

## **MAINTAIN WFn55 FORESTS AS WOULD SENESCE, DISEASE, OR SELECTIVE WINDTHROW TO CREATE SMALL GAP HABITAT**

Emulating fine-scale disturbance to favor black ash, American elm, red maple, yellow birch, balsam fir, green ash, basswood, or northern white cedar.

The primary goal when maintaining a WFn55 forest using this strategy is to create small gaps ranging from the space occupied by a single tree or groups of trees up to 0.25 acres over advance regeneration of black ash, northern white cedar, yellow birch, red maple or other naturally occurring tree species. The silvicultural focus is to recruit tolerant, high quality stems through episodic small gap creation using selection harvest.

### **Small Gap Concept**

Mature WFn55 forests were maintained by fine scale disturbances that killed individual trees or groups of trees, thus creating small-gap habitat. Natural senescence, disease pockets, accumulated wounding and subsequent rot, and pockets of deep and unstable peat could all result in fine-scale disturbance that ultimately was manifest as windthrow. Such events 1) released advance regeneration strongly dominated by black ash but included American elm, red maple, yellow birch, balsam fir, green ash, basswood, and northern white cedar, 2) created future nurse logs that especially encouraged yellow birch and northern white cedar establishment, and 3) created deep cradles that functioned as treeless pools for decades.

### **Silviculture Prescription (see table on next page)**

- favor non-ash species for natural regeneration
- increase or introduce non-ash replacement species via artificial regeneration
- reduce the black ash canopy by creating small gaps to 50-60 square feet per acre of basal area
- cull low-value or poor-quality trees and leave as potential nurse logs
- retain a legacy of dominant or co-dominant, black ash to help regulate water table response and favor retention of healthy, non-ash trees suitable to WFn55 sites

### **Photo**

Figure 1. Small gap (left) and strip harvest (right) in mature WFn55 native plant communities.



<b>Small Gap Silviculture Prescription Summary Table</b>
<p><b>Objective:</b></p> <ul style="list-style-type: none"> <li>• two- or uneven-aged forest; growth and production on quality residual trees</li> </ul>
<p><b>Species Favored:</b></p> <ul style="list-style-type: none"> <li>• black ash to control water table response</li> <li>• quaking aspen, yellow birch, northern white cedar, red maple, balsam poplar, paper birch, balsam fir, basswood, American elm, white pine, black spruce, bur oak, and white spruce as desirable components</li> </ul>
<p><b>Species to Diminish:</b></p> <ul style="list-style-type: none"> <li>• none because black ash is the superior competitor and site dominant</li> <li>• any tree that is damaged, of poor form or low value</li> </ul>
<p><b>Canopy Removal Gap Size:</b></p> <ul style="list-style-type: none"> <li>• 0.10 -0.25 acre – emulate single tree or group selection silvicultural systems</li> </ul>
<p><b>Legacy Considerations:</b></p> <ul style="list-style-type: none"> <li>• protection of black ash advance regeneration</li> <li>• retention of all non-ash trees as seed trees</li> <li>• crown release of selected tolerant trees if present</li> <li>• preserving at least 70% of the forest floor</li> </ul>
<p><b>Management Concerns and Risk:</b></p> <ul style="list-style-type: none"> <li>• soils are weak and inoperable unless frozen solid. Springheads and seeps may never freeze enough for heavy equipment</li> <li>• rutting risk is very high due to constant saturation. Ruts are almost certain to channel moving surface water. Hydrology could change in unpredictable and possibly dramatic ways</li> <li>• groundlayer diversity is linked to microtopography of the forest floor, minimize disturbance during operations</li> </ul>
<p><b>Site Preparation:</b></p> <ul style="list-style-type: none"> <li>• none</li> </ul>
<p><b>Species for Artificial Regeneration or Seeding:</b></p> <ul style="list-style-type: none"> <li>• potential species: balsam poplar, swamp white oak, hackberry, silver maple, trembling aspen, red maple, bur oak, disease resistant elm, yellow birch, tamarack, northern white cedar, white spruce, and black spruce</li> <li>• techniques: hand planting (before or after harvesting), live staking, and direct seeding</li> </ul>
<p><b>Future Actions:</b></p> <ul style="list-style-type: none"> <li>• evaluate the tree and hydrologic response within the first 3 years after treatment</li> <li>• schedule a regeneration survey at age 3 for stands with natural regeneration and at age 1 for planting/live staking and age 5 for direct seeding</li> <li>• consider crop tree selection, cleaning, release, thinning, or stand improvement. Planting can follow any entry</li> </ul>
<p><b>Case Studies:</b></p> <ul style="list-style-type: none"> <li>• NA</li> </ul>
<p><b>Literature:</b> refer to I:\FOR\Ash Management\Literature for a compilation of research papers</p>