

Conversion strategy of the aspen covertime to long-lived species on the clay plain

In the Lake Superior Clay Plain, there is an opportunity to work with the aspen covertime in some stands and gradually convert to other types. Though the common silviculture method to maintain aspen is by the coppice method (clearcut), landowners would have other options to manage these stands if the specific conditions are present. The attached stand conversion flowcharts suggest alternatives for converting the aspen covertime to another cover type with a majority of long-lived species such as white pine, sugar maple, basswood, yellow birch, or white ash. In addition, the conversion from aspen to red maple is outlined. Though many areas on the clay plain are comprised of a mix of species, the species covertime, defined in the WDNR Silviculture Handbook, comprises 50% or more of basal area in that species in the stand. With these conversion strategies, aspen will still be a component of the stand but eventually as a minor species.

The models outline initial considerations in the management plan process and integrate the use of silvics, site capabilities (soil, habitat type, competition, regeneration, successional pathways), methods (timing/sequence), and timeline at growth stages under ideal conditions. The management alternatives are designed to promote the optimum vigor of the tree species with sawtimber as an objective as referenced in the WDNR Silviculture Handbook. Sustainable forestry practices must be based on compatible landowner objectives, the capability of each site and generally accepted silvicultural practices. Each of these factors should be considered when approaching this model.

Outlining the decision criteria is important in this or any silviculture recommendation and they are:

1. Landowner goals and objectives: timber, wildlife, economics, aesthetics, ETS
2. Site capability: soils, habitat type, site index, geology, topography (slope, slope position, and aspect)
3. Stand Assessments: overstory and understory composition, structure and health, stand age, SI, Rotation age (aspen), crown closure
4. Silvicultural potentials: site character, stand condition, silvics, growth potential, successional pathway, disturbance regimes, regeneration, seedbed characteristics
5. Special considerations: watershed, BMPs, ETS, Archeology, landscape, "swamping" potential
6. Methods: timing, sequence, intensity

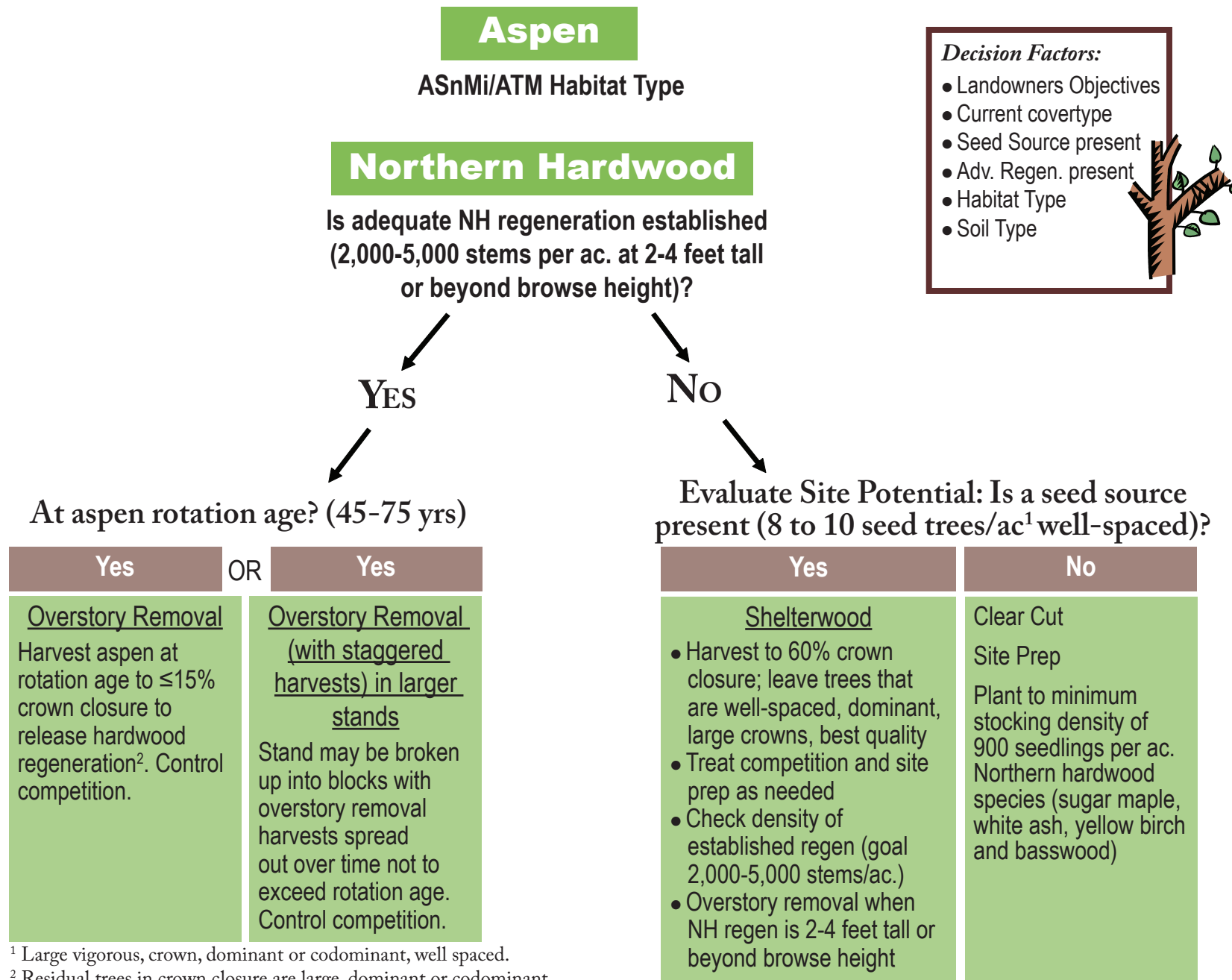
When writing a silviculture prescription, it is important to understand the silvical characteristics of these long-lived species such as white pine, northern white cedar and the northern hardwood mix of sugar maple, basswood, white ash, yellow birch. Other species such as red maple, balsam fir, white spruce and paper birch are not considered long-lived species though they occur on the clay plain as transitional species in the successional pathway of these stands. These species will be present to a greater or lesser degree. The silvics of the species and ecological capability can be referenced in the WDNR Silviculture Handbook.

