Identifying Michigan Invasive Species & Technologies to Combat Invasives in Michigan

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Presentation Overview

- Introduction to Michigan Invasive Species Program
- Terrestrial and Aquatic Invasive Species ID
- Identification Resources
- Detection Tools
- Control Methods
- MDARD Certification
- Prevention
- Questions

Introduction to MISP

Michigan Invasive Species Program

EGLE, DNR, MDARD, MDOT

Goals

- Prevention
  - New introductions to state
  - Spread of established species
- Early Detection & Response
- Control and Restoration
- Collaboration

Michigan Invasive Species Program

Michigan.gov/invasives

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

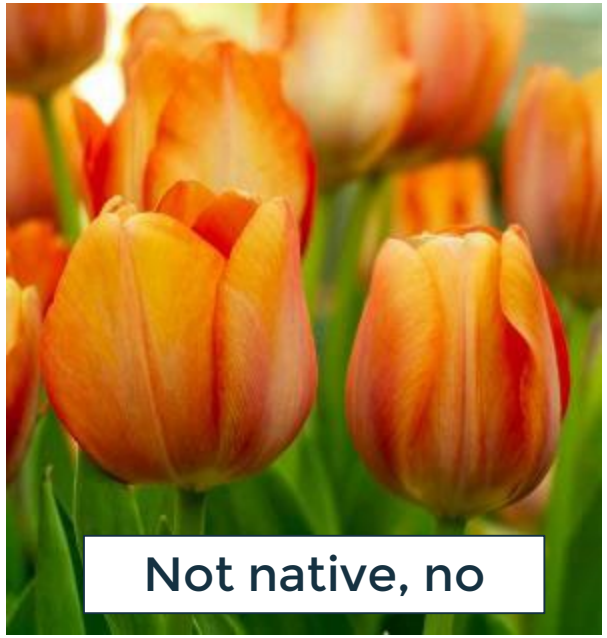
Not MI Species

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, yes

Poison ivy



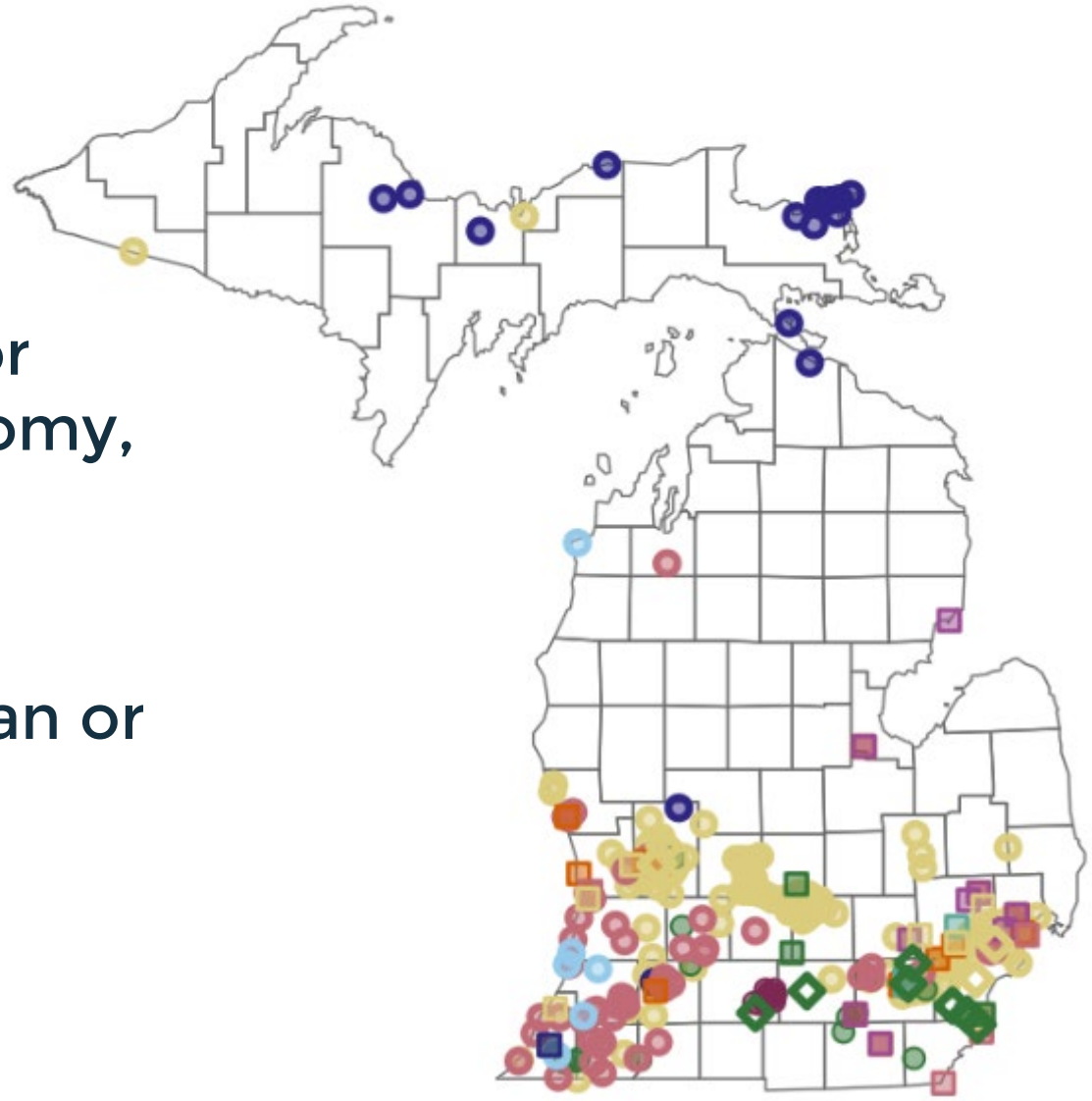
Not native, no

Not native, yes

Prohibited and Restricted Species

- Unlawful to possess, introduce, import, sell or offer for sale as a live organism, except under certain circumstances
- Examples:
  - giant hogweed
  - Phragmites
  - Japanese knotweed

Watch List Species



- Identified as posing an immediate or potential threat to Michigan's economy, environment or human health
- Not confirmed in the wild in Michigan or have a limited known distribution
- 8 terrestrial species and 10 aquatic species

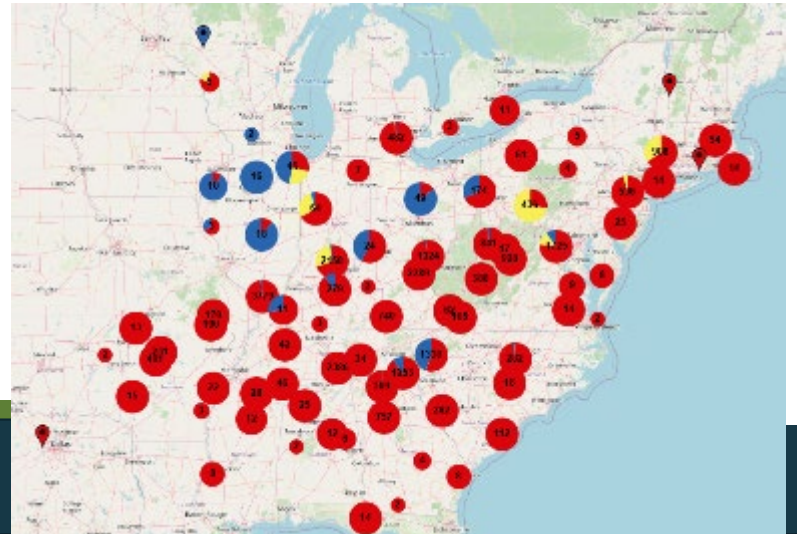
Watch-List Data Viewer https://experience.arcgis.com/experience/2f896039d5344019b78e5c50aab114a5/page/Data-Viewer

