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Private Land Section

Harvest Choices for Island Forests

Making the Right Choice for You and Your Woodlot

Harvesting a section of forest can be profitable for you, and good for your woodlot, particularly if you plan for the long-term well-being of your forest before you begin. There are many different options, but most are variations on three main systems: The Clearcut System, The Selection Cut System, and The Strip or Patch Cut System. Each silvicultural system offers different approaches to the harvest, regeneration, and cultivation of trees and forests.

This issue of Woodland Notes outlines the rationale and methodology for these three systems and reviews some of the key elements landowners should understand before they choose the system which is right for them and their forest.

First Steps

Before you begin any forest harvest or management operation, it is important to take stock of your woodlot, and develop a plan which addresses your needs and the needs of the trees, plants and

animals found on your land. The plan should identify the different stands found on your woodlot, suggest appropriate treatments, and provide a schedule for each treatment over a period of several years.



Varying the harvest edge helps to blend a clearcut into the landscape.

The Clearcut System

The Clearcut System is defined as a harvest where most or all of the trees in a given area are harvested in one operation. While there is no commonly accepted minimum size for a clearcut, for the sake of this discussion it will be defined as an area of greater than one hectare (2.5 acres).

Clearcutting is the most common harvest method used on PEI for a variety of economic and

biological reasons. It is suited for stands which have one or more of the following characteristics:

- where all of the trees are even-aged (about the same age) and are mature to overmature,
- trees suffering from extensive insect or disease damage,
- trees which present a safety hazard to forest workers,
- trees in danger of blowing over into streams and watercourses, or
- where the next crop of seedlings need full sunlight to grow and thrive.

What results can I expect when I use this method?

Clearcutting removes all of the merchantable trees from a given area resulting in large amounts of slash and harvest-related debris scattered across the site. As long as the stumps are not too high or the slash is not too heavy, the site can usually be prepared for planting in the following year.

However, if the landowner wishes not to plant, the natural seedlings and sprout growth which

quickly reclaims most Island clearcuts can be managed. Keep in mind that the new, natural growth may consist of species with lower timber potential, but with value for wildlife habitat, biodiversity, and aesthetics.

Where should I use the Clearcut Option?

Contrary to popular opinion, clearcutting can be beneficial particularly if it is designed to mimic natural disturbances. It is a good choice for the mature and overmature old-field, white-spruce stands common across much of PEI. These stands arose on abandoned lands which were once cleared for agriculture but have subsequently reverted to forest cover.



Cover Patch

By leaving standing dead snags, cover patches, and travel corridors you can mimic natural disturbances and provide valuable habitat for many wildlife species. Varying the harvest edge with the land's natural contours will also lessen the visual effect on the landscape.

This method will eventually produce a new, even-aged forest, particularly for shade-intolerant (sun-loving) species such as red pine, larch, poplar, and white birch. These species will quickly dominate a clearcut area because they require full sunlight in order to develop and thrive. Young

balsam fir and red maple are often found on these sites too because they will establish themselves in the partial shade of the collapsing white-spruce stand prior to harvest, and then quickly respond to the increase in light and nutrients.

Clearcutting is not usually recommended for white pine, red spruce or hemlock stands, uneven aged stands, tolerant hardwood stands, or mixed wood stands containing a high percentage of shade-tolerant species.

Benefits

1. Simplest and safest harvest method
2. Generates highest immediate profit
3. Favours shade intolerant (sun-loving) and shallow rooted species which in turn will benefit certain wildlife species
4. Can mimic natural disturbances such as forest fire or insect damage
5. Suited to either mechanical or manual felling
6. Easiest harvest system to site prepare

Disadvantages

1. Unpleasant to look at for three to five years
2. Exposed areas can be difficult to renew naturally
3. May require additional investment to prepare for planting, plantation maintenance, and browse protection
4. Liquidates stand in one operation, removing timber income potential over the next 25 years
5. Of little value for recreation for several years

The Selection Cut System

The Selection Cut system is the periodic harvest of individual trees or small groups of trees which are mature to overmature, unhealthy, or of unwanted species. Every 10 to 15 years the stand is thinned (maximum of 20 to 40 per cent removed) to give the remaining trees room to grow, encourage the establishment of shade tolerant species, remove unhealthy or overmature crop trees, and provide revenue to the landowner.



Small openings promote shade tolerant species such as Sugar Maple

How It Works

Before undertaking a selection cut, it is important to conduct a stand inventory to identify tree species, size, health, and quality. Once this information has been collected, the selection criteria can be defined. Trees which will be left to grow (Crop Trees*) should be marked at the base with a bright, highly visible colour.

Marking is your protection that only the selected trees are harvested.

* Crop Trees are trees left to grow for future commercial harvest, for their value as wildlife habitat, or as high quality seed sources for the renewal of the site.

The Selection Cut relies on natural renewal. By harvesting individual or small groups of trees, and leaving high-quality, shade-tolerant species standing to produce seed, you can encourage the renewal of species such as sugar maple, white pine, and hemlock. Because there are many trees still standing, care must be taken to avoid damage to crop trees. This means that access roads and the skid trail networks must be laid out in advance to improve the efficiency of the treatment and minimize potential damage to crop trees.



