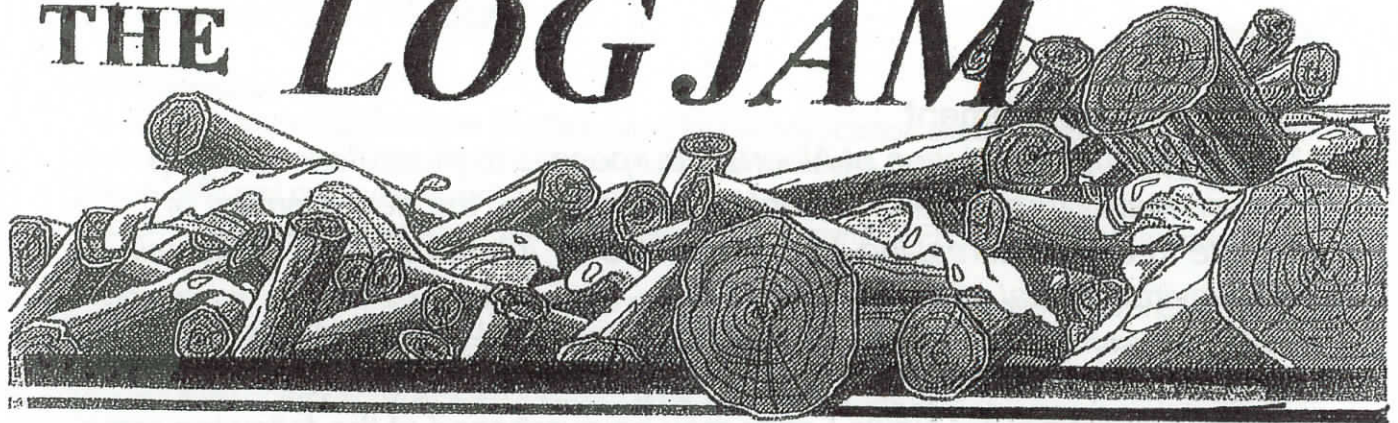


THE LOGJAM



Published by the Woodlot Association of Alberta (WAA)

December, 2017



A centre pieces —Really ?? (see editorial for explanation)

photo by Ivan

Our Mission Statement

"The Woodlot Association of Alberta's purpose is to promote leadership in sustainable forest management by encouraging the development of Private forest by increasing awareness of their inherent social, economic and environmental values."

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President's Report

Laval Bergeron

Hello everyone,

Great news for woodlot owners of Alberta and for the Association also. It looks like we have done it. Through meetings with the Board of Directors, Alberta officials of different levels, many phone calls and patience, Woodlot owners of Alberta with a Management Plan will be able to submit their case and become « this is my own new acronym » FFF, Full Fledge Farmers. Isn't this amazing.

I know we are affected differently by taxes depending on where we live in the province but now you will be able to be taxed as farmers are, meaning growing a forest will be looked at the same as growing wheat if you will. Keep reading through your favourite magazine « The Logjam » and you will find full details. Very exiting times.. It's been on the topic of discussion for a long time and this shows that if you believe in something it is possible to succeed and I'm sure this will lead to new openings.

Again I want to thank your Board of Directors for always being at the table of discussions. Awesome bunch :)

Another issue that we are working on is permanent funding. Right now we are ok, because of a generous donation from FRIAA but we can't rely on these for ever. You will also find full details on this subject further down the Logjam.

I want to thank Karen Visser for her time on the Board. Being the youngest and very much involved creates a big gap and she will be greatly missed.

On a personal note, in the last issue I talked about a storm that went through, well as of today we have finished our firewood for next year and it looks like we have only touched the tip of the iceberg. It's surprising to see big healthy trees ripped apart like that. The next step is to salvage and or make sense of what is laying down, fun fun...

I wish you a nice long winter. .. just kidding « Holidays » and may peace reign on your woodlot.

Up Coming Events

Board of Directors - Teleconference

January 29, 2018

February 26, 2018

March 26, 2018

All calls are at 7pm

Face to Face meeting on January ~~17~~₂₄, 2018 in Whitecourt AB.

**We Want to Wish all WAA Members a
Very Merry Christmas and a
Happy, Healthy New Year**

Good News

This is truly good news for Woodlot Owners, that being with this years Municipal Government Act Review. The regulations have been amended to include private woodlots as a farming operation.

As the farming regulation state:

(IV) an operation on a parcel of land form which a woodland management plan has been approved by the Woodlot Association of Alberta or a forester registered under *Regulated Forestry Profession Act* for the production of timber primarily marketed as whole logs, seed cones or Christmas trees.

The good news here is that a managed woodlot will be assessed as farmland rather than at market value. This will now allow owners of forest land to retain them as taxes will no longer make it financially impossible to retain these woodlots for the long term.

In order to develop a management plan you should use our -*Template for a Farm Woodlot management Plan* - which goes step by step how to build your management plan. To obtain a copy of the template contact myself, it will also be on our website.

This plan must be approved by either the WAA or the RPFs

There will be a fee for the approval, (*The WAA must set the fee, but by the March issue of the logjam it will be done*)

This will come into effect in the 2019 taxation year

The Woodlot Association - Needs YOU -

The WAA is in need of some volunteers of either male or female to fill several volunteer positions, which are.

1) Secretary of the WAA and be member a of the board of directors

This involves:

- a) taking minutes at all meetings and taking part of discussions at meetings
- b) The scheduled meetings are, i) a monthly tele-conference meeting (1to 2 hr.)
ii) the face to face meetings held in Whitecourt 3 times a year (4 to 5 hrs)
iii) the Annual General Meeting held in various places in AB. (1 or 2 days)

c) All minutes are e-mailed to all members of the board of directors.

2) Three members to serve on a steering committee

This committee will be formed for the purpose to establish a "Check-Off" system for all forest products sold from private land. Also to change the Woodlot Association of Alberta to the Alberta Woodlot Commission, this is so that we are legally able to collect funds from the check - off collected from the sale of forest products from private land.

Perhaps I should backup a step, I'm sure that most of you who are farmers understand the check - off system, but for those of us who do not understand what a check - off system is, I will give you a short explanation what it is.

The check - off system is legislated by law for 13 farm products each is a separate commission, these commissions set the rate that everyone pays when they sell a product i.e. for the sale of lambs \$1.00 is paid for each lamb sold. Those funds are collected at the point of sale and given to the Alberta Lamb Producers, who use these funds to promote their industry, conduct research etc.

It is through these commissions that the producer organizations are able to present their views and advance their industry in the eyes of both the political and the public in general.

Now to get back to the good part of these positions, this would entail a considerable amount of work and takes up to two years to complete, but I believe that a considerable amount of that time is spent waiting for others to reply. You would work very closely with the department of " Alberta Agricultural Products Marketing Council". At our AGM in June, Ms. Siobhan Shears who is the Senior Manager Policy & Regulation from the department gave us a general over view of how a commission can be formed. She also said that they will give considerable assistance and guidance to the committee to aid them.

