

# Silvicultural options for black ash communities in the face of EAB



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# Overview



- Identify objectives for black ash systems
- Silvicultural approaches to meet these objectives
- Silvicultural and ecological implications of phloem reduction
- Final thoughts on silviculture within these systems

# Updated definition of silviculture



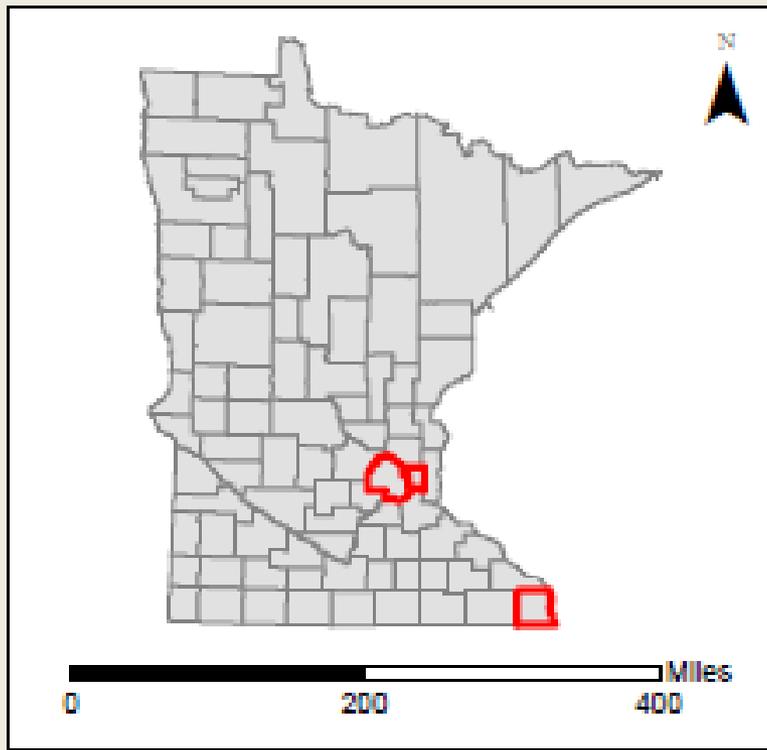
- The art and science of using phloem reductions and associated treatments to meet the diverse needs and values of landowners and society on a sustainable basis



# Black Ash and EAB in MN



- We need to start planning for EAB from a silvicultural stand point, but should bear mind that we are managing black ash communities, not just EAB



# Objectives for black ash systems



- In the face of EAB, two prevailing objectives for northern black ash systems

- 1) Build site-level resilience (i.e., how do we hold the site?)

- Lowland ash systems (WFn55 and WFn64)

- 2) Reduce potential impacts/spread of EAB

- All communities with black ash

# Building site-level resilience



# Building site-level resilience



- Upland forest types
  - Depending on community, many players in place to replace black ash
    - Sugar maple, aspen, balsam fir, red maple....



# Building site-level resilience



- Lowland forest types
  - Natural regeneration of substitute species likely insufficient (the reason we're worried)



# Building site-level resilience



- Considerations for planting lowland forest types
- Where do we plant?
  - Microsite conditions will be critical
    - Need to be opportunistic
      - » Good planting spots versus rigid spacing
- When do we plant?
  - Is fall our only option during most years?



# Building site-level resilience



- Considerations for planting lowland forest types
- What do we plant?
  - Potential candidate species for planting on mucky mineral soils (i.e., WFn55) – no standing water in late summer
  - Quaking aspen (2)- if present in the stand or adjacent areas



# Building site-level resilience



- What do we plant?
  - Potential candidate species for planting on mucky mineral soils (i.e., WFn55) – no standing water in late summer
    - Yellow birch (3) and northern white cedar (4)



# Building site-level resilience



- Browse protection will be crucial for all species, particularly cedar



# Building site-level resilience



- Lowland forest types
  - Potential candidate species for planting on peaty soils (i.e., WFn64) – standing water throughout growing season
    - Tamarack (2), quaking aspen (3), white cedar (4), yellow birch (5)





# Building site-level resilience



- Nurse tree (nurse crop) shelterwood system:
  - Use ash overwood to maintain hydrologic conditions for underplanting replacement species
  - Timing of removal will depend on tolerance (light and flooding) of replacement species



# Building site-level resilience



- Regeneration methods
  - Selection-based systems:
    - Group selection for mid- to shade tolerant replacement species
    - Larger (0.5-0.75 acre) groups (patch selection) for intolerants to mid-tolerants



# Building site-level resilience



- Release treatments
  - How do we deal with ash stump sprouts?
    - Suggest retaining some clumps for resistance potential and insurance (i.e., what if our plantings fail?)



