

Firewood and Forest Health

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- What role in forest health does firewood play?
- Is firewood a good habitat for insects and pathogens?
- What's the risk – what can be in or on a piece of firewood?
- What's at risk at this time in North America? It's not just ash trees.....



What role in forest health does firewood play?



Oak wilt pocket

- Firewood can serve as a local source of an insect or pathogen that could attack and kill a nearby tree or trees. This could lead to a small local outbreak but, if the pest is native the overall forest health impact is minor.

What role in forest health does firewood play?



- Firewood can serve as a source of long distance transport of a non-native insect or pathogen. Once introduced, this organism could spread and cause widespread damage, in some cases altering entire ecosystems.

Beech trees infected with beech bark disease

Is firewood a good habitat for insects and pathogens?



Fungal conk of a wood decay fungi

Longhorned beetle larvae



Blue Stain fungi



Is firewood a good habitat for insects and pathogens?

- **YES**

- Wood moist and fresh
- Phloem not discolored, moist
- Tight or adhering bark
- Large pieces, not split

- **NO**

- Dry-seasoned wood
- Bark off or loose
- Small pieces, split

What's the risk – what can be **in** a piece of firewood



**Asian longhorned
beetle larvae**



**Oak wilt
fungal pad**



**Emerald ash
borer larvae**

What's the risk – what can be **on** a piece of firewood ?

- Egg masses
- Pupae
- Adult insects
- Fungal spores, hyphae
- This group of organisms are referred to as shelter seekers



Gypsy moth egg masses – each egg mass has 500-1000 eggs

Insects associated with firewood

- **Wood Infesting**

- Longhorned beetles --Asian longhorned beetle
- Bark beetles – European elm bark beetle
- Flatheaded woodborers – emerald ash borer
- Wood wasps – Sirex woodwasp
- Ants, termites, powderpost beetles.....

- **Bark infesting**

- Scale insects – beech scale
- Aphids/adelgids – hemlock woolly adelgid
- **Shelter seekers**
- Gypsy moth – protective place to pupate or lay egg masses

Tree killing insects that could be moved on firewood

- Emerald ash borer
- Asian longhorned beetle
- Sirex wood wasp
- Beech scale
- Hemlock woolly adelgid
- Gypsy moth



Ash infested with emerald ash borer

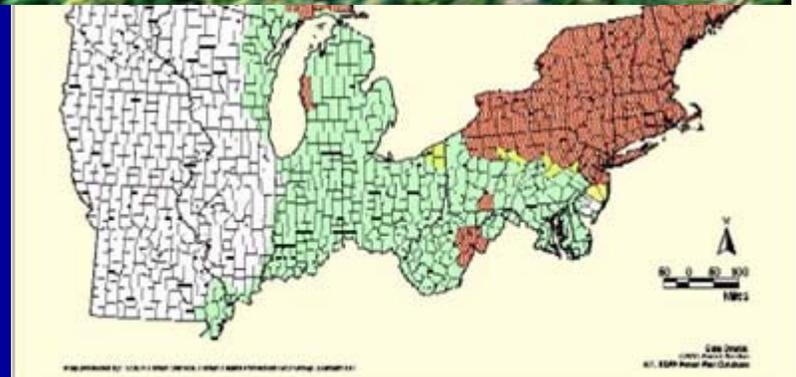
Tree killing pathogens that could be moved on firewood

- Dutch elm disease
- Oak wilt
- Beech bark disease
- Butternut canker
- Sudden oak death ?