Snag trees are important to many species of wildlife.

What results can I expect for my forest when I use this method?

When conducted in suitable stand types, the Selection Cut should support a diverse forest with a wide range of species of different sizes and ages. It also provides a continuous wood supply, habitat for wildlife, and excellent opportunities for recreation development. However, it is important to realise that many of these changes will only occur over a period of several decades.

Where should I use Selection Cutting?

The Selection Cut system is best suited to mixed or hardwood forests which contain shade

tolerant and windfirm species such as sugar maple, yellow birch, hemlock, white pine, and quality (disease free) beech. These forest types rely on small-scale disturbances such as wind, insects, and disease to remove groups of old trees and create growing space for young seedlings. Small, periodic cuts mimic this natural renewal cycle. Assistance from forestry experts is recommended.

Benefits

1. Partial canopy protects site from severe change or disturbance
2. Creates periodic income and steady supply of wood
3. Preserves the genetic diversity of the forest
4. Offers wildlife and recreation areas
5. Maintains a more natural-looking forest
6. Promotes more shade tolerant, long-lived species

Disadvantages

1. Pre-harvest investment required to evaluate the forest, select and mark crop trees, layout extraction trails and safely harvest trees
2. Larger areas are required to generate enough wood and income to cover costs
3. Requires greater skill, care and time to avoid damage to crop trees and regeneration



Strip width should be one to two times the height of the tallest trees.

Strip or Patch Cut System

How It Works

Under the Strip Cut System, the harvest area is divided into strips and these strips are harvested in two or three operations over a period of years. Strip widths are usually one to two times the height of the tallest trees depending on the wind-firmness of residual trees and tolerance characteristics of the desired renewal species. Shade tolerant species will benefit from narrower strips while intermediate or intolerant species will need wider strips. Under the Patch Cut System small patches are also harvested over a period of years. In more variable stands this system may be preferable to the more systematic strip cut. Diameter of patches will vary between one and two times the height of the tallest trees, again considering windfirmness of residuals and shade tolerance of the next tree generation.

It is important to conduct a stand inventory to identify tree species, health, and quality before you undertake a Strip or Patch Cut.

Bordering trees should be wind firm, mature, and able to produce sufficient quantities of seed. Undesirable species, and high quality trees which are not needed for seed, can also be removed along the edge.

Depending on how the strips or patches are laid out, from one-quarter to one-half of the standing volume is removed in each harvest. This stimulates forest renewal by creating a suitable bed for seeds from trees at the edges of the cut.

Strips should run perpendicular to prevailing winds to ensure that seed is well scattered across the harvest site. However, if there are problems with windfirmness, the strips can be run toward the prevailing winds to prevent excessive blow-down losses.

What results can I expect when I use this method?

Because the site is harvested in stages over the next 10 to 30 years, the financial return will be spread out over that period. If the harvest site is scarified and the cut is timed in conjunction with a good seed crop, the harvest area should quickly revert to high-quality species.



Successful White Pine regeneration on a 7 year old strip cut.

It usually takes from five-10 years to adequately reforest a

harvest strip or patch with the desired species. Once these harvested areas are adequately reforested, the next series of strips or patches can be harvested. Eventually, the reforested strips or patches will need to be thinned to support the growth of good-quality trees.

Where should I use the Strip Cut/Patch Cut option?

This system is well-suited to many Island forest types particularly those with a high percentage of black spruce, red spruce, balsam fir, white pine and yellow birch or mixed hardwoods.

Benefits

1. The majority of the area remains standing after the harvest
2. Natural seeding renews quality trees on the site
3. Creates diversity through a combination of young and older trees
4. Allows the landowner to spread out income over several years
5. Increased edge results in increased number of certain wildlife species

Disadvantages

1. Several smaller cuts may result in higher costs and lower returns
2. Pre-harvest investment required to mark the harvest strips or patches
3. Potential to lose valuable trees to blow down between harvests
4. Creates several small stands of various ages. This can cause loss of habitat for animals that require large blocks of mature closed canopy

Conclusion

Harvesting a section of forest can be profitable for you and good for your woodlot. However, the harvest system you choose should be based on long term goals for your forest and the potential that your forest has to meet those goals. So take some time to get to know your woodlot and review the ideas in the Woodland Notes series. Then you can decide which options are best for you.

For information regarding assistance programs for woodlot owners, contact your local forestry district office.

District Forestry Offices

Eastern Forest District Office

Southampton
Box 29
St. Peters Bay PE C0A 2A0
Tel: (902) 961-7296
Fax: (902) 961-7298

Central Forest District Office

Beach Grove Road
Box 2000
Charlottetown PE C1A 7N8
Tel: (902) 368-4800
Fax: (902) 368-4806

Western Forest District Office

Wellington
Box 144
Wellington Station RR1
PE C0B 2E0
Tel: (902) 854-7260
Fax: (902) 854-7448