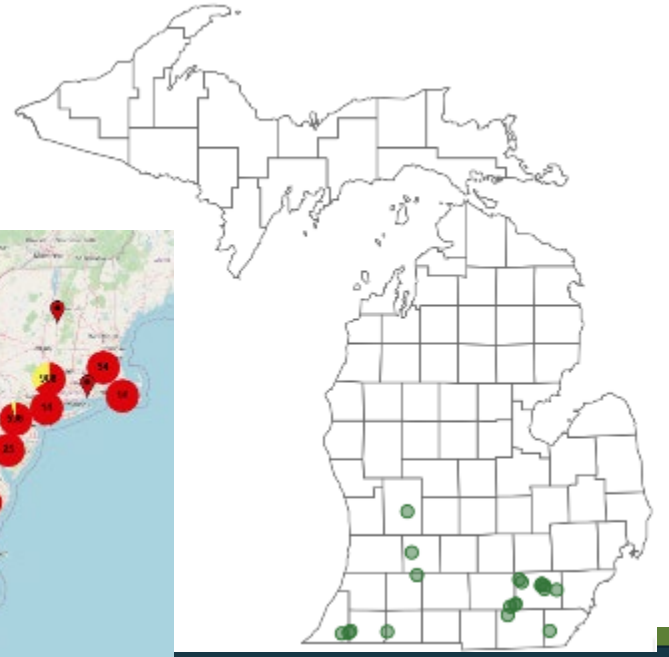
Watch List Species

Terrestrial Species

Stiltgrass
Microstegium vimineum

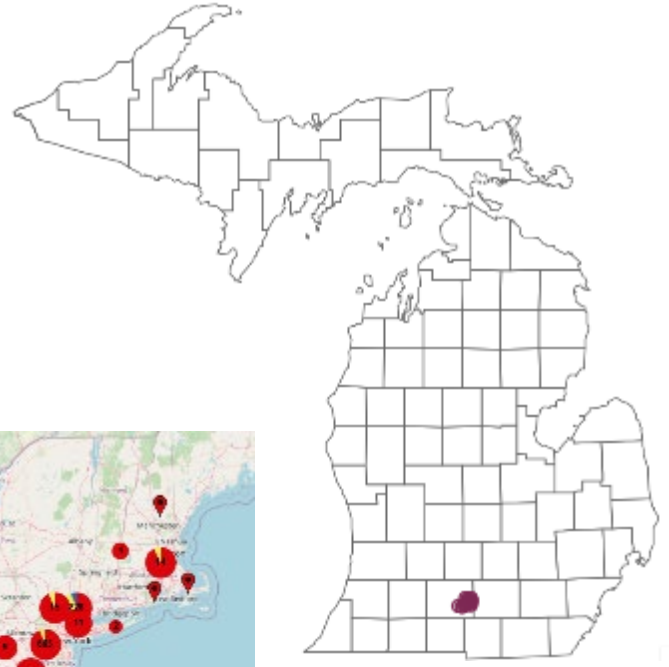
- Annual grass
- Forested floodplains preferred
- Deep shade to full sun
- Spreads by seeds
- Sprawling habit, shallow roots
- Off-center silvery stripe on wide-ish leaf blades
- Stems turn purple-brown after frost
- Management:
  - Mechanical – small populations
  - Chemical - before flowering
  - Pre-emergent





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

Leslie J Mehrhoff, UConn

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

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

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

Garlic Mustard

Alliaria petiolata

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

Spotted Knapweed

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

Centaurea stoebe

And More!

Purple loosestrife

Black locust

Spongy moth

Japanese barberry

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

No pruning or wounds: April 15 - July 15

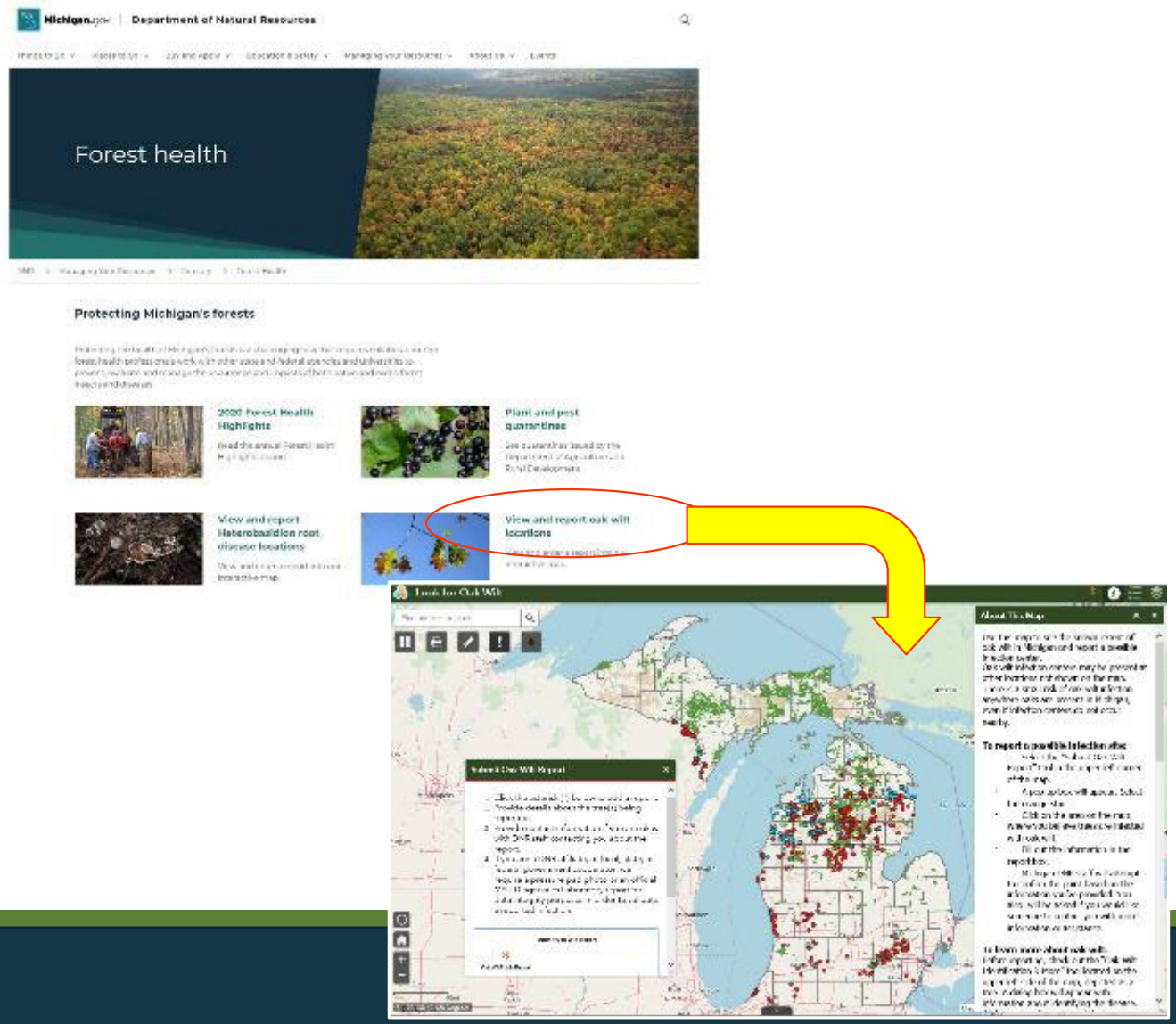
If you must prune, immediately cover wound with barrier like latex paint

MI DNR Oak Wilt Viewer:

- 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***

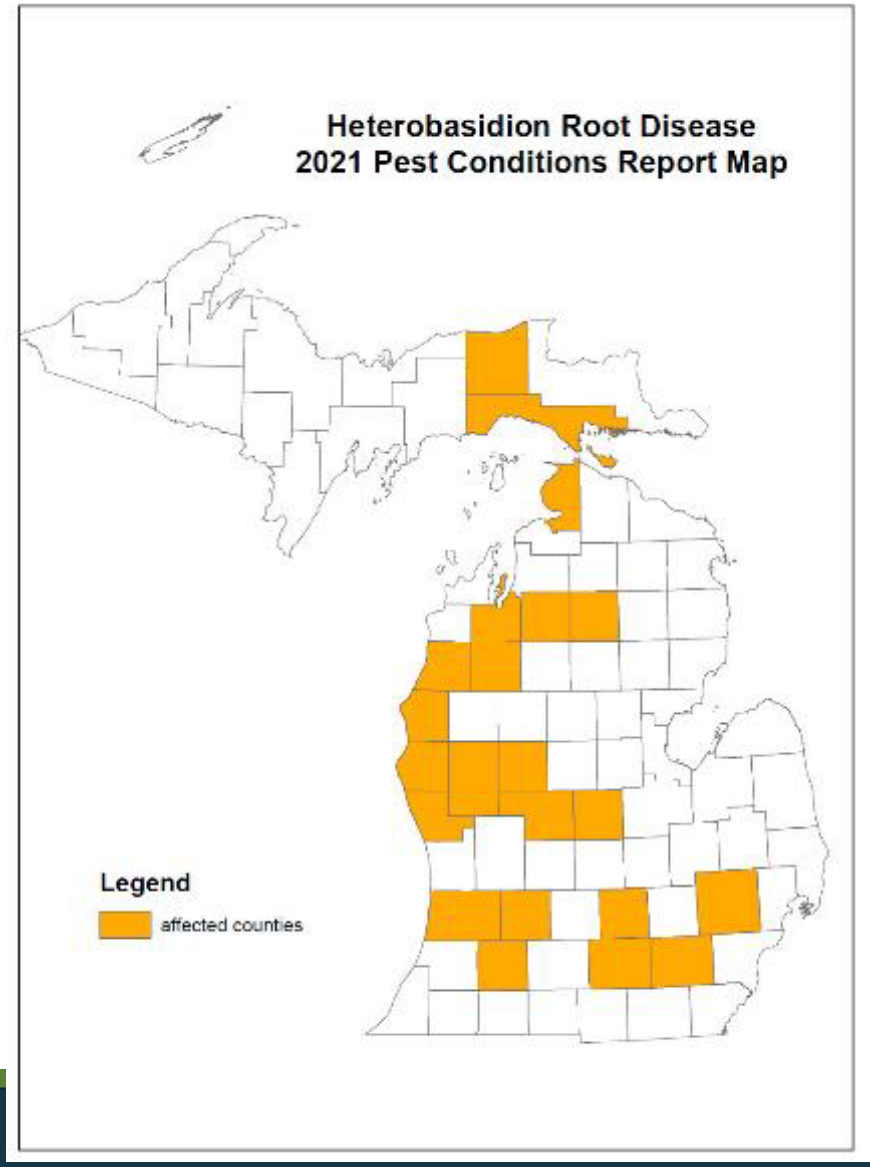


Heterobasidion Root Disease (HRD)