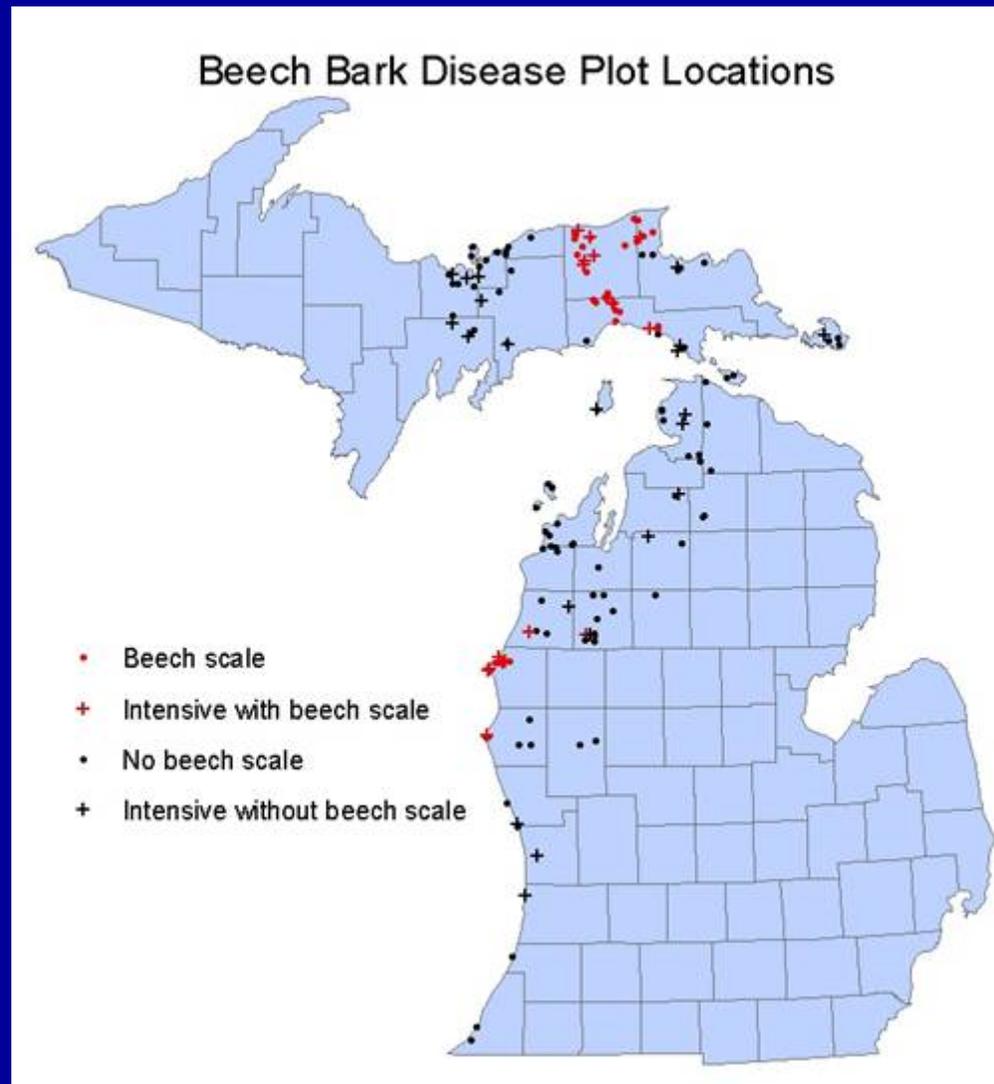
American elm dying of Dutch elm disease

What's at risk? American Beech Resource



What's at risk?

American Beech Resource



What's at risk? American Beech Resource



**Removals from Bass Lake Campground
in Luce County.**

What's at risk?

Midwest oak resource



- Gypsy moth
- Oak wilt
- Sudden oak death ?



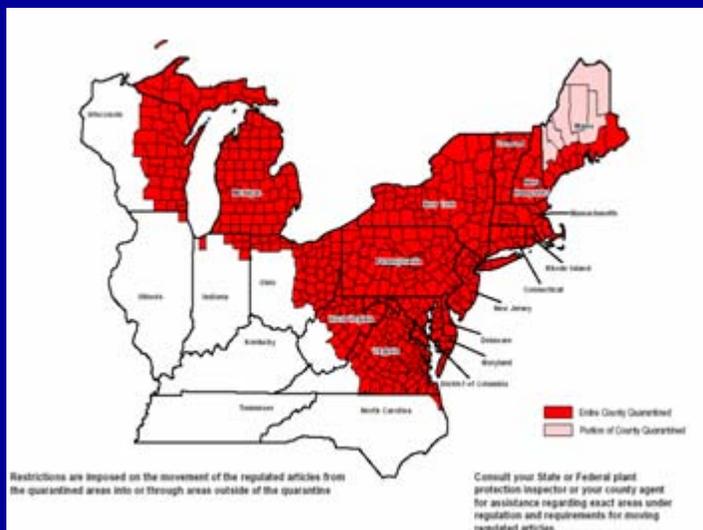
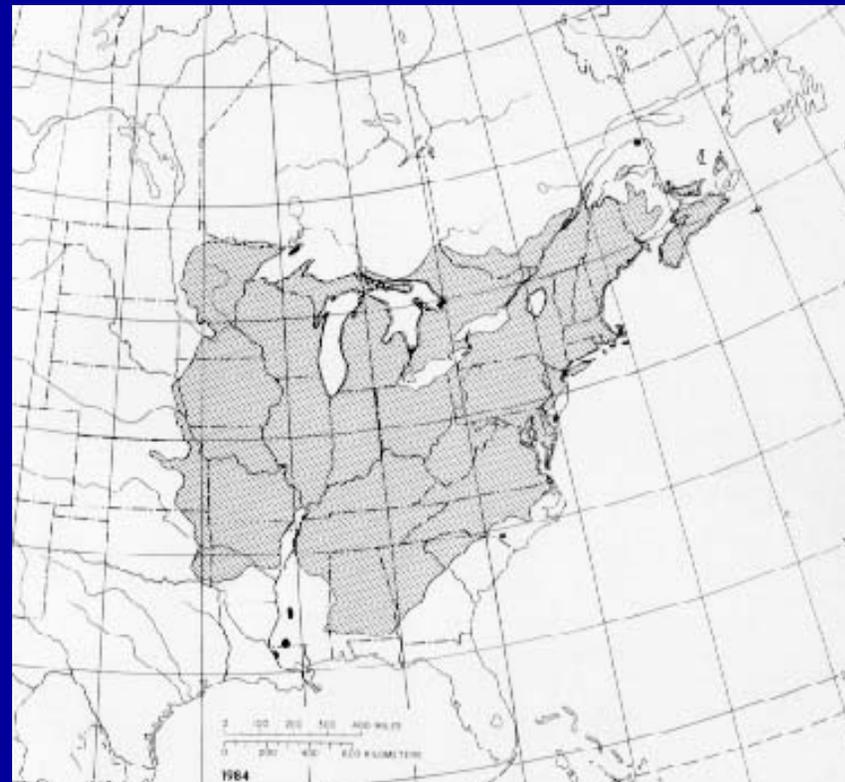
Gypsy moth females with
Freshly laid egg masses



