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ABOUT THE TRAIL

The Forest Management Trail is a 1.5 km self- guided loop through a tract of Ontario's Great Lakes-St. Lawrence Forest. Follow it and discover some of the members of this forest community, from the obvious to the obscure. You will also learn how humans participate in this diverse and complex **ecosystem**.

The Forest Management Trail begins on the west side of Highway 35, across from the Frost Centre. Please be careful crossing the highway and keep to the trail by following the directional arrow signs. After you have completed a couple of short uphill sections you will find yourself on a gently rolling, packed-earth trail. You need a basic level of fitness and comfortable footwear to hike this trail. We recommend that you bring insect repellent during late spring and throughout the summer. Allow yourself at least 1.5 hours to do the hike.

The numbered sections of this guide correspond to the numbered spots along the trail. To get the most from your hike, stop and face the numbered post. Then read the description in the guide. Special terms are in **bold** text and are explained in the glossary at the back of this guide. Look for special boxes in the guide. They give additional ideas about what to do between signposts.



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PURPLE FINCH

HAIRY WOODPECKER

BUNCHBERRY

BLUE-SPOTTED SALAMANDER

FOREST MANAGEMENT

SEEING THE FOREST AND THE TREES

It is possible to walk this trail and see only the trees. But look carefully. A healthy forest is far more than the trees that catch the eye. It is a living and growing ecosystem that changes over time. Everywhere you look plants, animals, fungi and bacteria interact with the air, soil, water and each other. Unseen processes recycle our planet's nutrients, water, soil and air, reaching far beyond the edge of the forest itself. Even the tiniest member of the forest community plays an important part.

A healthy forest provides many valuable products and services. It offers **habitat** and **wildlife** and protection for soils. It cleans our air and renews the earth's oxygen supply. It provides people with inspiring scenery and opportunities for tourism and recreation. Ontario's forests are home to many species of trees that are used in a variety of wood products and provide thousands of jobs. **Softwoods** such as spruce and pine are used for wall studs, floor joists and roof rafters in buildings. **Hardwoods** such as oak and maple are made into furniture and flooring for our homes and offices. You can probably think of many other reasons that forests are important to you.

How can we possibly take all these products from the forest and still be sure the ecosystem itself remains healthy? On **Crown land**, that is the job of the planners, biologists and foresters who make up the **Forest Management Team**. (For more information about forest management on private lands please see inside back cover)

Today's forest management teams put the long-term health of the forest first. They do research and **inventory** to better understand the forest and what products and services it might provide. The teams consult with local communities, considering all values of the forest before a tree is cut. They determine which trees will be cut and which trees will be left. They also plan for the **renewal** of the forest so that healthy forests will be part of everyone's future.

On this hike, you will explore how people manage forests for a wide range of values, while keeping them healthy for the future. A good forest manager sees the forest as a more than a collection of trees. We hope that you will too.



POST ONE

POST ONE- THE GREAT LAKES-ST. LAWRENCE FOREST

Each forest is different. At this stop you will find out what lays the groundwork for the diversity in our forest ecosystems.

Ontario has three main forest regions: the Boreal Forest Region in the north, the Deciduous Forest Region in the extreme south and the Great Lakes-St. Lawrence Forest Region situated between the two. Here at the Frost Centre, you are standing within the heart of the Great Lakes-St. Lawrence Forest Region. This area grows a variety of **deciduous** trees (such as maple, oak, and poplar) and **coniferous** trees (such as pine, spruce and cedar). These trees, along with other living things, mix themselves into many different forest types. So within the Great Lakes-St. Lawrence forest Region we find a mosaic of forest communities that can vary greatly in their appearance and ecology. These forest communities are sometimes called **stands**.

The type of forest stand that grows in an area is determined by many factors including climate, landforms, slopes, soil, moisture conditions and surrounding plants and animals. Look around where you are standing. You can see that some of these conditions, such as soil and slope, change from *place to place*. But we also know that conditions change over time. Sometimes change is slow; glaciers, erosion and climate change have all affected this are over the past ten thousand years. Sometimes change is quick; fire, disease, wind and logging have also formed this forest.