- ***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



FYI - Heterobasidion Root Disease (HRD)

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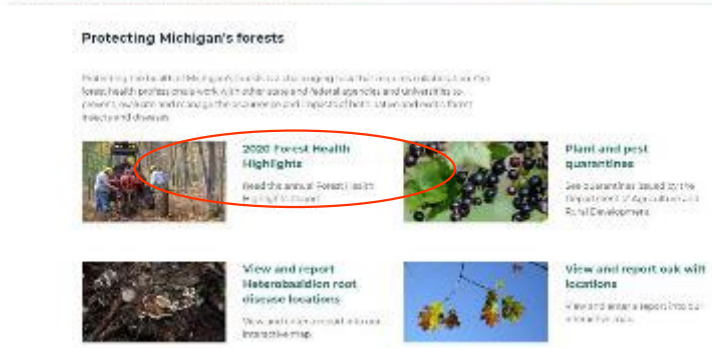
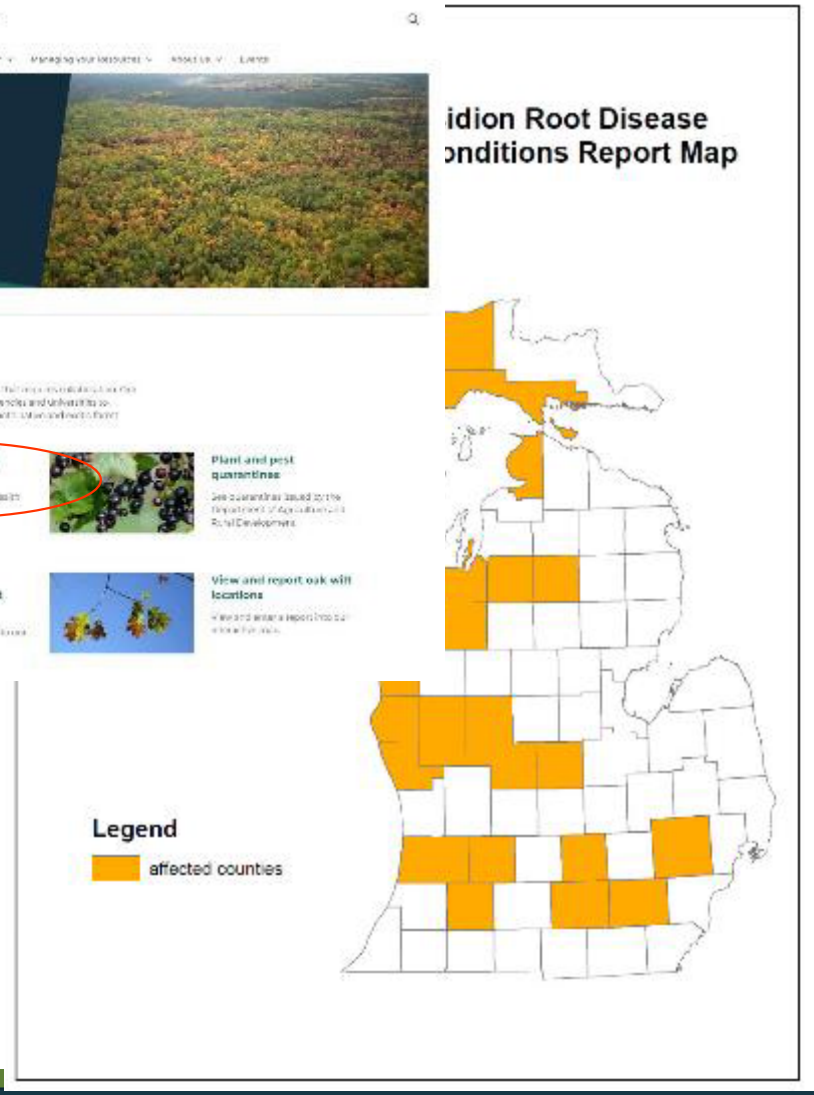




Aquatic Species

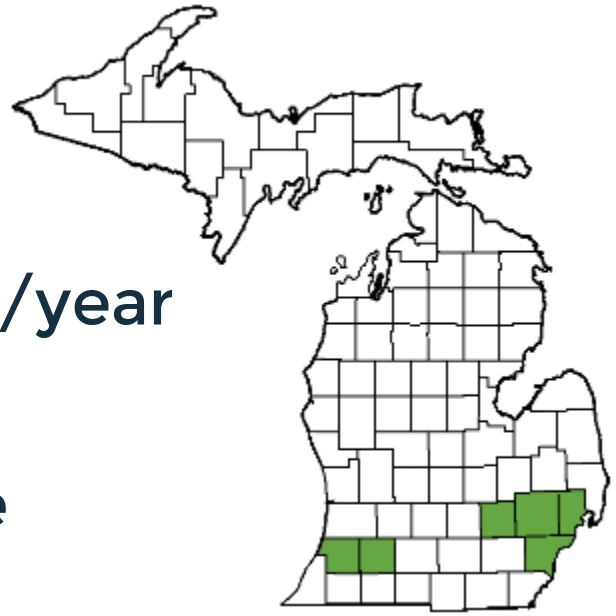
Red Swamp Crayfish (PROHIBITED)

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

Zebra/Quagga Mussels (RESTRICTED)

ID

- Triangular or Fan-shaped shell
- Up to 1-2” long

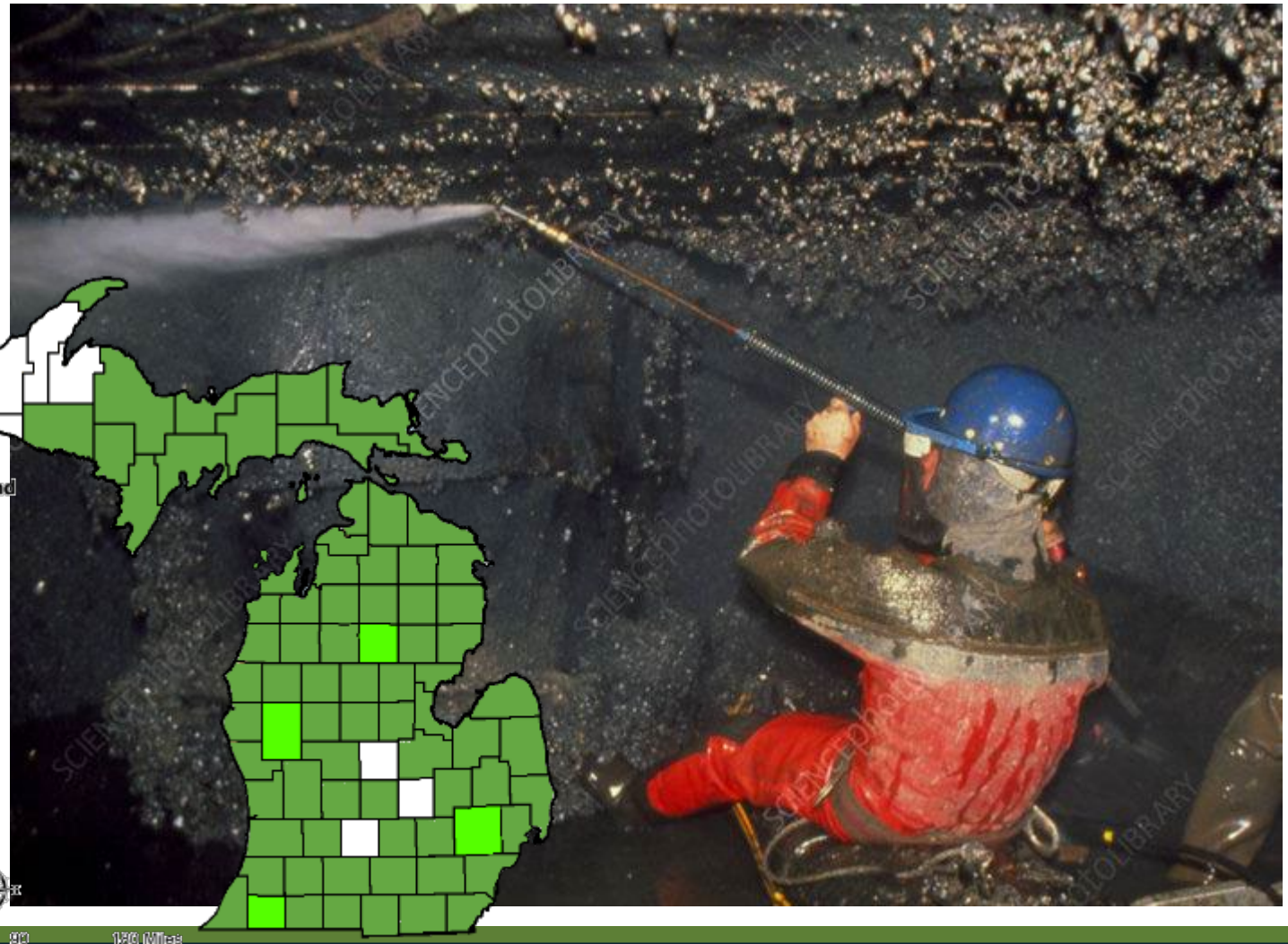
Harm

- Ecosystem
  - Food web
- Economy
  - Infrastructure

Zebra/Quagga Mussels

Control

- Physical removal
- Molluscicide (soil bacteria)