Oak wilt fungal pad found under
the bark of a piece of oak firewood

What's at risk?

Midwest oak resource

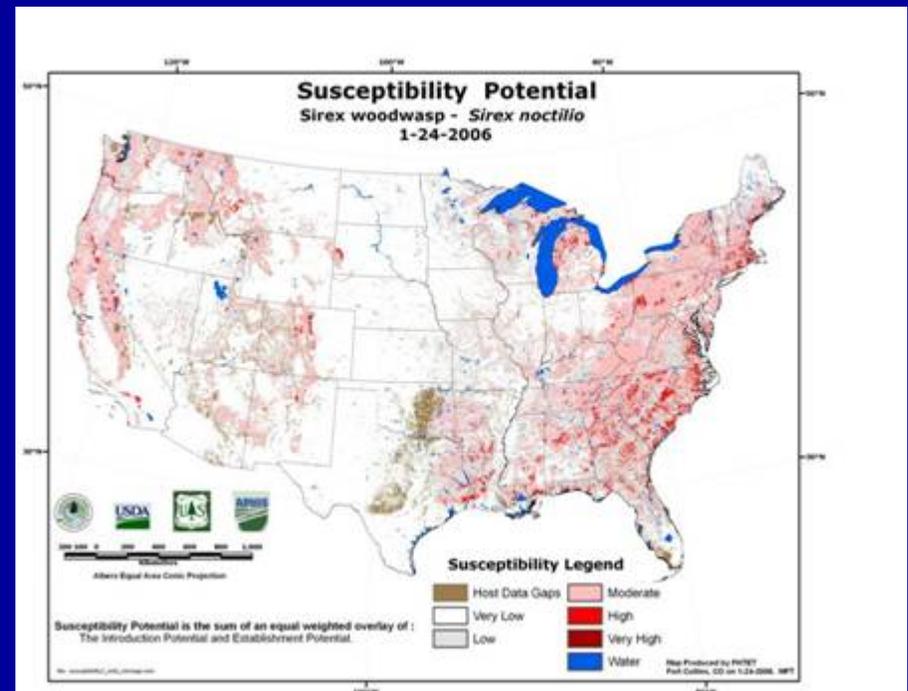


Gypsy moth distribution

What's at risk? North America's pine resource



Sirex wood wasp



What's at risk? North America's ash resource



Native Range of White Ash



Native Range of Oregon Ash



Native Range of Green



Native Range of Black Ash



Native Range of Blue Ash



Native Range of Pumpkin Ash/Red Ash



What's at risk?

North America's ash resource



Emerald ash borer larvae



Firewood with extensive emerald ash borer galleries

Is firewood ever safe to move?

- Highest risk is moving freshly cut wood that had recently died – bark is still tight
- Lower risk is moving well seasoned firewood that has been split and the bark is loose
- Firewood hitchhikers – gypsy moth egg masses or pupae are always a concern