

The Emerald Ash Borer and What It Means For You

*Candia Agriculture Commission
January 11, 2021*

Greg Jordan

Extension Forester, Rockingham County

Some Slides Developed By:

Bill Davidson

Forest Health Specialist – NH Division of Forests and
Lands



New Hampshire
Department of Agriculture,
Markets & Food



The Plan for the Evening

1. Background
2. Signs and Symptoms
3. Current Management Efforts in New Hampshire
4. What EAB Means for You
 - Best Management Practices
 - Woodlot Management Recommendations
 - Homeowner Recommendations

Isn't There Any
Good News?

What Trees Are At Risk?

Only members of the
Genus *Fraxinus*.

Compound Leaves

- 5-11 Leaflets
- Smooth or Toothed



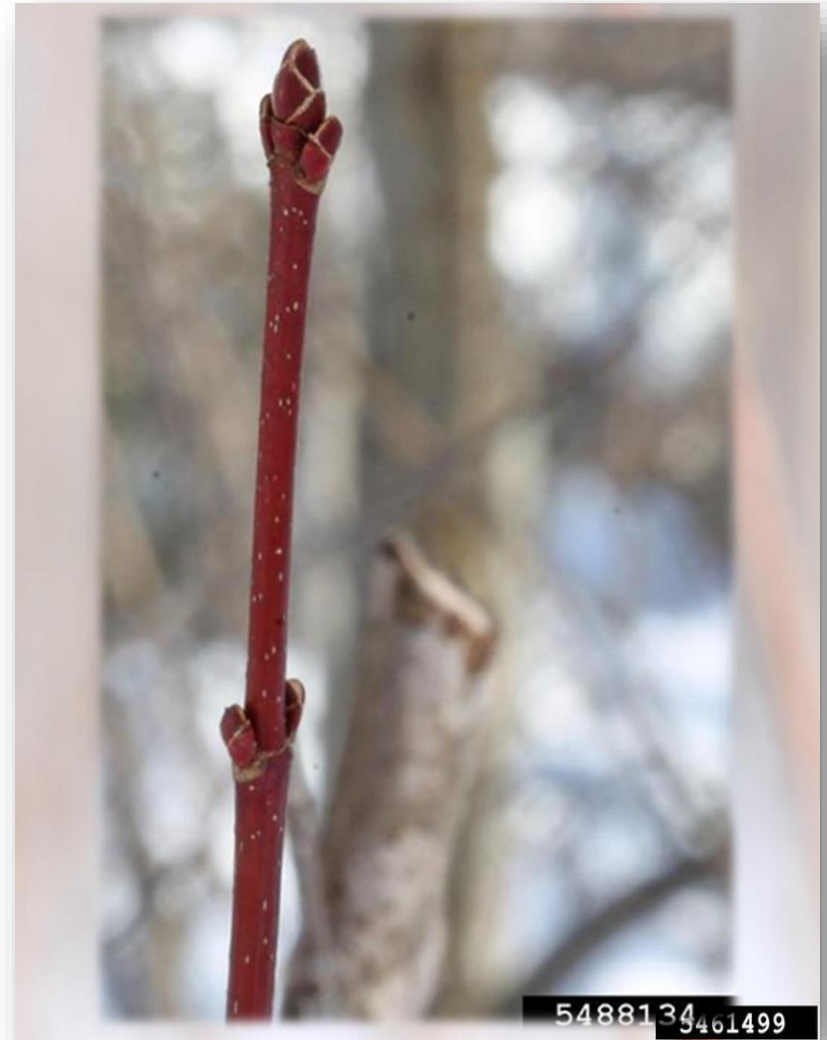
Opposite Branches



Ash



Opposite Buds



Diamond Pattern in the Bark



Oar-Shaped Samaras



Mountain-ash
Sorbus spp.