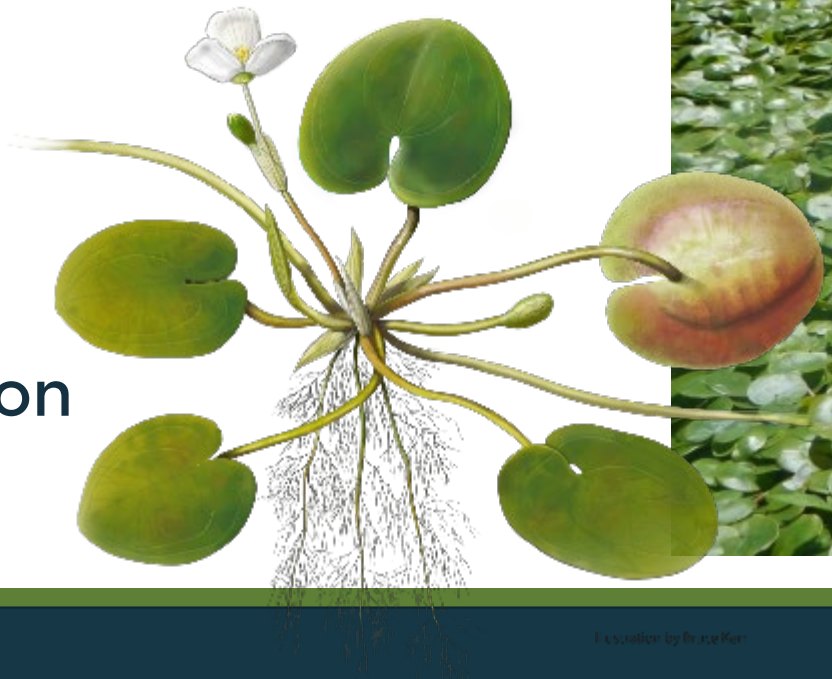
European Frog-bit (PROHIBITED)

ID

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

Harm

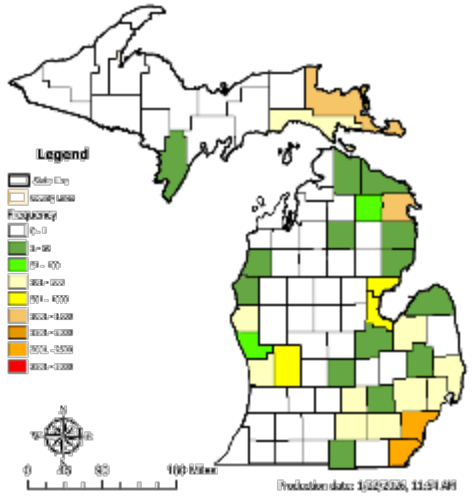
- Ecosystem
- Economy
  - Recreation

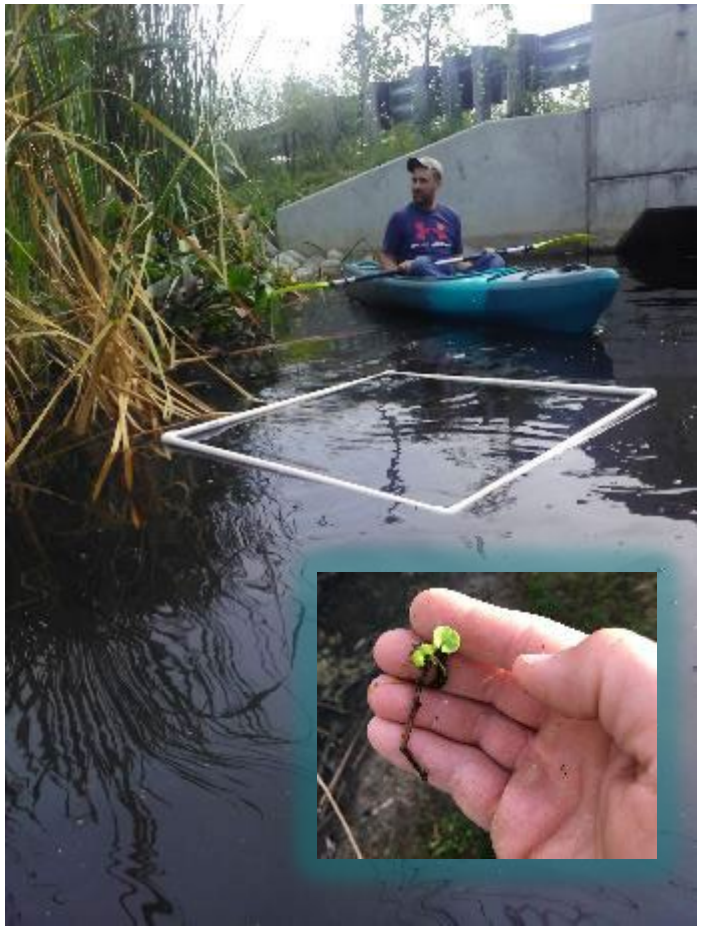


European Frog-bit (PROHIBITED)

Control

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

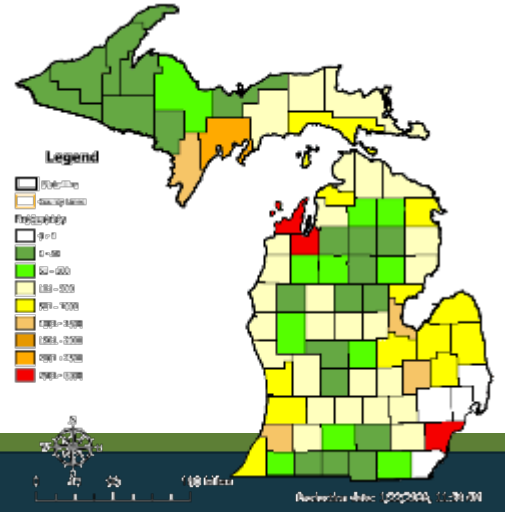


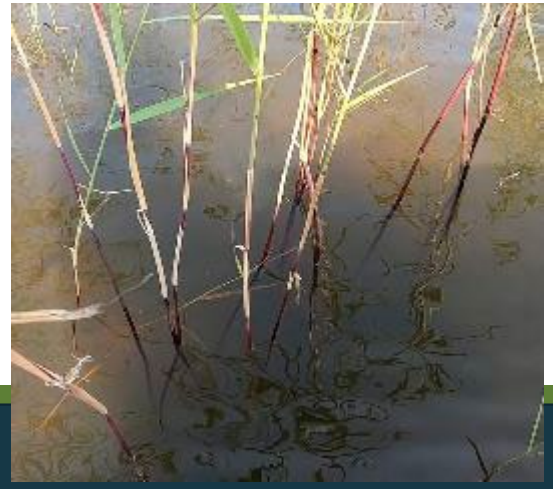


Phragmites (RESTRICTED)

ID

- 6-13 foot-tall Perennial grass
- Forms monoculture stands
- Greenish-tan stems
- Dead stems remain standing





Phragmites (RESTRICTED)

ID - Caution

- Native sub-species
  - Red stems
  - No monoculture
  - Leaf color

Phragmites (RESTRICTED)

Harm

- Ecosystem
- Economy
  - Recreation
  - Property value
  - Human health

Phragmites (RESTRICTED)

