

RE-INITIATE WFn55 FORESTS AS WOULD SEVERE WINDTHROW TO CREATE OPEN TO VERY LARGE GAP HABITAT

Emulating stand-replacing windthrow to favor black ash, quaking aspen, paper birch, green ash, or balsam poplar.

The primary goal when maintaining a WFn55 forest using this strategy is to remove most of the mature canopy in large gaps to avoid hydrologic swamping that would favor non-tree vegetation (e.g., cattails, lake sedge, etc.). The silvicultural focus is on restoring understocked sites to a fully-stocked forest that, at maturity, can be maintained using the less-risky large or small-gap strategy.

Open (Large-gap) Concept

Sometimes severe windstorms would flatten WFn55 forests by toppling the largest and tallest trees on a weak substrate to create open to very large-gap habitat. Such events 1) selected against wind-susceptible trees like quaking aspen, balsam fir, and balsam poplar, 2) 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, 3) encouraged some recruitment of less-tolerant trees such as paper birch and quaking aspen, 4) created future nurse logs that especially encouraged yellow birch and northern white cedar establishment, 5) created deep cradles that functioned as treeless pools for decades, and 6) released rough alder and other wetland shrubs capable of delaying the recovery of the forest.

Silviculture Prescription Highlights (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 to 10-40 square feet per acre of basal area
- retain a legacy of pole size black ash to help regulate water table response and favor retention of healthy non-ash trees suitable to WFn55 sites

Photo

Figure 1. Clearcut with scattered reserves in mature ash WFn55 native plant community.



Open (Large-Gap) Silviculture Prescription Summary Table
<p>Objective:</p> <ul style="list-style-type: none"> • even-aged forest with patches, clumps and/or scattered residuals
<p>Species Favored:</p> <ul style="list-style-type: none"> • black ash to control water table response • 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
<p>Species to Diminish:</p> <ul style="list-style-type: none"> • none because black ash is the superior competitor and site dominant • any tree that is damaged, of poor form, or low value
<p>Canopy Removal Gap Size:</p> <ul style="list-style-type: none"> • 0.50-1+ acre – emulate clearcut with reserves or seed tree silvicultural system
<p>Legacy Considerations:</p> <ul style="list-style-type: none"> • protection of black ash advance regeneration • retention of all desirable non-ash trees as seed trees • preserving at least 70% of the forest floor
<p>Management Concerns and Risk:</p> <ul style="list-style-type: none"> • soils are weak and inoperable unless frozen solid. Springheads and seeps may never freeze enough for heavy equipment • 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. • swamping may occur with large canopy removal (greater than 4 acres clear gap or 60% of canopy), especially if advance regeneration isn't dense, large or well distributed enough to transpire significant amounts of water • if rough alder, bluejoint grass, fowl manna grass, or lake sedge are abundant, harvest may result in conversion to non-forest. • groundlayer diversity is linked to microtopography of the forest floor, minimize disturbance during operations
<p>Site Preparation:</p> <ul style="list-style-type: none"> • although not a common practice, consider trenching and mounding for artificial planting or seeding
<p>Artificial Regeneration</p> <ul style="list-style-type: none"> • 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 • techniques: hand planting (before or after harvesting), live staking, and direct seeding
<p>Follow-Up Actions:</p> <ul style="list-style-type: none"> • evaluate the tree and hydrologic response within the first 3 years after treatment • 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 • consider crop tree selection, cleaning, release, thinning, or stand improvement. Planting can follow any entry
<p>Case Studies:</p> <ul style="list-style-type: none"> • NA
<p>Literature: refer to I:\FOR\Ash Management\Literature for a compilation of research papers</p>