# Building site-level resilience



- Release treatments
  - Potential for high levels of woody and herbaceous competition
  - Mechanical treatments
  - Operational limits and environmental concerns dictate hand applications of herbicides (e.g., glyphosate)



# Reducing impacts and spread



- Part of reducing impacts is creating site resiliency
- Once an infestation occurs or is in the local area:
  - SLAM and other integrated pest management techniques



USDA Forest Service

# Phloem reduction



# Phloem reduction



- We may know little about black ash silviculture, but we know a ton about the effects of phloem reductions (i.e., diameter-limit cuttings) applied as a silvicultural practice



USDA United States Department of Agriculture  
Forest Service  
Northeastern Area  
State and Private Forestry  
NA-TP-02-05  
August 2005



**Diameter-Limit Cutting and Silviculture in Northeastern Forests:**  
*A Primer for Landowners, Practitioners, and Policymakers*



# Phloem reduction



- From Nyland (2007): “Diameter-limit cutting:
  - Removes the most vigorous trees, leaving defective and poor-vigor trees smaller than the target diameter
  - Includes no deliberate provisions for regenerating a new age class of desirable species or for improving quality or controlling species composition

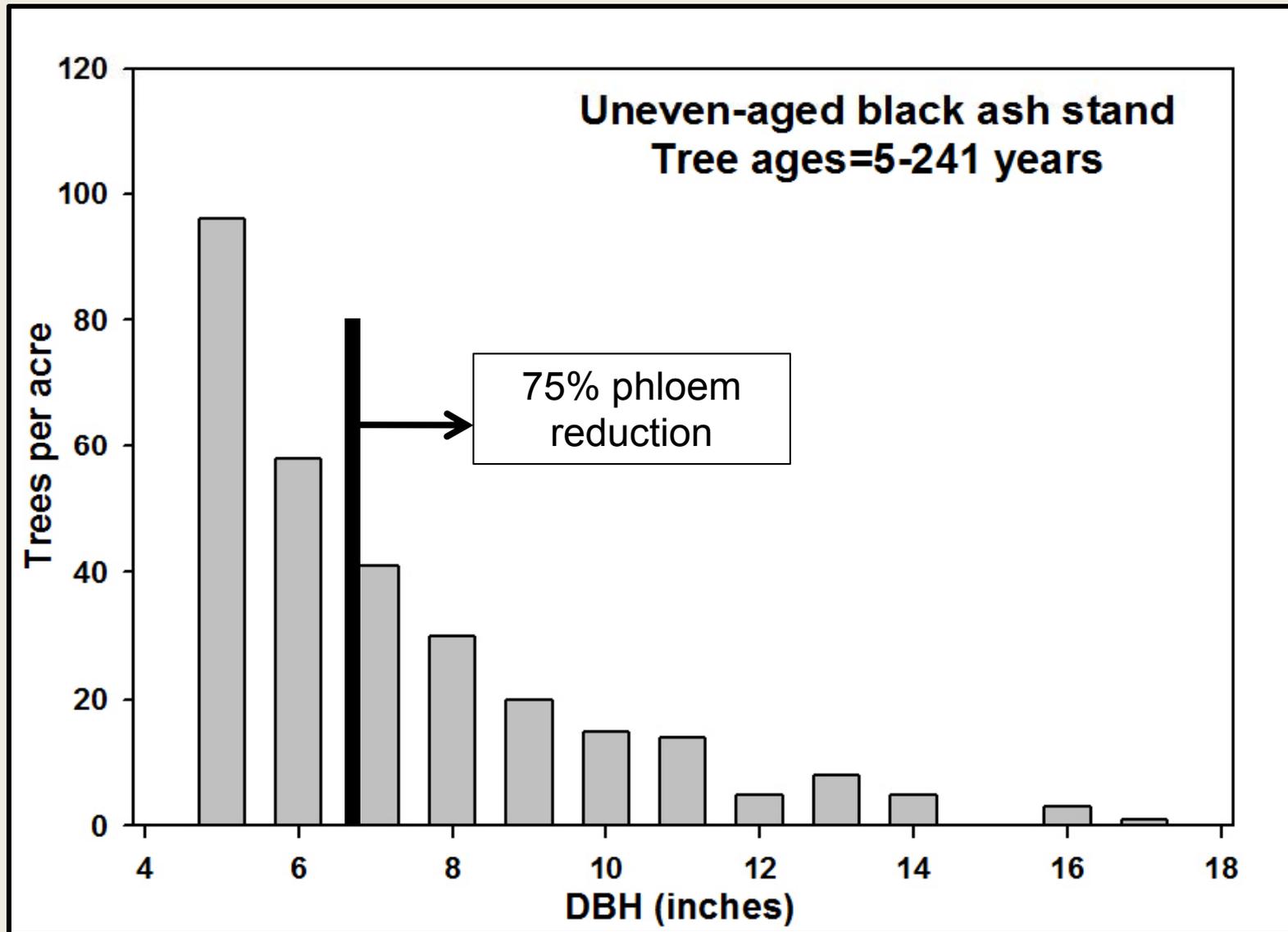
## **Diameter Limit Cutting — A Questionable Practice**

