www.MISIN.msu.edu
- State of MI
 - www.Michigan.gov/invasives
 - NotMISpecies Webinars



How we tackle invasives: Public

MISIN Midwest Invasive Species Information Network

- CISMAs
- Public reporting
- Awareness programs



RIPPLE
REDUCE INVASIVE
PET & PLANT ESCAPES



**STOP INVASIVE
SPECIES IN
YOUR TRACKS.**

PlayCleanGo.org



Resources

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Prevention

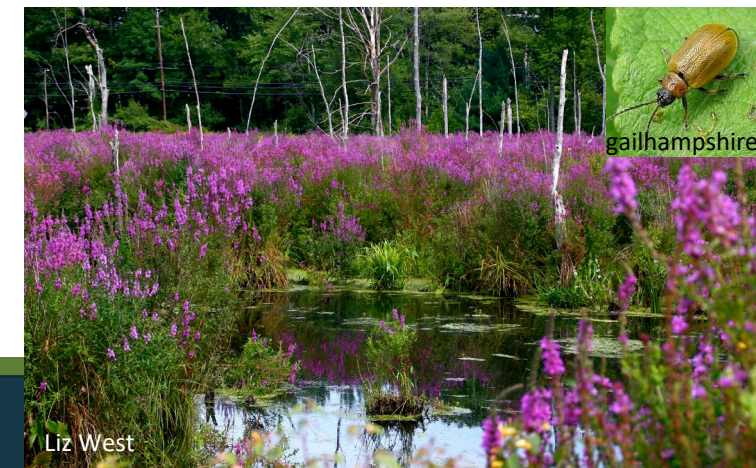
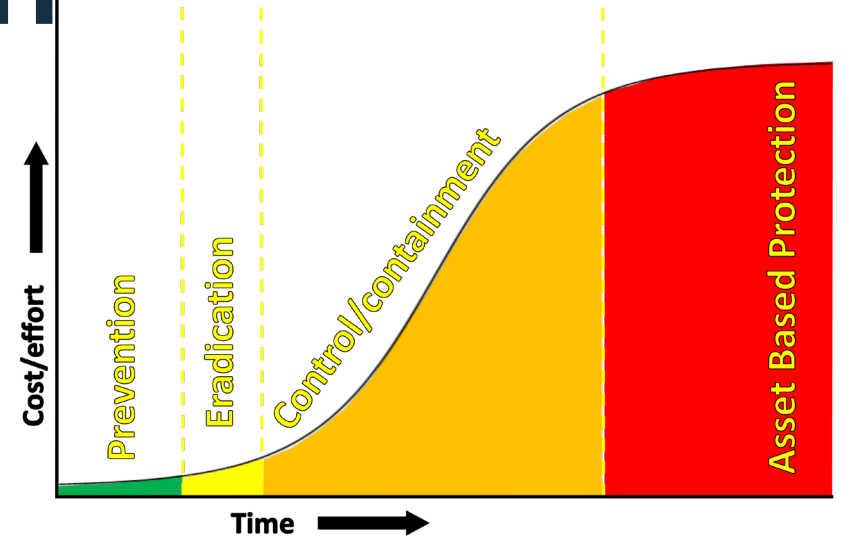
Strategies: Prevention

- Pathways
 - Recreation & “hitchhikers”
 - Habitat modification/maintenance
 - Mowing & clearing, logging, planting
 - Trade: garden, pet releases
 - Firewood & wood products
- Education vs. Regulation
 - Enforcement vs. informing



Strategies: Prioritization

- Impacts
- Place on invasion curve
- Prevention/control methods available
- Cost
 - Money & time



Prevention - Decontamination

LOW RISK

- Visually inspect clothing, equipment, vehicles, and footwear
- Remove visible plant material, mud, dirt, and seeds
 - Hand remove, brush, pressure washer, etc.



Prevention - Decontamination

HIGH RISK

- Low risk actions first
- Disinfect
 - Chemicals - dilute bleach, detergents, isopropanol, etc
 - Heat - Steam, Heated pressure washer, sun drying, etc.

- [QOL-2-2014](#)



Prevention – Minimize Risk

CONSIDERATIONS

- Work order: non-infested → most infested
- Timing: When risk is lowest (before seeds production)
- Avoid contact

**What are your biggest
barriers to managing
invasive species?**

Questions?



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