Emerald Ash Borer
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Introduction

- Most economically damaging pest in North America
- Asian origin
  - Natural range=eastern Russia, northern China, Japan, and Korea
  - Discovered in Detroit, MI in 2002
  - Likely arrived from cargo in ships or for packing/crating
- Established in **25 states** and two Canadian provinces
- Cannot be eradicated once it has become established
  - Difficulty of detecting and delineating infestations
**Damage symptoms**

- Canopy dieback visible when 25-35 adults present
- Cracks in the bark
- Epicormic sprouting
- D-shaped exit holes
- Woodpecker damage
Native Green Ash
Urban Green Ash in Montana

- Planted extensively in urban settings in Montana
- Increased in importance as elm died from Dutch elm disease
- Major component of urban forest canopy on public and private property
- Has volunteered on adjacent areas from seed which has increased its urban impacts
- Major provider of environmental services in our cities

<table>
<thead>
<tr>
<th>Community</th>
<th># of Ash Trees</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bozeman (2010-2013)</td>
<td>4,912</td>
<td>47</td>
</tr>
<tr>
<td>Billings (2010)</td>
<td>1,893 parks</td>
<td>23</td>
</tr>
<tr>
<td>Missoula (2012-2014)</td>
<td>2,588</td>
<td>12</td>
</tr>
<tr>
<td>Helena (2010)</td>
<td>5,551</td>
<td>60</td>
</tr>
<tr>
<td>Columbus (2014)</td>
<td>818</td>
<td>68</td>
</tr>
<tr>
<td>Conrad (2014)</td>
<td>795</td>
<td>66</td>
</tr>
<tr>
<td>Dillon (2011)</td>
<td>494</td>
<td>63</td>
</tr>
<tr>
<td>Kalispell (2008-2009)</td>
<td>647</td>
<td>7</td>
</tr>
<tr>
<td>Ft. Benton (2012)</td>
<td>575</td>
<td>65</td>
</tr>
<tr>
<td>Livingston (2009-2014)</td>
<td>3,546</td>
<td>46</td>
</tr>
<tr>
<td>Laurel (2011)</td>
<td>2,292</td>
<td>68</td>
</tr>
<tr>
<td>Lewistown (2012)</td>
<td>1,489</td>
<td>56</td>
</tr>
<tr>
<td>Total (58 communities)</td>
<td>38,703</td>
<td>29</td>
</tr>
</tbody>
</table>
As of today, EAB is **NOT KNOWN** to be established in the state of Montana.

The first steps for Montana:
- Conduct EAB outreach to educate the public
- Conduct detection survey work in an attempt for early detection
How is EAB spread?

- On its own, ~ 10 miles/yr
- EAB is very resourceful and actually uses the available trees before they move further out in an area
- Artificial movement by people is the biggest way in which EAB is spread
- How is EAB artificially moved by people?
What happens if/when EAB is found in Montana?

- A state quarantine will be put in place for intrastate movement of regulated articles
- A federal quarantine will be put in place for interstate movement of regulated articles
Monitoring/Detection

- Initially establishes in low numbers
- Newly infested trees typically asymptomatic
- EAB adults do not produce long distance pheromones
  - Locate host through volatiles of stressed trees and color
    - Artificial bait traps not highly effective for early detection
- Destructive branch sampling
Management Options

- Education
- Inventory/Assessment
- Management plan
- Removal
- Replacement
- Treatments
Treatments

- Select only healthy trees in appropriate growing sites for treatment
- Treatment options (active ingredients)
  - **Emamectin benzoate (Tree-Age)**
    - Can bring back trees that have been infested for 2+ years
    - In some cases, have brought back trees with greater than 50% canopy loss
    - At least two years of control
  - Other control options
    - Permethrin - Bifenthrin
    - Imidacloprid - Cyfluthrin
    - Dinotefuran - Azadirachtin
    - Carbaryl

- *NCP-IPM EAB Insecticide Bulletin_2nd edition*
Questions?

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