NOT AN ASH

White Ash





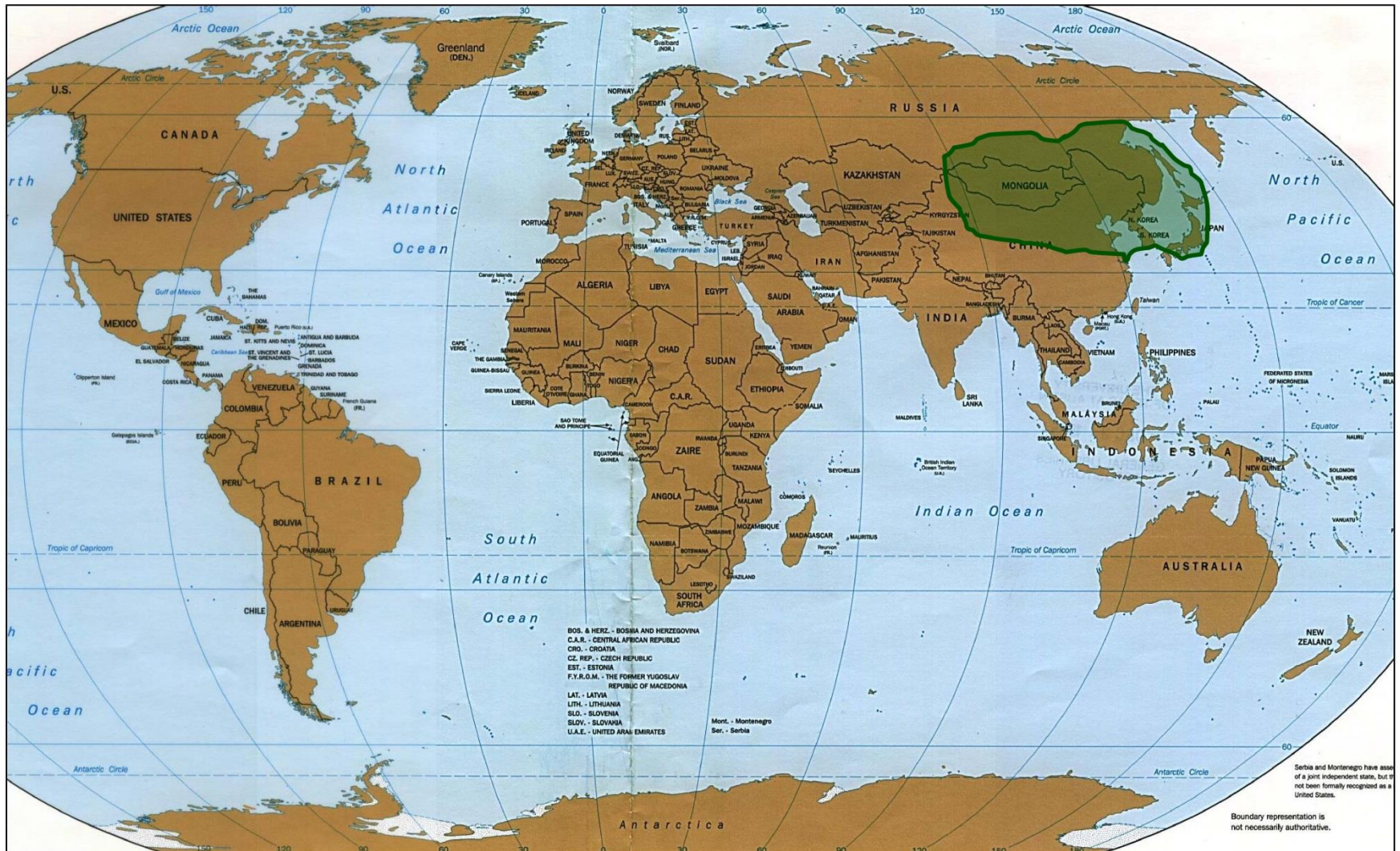
Green Ash

Black Ash



Where Is EAB
From And How
Did It Get Here?