James Rickerd, Woodland Forester, Idaho Department of Lands,  
Don Hanley, Extension Forester

# Phloem reduction



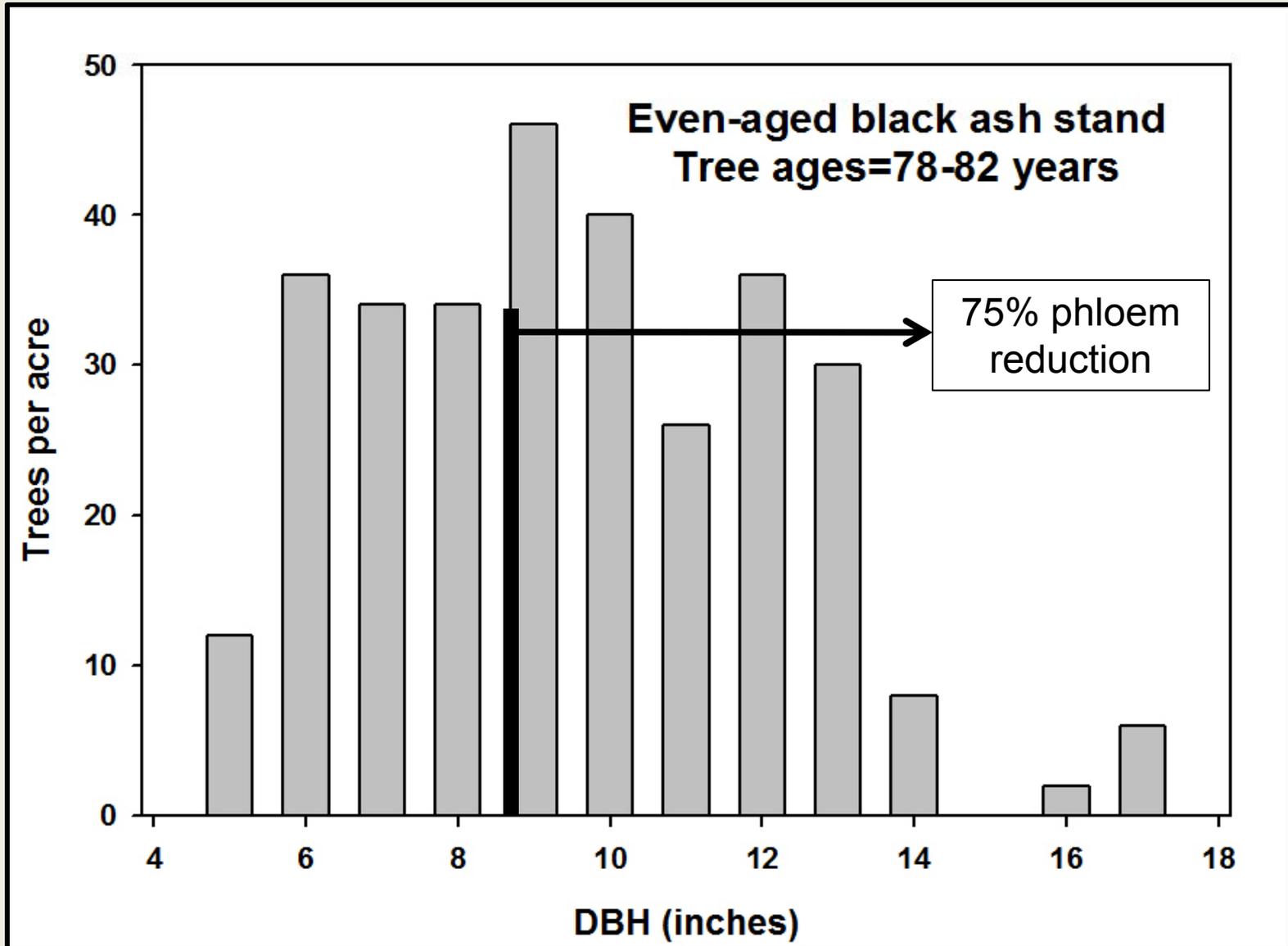
From Erdmann et al. (1987)