What did this forest look like 150 years ago? For a clue, look at the towering pine trees in front of you. These white pines, Ontario's official tree, were once more common in this area. In 1806 when Napoleon cut off Britain's supply of forest products from Central Europe, Britain turned to Canada's white pine forests for its ships' masts. By the 1860's logging had arrived in the area we now call Haliburton and Muskoka. People had become a major force of change in this forest.

What will this forest look like in another 150 years? People will no doubt play an important role in that too.

Continue your hike to learn more about some of the living members of forest ecosystems.



FOREST REGIONS

Boreal Barrens Region Boreal Forest Region Great Lakes—St. Lawrence Forest Region Deciduous Forest Region

ALONG THE WAY...

On the way to the next stop, watch for tall white pine trees. These scattered giants are called supercanopy trees because they push up above the leafy **canopy** created by their forest neighbours. Supercanopy trees are an important part of the forest ecosystem. Hawks and eagles roost in their high branches. Over the past few years, merlins (members of the falcon family) have perched in these trees during the breeding season. Black bears also use supercanopy trees. Mother bears send their cubs up the trunk to safety when danger calls.

Supercanopy trees are just one of many natural and necessary parts of the forest ecosystem. Post 2 will introduce some of the other forest ingredients.

SUPERCANOPY TREES

POST TWO

FOREST ECOSYSTEM INGREDIENTS

At this post you will learn about some of the ingredients that make up Great Lakes-St. Lawrence forests.

Look around you. This rugged landscape is typical of the Haliburton and Muskoka area. The rocky cliffs and hilltops, like those in front of you, have shallow soil at best. Between the cliffs are valleys containing deeper soil. This variety in the non-living parts of ecosystems leads to diversity in the species that live here. These basic ingredients, living and non-living, are assembles in many ways to create different forest stands.

Trees are the most obvious living things in any forest ecosystem, and the Great Lakes-St. Lawrence Forest Region is home to a wide variety of these. In fact, there are about two dozen different types of native trees found in the Frost Centre area. Each species is best adapted to a certain set of soil, slope, moisture and shade conditions. Each one has different values to wildlife, to the hiker and to the consumer of wood products.

To a certain extent forest managers can encourage the growth of one type of tree over another in a specific area. They might do this to provide economic benefits to the region, to restore an ecosystem type that has become rare or to improve habitat for a particular species of wildlife. However, a key idea in forest management is to make sure that no basic forest ingredient is lost. Each tree species, each plant and each animal has its plane in the forest, and each forest has its place on the landscape.

What are some of the basic ingredients in the Frost Centre forests? As you hike, use the "Forest community checklist" in this section to record a few of your observations. We may not know exactly what our future forests will look like but a healthy forest will include these species and more.

At the next stop we will explore what tree species are on a few types of sites.



As you walk the rest of the trail, look around to see how many forest ecosystem ingredients you can find (there is a simple I dentification guide to trees on the back cover). Add your own ideas in the blank spaces! Please be careful not to disturb the things you are observing.

Can you find these?

\diamond	Sugar maple	\diamond	Red oak tree
	tree	\diamond	White ash tree
\diamond	White pine tree	\diamond	White birch tree
\diamond	Yellow birch tree	\diamond	Aspen tree
\diamond	Beech tree	\diamond	Moss
\diamond	Tree fungus	\diamond	Fern
\diamond	Wildflower		

Can you hear or see signs of the following animals?

\diamond	Red squirrel	\diamond	Songbird
\diamond	Woodpecker	\diamond	Flying squirrel
\diamond	Black bear	\diamond	Insects

FOREST COMMUNITY CHECKLIST

POST 3

SPECIES AND SITES

The characteristics of soil, moisture and shade determine what types of vegetation will grow on a site. These characteristics are known as site conditions. From this post you can see a range of site conditions and the tree species that have been most successful within each.

In front of you, between the post and the cliff, is a bowl-like depression where water collects. Yellow birch trees prefer the moist soil conditions found here. Now look to the top of the ridge behind you. The shallow, dry soils there favour red oaks. In between, **fresh**, well-drained soils support the best maple growth. Each set of conditions favours a different tree species.

