Forest Health Update

January 10, 2026

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Forest Health Outreach Forester

Michigan is home to almost 20 million acres of forest land

- Diversity
- Wildlife
- Food
- Oxygen
- Shade for rivers & streams
- Recreation

- Clean water
- Air quality
- Products
- Jobs
- Mental wellbeing
- Much more!

Healthy Trees = Healthy Forests


Steam loader
and Big Wheel
Lumbering
Near Mancelon
Mich
F00


Trout Lake
March
1912
R - 537


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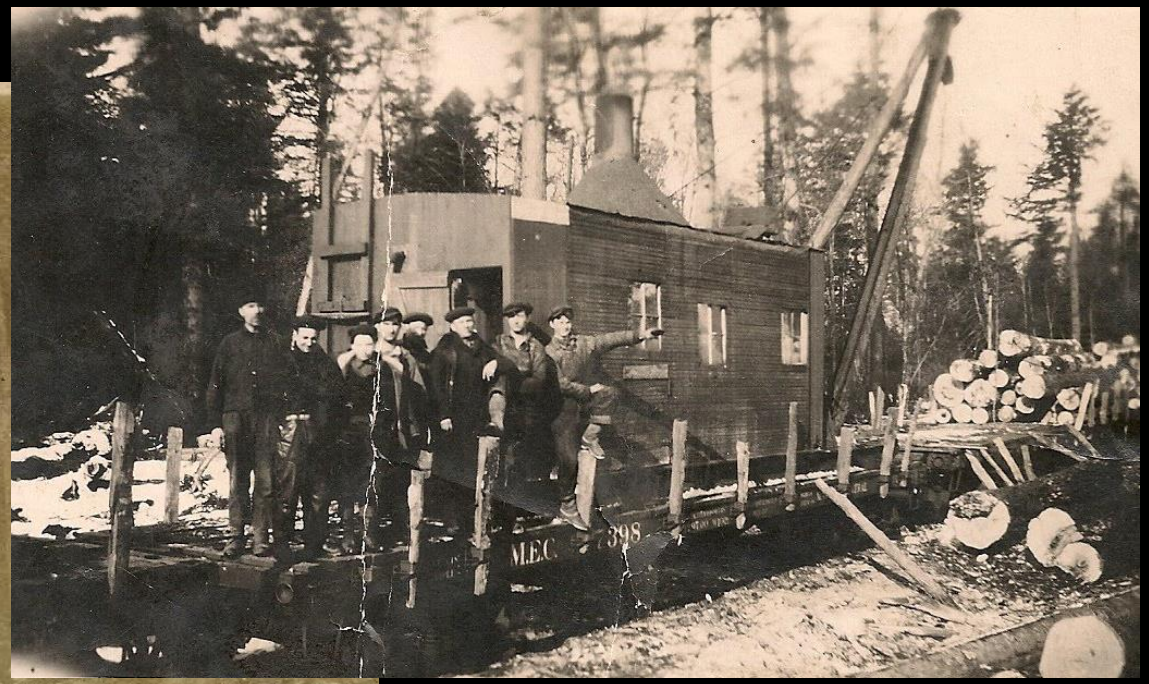
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Michigan's forests were cut over in the mid-late 1800s through the early 1900s leaving us with the older trees of today

Oak Decline

- **Predisposing factors**
- **Inciting factors**
- **Contributing factors**
  - **-** Insects
  - - Disease

Predisposing factors:

- Early land use - over-harvesting, grazing, burning
- Growing on dry, nutrient-poor, sandy soils
- South- and West- facing slopes
- Tree age - Usually 100 years or older

Inciting factors:

- Short-term severe drought
- Repeated defoliation by insects
- Frost, ice, and/or wind damage

Drought Stress

Spongy Moth

Forest Tent Caterpillar

Contributing factors:
Disease

Armillaria root rot fungus

Contributing factors:

Insects

Two-lined chestnut borer

Cerambycid Beetles

Oak Decline

Symptoms:

- Twig and branch dieback in the top and outer portions of the crown
- Sprouting (epicormic) branching common
- Tree tends to hold majority of leaves for a year or longer

Long-term Strategy for Oak Decline

- Increase the diversity of forest stands to reduce the dominance of one or two tree species
- Encourage growth of younger and more vigorous trees in a stand by thinning out the weak ones
- Encourage long-lived and drought-tolerant species such as white oak, and red pine

Oak Decline is often confused with Oak Wilt

Oak Wilt – A Non-Native Disease

Oak wilt is a vascular wilt disease caused by the fungus ***Bretziella fagacearum***

- Affects vascular tissue of the tree impeding its ability to transport water
- Red oaks more vulnerable than white oaks
- White oaks can become infected but are rarely killed

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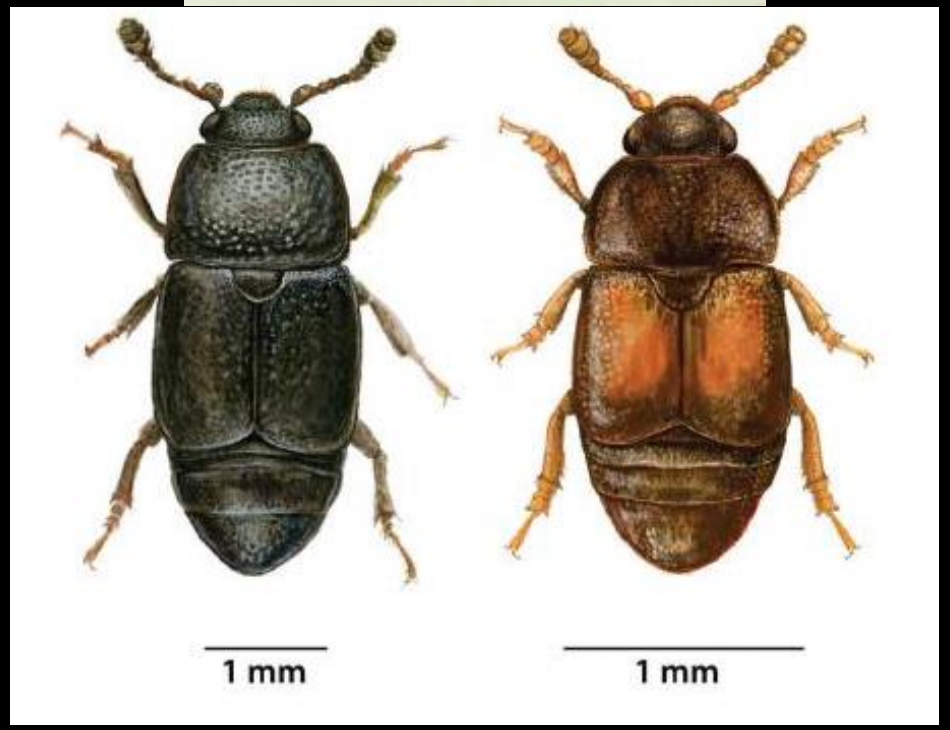
- White oaks produce bubble-like “tyloses”
- Makes wood almost impervious to liquids; slows the spread of the oak wilt fungus

Oak Wilt – A Non-Native Disease

Transmission:



Above ground (overland spread) through sap-feeding nitidulid (picnic) beetles

Below ground through root grafts

***PEOPLE!* Don't move firewood!**

Spore/Mycelia Mats / Pressure Pads

Generally produced only in the year following tree mortality

Symptoms appear in late June, early July and can continue through fall leaf drop.

Top-down leaf discoloration, usually accompanied by active leaf drop.

Rapid progression of symptoms.

Tree infected from powerline ROW pruning in the spring, is dead in 4-6 weeks.