Control

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

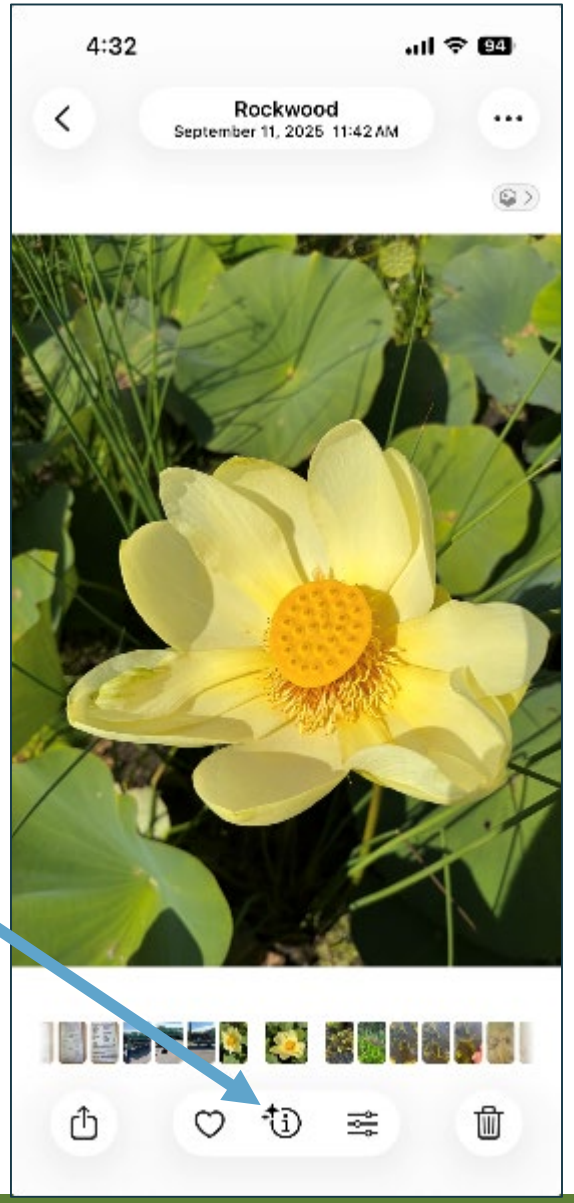
ID Resources

ID Resources

Technology

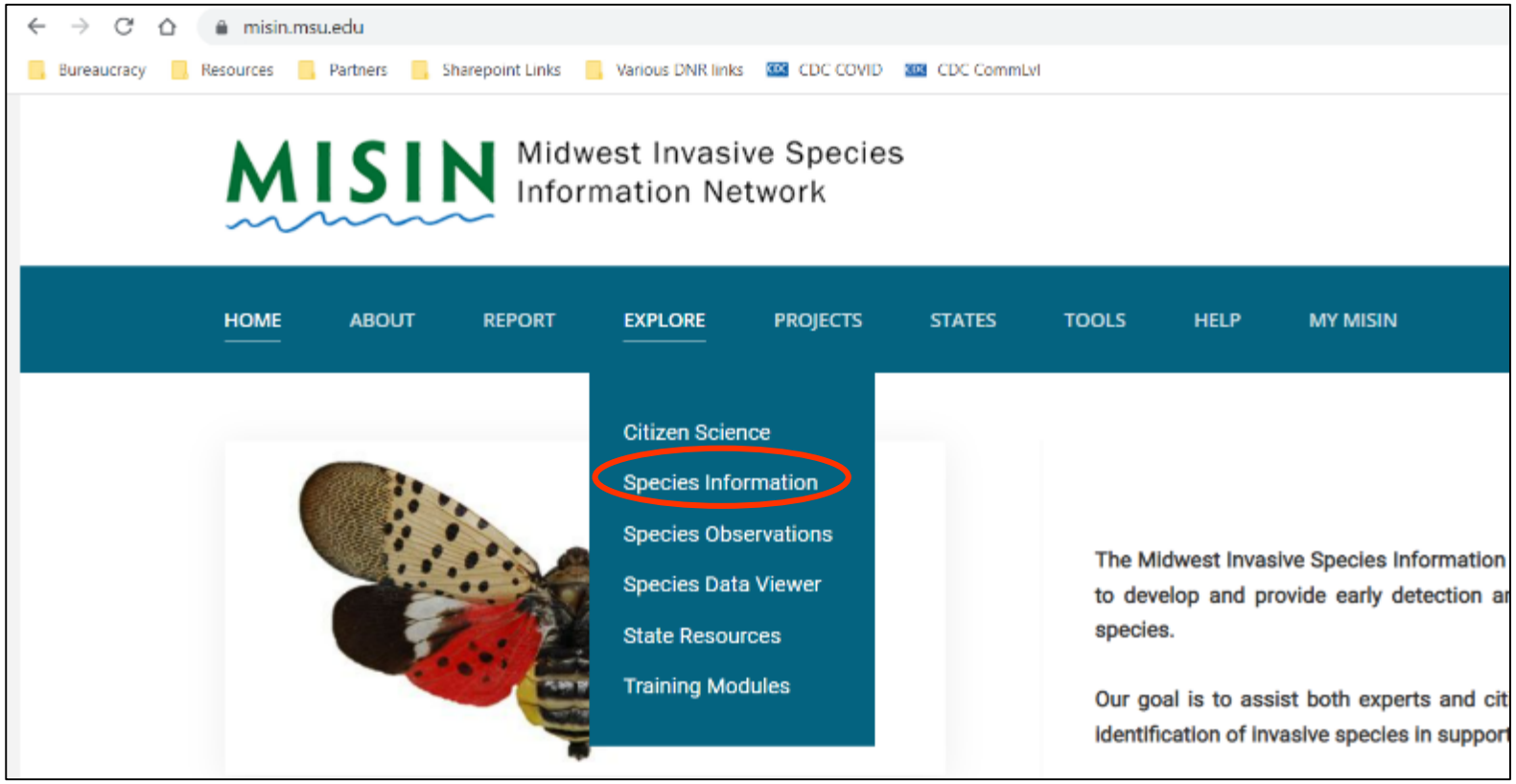
- Smart phones
  - AI… already built-in

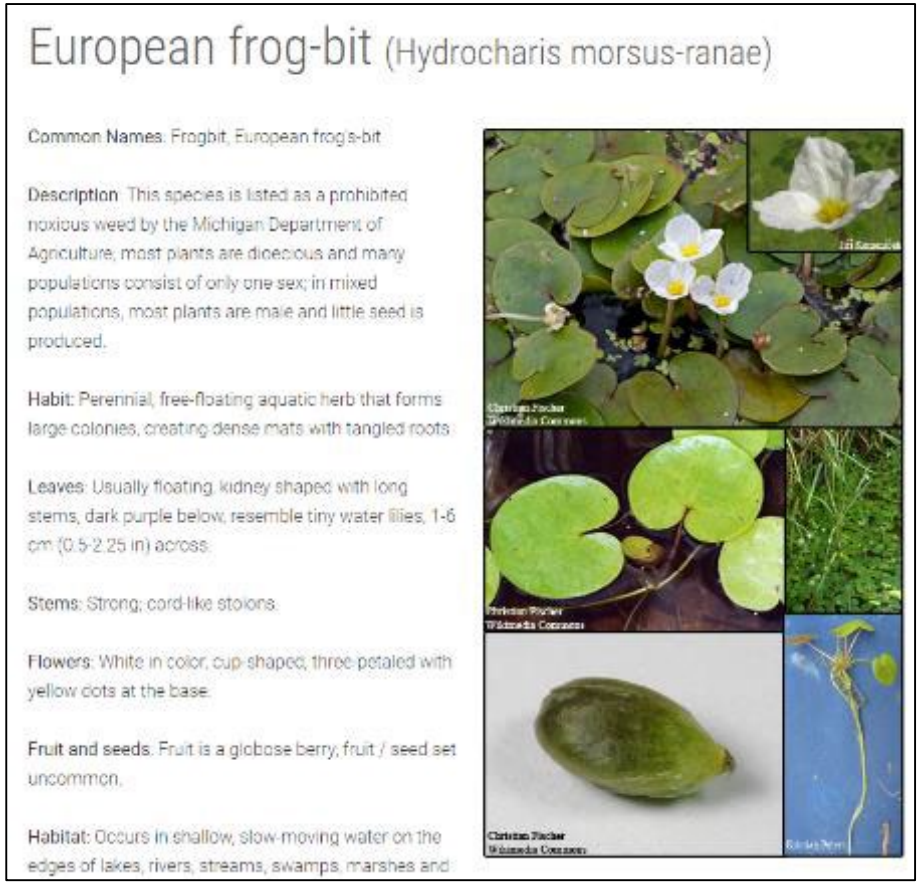
- Internet
  - Michigan Flora
  - MISIN
  - iNaturalist