Native Range

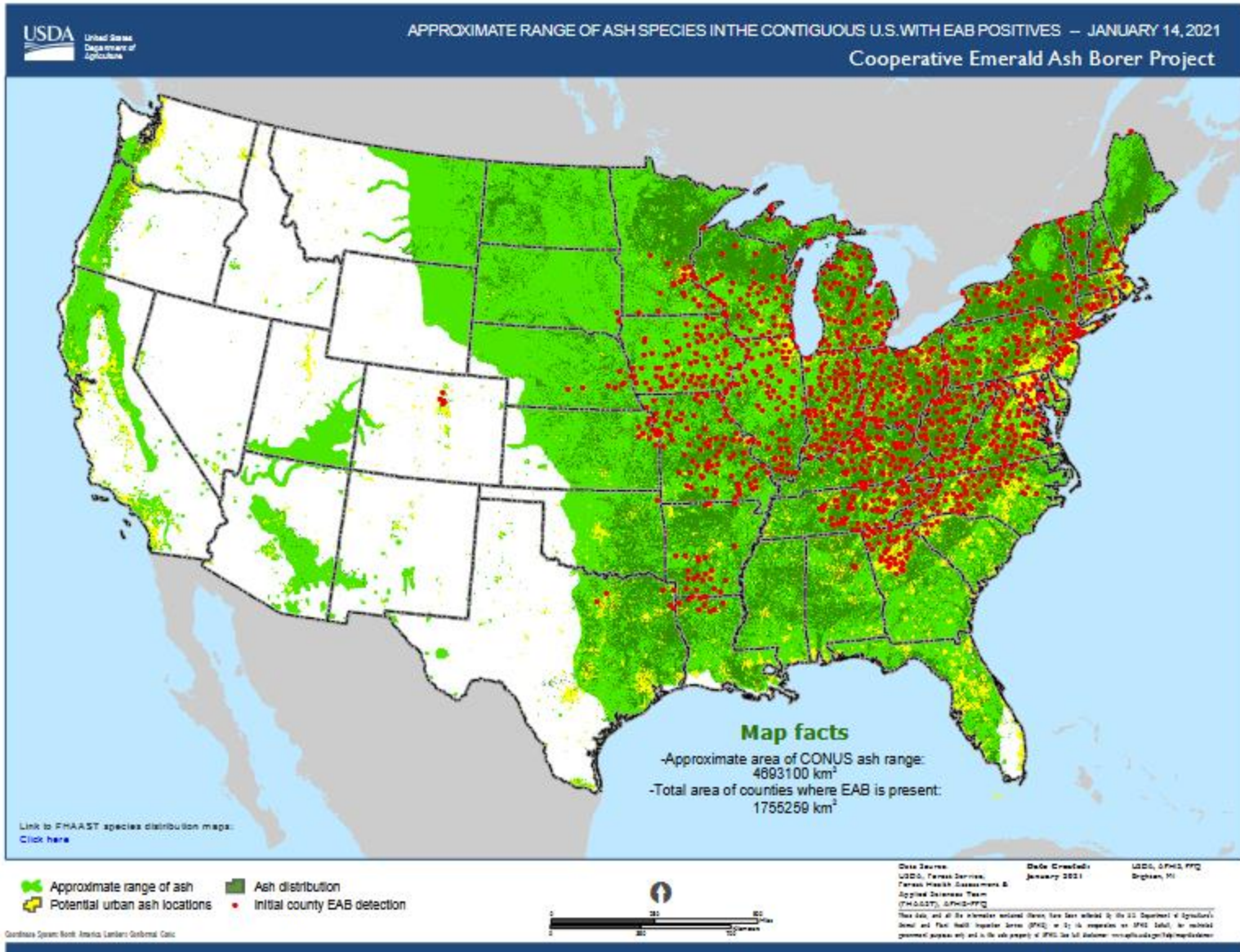




Michigan - 2002

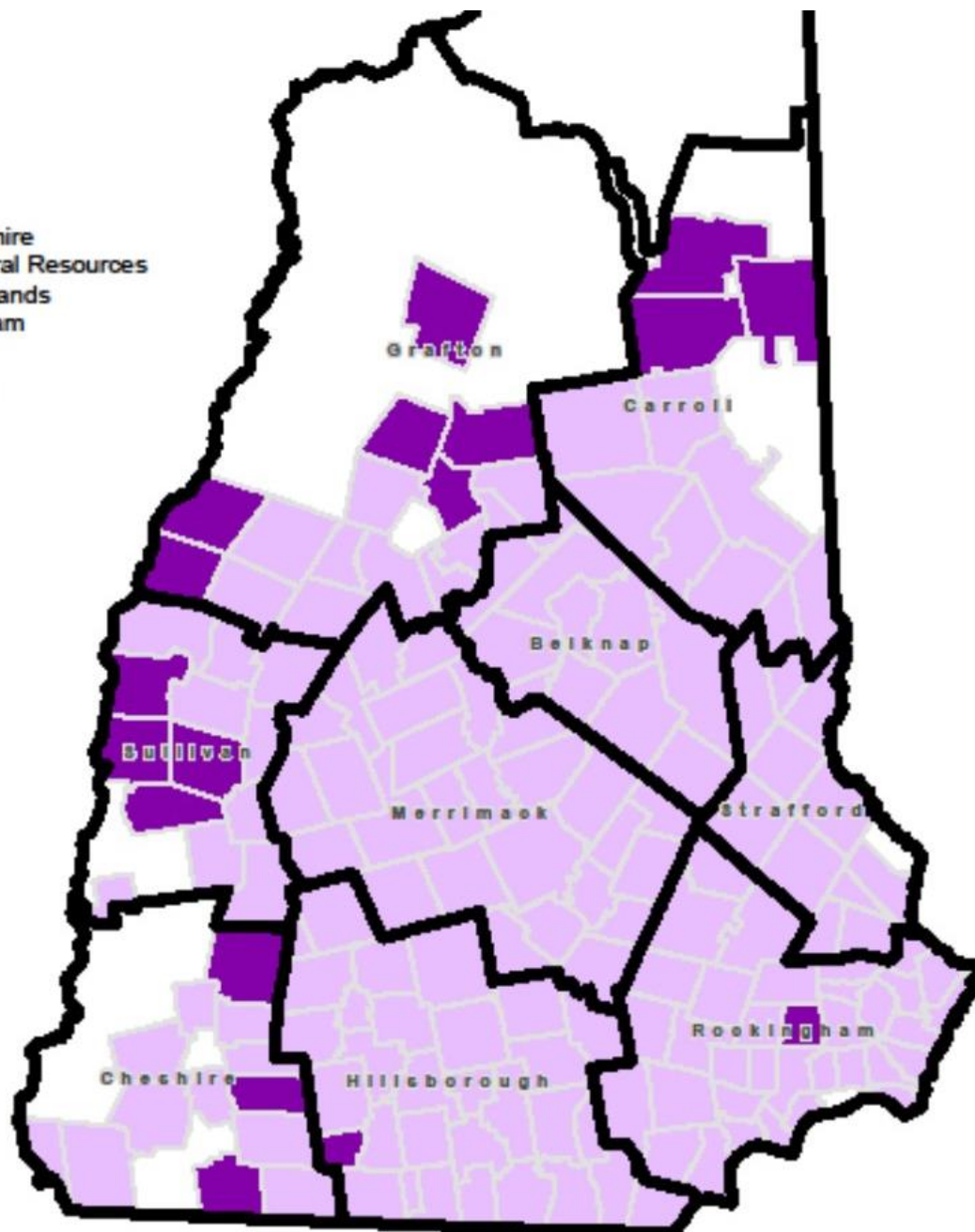


Potential Range

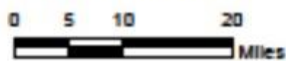




State of New Hampshire
Department of Natural & Cultural Resources
Division of Forests & Lands
Forest Health Program



Jen Weimer
8 November 2021



Movement



Buy it where you burn it!



**FIREWOOD
SCOUT**

firewoodscout.org

How Does EAB Damage Trees?

Life Cycle



Life Cycle



Life Cycle



EAB Life Cycle

June-Aug:
Eggs hatch,
larvae tunnel
into tree



Aug-Oct: Larvae
