Division of Forestry – Black Ash Adaptation Project

Operational-scale climate adaptation approaches and partnerships

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1/22/2020  MN Climate Adaptation Conference – “Crossing Boundaries – Sparking Collaboration”
Department Ash effort

Department shift to address black ash in 2016:

- EAB spread into Minnesota
- States to the east actively managing damaged ash resource
- Forest products industry accepting more ash pulpwood
- Forest research community established foundational study
Department climate change effort

Department policy in 2018 to address climate change:

- Training
- Adaptation strategies
- Mitigation strategies
- Communication
- Cooperation

DNR webpage:
https://www.dnr.state.mn.us/climate/climate_change_info/index.html
The emerald ash borer (Agrilus planipennis) EAB, is a destructive wood-boring pest of ash trees (Fraxinus spp.). It kills all species of ash, healthy or stressed.

- Initial discovery in southeast Michigan in 2002
- Today, EAB infestations have been detected in 35 states
Emerald Ash Borer

- Discovered in St. Paul neighborhood in 2009
- Infestation was about 4 years old
- Is spreading – slowly...urban centers, SE MN, Twin Cities, St. Cloud, Duluth
Black ash resource

- 1.2 billion ash trees in state
- More than 30 percent of our community trees
- More than 1 million acres of black ash-dominated (*Fraxinus nigra*) cover type
- 7 percent of Minnesota’s forests
- Important for wildlife
- Predicted climate “loser” with expected declines in habitat suitability
Black ash resource Issues

- Remote, frozen ground access only
- Low merchantable volume/stumpage values - $6-7/cord
- Few markets
- Hydrological concerns and swamping risk
- Replacement species difficult to establish naturally or artificially
Adaptation strategies

- Resistance
- Resilience
- Transition

Encourage resilience/transition strategies

Millar et al. 2007
DNR adaptive management – black ash case study monitoring

Partnerships

Black Ash Reforestation Projects as of 2019
DNR adaptive management – black ash case study monitoring

Replacement Species -  
(1-2 year results)

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<td><strong>1.</strong> Swamp White Oak</td>
<td><strong>6.</strong> Black Spruce</td>
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<td><strong>2.</strong> Bur Oak</td>
<td><strong>7.</strong> Silver Maple</td>
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<td><strong>3.</strong> Balsam Poplar/ Trembling Aspen</td>
<td><strong>8.</strong> Cottonwood/ Hackberry</td>
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<td><strong>4.</strong> Paper Birch</td>
<td><strong>9.</strong> Red Maple</td>
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<td><strong>5.</strong> Balsam Fir</td>
<td><strong>10.</strong> Yellow Birch</td>
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DNR next steps

- Monitor and track prescriptions
- Complete regeneration case study assessment and evaluation at age 5
- Accelerate amount and distribution of plantings, cuttings, and seeding projects
- Present findings, update guidelines
Great Lakes Restoration Initiative (GLRI) accelerates efforts to protect and restore the largest system of fresh surface water in the world.

- Treat 100 acres on 5-10 sites, planting approximately 400-1000 trees/acre depending on native plant community and current vegetation composition.
Partnerships take-away

• Creative solutions to address forest resource challenges

• Leverage resources – field sites, grant writing, data collection, monitoring and communication

• Build and foster relationships between foresters, natural resource specialists, managers, and the research community

• Grants often funded when we work together! 😊
DNR adaptive management – “living with EAB”

Landscape perspective:

✓ Focus on ecosystem health and hydrology, not on EAB
✓ Keep forested sites forested; minimize impacts to habitat and biodiversity

Stand perspective:

✓ Adaptive management practices that:
  • match silviculture system with natural disturbance regime... where feasible – partial harvests, minimize clearcutting
  • increase tree species diversity (harvest, live-staking, seeding, planting)
Acknowledgements

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• Numerous organizations for research, partnership and collaboration
EAB will eventually spread across the vast majority of Minnesota and kill ash. It will take years to decades for this to happen.

Extreme and prolonged cold weather (-20°F to 30°F) can kill EAB larvae, but moving infested firewood is the major cause of spread to new locations.

Without tree cover, water tables can rise to the point where you have an ecosystem state change from a forested wetland dominated by trees to a wetland dominated by shrubs, sedges and grasses.

Economics will make it difficult to use timber harvest of ash to favor other species that will replace ash due to low volume per acre and low demand.

We can expect to see a shift in plant diversity especially on sites, especially with significant overstory tree removal. Habitat alteration will likely impact most wildlife species.

Prioritize silviculture strategies that promote natural and artificial regeneration mixtures of non-ash species in ash stands near EAB mortality centers (~50 miles). Live staking, seeding, and hand planting combinations can be successful, but will take time, commitment and funding.

Observations/surveys indicate balsam poplar, trembling aspen, swamp white oak, bur oak, spruce, silver maple and cottonwood as replacement species at a forest stand level scale.