We the WAA are badly in need of a check -off system to give us a stable source of income, which would enable us to assist woodlot owners and promote the industry. Whereas at present every thing that we do is done by volunteers and any monies that we have is from grants which nearly cover costs.

This is the time for the WAA to become a commission for our forestry products can now become a farm product, just as are livestock, grains , honey etc. That is if the product comes from a woodlot with an approved management plan.

(Read the GOOD NEWS article in this issue which out lines how your woodlot can become a farm)

For more detailed information contact our President - Laval Bergeron

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*These ads are **free** to all members , for the - sale and purchase of any item, or a service you can supply - or pets/livestock , etc.*

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Living Close To Trees May Help You Live Longer: Study

Dan Crouse of the University of New Brunswick, along with other researchers across Canada and the United States, studied 1.3 million Canadians in 30 cities over an 11-year period.

"We found that those who have more trees and vegetation around where they lived had an eight to 12 per cent reduced risk of dying compared to those who didn't," Crouse said Wednesday.

The study used data from the 2001 long-form census and compared it to Canadian mortality data base for the next 11 years.

Researchers took into account the amount of trees, plants, shrubs and other vegetation within 250 metres of an individual's home and created estimates of daily greenness exposure, he said.

They also used community data such as socioeconomic makeup and environmental characteristics like air pollution and population density.

"Holding all that constant, if you live in a greener area, compared to a less greener area, there's about a 10-per-cent reduced risk of dying," he said.

Crouse said he had heard anecdotal stories from people who said their stress level was reduced after spending time with nature, but he was surprised at the impact that green space can have.

Researchers found the protective effects of exposure to green space weren't the same for everyone, however.

"One thing that was kind of striking is that we found that those who were in the highest income bracket and those who had the highest levels of education were benefiting more from the exposure to greenness," he said.

"If you take two people and everything else is more or less the same ... their age, sex and city they live in and they both have the same amount of greenness around where they live, someone who is more affluent is getting a big boost to their risk of dying whereas people in the lowest income group were getting almost no benefit at all."

He said lower-income people may have less time to spend around their properties or live in an apartment without good views.

Having green space around your home has greater benefit than weekly trips to the park, he said, calling it an important message for city planners.

"Parks are important but I think this shows that it's just as important to have trees on medians and along streets and sidewalks where people are going to have contact on a regular basis," he said.

The study only measured rates of mortality and didn't estimate how much longer someone might live with regular exposure to green spaces.

The full findings of the study are published in this month's issue of *The Lancet Planetary Health*.

UQAT launches forest research laboratory

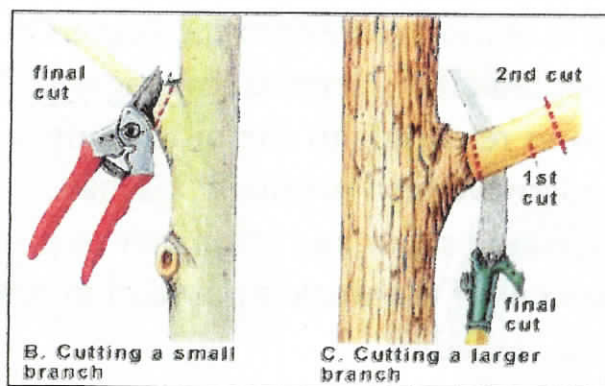
Université du Québec en Abitibi-Témiscamingue has officially launched the Laboratoire international de recherche sur les forêts froides. The new laboratory will allow for the development of an international research group made up of researchers from Canada, France, Sweden, Norway, China, and Russia who study the functioning of mountain and boreal ecosystems in the northern hemisphere. The research group will also train graduate students in forest ecology and biodiversity management. The research library will reportedly become one of the largest and most diverse in Canada in its field of research, especially in the areas of dendrochronology and paleoecology.

Heavy snow on trees

With nine months of potential snow here in Alberta, we frequently get heavy snow in early fall or late spring that can greatly affect our trees and shrubs. Most of them are well adapted to winter conditions but having sudden heavy snow when trees have not completed or are just starting their growing season can be devastating. Most of our spruces, pines, and fir have flexible branches and shed snow relatively easy, but coniferous trees often have their tops broken by heavy snow. Trees with a narrow vertical crown: Swedish poplar, junipers, and many shrubs, and with narrow upright branching are highly susceptible to damage from wet snow. The best way deal with this is to very gently remove snow with a broom or a small pole. Do not shake the tree or shrub as branches can easily get broken. If snow or ice is frozen to a branch don't do anything until it thaws or melts off. Do not use any salt deicing spray as salt is one of the most common killers of trees and shrubs in Alberta shelter belts or residential areas. Also don't use heat of any kind to melt ice or snow. If there is no significant damage and the tree is still holding let the snow melt naturally - leave the tree alone.

If your trees and shrubs are damaged; pruning is your only option. There are several steps to consider:

- **Safety** -inspect your tree for any power line contact. Look around trees and carefully inspect them from a safe distance. Stay away from the trees and call the power company to deal with them.
- If you have heavy broken branches or large trees, call a certified arborist to deal with them. Broken hanging heavy branches can fall in a slight wind or cold and you can be easily injured.
- Do not try to use a ladder to remove snow or broken branches as it is very slippery and you can be easily injured.
- Do proper pruning which includes three way cut of larger branches to remove the heavy weight of the branch. Do the undercut first, then remove the heavy weight as the second cut. The third, final cut should not damage the tree branch collar.



- Small branches less than 2 inches in diameter can be removed with one cut.
- Putting wound paint or dressing on the cut has no effect.
- Do not leave any stubs when pruning.
- Make cuts with sharp tools.

Overall our trees and shrubs are adapted to winter conditions, and in the few instances where we get heavy wet snow or ice you may not need to do anything expect monitor the situation. Always keep safety in mind. Enjoy the trees in our winter wonderland - or, if it is early spring, enjoy the fact that summer is around the corner!

Medicinal Plants in the Modern World

About one-quarter of the more than quarter million known species of flowering plants have been used at some time for medicinal purposes. At least eighty thousand plant species are documented as traditional medicines worldwide. But plant medicines are not historical relics. They have significant importance today both in developed and developing countries. The 1985 market value of prescription and over-the-counter plant-based drugs in developed countries was an estimated \$43 billion. Twenty-five percent of prescription drugs dispensed in the United States contain one or more active constituents obtained from higher (flowering) plants. In addition to anticancer drugs, the list includes compounds from foxglove, used in the management and treatment of heart disease, and atropine, a toxic alkaloid from belladonna used to reduce salivary secretions and to control bronchial secretions during surgery. Curare or South American arrow poison, extracted from the bark of several South American tree species, is used to relax skeletal muscles during surgery. The famous pain killers morphine and codeine are narcotic and habit-forming alkaloids derived from the opium poppy.