feed under bark
creating
s-shaped galleries



June to Aug: Adults lay
eggs on bark



May-July: Adults
emerge leaving
d-shaped holes

Look Alikes

emerald ash borer



bronze birch borer



twolined chestnut borer



flatheaded apple tree borer



Buprestis sp.



blister beetle



annual cicada



polydrusus weevil



halictid bee



blow fly



Japanese beetle



dogbane beetle



green stink bug



Chlaenius ground beetle



bark gnawing beetle



Poecilus ground beetle



sixspotted tiger beetle





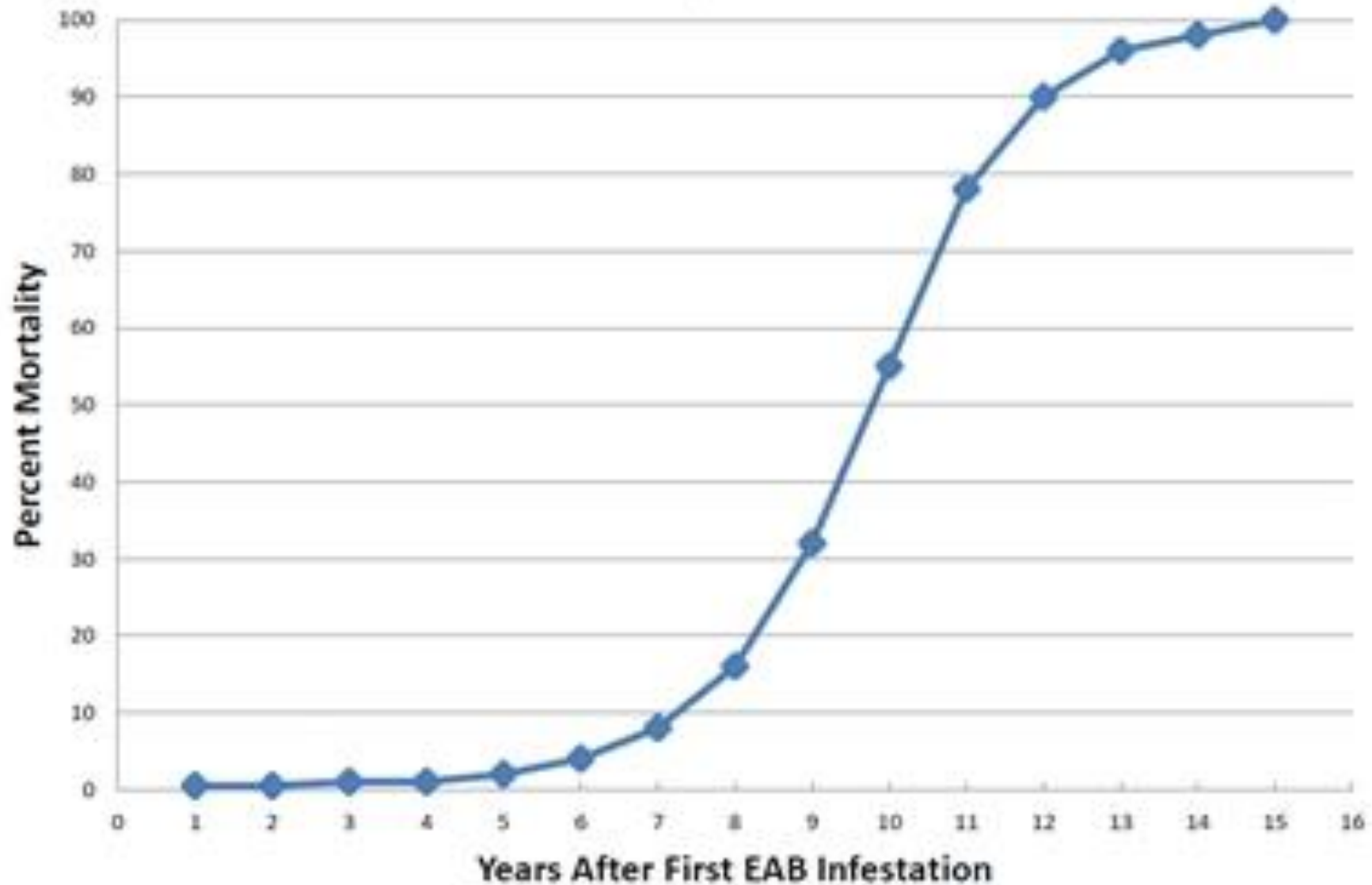
Toledo, Ohio (2006)