ID Resources

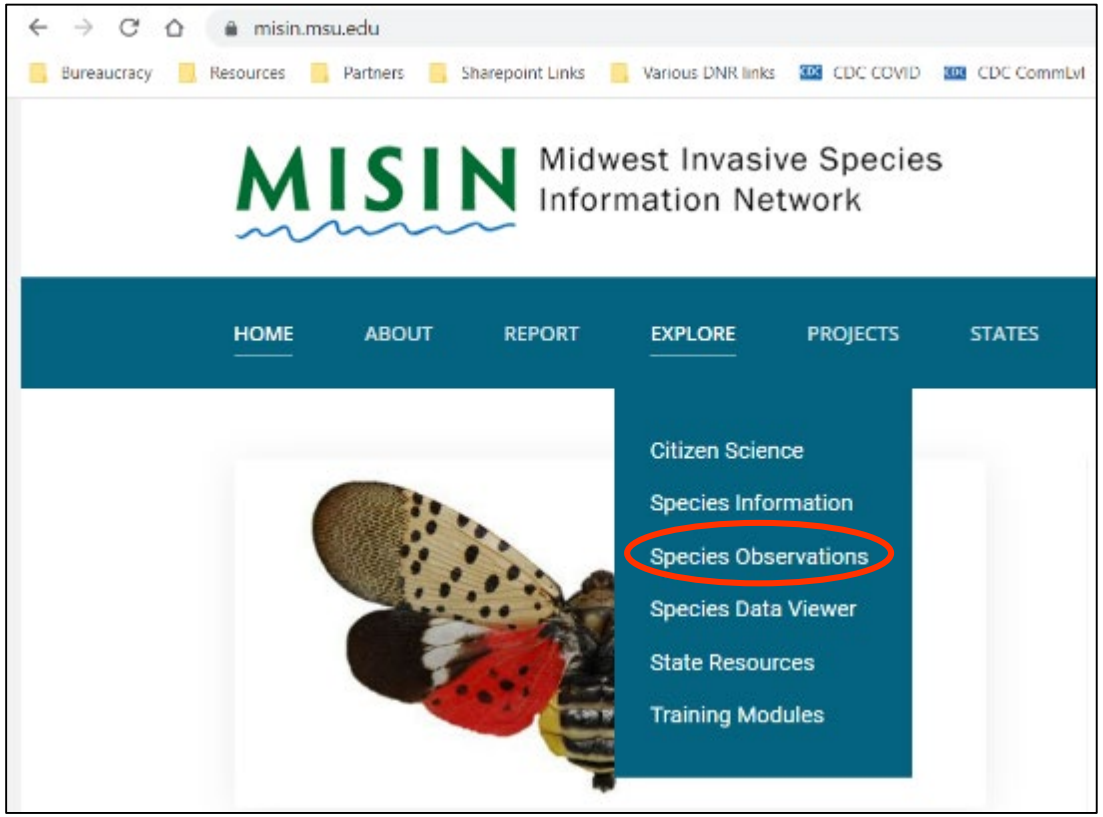
Midwest Invasive Species Information Network