Tree height can usually indicate the quality of the site. The taller the tree is, the better the growing conditions are for that particular species. But remember, site conditions alone do not determine what tree species will grow on a particular site. Surrounding seed sources, wildlife and history (including past human actions) all play a role.

One of the jobs of forest managers is to encourage the growth of a forest that best matches the site conditions. The process of tending, cutting and replacing trees in a planned way is called **silviculture**.

Forest managers have developed "tools" to help them take an **ecosystem approach** to managing forests. One tool is a classification system for forest "sites" (see the box "*Name that ecosite!*"). Other tools include a variety of **silvicultural systems** that can be used on different sites if the management team decides to allow logging in the area. These silvicultural systems are designed to ensure the continued health and diversity of forest ecosystems before and after tree cutting. Please remember that forest managers may also decide not to allow cutting if it might put ecosystem health or other values at risk.

We will look at three basic silvicultural systems and the "no-cut" option at future stops.



In central Ontario, forest ecologists have described over 40 different **ecosites**. A skilled forestry like a **forester**, a **forest technician** or a **tree marker** can walk into any forest stand, make some key observations and classify the stand. This information can help the management team decide if the site should be logged and, if so, what silvicultural system should be used.

Forestry professionals use a lot of information to classify a site. However, we can give you a simpler challenge. Use your powers of observation and what we've already told you to determine which of the following descriptions best matches the site in front of Post 3.

Is it Ecosite 25.1, Ecosite 28.1 or Ecosite 29.2?

Ecosite 25.1: a stand of mainly sugar maple, beech and red oak trees, on dry to moderately fresh soils. Found on the hilltops and upper to middle slopes.

Ecosite 28.1: a stand of mainly sugar maple, hemlock and yellow birch trees on dry to moderately fresh soils. Found on upper to middle slopes.

Ecosite 29.2: a stand of mainly yellow birch and sugar maple trees on fresh to moist soils. Found on upper to middle slopes.

The correct answer is given inside of the back cover.

NAME THAT ECOSITE!

POST FOUR

DEATH AND RENEWAL IN THE FOREST

Have a close look at some of the large trees near Post 4. Can you see signs that any of them are dying? You may see small, shelf-like fungi on some of the trunks. A tiny fungus on the outside of a tree is a sign of a massive rot on the inside.

Death is change, and change is a natural and necessary part of life in the forest. In dying, old trees make room for the new. Natural agents of change include disease, severe winds and fire. Sudden change in the forest, such as death of one or more trees, is sometimes called "disturbance". Disturbance can remove individual trees, small groups of trees or hundreds of hectares of trees in a single event. The amount and type of disturbance determines how much sunlight reaches the forest floor and whether or not the soil is uncovered. These conditions, in turn, determine what species will replace the out-going trees. The death of scattered trees on this site will keep it as a beech-maple stand. A large disturbance, such as a very hot fire, would create a very different stand here.

Forest managers try to imitate patterns of natural disturbance when they set guidelines for logging. At upcoming stops you will learn how three silvicultural systems are designed to imitate different natural disturbances.



Have you noticed that some of the trees along the trail have red disks that are marked with the letters "DEF" and a number? Here, forestry professionals called "tree markers" are trained to recognize signs that a tree has low economic value or poor health (you can learn more about tree markers at Post 10). The presence of fungi, disease, cracks, holes, wounds and dead branches indicate poor tree health and low wood quality.

When it is time to decide which trees to cut and which to leave, the ability to recognize certain characteristics is very important. Can you detect the signs of poor health and low wood value in the tree in front of you (DEF # 6)? Which, if any, of the three indicators pictured on facing page, are present? The correct answers are on the inside of the back cover.

Dark-face Scar

Bare wood at the side of a wound that is dark-coloured and moist, indicating decay.

Target Canker

A Nectria or target canker on a tree trunk is free of bark and shows concentric rings or ridges.

False Tinder Fungus

A hoof-shaped, grey or black "conk" with a whitish outer rim.