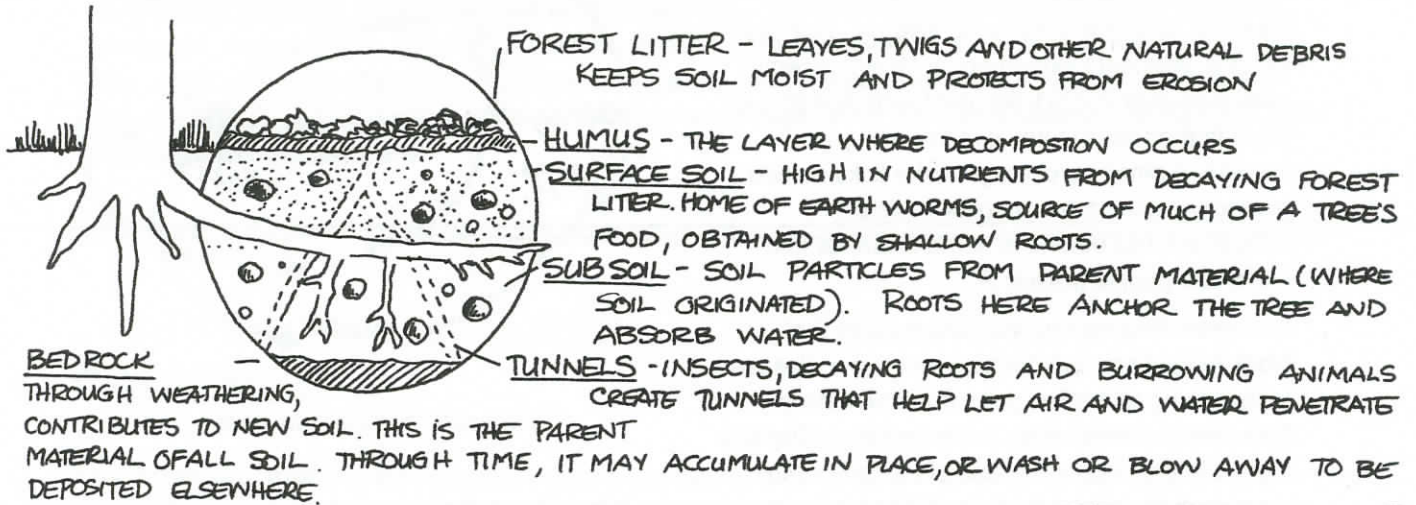
One hundred nineteen distinct chemical substances derived from ninety-one plant species are used in orthodox western medicine. Of these, eighty-eight (74 percent) were adopted after scientists investigated the traditional or folk uses. These figures refer only to chemical compounds extracted from plants used in modern western medicine. Globally, an even greater number of plant species are used safely and effectively to prevent or treat disease. As much as 80 percent of the world's population relies on traditional medicine, chiefly herbal remedies.

EDITORS NOTE: This is an other reason for the maintenance of our Woodlots in order to retain as much of the native plants, because we do not know what plants may in the future be used in the production of lifesaving drugs.

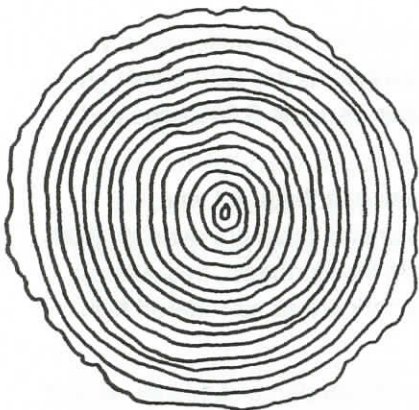
The Soil

Soil scientists fondly point out that all life on land depends on a thin layer of what most of us call dirt. Although this simplistic view ignores some other important considerations - air, water and sunlight to name a few - it is true that soil is a major factor in determining what we can expect from the land. This is as true for forest land as it is for farmland, and your acquaintance with your property is not complete until you get to know your soil.

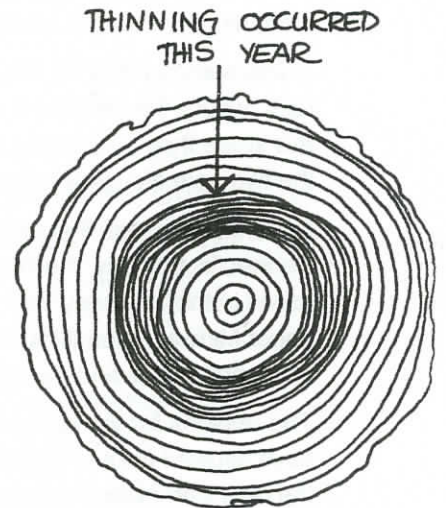
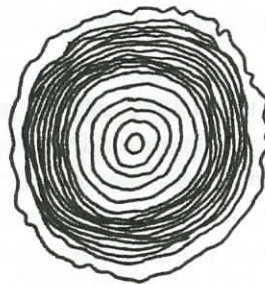
SOIL IS FAR MORE THAN DIRT



THINNING PAYS



THE TREE ON THE LEFT WAS GROWN UNDER IDEAL SPACING CONDITIONS. ON THE RIGHT, A TREE OF THE SAME AGE GROWN IN A STAND THAT SHOULD HAVE BEEN THINNED.



THE RESULTS OF THINNING SHOW CLEARLY. THESE ANNUAL RINGS TELL THE STORY OF A TREE THAT RESPONDED NICELY TO THE REMOVAL OF SURROUNDING COMPETITION

Lyme Disease from the Black - Legged Ticks

(*Ixodes scapularis*)

On a hike this spring, we walked through a clear-cut area with tall grass and brambles. Afterwards, our pant legs were crawling with black-legged ticks (*Ixodes scapularis*), also known as deer ticks, the kind that carry Lyme disease. Scientists with the Vermont Department of Health recently examined over 2,000 ticks and found that 53% of black-legged ticks tested positive for Lyme disease. A small percentage of the ticks carried pathogens that cause anaplasmosis or babesiosis, two other tick-borne diseases that can make people gravely ill.

Understanding the two-year life cycle of the black-legged tick can help prevent Lyme disease.

In the spring of the first year, tick larvae hatch from honey-colored eggs in the leaf litter. The six-legged larvae, about the size of a poppy seed,

soon seek their first blood meal. The larvae may become infected with the bacterium that causes Lyme disease through this blood meal; it all depends on what kind of animal they find as a host. If it's a white-footed mouse, they're very likely to contract the Lyme spirochete. If it's a chipmunk or shrew, they're somewhat likely. If it's a squirrel or a larger mammal, they probably won't.

After feeding, the larvae drop off into the leaf litter and remain dormant until the next spring. In the spring of year two, these larvae molt into eight-legged nymphs, the size of a pinhead, and seek another blood meal. While most feed on mice and chipmunks (and have another opportunity to contract Lyme disease), pets and humans may become unsuspecting hosts.