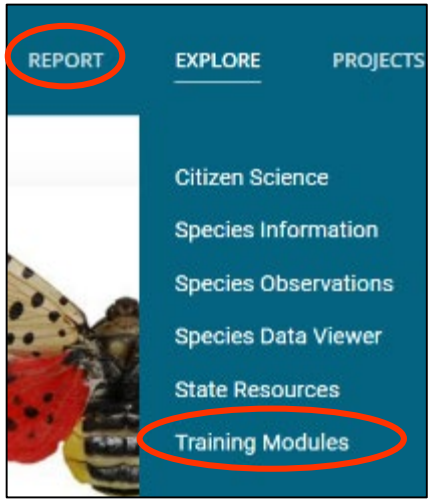
ID Resources

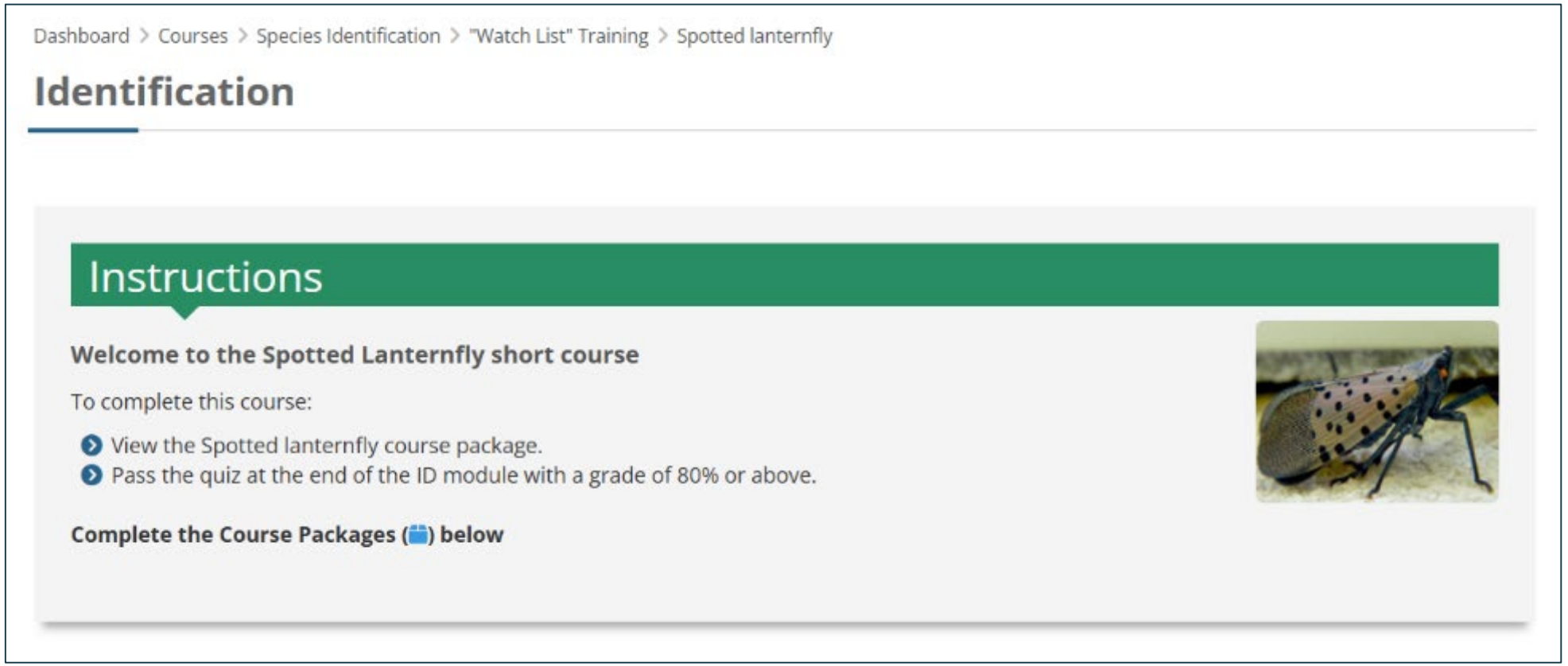
Species Observations



ID Resources

Learning and Reporting

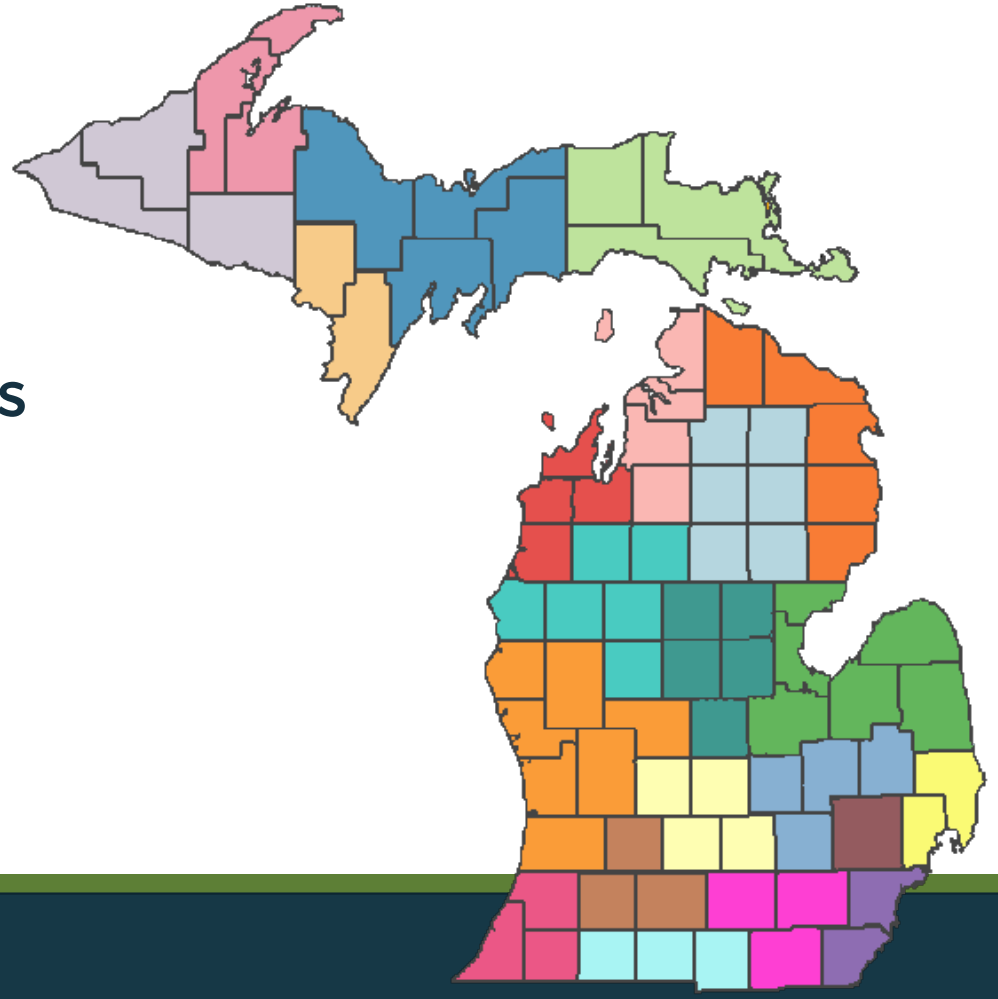




ID Resources

Cooperative Invasive Species Management Areas

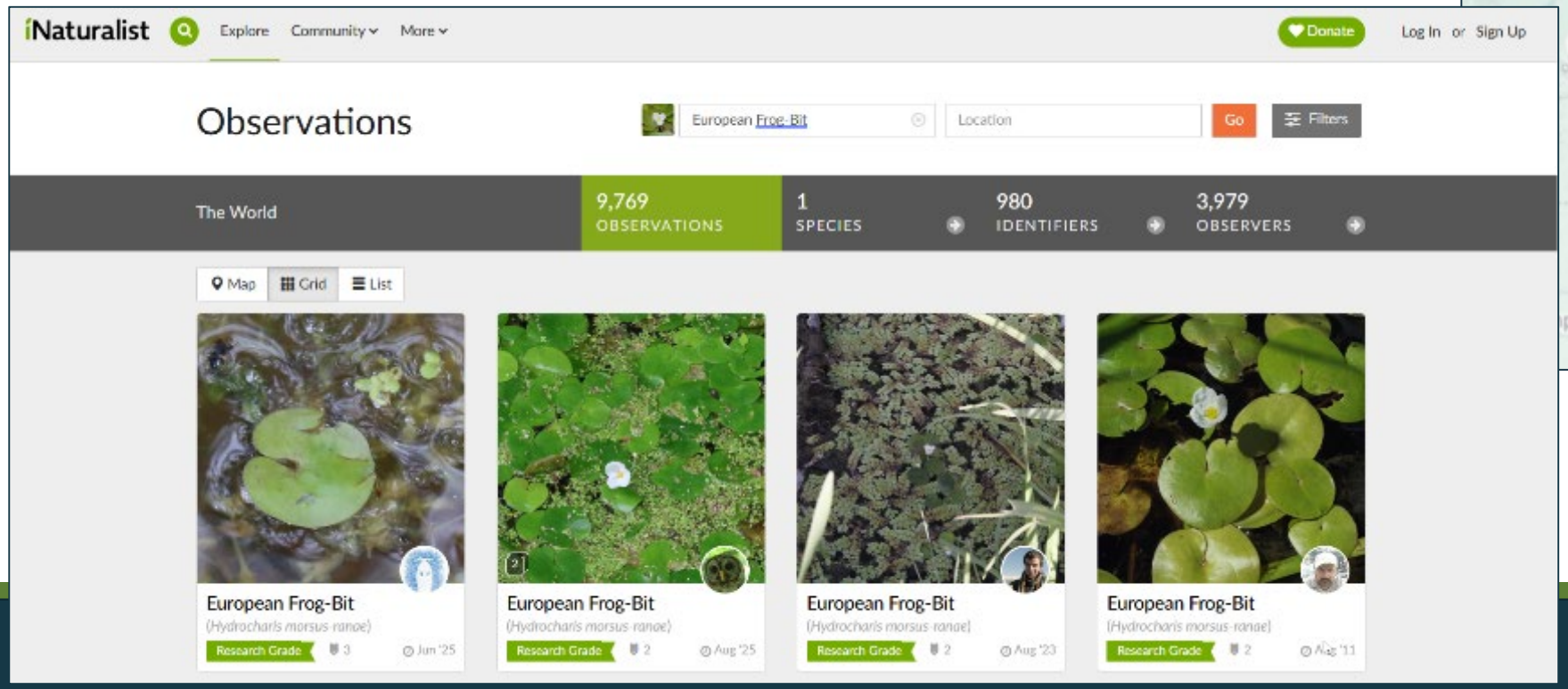
- Each CISMA is different!
  - Outreach
    - Resources
    - Presentations/workshops/field days
  - Control
  - Local experts!
  - www.MichiganInvasives.org

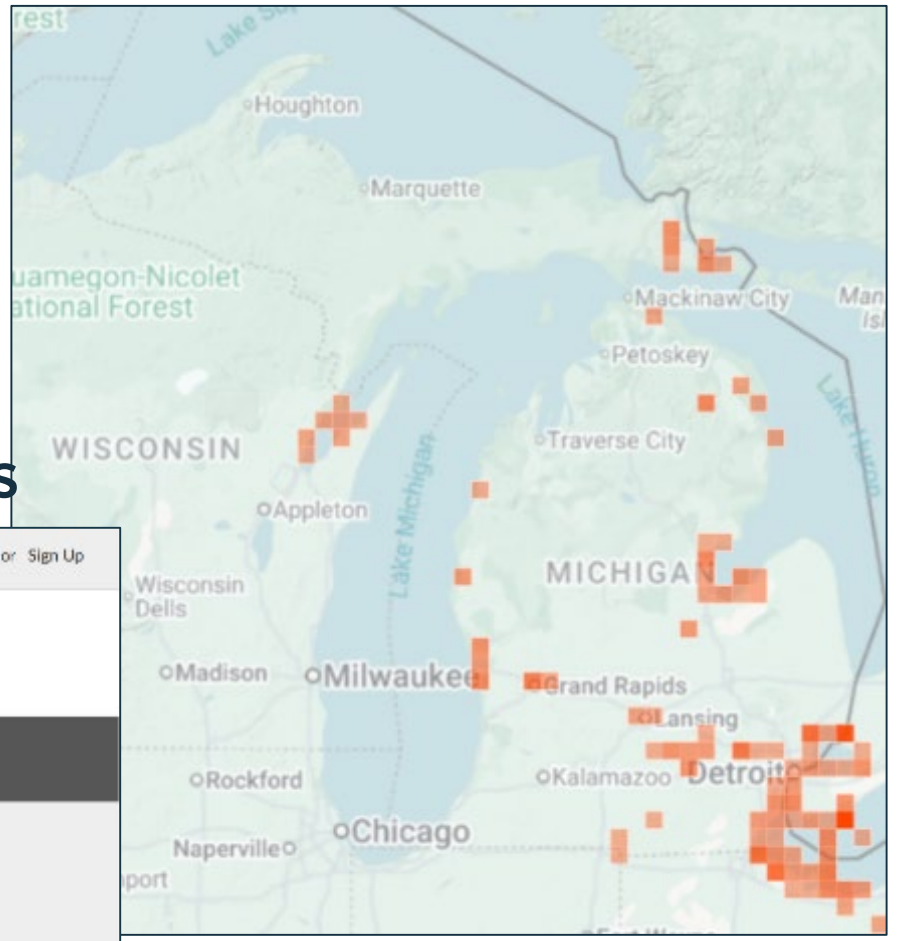


ID Resources

iNaturalist

- World-wide
  - Can post observations of unknown species





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

MISIN Midwest Invasive Species Information Network

Michigan Department of Agriculture & Rural Development

Department of Natural Resources DNR Michigan

EGLE Michigan Department of Environment, Great Lakes, and Energy

iNaturalist

Detection Tools

Detection – Education/Outreach

INCREASE AWARENESS

- More eyes = better chance of detection
- Most watchlist detections are from external sources
- Ultimately should reduce spread/introduction of invasive species

RIPPLE
REDUCE INVASIVE PET & PLANT ESCAPES

GO BEYOND BEAUTY • WITHOUT INVASIVE SPECIES •

Not MI Species

Play Clean Go

STOP INVASIVE SPECIES IN YOUR TRACKS.
PlayCleanGo.org

STOP AQUATIC HITCHHIKERS!
CLEAN DRAIN DRY

Detection – Drones/Aerial imagery

ADVANTAGES

- Survey large areas
- Access difficult habitat/locations
- Efficient data collection