CONKS, CRACKS AND CAVITIES

POST FIVE

SHELTERWOOD AND GROUP SELECTION

At this stop we will begin to look at the silvicultural systems used in the Great Lakes-St. Lawrence Forest. First, here's a little history of this stand.

This ridgetop site with its shallow, dry soils supports a stand of red oak trees of the same age and size. The area probably developed as a red oak stand about 100 years ago after a major disturbance. If the disturbance was natural, it was likely a forest fire hot enough to remove most low vegetation and kill some of the large trees. A few large oaks must have survived to supply the acorns that grew into todays forest. How do we know this? To thrive, red oak **seedlings** require large enough openings to let in some sunlight. At the same time, the seedlings need a little protection from the full summer sun and late spring frosts. Finally, they need relief from competition with other plants that invade forest openings. Intense fire can provide this.

Two related silvicultural systems are designed to allow us to cut this red oak stand and create the right light conditions for its renewal – **shelterwood** and **group selection**. In front of you is a red oak shelterwood cut begun in 1986. About half of the trees were initially removed from one section of the stand. The remaining large oaks, called **seed trees**, were left to provide acorns for the new openings, and to protect the seedlings that took root. The intent was to harvest the seed trees when the new oak forest was established.

We may have created the correct light and seed conditions for a new oak stand, but maple **saplings** soon overwhelmed the young oaks. So, in 2001, two actions were taken to encourage oak regeneration on one half of the original shelterwood site: a horse-logging operation removed more of the mature trees and a "tending" operation removed the competing maple saplings. Will this be enough to re-establish the oaks on this part of the site? You can be the judge: face the post and compare the left side of the site with the right side. On the left, where invading maple saplings were cut down, the oak saplings (marked with orange flagging tape) are coming back. On the right side of the site, maple trees are still taking over the untended area. Young oaks cannot be found.

Encouraging a new red oak stand sometimes requires more than just cutting the stand properly.



BEFORE CUTTING AND TENDING

LOGGER, GERALD COOK, PERFORMS A SHELTERWOOD CUT WITH HIS TEAM

AFTER CUTTING AND TENDING

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POST SIX

RENEWING THE HARDWOOD FOREST

The forest that grows back after a disturbance can be quite different from the one that was removed. You are facing a stand of young maple trees growing where there was once a well-maintained lawn below a fire tower. Even before that, a red oak stand graced the site. We can see the evidence in the large oak trees that remain. Why do we see mainly maple trees coming back after the tower was removed?

Part of the answer is in the ability of sugar maple seedlings to outcompete oaks under certain conditions. Maples produce more seeds than oaks, and the young maple seedlings can tolerate shade better than the oak. In a small, partly-shady clearing, maples can grow very quickly, never giving oaks their moment in the sun.

Another part of the answer is the absence of fire at a key time in this stand's life cycle. People have greatly reduced the amount of fire on our forested lands. This has affected the ability of some species, such as oak and white pine, to replace themselves.

What can forest managers do when the tree species best suited to the site has a hard time getting started? In the case of the red oak, forest managers can try to time logging to coincide with good years for acorns. Even then, it might be necessary to hold back the competing vegetation until the oaks are established. Forest managers have several ways to do that:

Cut or "uproot" the competing vegetation

Use one or more controlled fires to burn off the competition

Use chemical herbicides to kill the competition

Plant red oak seedlings that are taller than the competition

All of these options have their place in the forest manager's "toolbox".



On the way to the next stop look for trees and branches that have fallen on the ground. Forestry workers have a term for these: "downed woody material".

Even fallen trees are an essential part of a healthy forest ecosystem. They stick around in various states of decay for many decades, providing shelter for wildlife and giving their nutrients back to the soil. Nature has always provided a supply of downed woody material. Forest managers too must make sure that a healthy supply of fallen wood stays on the landscape.

DOWNED WOODY MATERIAL



POST SEVEN

A QUESTION OF VALUE

Look at the forest around you. Is this a "high value" stand of trees? At this post we discover that the value of a tree is "in the eye of the beholder".