How to use this flowchart? The conversion model suggests a standard by asking first if adequate desired regeneration is present or seed source is present; otherwise, there are very limited options. When considering a desired future stand type, adequate stocking levels for the desired species should be present. Recommended stocking levels are mentioned in some of the covertime chapters and also in this flowchart. The recommended stocking levels account for stems lost or damaged during the overstory removal, for height competition and for stem exclusion. For more detail, see the applicable chapter in the silviculture handbook.

Other considerations to keep in mind with implementation of standard silvicultural methods are necessary steps recommended in order to increase the success of conversion, i.e. controlling competition, site preparation to expose mineral soil, proper crown closure, monitoring regeneration success. In the conversion process, aspen suckers will need to be treated using chemical or mechanical methods (see Silviculture Handbook chapter 21). For the shelterwood method, it is recommended that the residual trees left in the crown closure are dominant or codominant trees that have large crowns and are well spaced. The same recommendations apply to the seed tree method as well. As the stand matures, additional efforts need to occur. *Tending* the underplanted white pine stock is needed to nurture and release its growth. Deer browse protection measures are highly recommended (fencing, tree shelters, liquid deterrent).

Timeline for the conversion process is not an exact science. Under ideal conditions, converting from aspen to a mature, sawlog white pine stand could take several rotations. The methods take time, effort and money, and a commitment from the landowner and manager.

Conversion Decision Model: Aspen to Northern Hardwood Covertypes



Conversion Decision Model: Aspen to PW Covertypes

Aspen

ASnMi Habitat Type

White Pine

Is the desired regeneration established? 700 or more stems/ac white pine at 5 ft. or beyond browse height

YES

No

Decision Factors:

- Landowners Objectives
- Current covertype
- Seed Source present
- Adv. Regen. present
- Habitat Type
- Soil Type



At aspen rotation age? (45-75 yrs)

Evaluate Site Potential: Is desired seed source present?
Minimum of 4 large, well-spaced PW¹ per ac?

Yes

OR

Yes

Overstory Removal

- Harvest to ≤15% crown closure²
- Control competition (herbicide or mechanical)
- Consider supplemental planting, if survival is low

Overstory Removal (with staggered harvests) in larger stands

Stand may be broken up into blocks with overstory removal harvests spread out over time not to exceed rotation age. Control competition.

Yes

No

Shelterwood

- Harvest to 50% crown closure; leave trees that are well-spaced, dominant, large crowns, best quality
- Control competition (herbicide or mechanical) and site prep. and monitor the seed crop
- Check if regen is established within 3-5yrs
- Overstory removal when regen is established (3-5 yrs, or beyond browse height)

Seed Tree

- Harvest to ≤15% crown closure leaving 4 well-distributed large white pine seed trees per acre
- Control competition to prepare the seedbed (herbicide or mechanical)
- Site prep if relying on natural regen
- Natural regen and/or supplemental plant white pine (900 stems per ac. of PW)
- Check if regen is established within 3-5yrs; if not plant with white pine seedlings

Clear Cut
Site Prep
Plant to minimum stocking density of 900 seedlings per ac.

¹ Large vigorous, crown, dominant or codominant, well spaced.

² Residual trees in crown closure are large, dominant or codominant and can be retained at the site.