Control and Prevention

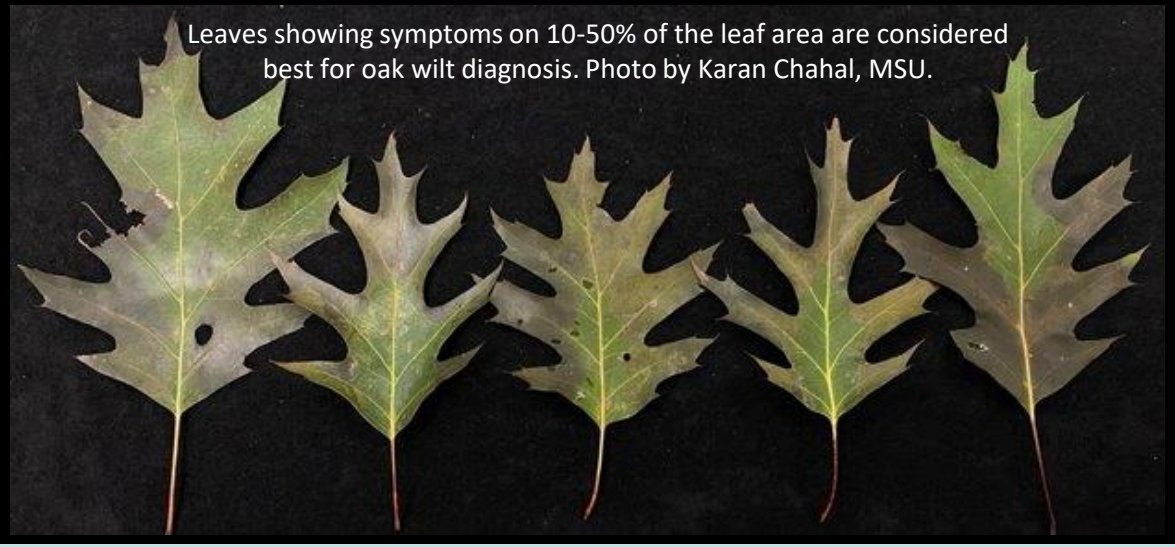
- **Do not cut or prune oak trees during the growing season from**

April 15 to July 15

- If damage occurs or pruning is necessary during this time cover the wood with spray paint **immediately**. (latex paint is ok)

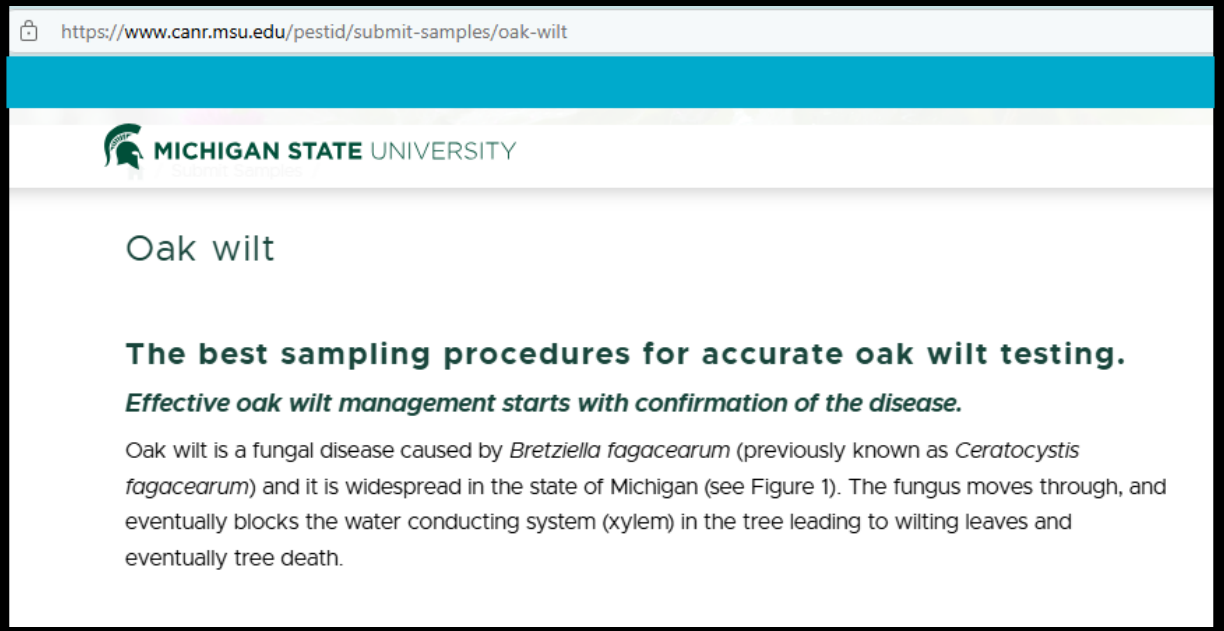
- Don’t move infected wood off-site without debarking, chipping, properly drying it, or until the wood has been dead for over a year

Before oak wilt management is discussed, ***confirm*** that you have oak wilt!



Leaves showing symptoms on 10-50% of the leaf area are considered best for oak wilt diagnosis. Photo by Karan Chahal, MSU.

- Have sample (branch, bole, or petiole) confirmed through testing by MSU's diagnostic lab
- Spore/mycelial mat identified by an oak wilt trained professional



https://www.canr.msu.edu/pestid/submit-samples/oak-wilt

MICHIGAN STATE UNIVERSITY

Oak wilt

The best sampling procedures for accurate oak wilt testing.

Effective oak wilt management starts with confirmation of the disease.

Oak wilt is a fungal disease caused by *Bretziella fagacearum* (previously known as *Ceratocystis fagacearum*) and it is widespread in the state of Michigan (see Figure 1). The fungus moves through, and eventually blocks the water conducting system (xylem) in the tree leading to wilting leaves and eventually tree death.

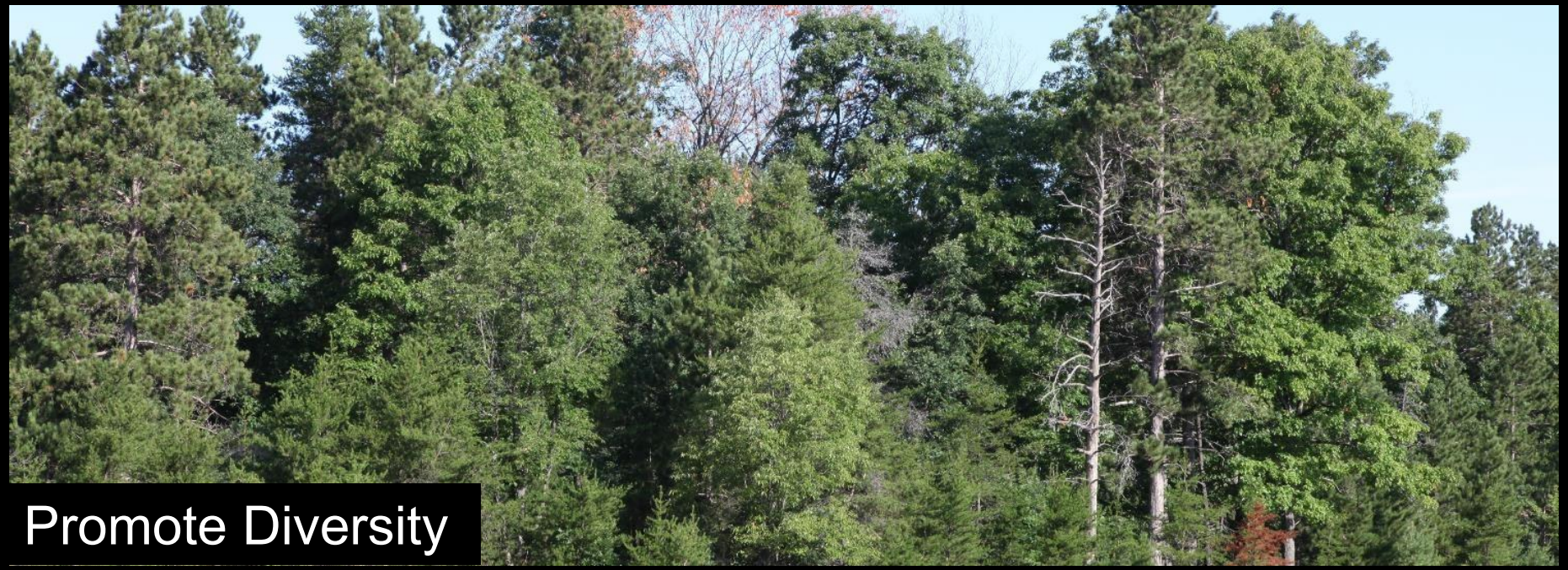
https://www.canr.msu.edu/pestid/submit-samples/oak-wilt