Economically valuable timber products such as **sawlogs** and **veneer** come from trees with straight stems, no rot and no cracks. Many of the trees in this beech and sugar maple stand have long cracks and seams. The stubs of old branches stick out from some of the trunks, and fungal conks indicate that rot has decayed much of the wood. These characteristics are considered defects when it comes to lumber, and a tree with such qualities is termed **unacceptable growing stock** (or UGS) by forest managers. Many of the trees marked with the small red disks are considered UGS trees.

The high number of UGS trees in this area is typical of a stand that has been **high-graded**. Many years ago the rules for logging on crown land were different. To meet society's demand for high quality wood, loggers were allowed to remove all the best timber from this stand. The trees left behind, with their cracks, rot and crooked stems, now take up most of the growing space. The verdict: we will not get much lumber or veneer wood from this stand; it has low *timber* value. The removal of some of these UGS trees would improve the future economic value of this stand by making room for the young, healthy, straight trees.

On the other hand, as these trees die the wood is colonized by insects. The insects become food for woodpeckers. The woodpeckers dig out cavities that are used by other forest dwellers such as flying squirrels, chickadees, bats and owls. When a tree falls down it becomes home for salamanders and a host of other small animals. The verdict: from a woodpecker or salamander point of view, this stand has a high value.

The challenge for the forest management team is to manage the forest landscape for a number of values at once. So the efforts to grow economically valuable trees are balanced by efforts to provide habitat for wildlife, recreational opportunities for people, and diversity of species in the forest.



As you walk through this stand watch for the smooth, grey bark that distinguishes the beech trees. Black bears often climb these trees in the fall to feast on beechnuts in the upper branches. On their way up, the bears leave their telltale claw marks in the bark of the trunk.

Beechnuts are a high-quality food source, and bears will travel long distances to feed at a beech stand like this. The fat they put on will help them get through the long winter months when they may lose their body weight.

Once again, the value of a tree is in the eye of the beholder. Forest managers must consider all value when they decide which trees may be cut and which must be left.

BEARS ON THE BEECH

POST EIGHT

THE SELECTION SILVICULTURAL SYSTEM

Before you is a recently cut stand of sugar maple and beech. This stand is managed under the **selection silvicultural system** and was last cut in 2001 by horse-logger Gerald Cook.

Sugar maple and beech seedlings can survive for years in the dense shade of older, larger trees, an ability that has earned them the name **tolerant hardwoods**. When a minor disturbance, such as disease or wind, kills a single tree or a small group of trees, a small opening is created in the leafy canopy overhead. The seedlings take advantage of the sunlight in the new opening and grow to replace their lost neighbors. As a result, a range of trees ages and sizes can be found in tolerant hardwood stands.

The selection system is designed to mimic small natural disturbances and maintain a healthy shade-tolerant hardwood stand. Individual trees or small groups of trees are selected for cutting about every 20 years. Enough trees are taken each time so that about 30% of the leafy canopy is removed. In the 20 years between cuts the remaining trees and seedlings grow back the amount of that has been removed. The cycle of harvest and growth can be repeated as time goes on.

The selection system has many advantages. But selection cutting will only maintain hardwood tree species that are tolerant of shade such as beech and maple. You might recall that the shelterwood system works best for the mid-tolerant red oak, white pine and yellow birch. How can we provide for the shade-intolerant species such as aspen and white birch? Post 11 gives you the answer.



You can think of the canopy as the "ceiling" of the forest. If you look up and see no spaces between the treetops (i.e. the branches from neighbouring trees are all touching overhead), the canopy is 100% "closed". Very little direct sunlight will reach the plants on the forest floor when the leaves are on the trees. On the other hand, if there are gaps between the treetops, the canopy is partly open and direct sunlight can reach the ground. New growth will thrive. More than 70% closure favours shade-tolerant trees such as maple. About 50% closure favours shade-intolerant species such as red oak and 0% closure favours shade-intolerant species such as aspen. Animals can also be affected by canopy closure. Red-shouldered hawks need at least 70% canopy closure for nesting.