In late summer and fall, the adult ticks, now the size of an apple seed, attach to large mammals, usually deer, where they feed and mate. People and pets are susceptible to picking up ticks at this time, although at this stage they are easier to see and feel. After this last blood meal, the females lay up to 3,000 eggs and the two-year life cycle begins again.

Lyme disease was first recognized in the US in 1975, after an unusual outbreak of arthritis in Lyme, Connecticut. Today, the Center for Disease Control and Prevention (CDC) estimates there are over 300,000 cases in the US every year. A CDC map of Lyme cases shows that most are in the Northeast, mid-Atlantic, upper Midwest, and West Coast. Vermont, Maine, New Hampshire, and New York are all considered high-incidence states and the number of cases of Lyme has risen in recent years.

The reasons for the increase in Lyme disease are many. Climate change is probably part of it. Milder winters have allowed ticks to expand their range and emerge earlier in the spring, as well as leading to a surge in the deer and mouse populations that feed them. Forest fragmentation has contributed to an increase in mice, which thrive in small patches of woodland, while their predators need larger forests to survive. In his groundbreaking 2011 book, *Lyme Disease – The Ecology of a Complex System*, disease ecologist Richard Ostfeld of New York's Cary Institute advocated for biodiversity — managing our landscapes for ecological health to promote human health. A diverse woodland is home to many other animals besides mice and deer that attract ticks but don't infect them. Some, like opossums, even eat ticks.

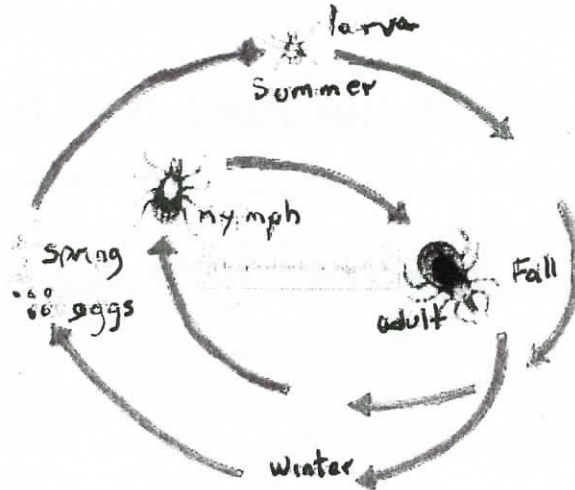


Illustration by Adelaide Tyrol

Ostfeld and Bard College ecologist Felicia Keesing predicted that 2017 would be a bad year for Lyme disease because of high mouse populations last year, due to an abundant mast crop in 2015. In some areas, said Ostfeld, 90 percent of mice harbor Lyme disease, which translates into correspondingly high infection rates for ticks.

Ostfeld and Keesing are searching for methods to control ticks and Lyme disease. Their Tick Project, in partnership with the CDC, New York Department of Health, and others, is in the second year of a five-year study in Dutchess County, New York, which has one of the nation's highest incidence of Lyme disease. The study will determine whether two tick control methods, used separately or together, can reduce the number of cases of Lyme disease in twenty-four neighborhoods. This spring, small bait boxes that attract rodents were placed in the study area. When an animal enters the box, it receives a dose of fipronil, the active ingredient in many tick treatments used on dogs and cats. The other tick control method in the study is a spray containing a fungus that occurs naturally in northeastern forest soils and has been shown to kill ticks. This fungal spray was applied to vegetation in the study area. If these methods are found to be effective, they are already commercially available and others could begin using them immediately, offering hope in the battle against ticks and Lyme.

INTERNATIONAL BOREAL CONSERVATION CAMPAIGN

The International Boreal Conservation Campaign (IBCC) is working to conserve and sustainably manage North America's Boreal region, a globally important ecosystem stretching more than 1 billion acres from Alaska to Labrador and containing one of the world's largest remaining old-growth forest and wetland ecosystems.

IBCC is a coalition of Indigenous peoples, conservationists, scientists, business and civic leaders with a shared vision of protecting and sustaining the natural, cultural and economic values of the Boreal region for the benefit of future generations. The campaign was initiated by The Pew Charitable Trusts and operates as a partnership of Pew, The William and Flora Hewlett Foundation, Ducks Unlimited Incorporated, the Gordon and Betty Moore Foundation, Ducks Unlimited Canada, the Indigenous Leadership Initiative, the Canadian Parks and Wilderness Society, the Boreal Songbird Initiative, and the Boreal Leadership Council.

IBCC's accomplishments include developing the [Boreal Forest Conservation Framework](#), a visionary and science-based plan to preserve at least half of Canada's boreal forest in a network of protected areas and to support sustainable communities and state-of-the-art stewardship practices in developing the remaining landscape. The Boreal Framework is supported by 1,500 scientists from around the world, scores of businesses, Indigenous leaders and nations and conservation organizations and has informed land use planning and decisions by Canadian and First Nations governments.

Ontario Protecting Endangered and Threatened Species

Province Investing in 105 Projects to Help At-Risk Plants and Animals

Ontario is protecting species at risk and promoting their recovery by investing to create and rehabilitate habitats, conduct research on recovery efforts and threats and educate youth about at-risk plants and animals in their area.

Now in its eleventh year, the Species at Risk Stewardship Program helps find solutions to problems such as reversing the decline of pollinators in Ontario, preventing the spread of White Nose Syndrome among bat populations and determining what kind of artificial habitats can be installed to host barn swallow.

105 projects are receiving support this year. Work includes:

- Using science to monitor and conserve endangered bats in Ontario
- Protecting and restoring rare oak savanna habitat for multiple species at risk at St. Williams Conservation Reserve
- Recovering wood turtle populations in Huron County
- Creating habitat for 22 species at risk in and around the Sydenham River
- Enhancing the genetic diversity of the American chestnut tree and expanding seed colonies to continue to bring back this iconic tree.

Investing in the conservation and protection of biodiversity in Ontario is part of our plan to create jobs, grow our economy and help people in their everyday lives.

Quick Facts

- Ontario is investing approximately \$4.5 million in the 2017–18 Species at Risk Stewardship Program to support 53 new stewardship projects and 15 new research projects. Another 37 stewardship and research projects that began in previous years are receiving continued support.
- Over the last 10 years, the Species at Risk Stewardship Program has funded more than 968 research and stewardship projects across Ontario, helping to restore 33,500 hectares of habitat for species at risk while creating 2,600 jobs and involving 28,000 volunteers.
- This year's projects focus on badgers, bats, birds, fish, insects, plants, pollinators, snakes, turtles and wolverines, and various habitats.
- The Species at Risk Stewardship Program invites applications each fall from Indigenous communities and organizations, academic institutions, Conservation Authorities, individuals, businesses, consulting companies and industry organizations, landowners and farmers, municipal and local governments, and non-governmental organizations.

It's Time To Ban Bee-Killing Pesticides

The Canadian government is [banning plastic microbeads](#) in toiletries. Although designed to clean us, they're polluting the environment, putting the health of fish, wildlife and people at risk. Manufacturers and consumers ushered plastic microbeads into the marketplace, but when we learned of their dangers, we moved to phase them out.