Management

Trenching

Conversion

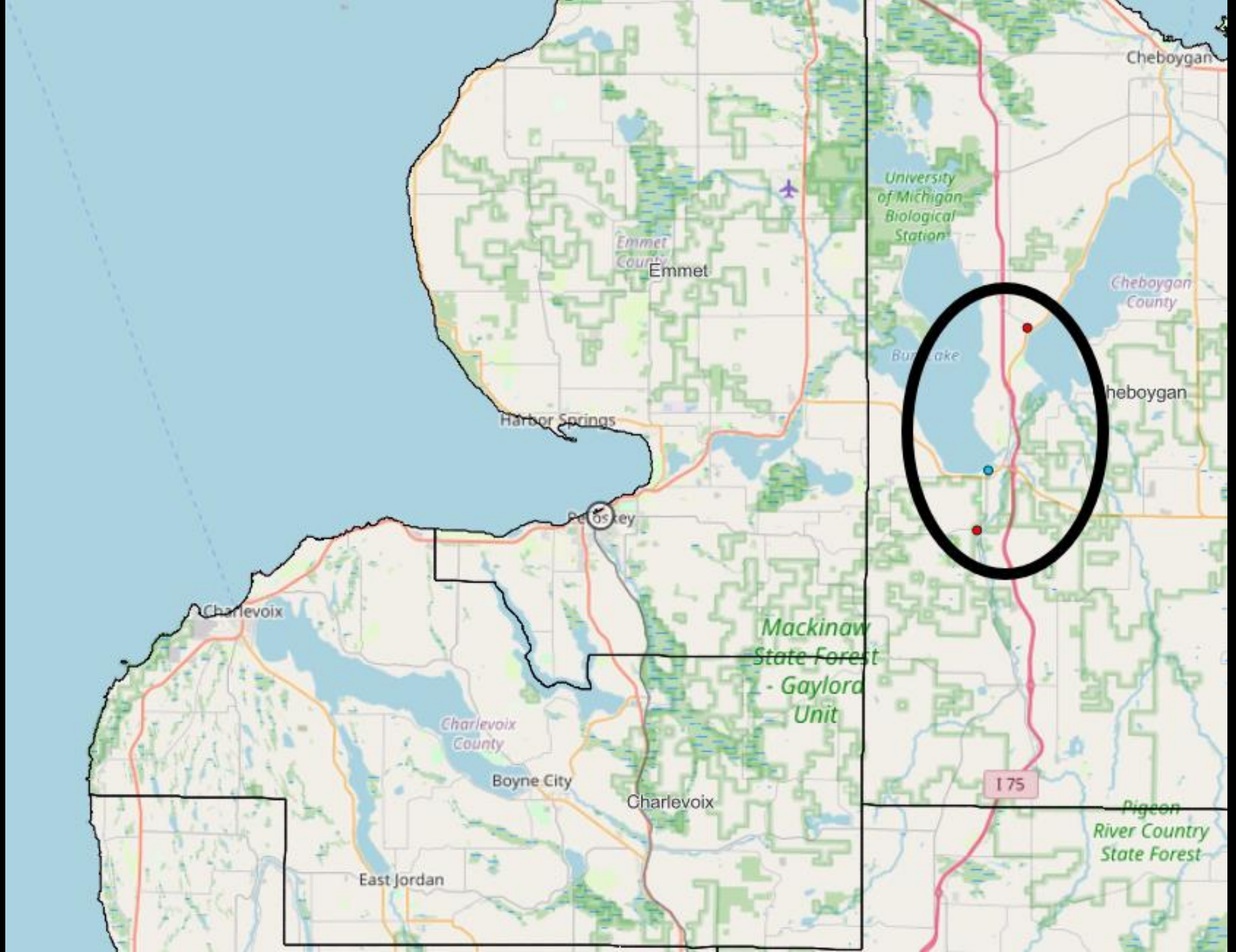
Herbicides



Promote Diversity

More oak wilt infection = greater risk

An increase in wind events that result in branch breakage between April 15-July 15 threatens to increase oak wilt infections on the landscape.


Cheboygan
University of Michigan Biological Station
Emmet County
Emmet
Cheboygan County
Harbor Springs
Charlevoix
Mackinaw State Forest - Gaylord Unit
Charlevoix County
Boyne City
Charlevoix
I 75
Pigeon River Country State Forest
East Jordan

Oak Wilt = Results in rapid defoliation (bare canopy)

Vs

Oak Decline = Normally takes years and holds onto its leaves after they turn brown

75% of Oak Wilt concerns are Oak Decline


Oak Decline


Oak Wilt
UGA5039096

Oak Wilt – Symptomatic Tree Progression

Oak Wilt – Majority of a tree's leaves on ground/Bracken fern during the growing season

Oak wilt success story!

MICHIGAN FOREST PEST

DETECTION PROGRAM

REPORT FOR 1951

- **75 years of management!**
- Treatment efforts
- Prevention efforts
- **600 million oak trees MI forestlands**