Check a couple of spots along the way to the next stop. If you look up in a freshly completed selection cut you might see that 30% of the canopy is open. In an uncut area the canopy may be 100% closed.

HOW OPEN IS THE CANOPY?



Closed Canopy

70% Closed Canopy

POST NINE

THE NO-CUT OPTION

All values must be considered when managing the forest. Much of the time logging is compatible with the other values. Sometimes it isn't. When other important values cannot be maintained with logging activities or when the ecosystem health might be put at risk, forest managers can call upon the "no-cut" option. This simply means the area is left uncut.

In front of you is a mixed stand that contains yellow birch trees. The wood of the yellow birch is very valuable economically and the trees are suited to this site. Silvicultural treatments, including cutting, could improve the future economic value of the stand but it will likely remain uncut for many years. Why? It has other values. The trail you are on is used for educational and recreational purposes. A separate cross-country ski trail cuts through the stand in winter. Forest workers such as tree markers are trained here. Nature enthusiasts watch for deer that browse on the wintergreen-flavoured yellow birch twigs, and birdwatchers track down the forest birds that dart through the branches. At this time, other values of this forest stand are more Important than logging.





POST TEN

TREE MARKING—WHERE ART AND SCIENCE COME TOGETHER

At this post you see a stand of trees that has been marked with paint in preparation for a selection cut. This is the work of professional, certified tree-markers.

Many of Ontario's tree-markers are trained here at the frost centre. They learn to recognize hundreds of wildlife signs, tree species, timber "defects", site conditions and forest values. With their knowledge and skill, they are artists that help shape the forests of the future. They sketch out, in yellow and blue paint, directions for a healthy forest that will produce valuable wood products for humans and suitable habitat for wildlife.

See if you can find the following markings:

- A blue "W" indicates a tree that will be left because it has a high value for wildlife. These trees may have good cavities in the trunk or hold the stick nests of forest hawks or owls in their upper branches. Or they may produce high quality wildlife food in the form of seeds and nuts.
- Yellow dots or bands mark the trees that will be removed. Depending on the quality of the wood, these trees can be used for lumber or firewood. Their removal also creates necessary growing space for the remaining trees. Providing healthy trees with more "elbow room" allows them to add the wood growth that would otherwise have gone to the trees with limited economic value.
- Unmarked trees are not competing with economically valuable trees and will be left uncut for now. A certain level of tree cover is necessary to protect the site from too much sun and wind.

Most Crown-land logging that is done in the Great Lakes-St. Lawrence Forest Region is done through selection and shelterwood cutting. That keeps Ontario's tree markers busy, applying their science and their art to the creation of our future forest landscape.



Follow the trail that is flagged with orange ribbon. It will lead you to a "wildlife tree" marked with blue "W". Then trace your steps to the main trail and resume the hike.

Tree markers are trained to recognize diverse forest values including an array of wildlife trees. This marked tree is considered a high value wildlife tree because of the small hole (called a "cavity") about 3 metres up the trunk. Many forest birds and mammals depend on tree cavities to meet some of their habitat needs. This particular hoe was created by a woodpecker and may now be used by a fling squirrel or a sapsucker. Please be careful not to disturb any inhabitants.

The best wildlife trees are those that are healthy enough to have many years of service ahead of them.

LOOK MOM! "GREAT CAVITIES!"



POST ELEVEN

THE CLEARCUT SILVICULTURAL SYSTEM

At this post you will look at the last of the basic silvicultural systems, the **clearcut.**

Some trees, such as aspen, poplar and white birch, need full sunlight to grow. We call **intolerant hardwoods** because they cannot tolerate and won't grow under larger trees. For aspen, poplar and birch to replace themselves, areas of several hectares or more must be completely opened up by a disturbance like fire, wind or clear cutting.

In front of you is a small clearcut that was intended to harvest a stand of large toothed aspen and create the right conditions for it to grow back. All the trees in this area were removed in 1986. The increased light and temperature caused **suckers** to spring up from the root systems of the parent trees. Some of these suckers grew to become the small aspen you see here to day.

