Michigan Eyes on the Forest & Forest Sentinel Tree Network

Michigan State University
Eyes on the Forest: Linking Research, Outreach & Communication

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Eyes on the Forest: Linking Research, Outreach & Communication

Identified 3 target pests: ALB, HWA and TCD

**Research**: Assess & map relative risks of entry & establishment for each pest

**Outreach**: Build awareness of 3 target pests & other invasive forest pests across the state

**Communication**: Facilitate reporting of suspect pests or symptomatic trees

**Goals**: Increase chance of early detection & successful response if new invasive forest pest becomes established.
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Risk Models
Outreach
Observations

Early Detection

Rapid Response
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<th>Probability of Entry</th>
<th>Host Availability</th>
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Eyes on the Forest
Rapid Response

Risk Models

MISIN

Prioritization

Surveys

Public

Sentinel Tree

Intensive

Rapid Response & Eradication Success
Eyes on the Forest Outreach & Communication

Public Outreach

- Build awareness of invasive forest pests across MI.
- Increase the chance of early detection of a new pest.

**Sentinel Tree Network**

- Recruit observers with relevant expertise (trees, forests) who can recognize unusual signs or symptoms.
- Volunteers adopt a Sentinel Tree(s) & periodically monitor the condition of the tree. Can be a host of a target pest or a different tree species.
- Observations submitted to MISIN website.
Register in MISIN - http://www.misin.msu.edu
Click on Citizen Science
Select Eyes on the Forest Sentinel Tree Network
Can print off a paper data sheet to take with you
Enter data on-line each time tree is examined
Eyes on the Forest: Sentinel Tree Network

Facilitates reporting of suspect pests or symptomatic trees using on-line MISIN.

Trained Sentinel Tree observers expands the number of “eyes” looking at forest & urban trees across the state & over time.

“Negative” observations (e.g., healthy trees) are recorded & mapped, along with suspect pest reports.

Value of records increases every year.
Target Pest: Asian Longhorned Beetle
Target Pest: Hemlock Woolly Adelgid

- More than 170 million hemlocks in Michigan forests
- Hemlock is an important forest & wildlife resource
- Deer browse has limited hemlock regeneration
- Most trees are mature or overmature & vulnerable
- Thousands of hemlocks planted in landscapes

Adelges tsugae (wax removed)  
Infested shoot  
Smoky Mtn Nat. Park
Hemlock Woolly Adelgid Infestation History in Michigan
(Year Detected)

- Ottawa Co. (2010)
- Ottawa Co. (2010, 2015)
- Allegan Co. (2013)
- Berrien Co. (2012)
- Macomb Co. (2010)
- Macomb Co. (2010)
Target Pest: Thousand Cankers Disease

Walnut twig beetle
*Pityophthorus juglandis*

Fungal pathogen
*Geosmithia morbida*
Forest Cover in Michigan & Wisconsin

Image courtesy of Danielle Shannon, Michigan Tech University and USDA NIACS
Sugar Maple - #1
Red Maple - #2
Hemlock - #9

- Maples: 28%
- Hemlock: 64%
- Walnuts: 3%
- Ashes: 5%
- Other Species: 5%

[Diagram showing tree species distribution]
Maple Volume Distribution
7,242,657,557 cuft
Hemlock Volume Distribution
931,647,268 cuft

- 10-13%
- 7-10%
- 1-7%
- Total 96%
Walnut Volume Distribution
94,790,607 cuft

- 5-7%
- 4-5%
- 2-4%
- 1-2%
- 96%
Ash Volume Distribution
1,250,661,562 cuft

5-6%
2-4%
1-2%
Total
80%
Another Way to Look at Species Distribution
Other Exotic Concerns
Oak Wilt
Beech Bark Disease
Balsam Woolly Adelgid
Heterobasidion Root Disease