# Phloem reduction



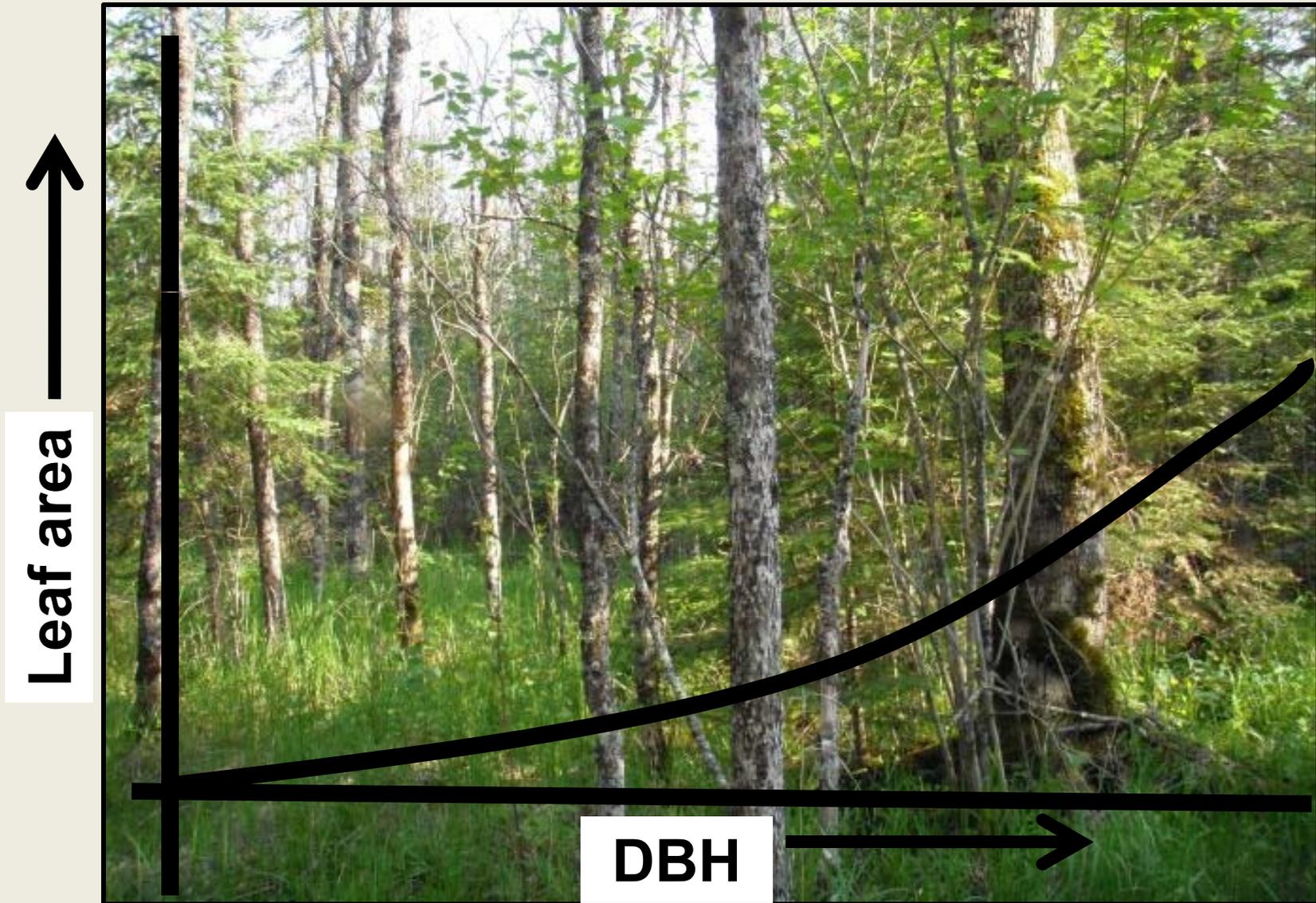
From Erdmann et al. (1987)



# Phloem reduction



## Leaf area – DBH relationships



# Final thoughts



- There is still time to practice silviculture in these forests before we focus exclusively on the insect
- Nonetheless, these efforts are currently hampered by lack of experience with encouraging non-ash species on these sites
- Great need for formal and operational experimentation to build silvicultural knowledgebase
  - Record keeping/sharing and use of site classification

# Final thoughts



- Economics of treatments and black ash markets will force a prioritization of stands based on ecological and cultural importance
- Things look grim for black ash, but maintaining these systems in a forested state keeps future options open for this species



# Thanks!