You may notice plenty of young maples that are also doing well on this site. How are shade tolerant sugar maples doing so well on an open site? The original clearcut was too small, and shade from the surrounding forest tipped the competitive advantage toward the maple trees. The maples will eventually take over this site unless another disturbance reopens it.

How do clearcuts affect wildlife? Certain kinds of wild plants and animals depend on large forest openings to meet some of their habitat needs. Open sites grow with a profusion of sun-loving plants that provide food for deer, moose, hare, and beaver. Many types of birds feed or nest in open areas. Some **predators** benefit from large openings in the forest because what's good for the prey also tends to be good for the predator. But even large openings don't stay that way for long. This "clearcut" site is well on its way to becoming a new forest stand that will serve many different types of wildlife at different stages in its life cycle.

It is important to note that while some types of animals and plants benefit from clearcuts, others need large blocks of undisturbed forest. Forest managers look at the broad landscape and plan for a full range of forest types over the dimensions of time and space.



POST TWELVE

SHELTERWOOD—FIFTY YEARS AFTER THE CUT

Do you remember climbing the stairs to Post 5 near the start of the trail? There you saw a red oak stand that had been cut using the shelterwood system. Here is a stand that was cut the same way in the late 1950's. The red oak trees, marked with orange dots, grew directly from acorns.

The success of this new oak stand is the result of several factors coming together. First, the dry site favours red oak over other species. Also, it was a particularly good year for acorns right after the first cut. Many of the acorns escaped the notice of hungry wildlife and grew into seedlings. The shelterwood approach created the right light conditions for many of the young oak to outstrip the competition and establish themselves firmly in the new forest.





POST THIRTEEN

SUSTAINING HEALTHY FOREST ECOSYSTEMS

On the tour you have seen examples of the selection, shelterwood and clear cutting systems. Each silvicultural system is designed to imitate a set of natural disturbances in natural patterns on the landscape. Each is planned and timed to reduce unwanted effects on soil, water, wildlife habitat and other values. Each has its place in helping the forest management team achieve social and economic goals while sustaining healthy forest systems in all their diverse glory.

The "no-cut option", also has its place on Ontario's landscape. It is wise to exclude woodcutting from places where it might put long-term ecosystem health at risk or conflict with other important values. We need forests of all ages, including the "very old" and the "very young", to maintain **biodiversity**. It also makes sense to leave some forested areas to the forces of nature alone so that we can better understand how ecosystems work and so that we can measure our own success as forest managers.

Post 13 marks the end of the forest management trail. The trail continues down the hill to the highway across from the north end of the Frost Centre campus. Once again, please be careful crossing the highway.

We hope you have enjoyed your hike. If you do not wish to take the guide home, please deposit it in the trail guide box at the trail head.





<u>Glossary</u>

Biodiversity: is a short form for biological diversity It refers to the variety of wild plant and animal species. The genetic variability of each species and the variety of different ecosystems and habitats they form.

Canopy means the almost continuous layer of leaves formed overhead by the older trees. It shades the layers of vegetation below.

Clearcut means a large opening created by cutting all the trees at one time. **Coniferous** trees bear cones and have needles or scale-like leaves. They are usually "evergreen". Sometimes called "softwoods", they include pine, spruce, cedar, hemlock, balsam fir and tamarack.

Conks are the visible part of a tree fungus, usually attached to the trunk of the tree like a small "shelf".

Crown land means land that is under provincial ownership and managed by the provincial government for the benefit of the people of Ontario.

Deciduous trees are those that lose their leaves each autumn

Ecosite means a network of living things (such as plants and animals, including humans) and non-living components of their environment (such as air, soil and water), interacting with each other and with other ecosystems

Ecosystem Approach refers to forest management that considers all parts of the forest and its neighbouring ecosystems before decisions are made

Forest Management Team means the group of planners, biologists, foresters and others that plan for the human activities, including logging, which occur in a forested area.

Forest Technician means a person, usually with a college diploma in forest science, who works in the forest marking trees for cutting and conducting inventories to find out what is there.

Forester means a person with a university degree in forestry who has expertise in the science of planning how forests can best be cut, renewed and looked after.