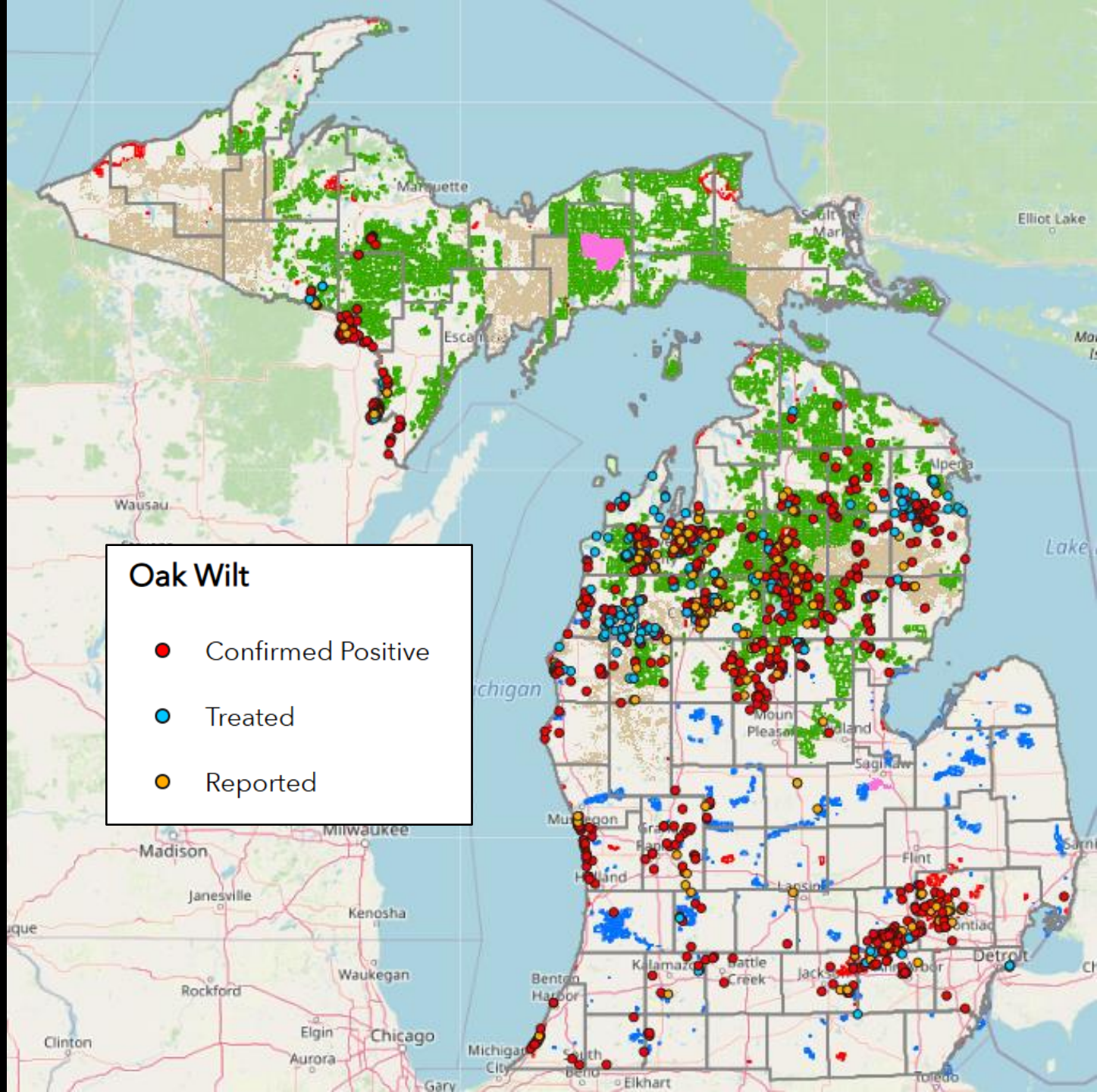
Oak Wilt

- Timber sale specs added according to site situation
- OW Interactive map & Reporting
- MI dealing with OW for more than 70 years
- Prevention & Treatment efforts have protected our vast oak resource

MI DNR Oak Wilt Interactive Map

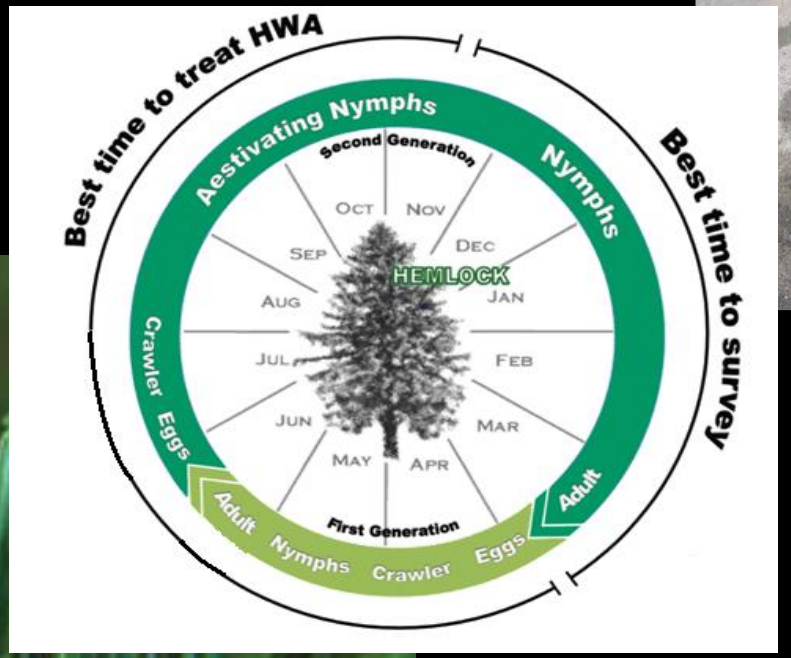
www.Michigan.gov/foresthealth

Click on: *VIEW AND REPORT OAK WILT LOCATIONS*



Hemlock Woolly Adelgid (HWA)

- An insect that, as an adult pierces its host and sucks out its nutrients
- Spread by wind, birds, and **humans transporting infested material from pruning and/or nursery stock**
- HWA has 2 generations per year and reproduces without males (parthenogenetic)



White cottony masses found at the base of the needles on the twigs

Crawlers plus wax

Hemlock Woolly Adelgid (HWA)

- Causes tree mortality in 4-10 years without intervention
- Look for gray-green needles, needle loss & dieback, white ovisacs

Hemlock Woolly Adelgid (HWA)

Surveys (Nov-March)

- Hemlock are selected based on having branches within reach.
- Visually scan the underside of the smaller twigs for woolly masses.
- A single tree that is positive for HWA establishes its presence in an area and delimitation surveys begin.

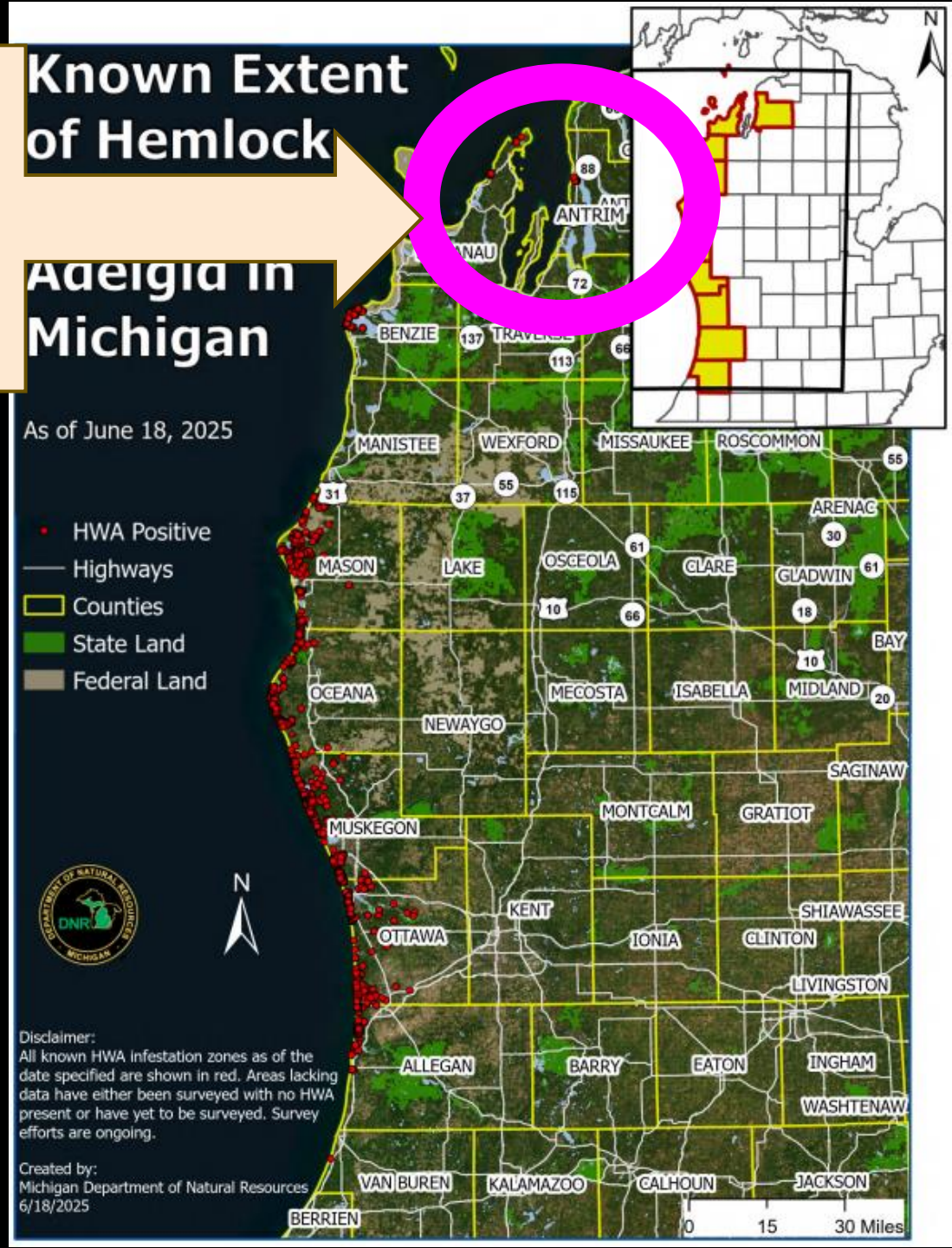
Treatments (March – Oct)