Why, then, is it taking so long to phase out the world's most widely used insecticides, neonicotinoids? Scientists have proven they're harming not only the pests they're designed to kill, but also a long list of non-target species, including pollinators we rely on globally for about one-third of food crops.

Neonics are systemic pesticides. Plants absorb and integrate them into all tissues — roots, stems, leaves, flowers, pollen and nectar. First [introduced in the 1990s](#), they now account for [one-third of the global pesticide market](#). Agricultural applications include leaf sprays, and seed and soil treatments. They're also used for trees, turf products, and flea and tick treatments for pets.

We've known about [neonics' harmful impacts](#) on pollinators and ecosystems for years, but this summer, two major scientific releases added significantly to the ever-growing body of research proving widespread use of these toxic chemicals must stop.

On Oct. 6, task force scientist Edward Mitchell and an interdisciplinary team from the University of Neuchâtel and the Botanical Garden in Neuchâtel, Switzerland, published [a study in Science](#), which found three-quarters of the honey produced throughout the world contains neonics. Although concentrations were below the maximum authorized for human consumption, they surpassed levels proven to affect bees' behaviour, physiology and reproductive abilities.

Conducted in 2015 and 2016, the study analyzed 198 honey samples from around the world, searching for the five most common neonics: acetamiprid, clothianidin, imidacloprid, thiacloprid and thiamethoxam. Seventy-five per cent contained at least one, with proportions varying considerably by region. The highest levels were in North America (86 per cent), Asia (80 per cent) and Europe (79 per cent), with the lowest in South America (57 per cent).

These new findings restate the need to stop all mass-scale systemic pesticide use. Maintaining the status quo means continuing environmentally unsustainable agricultural practices. After all, the latest science also shows that in many cases, [neonics provide little or no real benefit to agricultural production](#). Instead, they [decrease soil quality](#), [hurt biodiversity](#) and [contaminate water, air and food](#). They [can't even be relied on to decrease farmers' financial risk or assist significantly with crop yields](#).

What are governments doing with this information?

In 2013, the [European Union imposed a moratorium](#) on certain uses of three neonics on bee-attractive crops: imidacloprid, clothianidin and thiamethoxam. The EU is now considering extending the moratorium. Meanwhile, the new [French biodiversity law](#) aims to ban all neonics starting in September 2018. North American regulators, meanwhile, have failed to recognize the urgent need to prevent neonics from further contaminating the environment.

Health Canada's Pesticide Management Regulatory Agency has [proposed phasing out one neonic](#), imidacloprid, but not until 2021 at the earliest — possibly as late as 2023. While [industry continues to lobby Ottawa](#) to continue using the toxic chemicals, environmental groups are calling for faster phase-out plans and an end to neonic use.

If we care about the quality and security of our food sources — and the species and ecosystems they rely on — the time for neonics is over. Sustainable and affordable agricultural and pest management practices exist. It's time to ban bee-killing pesticides.

If the bee disappeared off the face of the earth, man would only have four years left to live.

Maurice Maeterlinck, The Life of the Bee

Where the old things are: Australia's most ancient trees

The vast majority of trees that burst forth from seeds dropped on the Australian continent die before reaching maturity, and in fact most die within a few years of germination.

But depending on how you define a tree, a very select few trees can live for an astoundingly long time.

What are the oldest trees?

If we define a "tree" as a single stemmed woody plant at least two metres tall, which is what most people would identify as a tree, then the oldest in Australia could be a Huon Pine (*Lagarostrobos franklinii*) in Tasmania, the oldest stem of which is up to 2,000 years old.

However, the Huon Pine is also a clonal life form — the above-ground stems share a common root stock.

If that common root stock is considered to be the base of multi-trunked tree, then that tree could be as old as 11,000 years.

But if you accept a clonal life form as a tree, even that ancient Huon age pales into insignificance against the 43,000-year-old King's Holly (*Lomatia tasmanica*), also found in Tasmania.

Once you accept that a common, genetically identical stock can define a tree, then the absolute "winner" for oldest tree (or the oldest clonal material belonging to a tree) must go to the Wollemi Pine (*Wollemia nobilis*).

It may be more than 60 million years old.

The Wollemi pine clones itself, forming exact genetic copies.

It was thought to be extinct until a tiny remnant population was discovered in Wollemi National Park in 1994.

The trunk of the oldest above-ground component, known as the Bill Tree, is about 400-450 years old.

But the pine sprouts multiple trunks, so the Bill Tree's roots may be more than 1,000 years old.

There is also substantial evidence that the tree has been cloning itself and its unique genes ever since it disappeared from the fossil record more than 60 million years ago.

How do you date a tree?

If no humans were around to record the planting or germination of a tree, how can its age be determined?

The trees themselves can help tell us their age, but not just by looking at their size.

Big trees are not necessarily old trees — they might just be very healthy or fast-growing individuals.

A much more reliable way to determine the age of a tree is through their wood and the science of dendrochronology (tree-ring dating).

Many trees lay down different types of cell wall material in response to seasonal patterns of light, temperature or moisture.

Where the cell walls laid down at the beginning of the growth season look different to those laid down at the end of the season, rings of annual growth can be seen in cross-sections of the tree.

This map of growth patterns can also be cross-dated or correlated with major events like multi-year droughts or volcanic eruptions that spewed material into the atmosphere to be incorporated into the wood of the tree.

Individual tree stems can live for so long because of the structure of the wood and the tree's defence mechanisms.

The woody cell walls are very strong and resist breakage.

In fact, scientists have recently discovered that these walls contain a structure — nanocrystalline cellulose — that is currently the strongest known substance for its weight.

Wood can, however, be broken down by insects and fungi.

Even though there is little nutrition or energy in wood, there is some — and there are plenty of organisms that will try and use it.

But trees are not defenceless, and can fight back with physical barriers or even chemical warfare.

When one tree is attacked by these destructive forces, individuals may even signal to other trees to be aware and prepare their own defences to fight off death and decay.

The death of trees

So why don't all trees live for centuries or millennia, and why do so many die before even reaching maturity?

Seedlings and young trees may die because they have germinated in an area where there's not enough water, nutrients or light to keep them alive as adults.

Young trees also haven't had much time to develop barriers or defences against other organisms and may be browsed or eaten to death.

Some trees simply fall prey to accidents: wind storms, fires or droughts.

This is just as well, because there is a vast number of plants and animals — including humans — which rely on the wood and other components of these dead trees for their food and shelter.

But increasingly we may see trees dying because the environment is changing around them and they may not be able to cope.

This is not just due to climate change; urban development and agricultural expansion, pollution and even too much fertiliser acting as a poison — even our most remote environments are subject to these changes.

But that doesn't necessarily mean we will have no more very old trees.

The Wollemi Pine's genes have already survived over millions of years, multiple ice ages and warming periods and even the fall of the dinosaurs and rise of humans.

