

WOODLOT MANAGEMENT HOME STUDY

- a Brief Introduction to - HARVESTING SYSTEMS

Deciding to Harvest your Woodlot

Harvesting is the first step in *silviculture* - the practice by which *stands* are tended, harvested and replaced by new *stands* to meet landowner's objectives.

Deciding which harvest method is appropriate for you will depend on your goals (e.g. aesthetics, recreation, timber production), and species of trees you have on your woodlot.

Forests can be harvested by using clear cutting or shelterwood systems to produce even-aged stands that have trees of roughly the same age. They can also be harvested by selection cutting to produce and maintain uneven-aged *stands* with trees of several different age classes and sizes.

The Clear Cut System

Clear cutting is the removal of all trees from an area in a single cut, with the expectation that an even-aged forest will be established following the harvest (Illustration 1). Clear cutting can be done in one large block (conventional), alternate strips, progressive strips or in patches. Most clear cuts in Nova Scotia range between 0.2 hectares (0.5 acres) and 50 hectares (125 acres).

Clear cutting is usually appropriate for stands that have the following characteristics:

- A high percentage of dead, unhealthy, or diseased trees.
- Extensive wind or fire damage.
- Exposed to strong winds and is poorly drained.
- Where short lived species, or species that cannot grow in the shade make up more than half of the stand.

- Where desirable regenerations is present or predicted to be established after harvest.

Clear cutting should not be done without considering how a site will grow back with new tree seedlings. Clear cuts that are irregularly shaped and follow natural boundaries and features are aesthetically more



Illustration 1: A clear cut with wildlife clumps.

Natural Regeneration

Nova Scotia is blessed with good natural regeneration following harvest. Sources of natural regeneration include:

- Seeds (on the forest floor, from harvested trees or from trees along the cut edge).
- Growth from roots and stumps of harvested trees.
- Regeneration established prior to the harvest.

Artificial Regeneration

If natural processes are unable to adequately regenerate a harvested area, then regeneration must be done artificially. Attempts to seed cuts artificially generally have not been successful in Nova Scotia. Therefore, planting is the most effective option.

Site preparation is usually necessary before planting. Preparation can be done during harvesting by driving a forwarder over the site to crush the brush or by mixing the soil and upper organic layer while you drag (skid) the wood out. Site preparation can also be done by using special site preparation equipment.

Mixed wood and softwood sites should not be planted for at least two years from the date of harvest, due to threat of seedling debarking weevil.

The Shelterwood System

Shelterwood harvesting is an even-aged system used to establish and develop desirable natural regeneration. Removing a mature stand in 2 to 3 cuts over 5 to 20 years, allows more sunlight to reach the forest floor to stimulate seedling development. The overstory provides seed and shelter for seedlings that can grow under partial shade.

The Shelterwood system is recommended for:

- Healthy mature stands.
- Long-lived species that can grow in partial shade such as, red spruce, eastern hemlock, white pine, yellow birch, white ash, and sugar maple.
- Sheltered stands on deep, well drained soils.
- High volume stands, for economic feasibility.

Shelterwood harvest is generally carried out in three stages: seed cut, release cut, and final cut.

Shelterwood Harvesting



Seed Cut



Release Cut



Final Cut

Illustration 2: Stages of shelterwood method

Shelterwood harvesting can also be done in strips or as the seed tree method.

The Selection System

Selection cutting allows a regular harvest of trees from several age classes without removing the entire canopy. Selection cutting removes poor quality mature and immature trees and provides space and seedbed conditions for the establishment and development of new trees.

Group selection is the harvest of small groups or clumps of trees. It creates openings that allow for regeneration of species that cannot grow in the shade.

Selection cutting can also be done by removing single trees where only small openings are created. This method favours shade tolerant species (Illustration 3).



Group



Single Tree

Illustration 3: Group and single tree selection methods

Selection harvesting should be considered in stands where:

- Trees are mature and where at least half of the trees are long-lived and can grow in the shade.
- At least three age classes are present (e.g. seedling, pole sized, and mature trees).
- Stands are sheltered and wind-firm
- Wildlife, recreation and other land values are better satisfied under selection harvesting.

Selection cutting is different from selective cutting,

sometimes called high-grading. **Selective** cutting removes the best trees, leaving only poor quality trees and seeds to form the new forest.

Other Considerations

Management Planning

In most cases, proper planning is the key to realizing your objectives. Having a management plan will help you plan effectively and it will also ensure that you understand where your boundary lines are, which is vital before you begin harvesting.

Regulations

The Wildlife Habitat and Watercourses Protection Regulations must be followed when forest harvesting takes place on any woodland in Nova Scotia. This involves leaving cavity trees, snags, coarse woody debris, and wildlife clumps, as well as maintaining special management zones along watercourses. Please contact the Department of Natural Resources (DNR) for more details, or visit:
www.gov.ns.ca/natr/forestry/

Erosion Control

Proper planning of roads and access trails can help prevent soil erosion and stream siltation. Erosion can also be reduced by not hauling during soft seasons, especially the spring. Winter and summer operations are generally best.

Hiring a Contractor

Contractors should have extensive forestry knowledge, strong ethics, good business practices, and have a good sense of stewardship for the land. Contractors with these credentials will be pleased to provide you with a reference and a written contract.

Silviculture Funding

Currently silviculture funding is available through the Forest Sustainability Regulations. It is best to discuss silviculture options and potential funding

before your woodland is harvested. For further information, please visit:
www.gov.ns.ca/natr/forestry/strategy/sustainabilityregs.htm

Estimating Volume

Before hiring a contractor or harvesting yourself, you should have an estimate of standing wood volume and volume to be cut. Some contractors offer this service, but it is a good idea to hire someone independent of the contractor.

Glossary

Harvesting - Removing saleable mature forest trees either individually or as stands.

Clear Cutting - Removing all trees from an area at one time.

Shelterwood - The stand is removed in a series of cuts begun several years before the final harvest.

Selection Cutting - Mature trees and less vigorous immature trees are periodically harvested over the whole area, singly and in a group.

Cavity Tree - Living or dead trees with natural or excavated holes or cavities.

Special Management Zones - A strip along each edge of a watercourse where partial harvesting, under certain conditions, is permitted within the zone.

Wildlife Corridor - A continuous undisturbed area left after harvesting where wildlife can travel, feed, and find shelter. Usually connecting isolated patches of habitat; often along watercourses.

Siltation - The filling-in of lakes and stream channels with soil particles, usually as a result of erosion on adjacent land.

Contractor - A party who agrees to provide supplies or services in accordance with a valid and legal contract.

For More Information

Please refer to the full length version of,
Home Study Module 2: Harvesting Systems.
This module, along with others in the Home
Study series, are available free from:

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