- **Two Chemicals**
  - **Imidicloprid**
    Slower Acting / 3-5 years control
  - **Dinotefuron**
    Faster Acting / 1-2 years control
- **Methods**
  - **Injections**
  - **Basal Bark Spray**
  - **Soil Drench (Site dependent)**

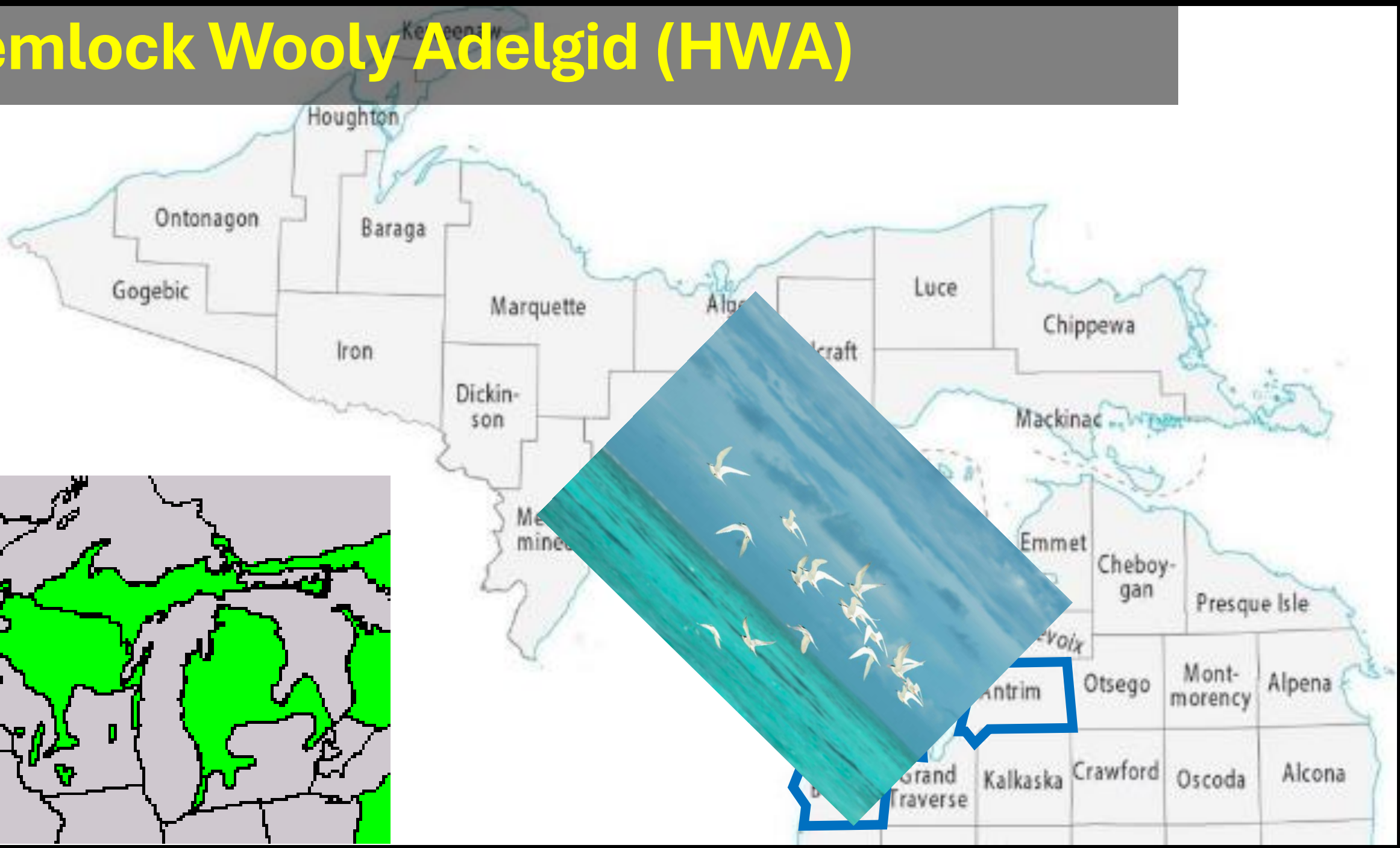
Hemlock Wo (HWA)

Northern-most known extent: Leelanau & Antrim Counties

- Current known infested counties:
  - Allegan, Antrim, Benzie, Leelanau, Manistee, Mason, Muskegon, Oceana, Ottawa, Van Buren
  - Washtenaw County (outlier)
- 2025: Revisions to the Statewide Strategic Plan completed



Hemlock Wooly Adelgid (HWA)



