Emerald Ash Borer: Forest Management Considerations

NATHAN W. SIEGERT, PH.D.
FOREST ENTOMOLOGIST

US FOREST SERVICE
NORTHEASTERN AREA
STATE & PRIVATE FORESTRY
FOREST HEALTH PROTECTION
Management tools are available:

- *Insecticide applications*
- *Establishment of biological control agents*
- *Girdled trees used as population sinks or to manipulate spread*
- *Targeted removal of ash trees to reduce emergence of EAB adults*
Targeted Ash Removal
Y = 0.024x² – 0.307x + 2.63
\( r^2 = 0.94 \)

- Total phloem area can be estimated from DBH
- Potential EAB production predicted

Overall, trees tend to produce about 100 EAB adults per m$^2$.

<table>
<thead>
<tr>
<th>DBH class (in)</th>
<th>1-5</th>
<th>6-10</th>
<th>11-17</th>
<th>18-23</th>
<th>&gt;23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ± SE</td>
<td>69 ± 6</td>
<td>108 ± 10</td>
<td>106 ±10</td>
<td>102 ±9</td>
<td>94 ± 11</td>
</tr>
<tr>
<td>95% CI</td>
<td>57-81</td>
<td>87-129</td>
<td>83-129</td>
<td>80-124</td>
<td>59-129</td>
</tr>
</tbody>
</table>

- 12 sites: 70,266 ash trees inventoried.
- While all sites were dominated by small trees (77.9 ± 2.4%), they only accounted for 14.3 ± 2.3% of the potential EAB population.
- Large (merchantable) trees comprised 6.2 ± 1.0% of the ash inventory, but accounted for 52.3 ± 4.6% of the potential EAB.
- Sites ranged in size from 40 to 560 ac and were forest, swamp, floodplain and suburban.

(Siegert et al., unpubl. data)
Overall

- 49.7 ± 4.6% phloem reduction
- 6.2 ± 1.0% stem reduction
- 52.3 ± 4.6% potential EAB

(Siegert et al., unpubl. data)
EAB Risk Assessment

- Proximity to known EAB infestations (>10 mi = low risk; <10 mi = higher risk of invasion in the next 5 yrs).

- Highly dependent on human-aided movement of EAB-infested material.

- Potential economic impacts dependent on inventory.
  - Low = most ash <12” dbh
  - Mod = most ash >12” dbh, but low % of stand
  - High = most ash 12-18” dbh & high % of stand
  - Highest = most ash >18” dbh & high % of stand
Do Nothing (and EAB invades)

- All ash present will likely die, with dead, standing trees typically lasting 5-10 yrs (hazard trees and wildlife trees).

- Most economic value from ash will be lost (more larger-sized ash = higher potential $$$ losses).

- Desirable tree regeneration may be affected (invasive species could dominate).

- EAB population will build rapidly & spread at higher rate.
If Potential Economic Damage is Low

- Consider thinning ash (firewood and pulpwood) to shift stand to best residual (non-ash) trees.

- Harvests are likely to create gaps and openings, the size of which may depend on ash distribution.

- Openings may need to be monitored and/or treated for intended regeneration.
If Potential Economic Damage is High

- Consider harvesting high-value ash (sawlogs) and low-quality residual non-ash trees to favor desirable species and quality trees.

- Emphasis on the residual trees would be necessary.

- Development of a regeneration plan would be critical (natural regeneration may be limited).
In Summary

- Assess EAB risk (proximity and potential losses).

- Conduct ash inventory, evaluate potential EAB impacts, and determine management objectives.

- Consult a professional forester to develop and implement management strategy.

- Premature to target ash beyond known infestations. Stick to harvest entry schedule. However, consider harvesting high-value ash if in stands now and don’t expect to return for 10-15 years.