BARRIERS

- Pilots
- Equipment costs
- Detection sensitivity
- Data analysis

Detection – Future

ON THE HORIZON

- eDNA
- Dogs
- Artificial Intelligence

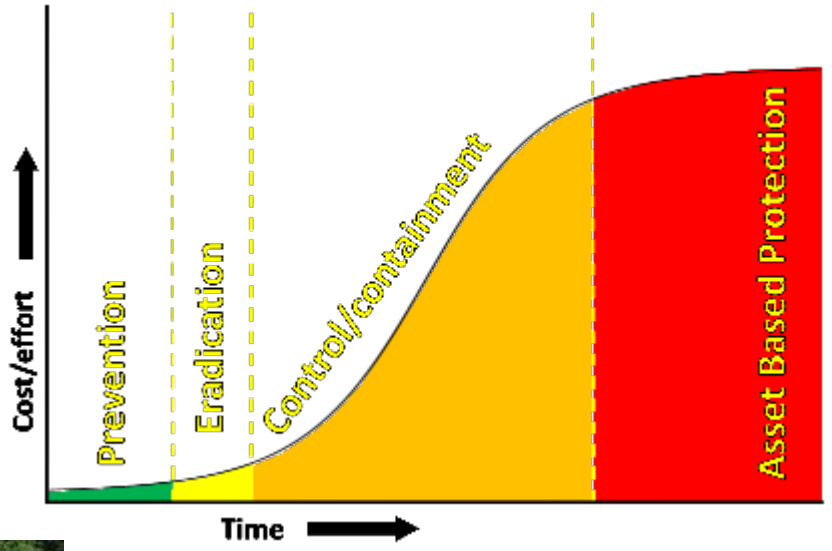
Control Methods

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



Chemical Treatment

- Various methods of application
  - Broadcast, inject, spot treatment, basal bark, and cut-stump
- Weather dependent
- Various chemicals options with different modes of actions and selectiveness

Physical Removal

- Cutting, mowing, or hand-pulling of plants
- Can lead to further spread from some species
- Can be a very effective tool if used properly

Biocontrol

- Control of plants by introducing natural predator
- Could be insect, fungus, virus
- Example: purple loosestrife, spongy, moth, and mike-a-minute weed

MDARD Certifications

Closing Pathways of Spread




Numerous observations have been made of invasive plants spreading via infested landscape and construction products

- Streambanks planted with invasive Phragmites when contaminated fill is used in culvert replacements
- Trails inundated with garlic mustard after being mulched with infested product
- Jumping worms transported in fill or mulch leading to soil that can't hold plants upright
- Japanese knotweed, which can grow through concrete, sprouting from contaminated fill at construction sites

New Program to Launch in 2027!

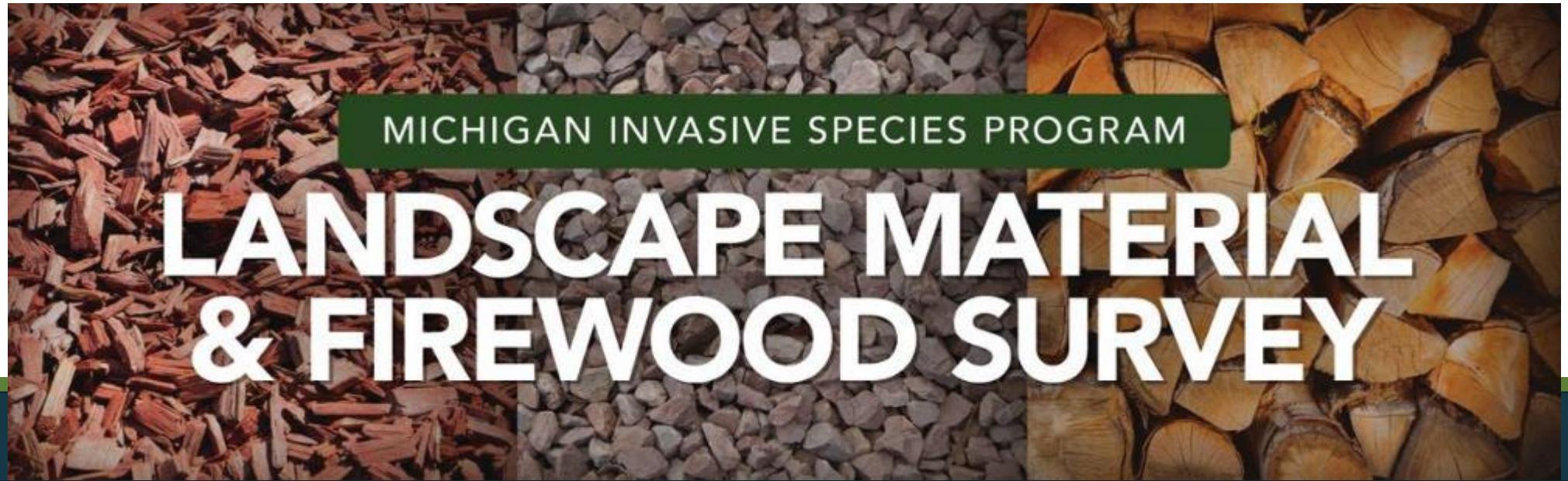
The Michigan Departments of Agriculture and Rural Development (MDARD) & Natural Resources (DNR) are collaborating to stand up a **voluntary invasive-free certification** program in the state

- Funded by Great Lakes Restoration Initiative
- **Once established the programs will be administered by MDARD**
- **MDARD Inspectors** will inspect production facilities for 88 different invasive plants, as well as ensuring the products are not stored where infested soil could adhere to the products, and that products being labelled as certified meet program requirements

What Michigan's programs will look like

- A committee including staff from MDARD and DNR are looking at how other state's programs are run and are considering what the standards for Michigan will be

- A social survey was active May – September of 2025 to assess consumer and producer interest in and barriers toward participation



What we learned from consumers

Consumer Surveys:

- There is knowledge and concern over invasive species
- Results showed that consumers are in support of a program like this
- ≈80% likely or very likely to purchase certified products
- **≈89% willing to pay 5-10% more** for invasive-free certified products

Advantages for Professional Landscapers and Builders

By using certified invasive-free products, landscapers and builders can ensure their clients they won't be introducing invasive species to their land

Advantages when working in coastal dunes

Permits for projects in critical dune areas require a **vegetation assurance plan**

- What vegetation needs to be removed
- What replacement planting will be done
- **Plan to prevent establishment of invasive plants**
- **Monitoring of the site for at least 2 years**

Advantages for Producers

- Participate early and reap the profits as consumer demand increases
- Show your customers that you care about the integrity of your products
- Can offer a superior product at a premium price (WTP 5-10% more)

If you're an interested producer...

Vicki Sawicki
Invasive Species Prevention Coordinator
Michigan DNR

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231-942-3982

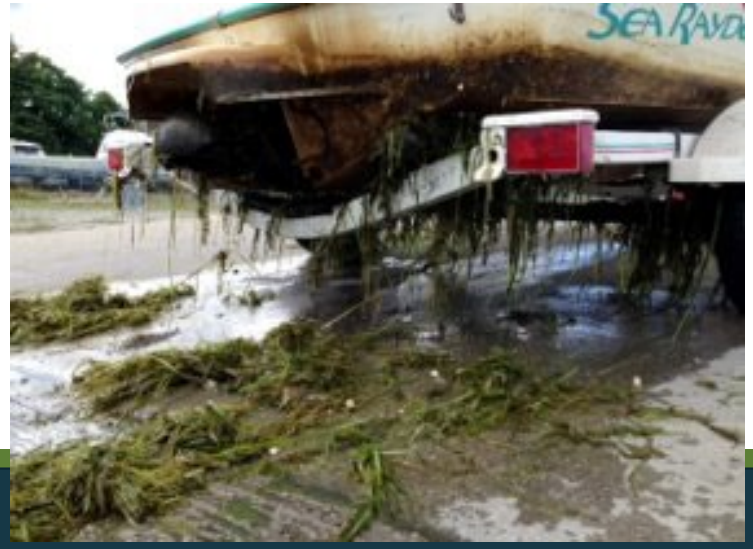

DEPARTMENT OF NATURAL RESOURCES
DNR
MICHIGAN

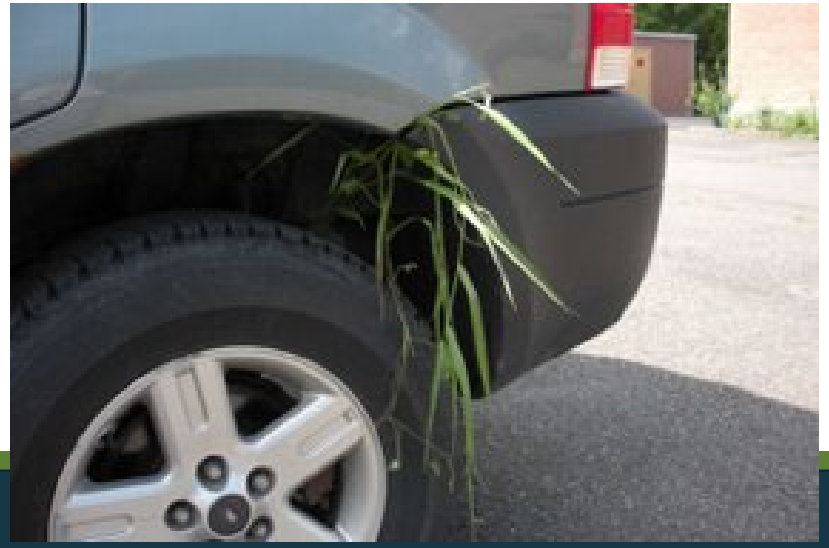
Prevention

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

Questions?

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MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
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