And now, people have deliberately spread Wollemi Pine trees all around the world so they are living in a wide range of countries and climates, meaning that the risk of them all dying out is substantially reduced.

Maybe we can do the same for other trees, ensuring that trees will outlive us all.

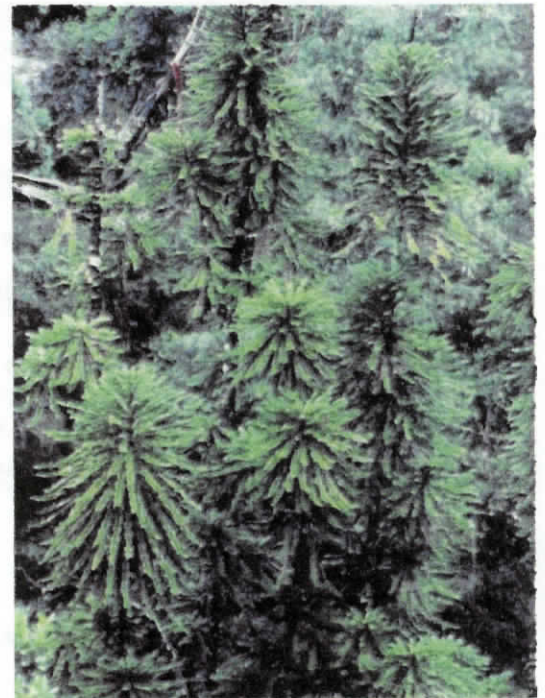


PHOTO: Adult Wollemi Pines in the wild.
(Supplied: J Plaza/Van Berkel Distributors)

Editorial

Jurgen Moll

No this is not a centre pieces, nor is it some exotic species, it is the top of our very ordinary white spruce. I will tell you what happened to this tree for it to grow in this particular way.

This tree grew as an understory in an aspen stand, when it got to about 35 feet it grew into the crowns of the aspen trees this is the normal progression of our boreal forests and normally the spruce tend to grow through the aspen crowns with some minor damage to them from the aspen branches. But not in this case this tree ran into a cluster of branches that did not let the tree progress through their crowns. The aspen branches and wind each year broke off the leader bud, for a period of some 10 years, but the buds of the side lateral branches were able to grow their branches which continued to grow longer each year and more started each year, so now we have this umbrella tree top.

For those of you who have planted spruce trees under an aspen stand this is something that you should watch out for when the spruce start to overtake the aspen. You may not end up with an umbrella as this one but each year that the leader bud is broken-off you loose a years growth and a crook or two leaders neither of these tops will make the tree a good merchantable tree.

The solution here is to remove the aspen tree that is causing damage to the spruce, if you don't you could loose several yeas of growth and have a deformed tree.

Researchers explore vehicle use of cellulose nanofiber-based parts

The researchers are from Kyoto University, and they are working on a material from wood pulp that could hold up with strength of steel yet lighter. The research team said it could replace steel in auto parts. Prof. Hiroyuki Yano leads the work at the university, said the BBC. He said the material could be used to make door panels, fenders and car bonnets.

Specifically, they are working with "a material made from wood pulp weighs just one fifth of steel and can be five times stronger," said Reuters.

How do they do that? Harrison: "The team chemically treats wood pulp, which consists of millions of cellulose nanofibers (CNFs), and disperses these CNFs into plastic."

(CNFs are used in products, from ink to transparent displays.)

The hybrid material is the result of this CNF blend with plastics.

Naomi Tajitsu and Maki Shiraki in Reuters said the university, along with auto parts suppliers, are developing a prototype car using cellulose nanofiber-based parts. They said the expected completion date is 2020.

An automotive analyst saw the bigger picture.

Paolo Martino, principal automotive components analyst at IHS Markit, said in the BBC article that the rush was on "to try and cut as much weight as possible, especially on cars which will pollute more," like pick-up trucks and SUVs.

As mentioned, "Reducing a vehicle's weight by 10 percent can improve the [fuel economy](#) of the vehicle by 6 to 8 percent." Also, "Magnesium and carbon fiber have the potential to reduce the weight of some vehicle [components](#) by 75 percent."

Martino, meanwhile, pointed out manufacturers also seek to lighten their [electric models](#), for an ability to travel further on a single charge.

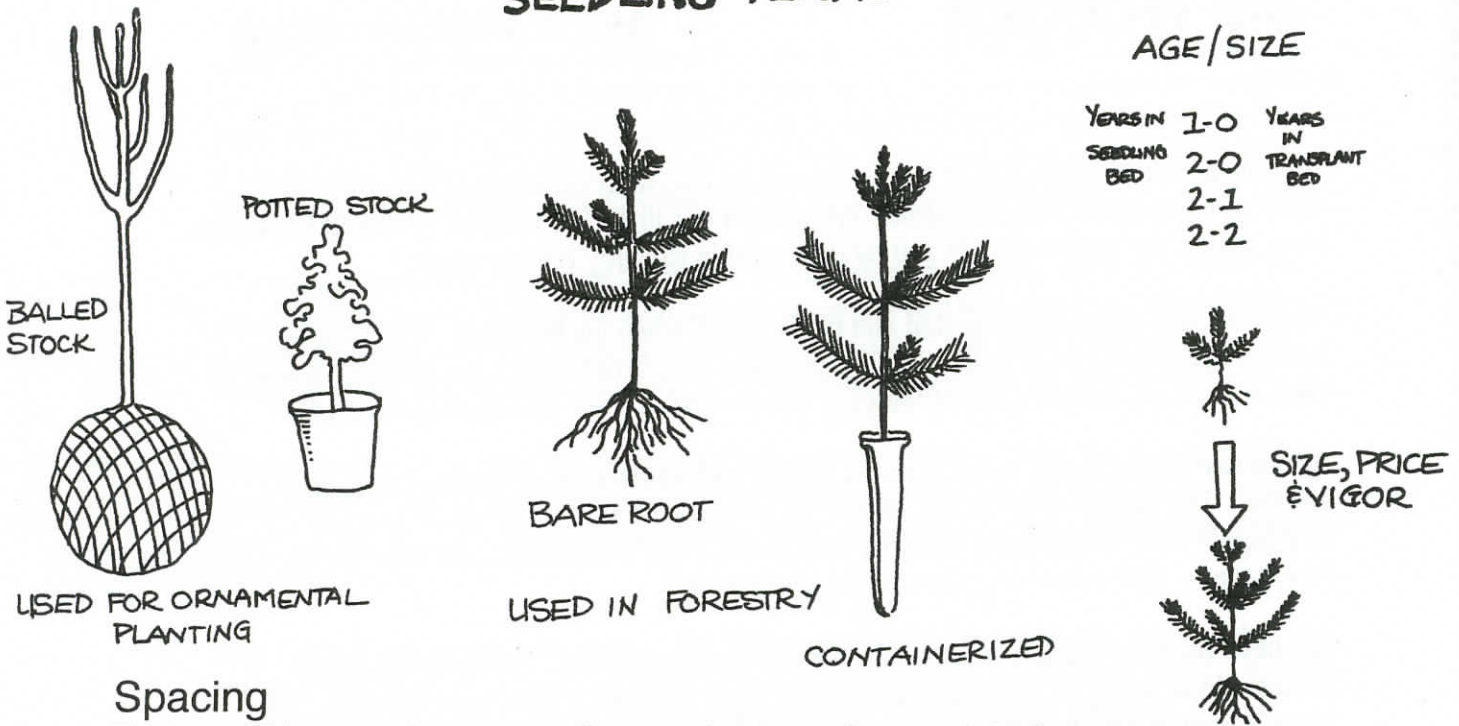
Tajitsu and Shiraki in Reuters said that "a reduction in car weight will mean fewer batteries will be needed to power the vehicle, saving on costs." They quoted Masanori Matsushiro, a project manager overseeing [body](#) design at Toyota Motor Corp. "Lightweighting is a constant issue for us."