Toledo, Ohio (2009)

Daniel A. Herms, The Ohio State University

Ash Mortality from EAB



Signs and Symptoms

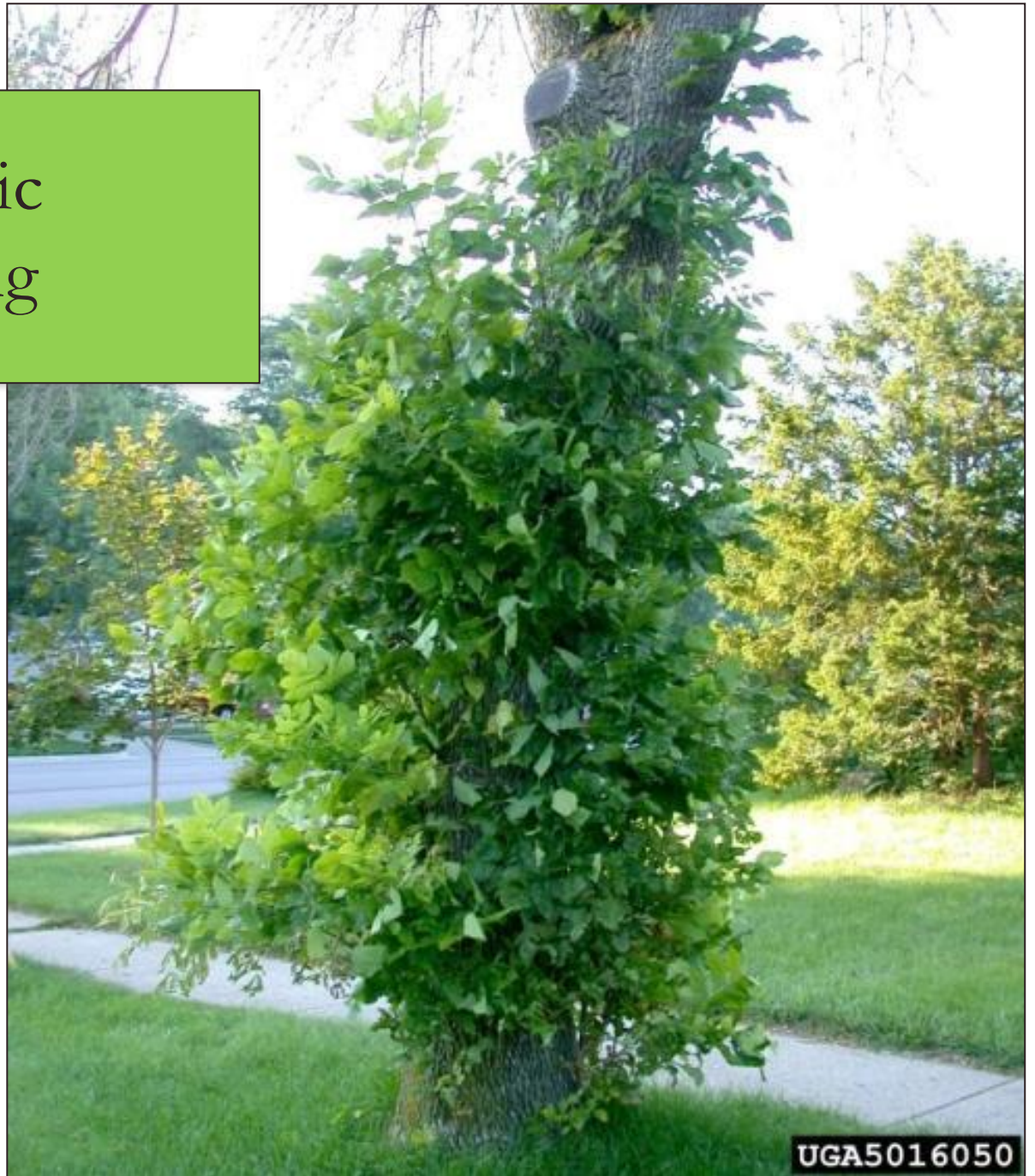
D-shaped exit holes



Serpentine Larval Galleries



Epicormic Branching



UGA5016050

Blonding and Woodpecker Activity



Blonding and Woodpecker Activity



Current Management Efforts in New Hampshire



Management Goals:

Detect new infestations early

Slow the spread of ash mortality

Provide guidance and education

THIS IS NOT ALB

No one will
be forced to
remove trees



Eradication is not feasible

IPM (Integrated Pest Management)

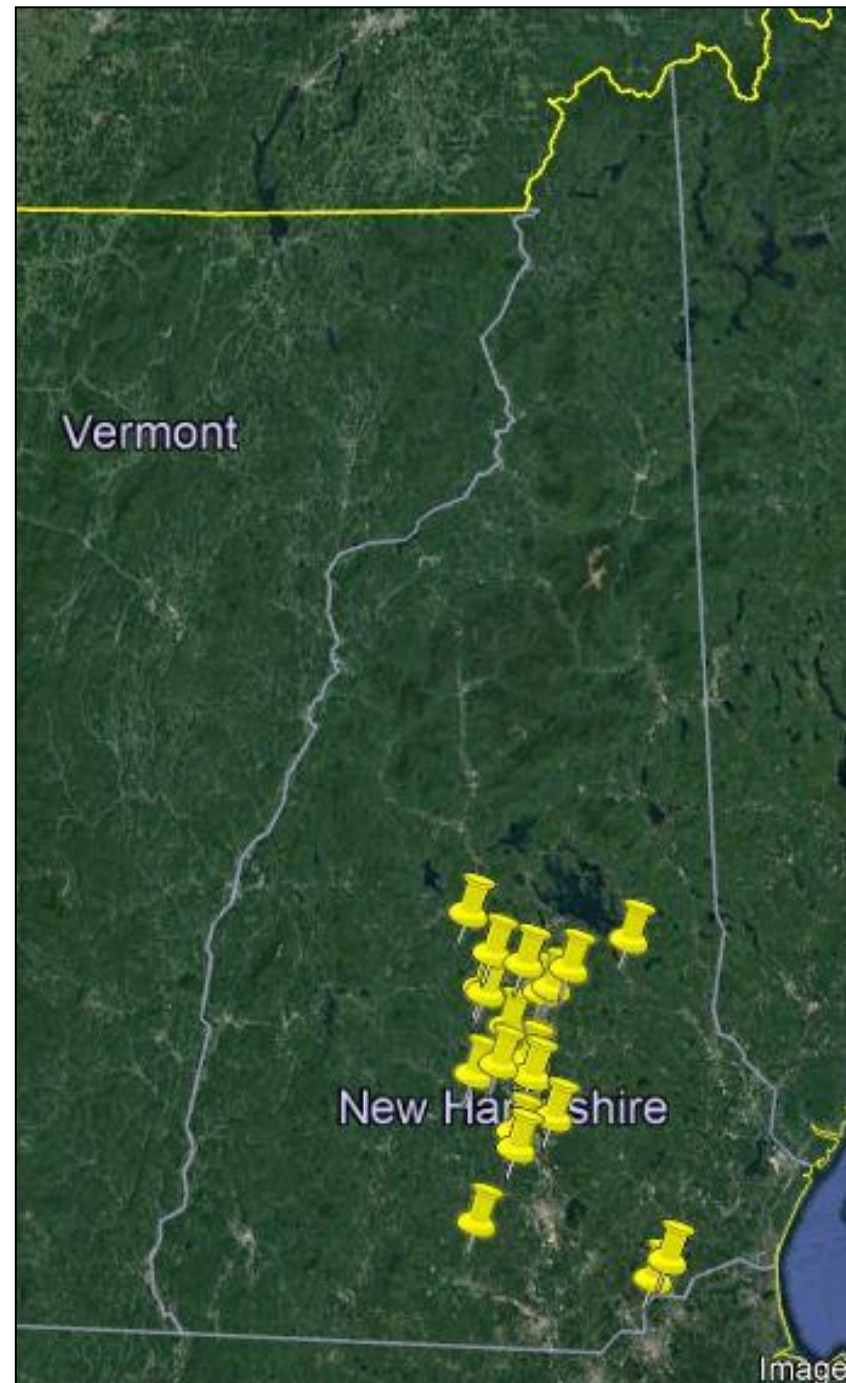
Combination of:

- 1) Biological Control
- 2) Chemical Control
- 3) Trap Trees
- 4) Sanitation



Biological Control Overview

- Suppress EAB through introduction of natural enemies
- Will take decades to fully play out
- 3 species of parasitic wasps have been approved for release in NH
- Wasps are highly specific to EAB and are harmless to humans
- Releases have taken place at over 20 sites throughout NH
- Early results show successful establishment and spread of wasps