Keep an out for... Beech Leaf Disease

Keep an out for... Beech Leaf Disease

Range of symptoms observed in MI

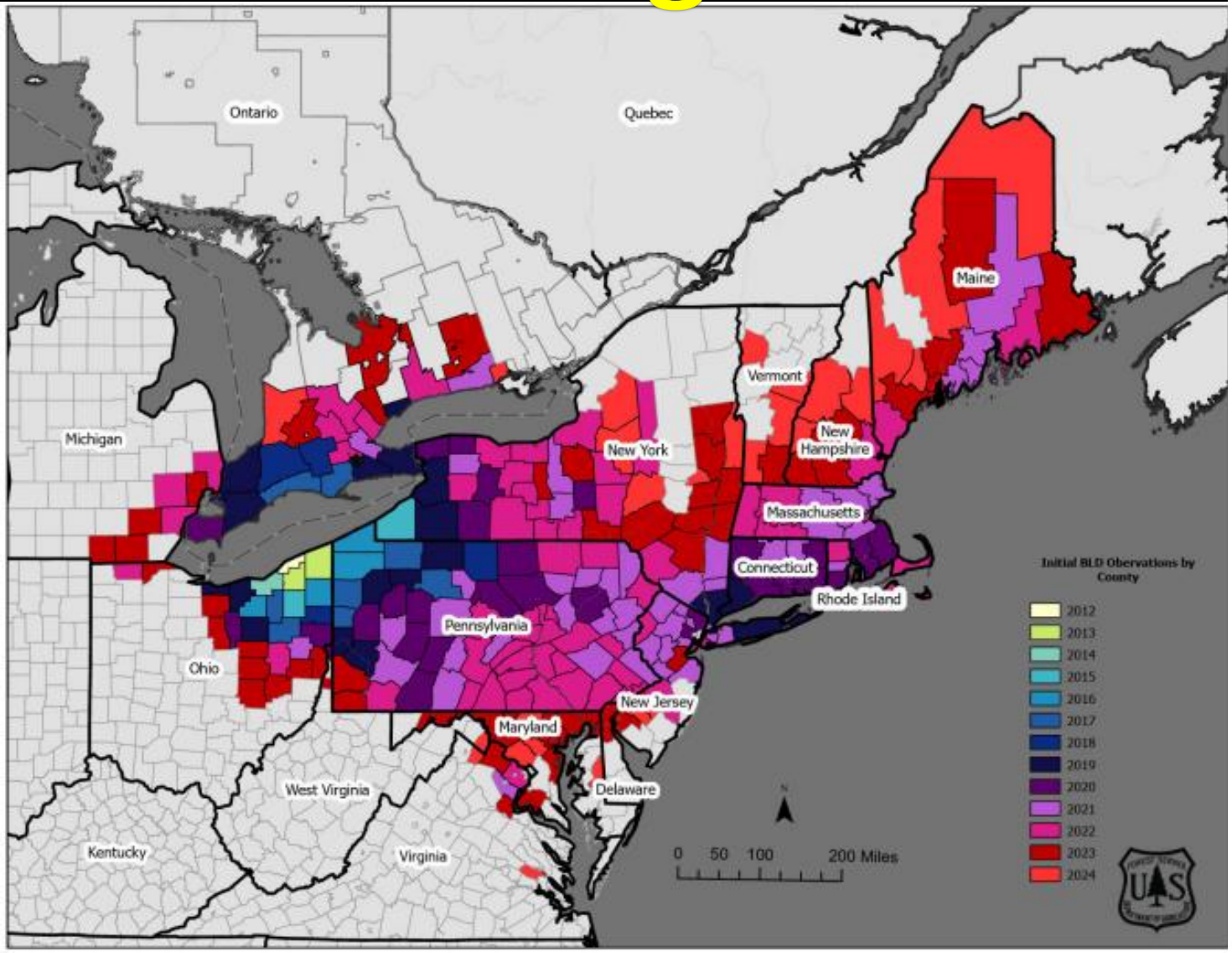
Keep an out for... Beech Leaf Disease

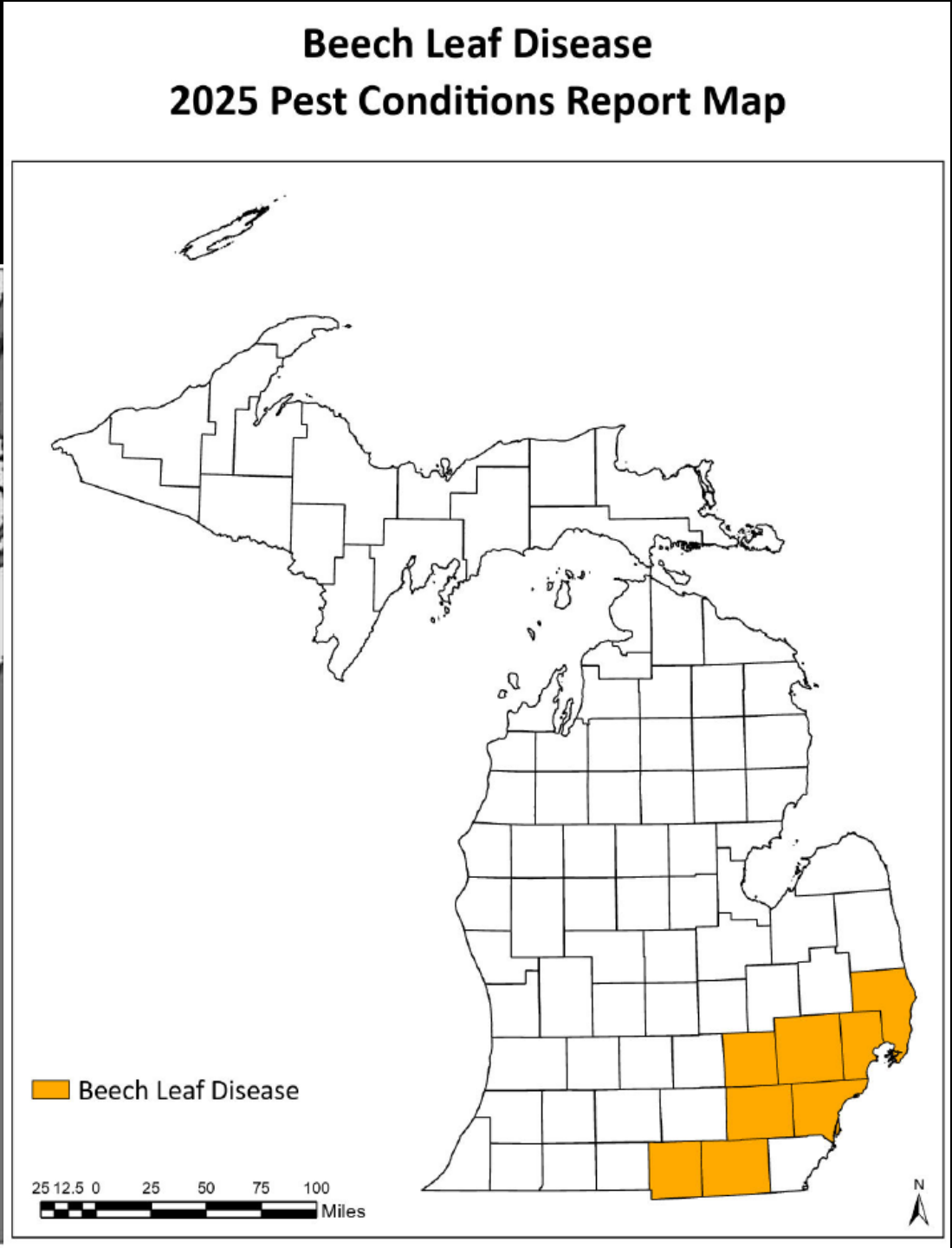
June 2025

- 4 seasons since BLD reported (spring 2022)
- Lots of light through canopy
- Understory mortality

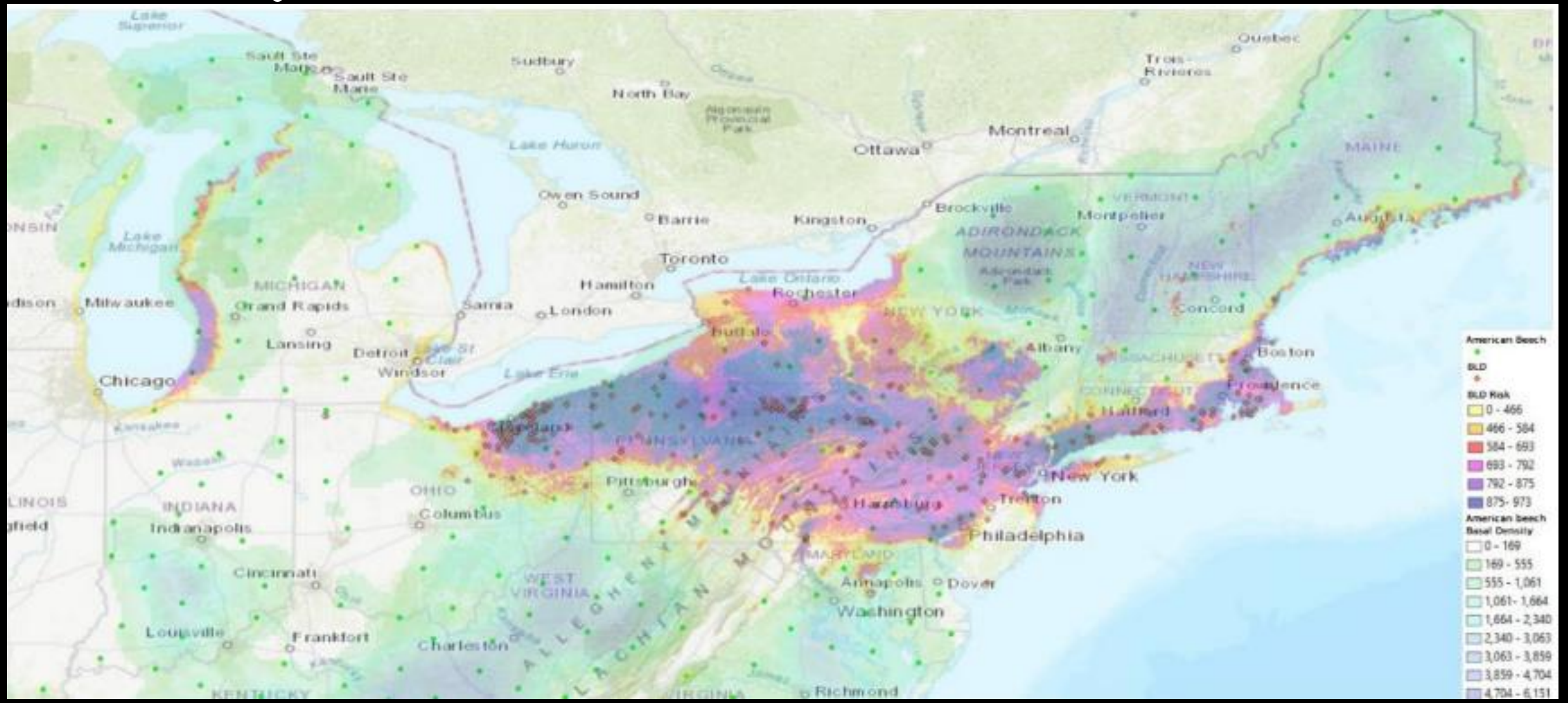
Keep an out for... Beech Leaf

2025: Livingston Co.