Nonetheless, as Reuters also pointed out, their material faces "competition from carbon-based materials, and remains a long way from being commercially viable."

The BBC quoted Vivek Vaidya, [senior vice president](#) at Frost & Sullivan, who said parts manufacturers might struggle to keep pace with auto production lines. "Most components are supplied on-demand, [so] whether a wood or organic material can be made available in a just-in-time way is definitely a question mark."

"Analysts say high-tensile steel and aluminum will be the more popular alternative for many years to come, said Reuters, "considering parts makers would need to overhaul production lines and figure out ways to fasten new [materials](#) like cellulose nanofiber onto other car parts."

SEEDLING TERMS

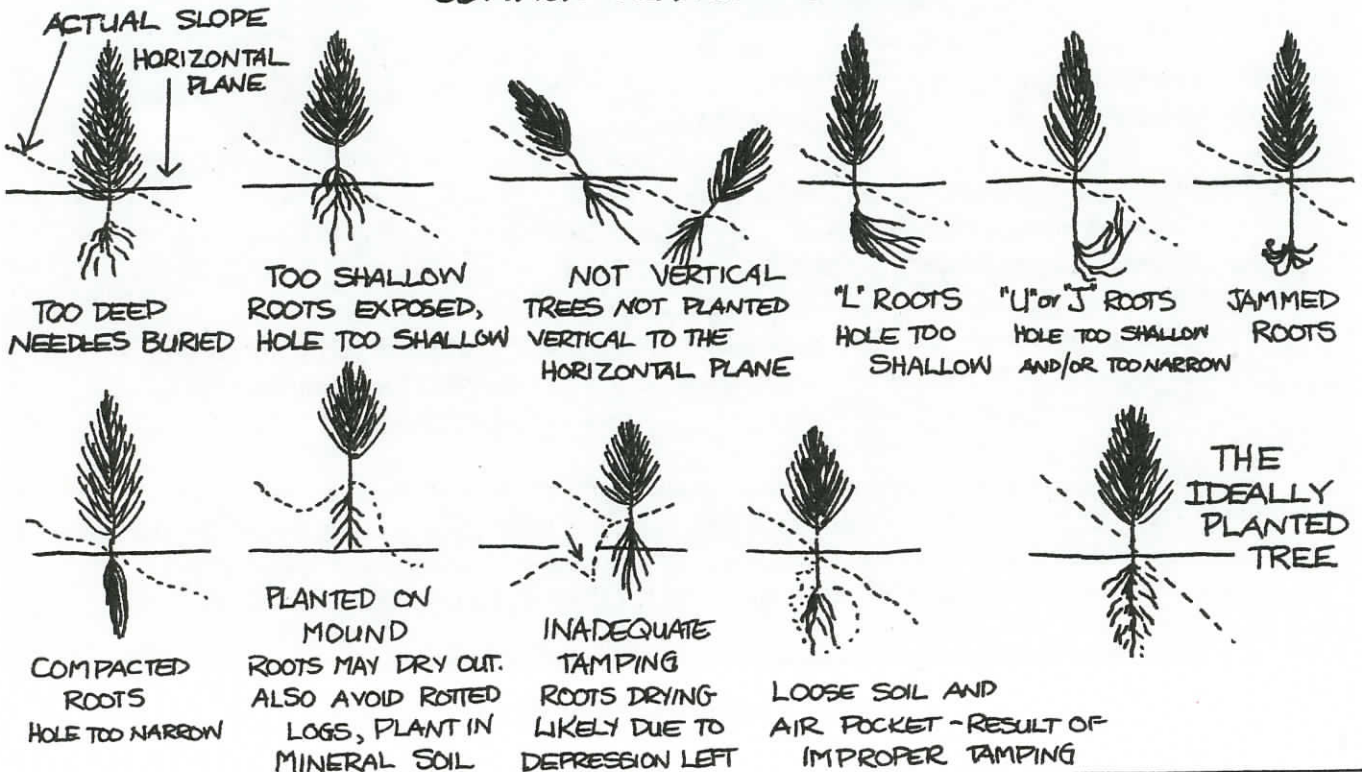


Spacing

The best guide to spacing your seedlings are local experience and the intended use of your trees. This chart shows how many to order, depending on what spacing you decide to use.

Spacing (in feet)	Trees Per Acre	Spacing (in feet)	Trees Per Acre
4 X 4	2722	6 X 10	726
5 X 5	1742	8 X 8	680
6 X 6	1210	10 X 10	430

COMMON PLANTING ERRORS



My Woodlot

Myron and Karin Bjorge

We live about 18 miles NE of Rocky Mountain House in an area that burned in the 1930's and re-grew from that time. We bought our little 120 farm in 1979 and have both been retired for over a decade and have been able to enjoy it very much.

The farm was about half forested and half cleared when we bought it. The cleared portion had mostly been cultivated but part was only brushed and not broken. It was all used as pasture, except most of the pine was fenced off and this has continued.

About two thirds of the forest is aspen poplar with quite a lot of balsam poplar and spruce. The poplar forest is old except for a few acres that are 40 to 45 years of age. Lodgepole pine which grew after the fires in the 1930's dominates the other third of the forest areas. Our home is in the middle of the pine.

We have thought of our place as a farm more than a woodlot. However we have protected the forest as much as possible and have watched it grow and develop. The areas dominated by poplar now show a lot more spruce in the over-story than when we came here in 1979. The pine forest is very thick and individual trees mainly have very few branches on the bottom half of the trunks. There has been oil company activity including two leases and three pipelines. Our relationships with oil companies have been good. Forest that had to be removed was all salvaged for lumber or firewood. In recent developments the oil company went to extra cost to save the forest. We have harvested some of the aspen poplar for lumber and firewood. We have also harvested some pine, taking the smaller trees where they are too thick. We have not logged commercially. A close neighbor has done our sawing. We used the lumber and firewood within our family and have quite a bit on hand.

Our most interesting forest endeavor has involved tree planting. In the spring of 2009 we got 5130 lodgepole pine and 4320 white spruce from the Woodlot Association of Alberta. In 2010 we got another 1000 pine and 4000 spruce.