Biological Control – *Tetrastichus planipennis*

- Female wasps lay their eggs within EAB larvae
- A single female can parasitize several EAB and lay hundreds of eggs
- These small wasps are restricted to attacking EAB in small diameter trees
- Wasp larvae consume the EAB larvae
- Dozens of larvae pack the gallery of their host beetle
- Upon maturing the wasps will chew their way out of the tree in search of more EAB



Biological Control – *Oobius agrili*



Oobius agrili is a tiny
(1<mm) stingless wasp

A female *O.*
agrili lays her
egg inside of a
newly laid
EAB egg



Biological Control -- *Spathius galinae*



- Just recently been approved for release
- Small numbers have been released at a handful of sites throughout NH

Chemical treatment



SAVING YOUR HIGH-VALUE ASH

A simple guide for homeowners and municipalities with true ash (*Fraxinus*) trees

Piera Siegert, NH State Entomologist



Emerald ash borer adult
Photo credit: N.W. Siegert

<i>See map above to determine your management zone.</i>		Ash is less than 18" DBH	Ash is greater than 18" DBH
Generally infested	Ash appear healthy	Imidacloprid, dinotefuran, or emamectin benzoate	Emamectin benzoate
	Ash are in decline	Emamectin benzoate	
	Ash are dead or with greater than 50% crown dieback	Tree removal. Insecticides unlikely to be effective.	
Expansion management zone		Imidacloprid, dinotefuran, or emamectin benzoate	Emamectin benzoate
Alert management zone		Treatment not yet warranted. Develop a plan.	

What EAB Means For You

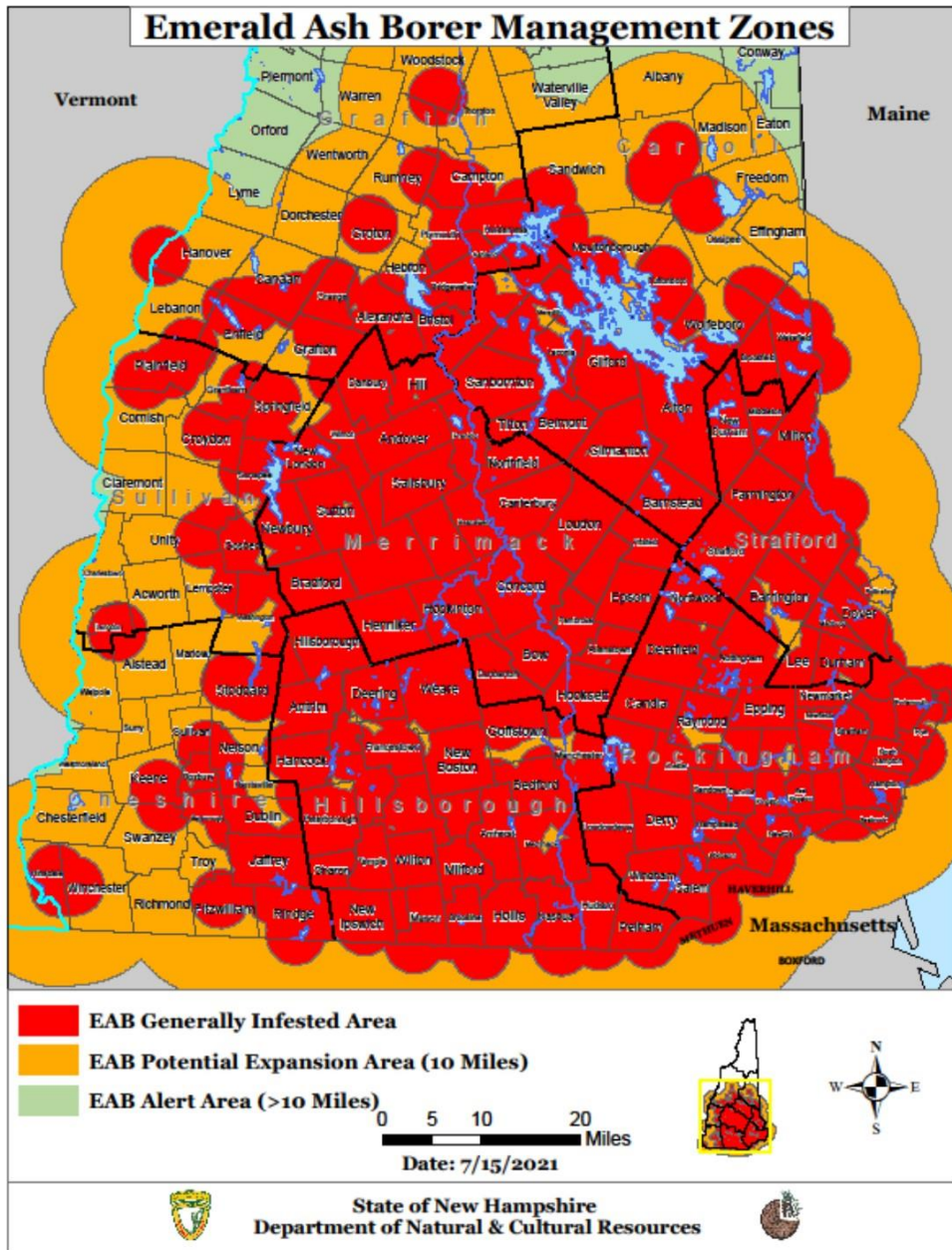
A yellow starburst graphic with a blue outline, containing the text "De-regulated 2021".