Fresh refers to soils that usually stay slightly damp. On a scale of soil moisture content, "fresh" is between "dry" and "moist".

Group Selection refers to a silvicultural system applied to stands of midtolerant tree species in which trees are cut to create scattered openings about 20 to 30 metres across.

Habitat refers to areas where plants, animals and other organisms live and find adequate amounts of food, water, shelter, and space to sustain their populations.

Hardwood is a term used to describe deciduous trees such as sugar maple, beech, oak and poplar.

High-Grade means to cut only the most economically valuable trees in a forest stand, leaving the less economically valuable trees (and their offspring) to take over the stand.



Intolerant Hardwoods are those whose seedlings cannot survive in shade. They need full sunlight to thrive.

Inventory refers to a survey of an area that describes the physical characteristics of the plants and animals, including the species present, the abundance of each species and other measures such as tree age, height, diameter and quality.

Mid-tolerant means a type of tree, such as red oak, yellow birch and white pine, whose seedlings can tolerate a moderate amount of shade but cannot survive in dense shade.

Predators are animals that hunt and eat other animals

Renewal refers to the efforts made to re-grow a forest. This may include planting trees, preparing the site with chemicals or physically removing unwanted competition.

Sapling refers to a small tree from 1 to 10cm in diameter.

Sawlogs are logs that will be made into lumber and have a diameter of at least 26 cm when measured 1.4 metres above the ground

Seed trees are those left to produce trees after an area has been logged Seedlings are tiny tree spouts, with stems a centimetre or less in diameter. Selection silvicultural selection involves cutting individual trees or groups of mature and/or unhealthy trees leaving most of the trees to grow and replace the cut trees

Shelterwood silvicultural system involves cutting the mature trees in a series of two or more cuts over several years.

Silviculture means the science of growing trees.

Silvicultural systems are methods for growing, harvesting and regenerating trees. Three main systems are used in Ontario: clear cutting, selection and shelterwood.

Softwood is a term used to describe coniferous trees such as pine, spuce and cedar.

Stand means a group of trees that can be distinguished from other vegetation by its composition, age, arrangement or condition.

Suckers are sprouts growing from the root systems of trees.

Tolerant hardwoods are trees such as sugar maple and beech whose seedlings can survive in dense shade.

Tree markers are certified forest workers that are trained to recognize a wide variety of tree species and forest values. They mark individual trees to be cut or left in stands that will be managed under selection or shelterwood systems. **Unacceptable growing stock (UGS)** refers to the lack of *economic* value of a

particular tree

Veneer is economically valuable wood that is peeled from a log in thin sheets and used for making plywood.

Wildlife means all mammals, birds, reptiles, amphibians, fishes, invertabrates, plants, fungi, algae, bacteria and other wild organisms.



FOREST MANAGEMENT ON PRIVATE LAND

Privately owned forests make up an important part of the landscape in central and southern Ontario. The Ontario Ministry of Natural resources supports good forest management on private lands through a number of information and tax incentive programs. If you own forested land and you are interested in getting more information about managing it wisely, please call your local ministry of natural resources office and ask for the stewardship coordinator.

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- Township of Algonquin Highlands—Parks, Recreation and Trails Department
- Westwind Forest Stewardship Inc.
- Ontario Ministry of Tourism, Culture and Sport
- Ontario Ministry of Natural Resources





ANSWERS PAGE

Poat 3: Name that Ecosite

The site at Post 3 is Ecosite 29.2

Post 4: Conks, cracks and cavities

DEF #6: Target canker and false tinder fungus are visible.

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SUMMER KEY TO DECIDUOUS TREES



For more information contact:: Township of Algonquin Trails Office

20130 Hwy # 35

705-766-9033

trails@algonquinhighlands.ca

www.algonquinhighlands.ca

Mailing Address:

1123 North Shore Road

Algonquin Highlands

ON, KOM 1J1

May to August

Hours

- Open 7 days a week
- Sun-Thurs 9am-5pm

Fri 9am-9pm

Sat9am-7pm

September to October

Open 7 days a week

9am-5pm

November to April

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10pm-3pm