Keep an out for... **Beech Leaf Disease**



Some modelling efforts suggest UP risk

Ersan Selvi, OSU, 2023
https://www.researchgate.net/publication/374669406

Keep an out for... Beech Leaf Disease

Reporting:

- New counties require lab testing
- Record location, take photo
- dnr-frd-forest-health@michigan.gov

Keep an out for... Asian Longhorned Beetle

- Large beetles: ~1” – 1⅜”
- Larvae bore into sapwood & heartwood which weakens the tree
- Saw dust and frass at the base of tree from adult chewing its way out
- Attacks healthy *and* stressed trees
- Wide hardwood host range
  - In US, prefer maple (*Acer*) species, as well as Buckeye, Horse chestnut, Birch, Willow, and Elm

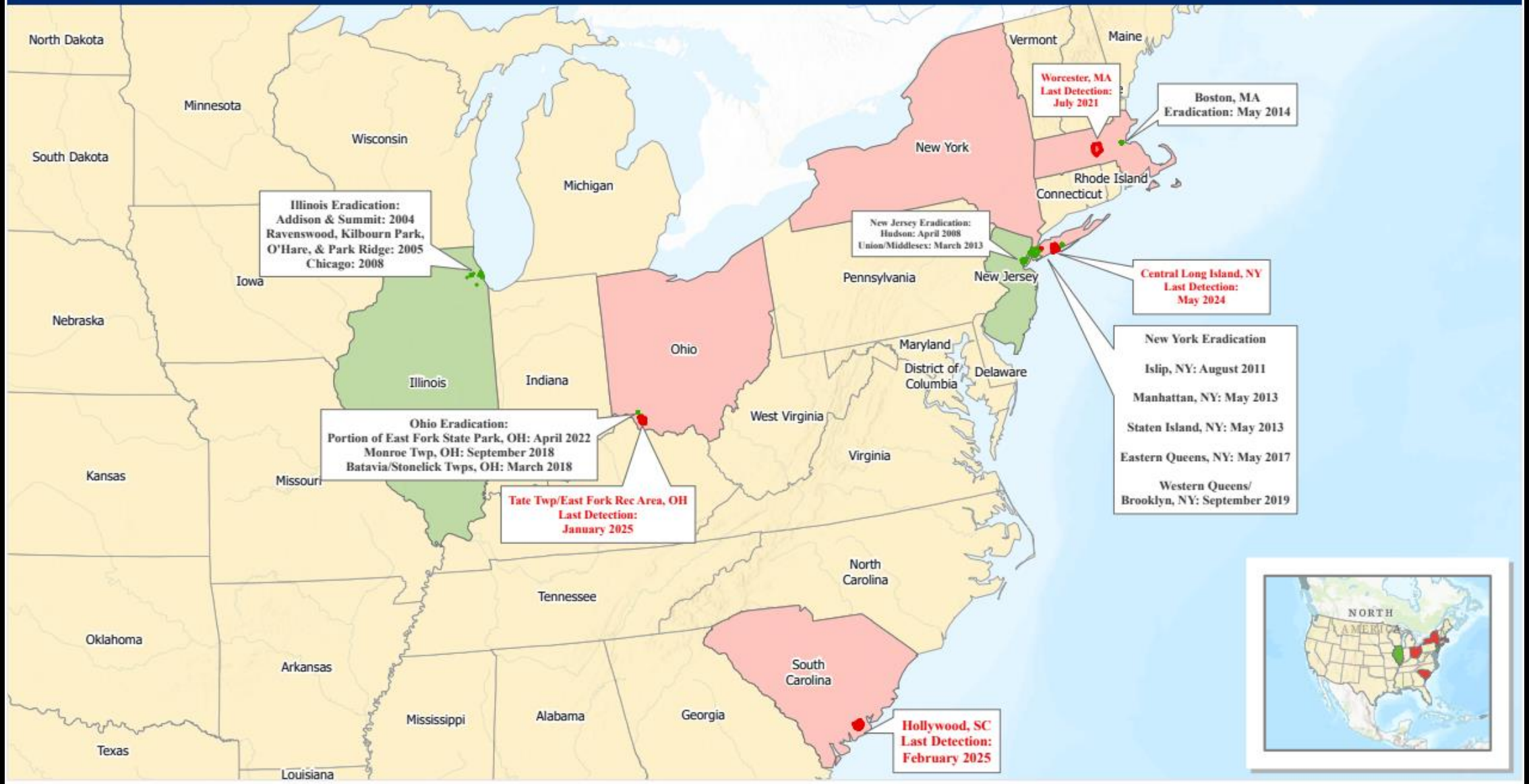
Keep an out for... Asian Longhorned Beetle

Exit hole: ¼” - $^{9}/_{16}$”

Oviposition pit: $^{9}/_{16}$”

USDA Animal and Plant Health Inspection Service
U.S. DEPARTMENT OF AGRICULTURE

ASIAN LONGHORNED BEETLE (ALB) ERADICATION PROGRAM
ALB National Overview 2025



Asian Longhorned Beetle Federal Quarantine Boundary
- Active Federal Quarantine
- Rescinded Federal Quarantine

- State Boundary - ALB Eradication Declared
- State Boundary - ALB Quarantine Active
- State Boundary

0 100 200 Miles
0 100 200 Kilometers

Data Source:
USDA APHIS PPQ
ESRI Basemap

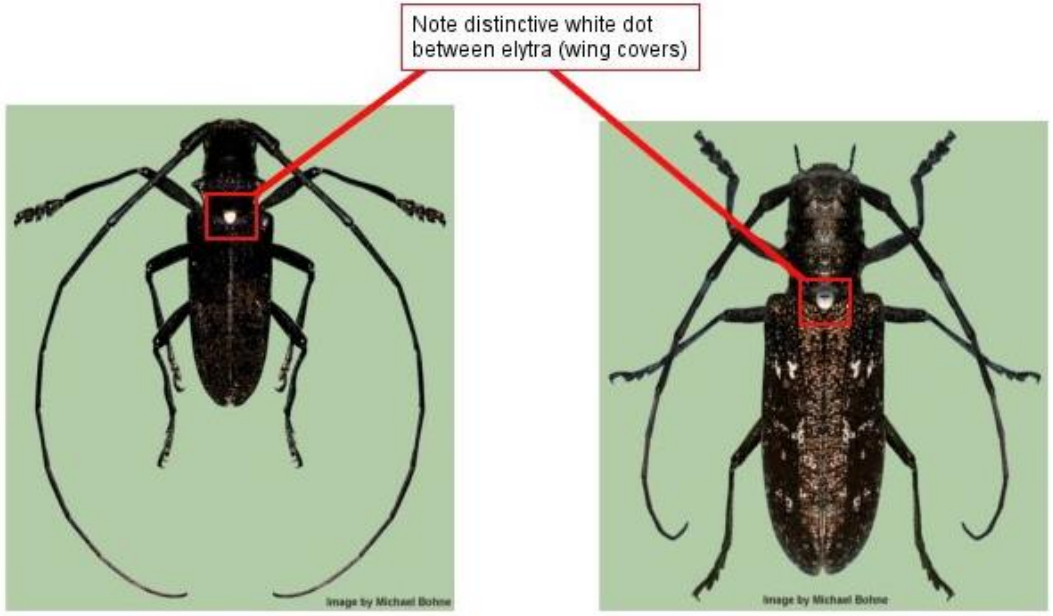
Date Created:
2/10/2025

USDA APHIS
2150 Centre Ave
Fort Collins, Co 80526

Comparison between the introduced Asian longhorned beetle (Anoplophora glabripennis) and the native Whitespotted Pine Sawyer (Monochamus scutellatus) [PHOTOS NOT TO SCALE]