De-regulated 2021

Federal Quarantine



New Hampshire Quarantine



Management Recommendations for Landowners

Three Zones:

- 1. generally infested area**
- 2. potential expansion**
 - within 10 miles of current infestation
- 3. alert area**
 - remainder of the state

Help stop the spread of EMERALD ASH BORER in New Hampshire

Natural spread of Emerald Ash Borer (EAB) takes decades; human-assisted spread takes only hours.

Following best management practices will help protect ash woodlots across New Hampshire and provide valuable time to managers and scientists looking for new control methods.



Signs of EAB infestation include birds removing the outer layer of bark (called "blonding") and "s"-shaped galleries under the bark

EAB was discovered in New Hampshire for the first time in 2013. While EAB has spread into most of NH's counties, it still infests a very small percentage of the state's total ash trees. Close attention to practices described on this card will help keep the outbreak from killing trees for decades.

Learn more at NHbugs.org

How to help minimize risk of spreading Emerald Ash Borer in New Hampshire

When moving ash logs:

- Transport only after September 1 and have processed by June 1
OR
- Ship only to mills willing to debark immediately
OR
- Confirm logs are likely not infested (for the latest information on infested zones , expert contacts and training opportunities visit NHbugs.org)

When moving firewood:

- Remove ash wood from shipments traveling more than 5 miles; deliver ash wood less than 5 miles
OR
- Season ash wood at its place of origin for at least 12 months
OR
- Deliver ash wood after September 1 and make sure it's burned by June 1

NOTE: Mulch or chips of any size can be moved year round.



New Hampshire
Department of Agriculture,
Markets & Food

Woodlot Recommendations

Everyone

Inventory and monitor your ash trees.

Plan under the assumption that ash trees that are left behind during a harvest will be dead before the next harvest.



Woodlot Recommendations

If you conduct a harvest, leave trees 6" and smaller standing.

This may slow the spread of EAB.





Homeowner Recommendations

Everyone

Determine what ash trees you have and whether they will become *hazard trees* when EAB arrives.

Identify high-value trees.

Realize that there are three options for each tree:

1. Removal
2. Chemical treatment
3. Do nothing and let it die and fall

Homeowner Recommendations

Those in the red and orange zones

Begin implementing decisions to remove or treat trees, even uninfested trees.



Chemical treatment

Homeowner Recommendations



Where Can I Go
for More
Information?



DAMAGING INSECTS & DISEASES

[Asian Longhorned Beetle](#)

[Balsam Woolly Adelgid](#)

[Beech Leaf Disease](#)

[Elongate Hemlock Scale](#) +

[Emerald Ash Borer](#) +

[Hemlock Woolly Adelgid](#) +

[Jumping Worms](#)

[Lymantria dispar \(formerly gypsy moth\)](#)

[Native Insects and Diseases](#)

[Oak Wilt](#)

[Red Pine Scale](#)

[Spotted Lanternfly](#)

[Spruce Budworm](#)

[White Pine Blister Rust](#)

[Winter Moth](#)

Damaging Insects & Diseases

There are many different damaging insects and diseases that currently threaten New Hampshire's towns and forests. Most are not native to North America and spread quickly. Please use the resources provided to learn more and how you can help combat these invasions

REPORT A SUSPECT TREE OR INSECT

RECEIVE BUG UPDATES



Insects

- [Asian Longhorned Beetle](#) >
- [Balsam Woolly Adelgid](#) >
- [Emerald Ash Borer](#) >
- [Gypsy Moth](#) >
- [Hemlock Woolly Adelgid](#) >
- [Jumping Worms](#) >
- [Spotted Lanternfly](#) >

Diseases

- [Beech Leaf Disease](#) >
- [Elongate Hemlock Scale](#) >
- [Oak Wilt](#) >
- [Red Pine Scale](#) >
- [White Pine Blister Rust](#) >

Native Insects & Diseases



Reporting Form

Use this form to report any suspected invasive insect, forest pest, or disease.

To take pictures of a fast-moving insect, slow it down by placing it in the freezer for at least an hour before taking the picture. Upload the picture(s) below. Store the insect in a tupperware-like container until you hear from us. We will either tell you to release the insect or give you instructions about mailing it, delivering it or arranging for pick-up.

Having trouble submitting a photo? Please email them to forest.info@unh.edu

CONTACT

Forestry Information Center

forest.info@unh.edu

1-800-444-8978 within New England

603-862-3883

Contact Information

FIRST NAME *

LAST NAME *

E-MAIL *

PHONE NUMBER