The pine seedlings were planted on the north side of our farm on a small field that had been brushed many years earlier but never broken. The soil on this field is gray with some areas being quite sandy so that the internal drainage is good. Planting them in the open was favorable as they need full sunlight to do well. The seedlings were very small on arrival but were very healthy. Spring 2009 was very dry but remarkably the seedlings established very well. Spring 2010 was more favorable and again the establishment was very good. The pine seedlings were fenced off in 2009 to keep cattle out.

Very few of the pine seedlings have died. Small numbers have just turned yellow and died. Deer have not browsed them so far but there has been some rubbing by whitetail bucks. The biggest problem has been competition from volunteer poplar, especially balsam poplar. In February 2015, Myron hand cut the balsam saplings. These are

growing back of course but the pine in the affected areas has done better in 2016 - 17. They are still smaller than average and the balsam poplar should probably be cut out one more time. . In one area timothy grass was very vigorous and the pine is smaller but coming ok Overall height is variable, about 2 to 8 feet with an average of about 6 feet. The pine all appear to be very healthy and the stand is reasonably full.

The spruce tree seedlings were planted in the under-story of existing forest which is mainly aspen poplar with quite a bit of balsam poplar and white spruce. These also established very well and are now about two to four feet tall, bushy and healthy. The cattle have not grazed them and have not trampled many either as they avoid the bush.

Birds present in our yard this winter include pine grosbeaks, white and red breasted nuthatches, blue and gray jays, ruffed grouse black capped and boreal chickadees and red polls. There are a lot of white tailed deer. Additional birds and mammals are present in lower numbers.

Our biggest worry with the trees is fire. We have had some extremely dry weather and are thankful that we and our neighbors have been careful to not let fires occur. Another concern is the potential of the pine beetle and other tree pests and diseases.

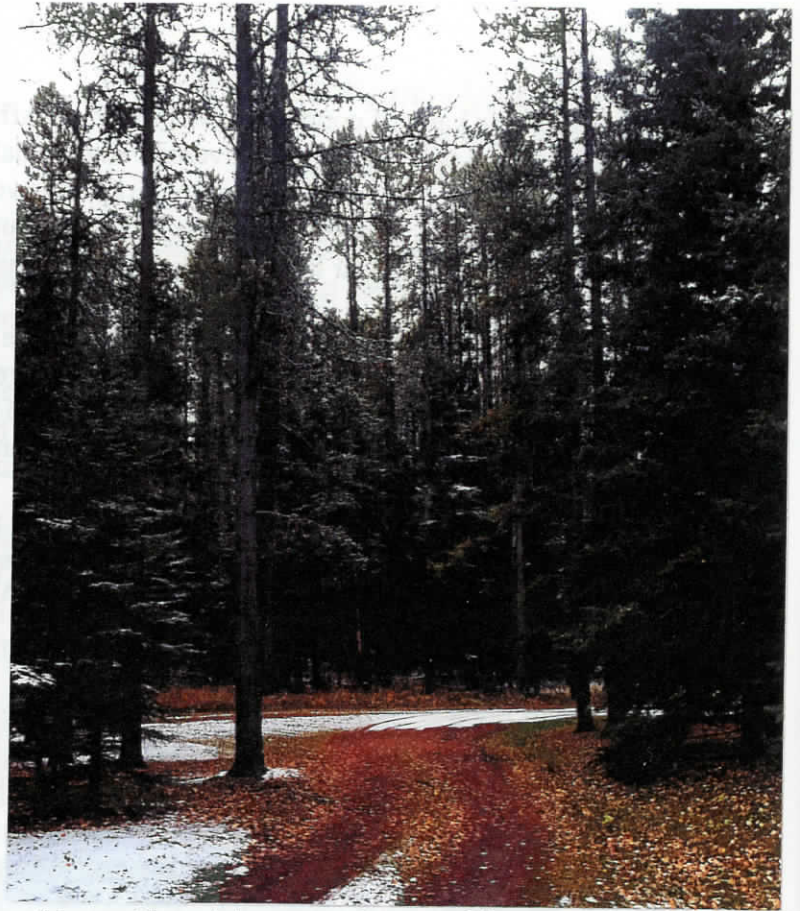


Lodgepole Pine Plantation (2009)

Photos of Myron and Karin Bjorge - Woodlot



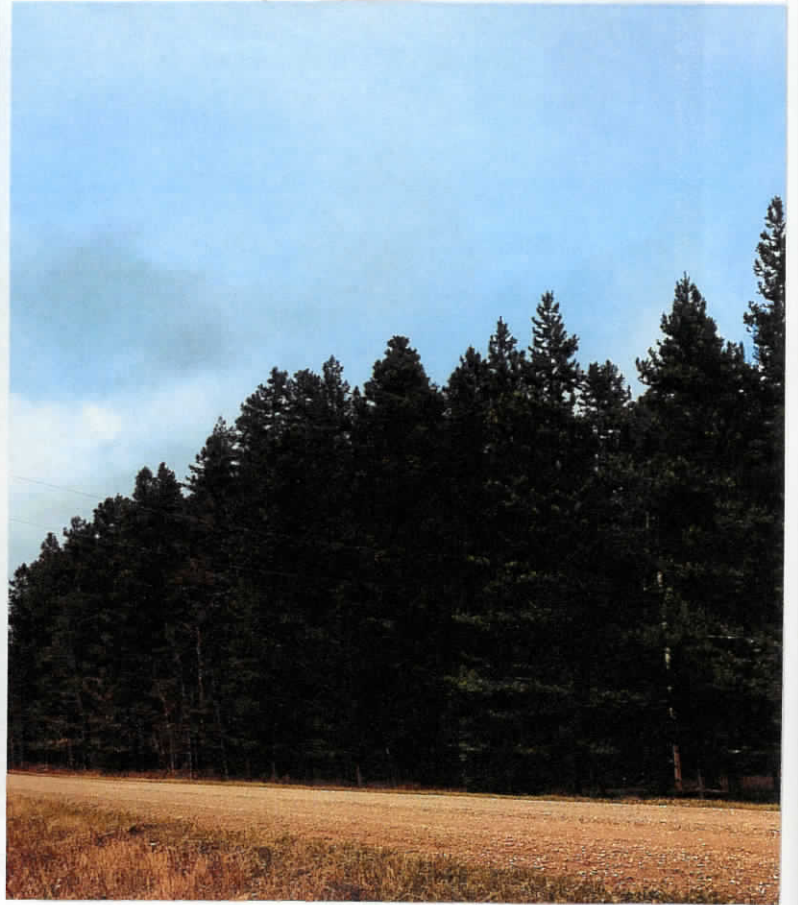
White Spruce Underplanting (2010)



*Along the driveway to our Home
Looking at 70 ft, Pine with Spruce Understory*



Lodgepole Pine planted in 2009



Pine and Spruce Forest beside our farm