Male Asian Longhorned Beetle

Female Asian Longhorned Beetle



Male Whitespotted Pine Sawyer

Female Whitespotted Pine Sawyer

Photo source: http://www.uvm.edu/albeetle/identification/index.html

Closeup of adult beetle showing small hairs on the legs and tarsi.
Photo: Jennifer Forman-Orth

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REPORT POTENTIAL FINDS TO MDARD

***send photos of tree and suspect insect**

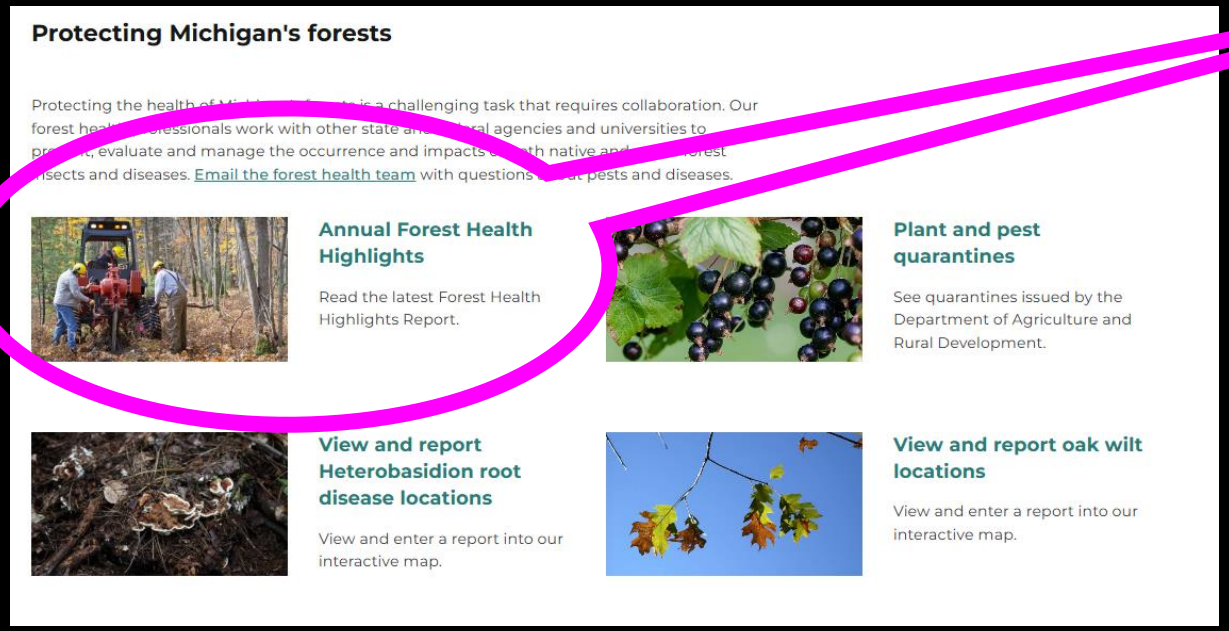
- MDA-Info@michigan.gov
- Or use the Midwest Invasive Species Information Network (MISIN) online reporting tool

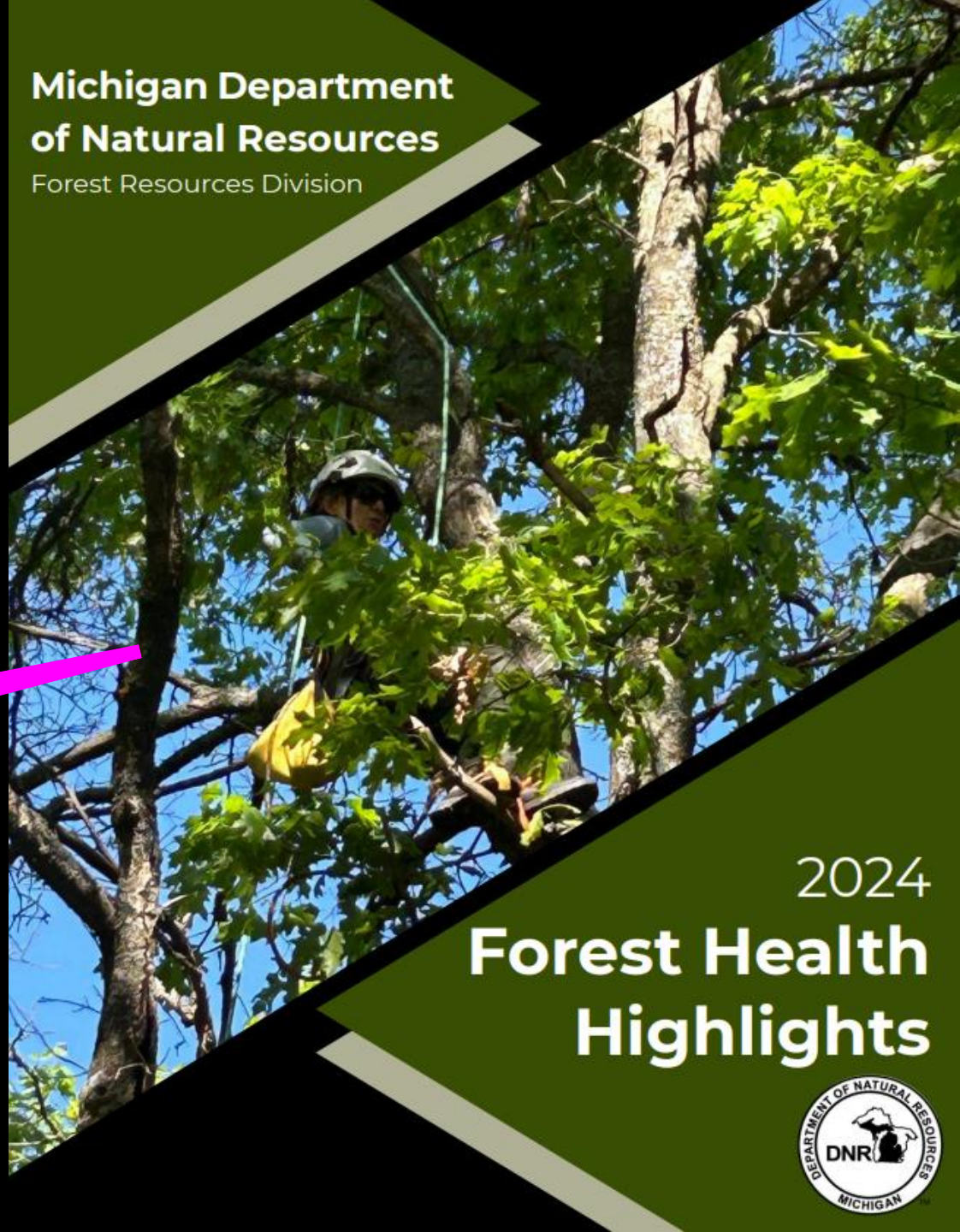
Whitespotted pine sawyer

Be sure to check out...

Forest Health Highlights
www.Michigan.gov/foresthealth

2025 Forest Health Highlights Coming Soon!





Resources

Michigan DNR Forest Health Website
www.michigan.gov/foresthealth

Michigan Invasive Species Website
www.michigan.gov/invasives

Resources

MISIN Website
www.misin.msu.edu

Cooperative Invasive Species Management Area
www.michiganinvasives.org/managementareas

Conservation Districts
www.macd.org

Questions?

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