MAINTAIN WFn64 FORESTS AS WOULD SELECTIVE WINDTHROW BY REMOVAL OF INITIAL-COHORT TREES IN LARGE GAPS

Emulating selective windthrow to favor black ash, green ash, yellow birch or American elm

The primary goal when maintaining a WFn64 forest using this strategy is to remove a portion of the mature canopy in large gaps and avoid hydrologic swamping that would favor non-tree vegetation (e.g., cattails, lake sedge, etc.). The silvicultural focus is to establish a fully-stocked forest through episodic creation of large-gaps to release and recruit high-quality, mid-to shade-tolerant advanced regeneration.

Large Gap Concept

Windthrow commonly maintained large-gap habitat in WFn64 forests by selectively toppling the largest and tallest trees on a weak substrate. Such events 1) selected for yellow birch, green ash, and red maple as wind-firm residuals, 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) created future nurse logs that especially encouraged yellow birch and northern white cedar establishment, and 4) created deep cradles that functioned as treeless pools for decades.

Silviculture Prescription Highlights (see table on next page)

- favor non-ash species for natural regeneration
- introduce non-ash replacement species via artificial regeneration
- reduce the black ash canopy to 40-50 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 WFn64 sites

Photo

Figure 1. Seed tree harvest with reserves and release of advanced regeneration in mature WFn64 native plant community.

Large-Gap Silviculture Prescription Summary Table
Objective: • even- or two-aged forest, with patches, clumps and/or scattered seed-tree residuals. Release of advanced understory regeneration or poles if present.
Species Favored: • 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
Species to Diminish: • none because black ash is the superior competitor and site dominant • any tree that is damaged, of poor form or low value
Canopy Removal: • 0.25-0.50 acre – emulate patch or strip clearcut with reserves silvicultural system
Legacy Considerations: • protection of black ash advance regeneration • retention of all desirable non-ash trees as seed trees • preserving at least 70% of the forest floor
Management Concerns and Risk: • 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 • 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
Site Preparation: • although not a common practice, consider trenching and mounding for artificial planting or seeding
Species for Artificial Regeneration or Seeding: • 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
Future Actions: • 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
Case Studies: • NA
Literature: refer to I:\FOR\Ash Management\Literature for a compilation of research papers