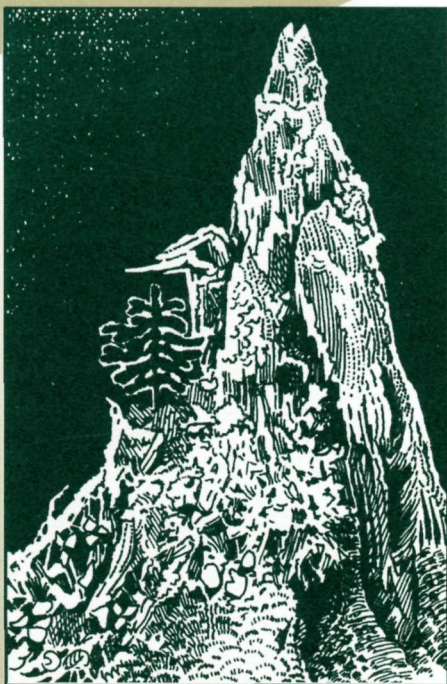




PRINCE ALBERT
NATIONAL PARK OF CANADA

*Treebeard
Nature Trail*



Parks
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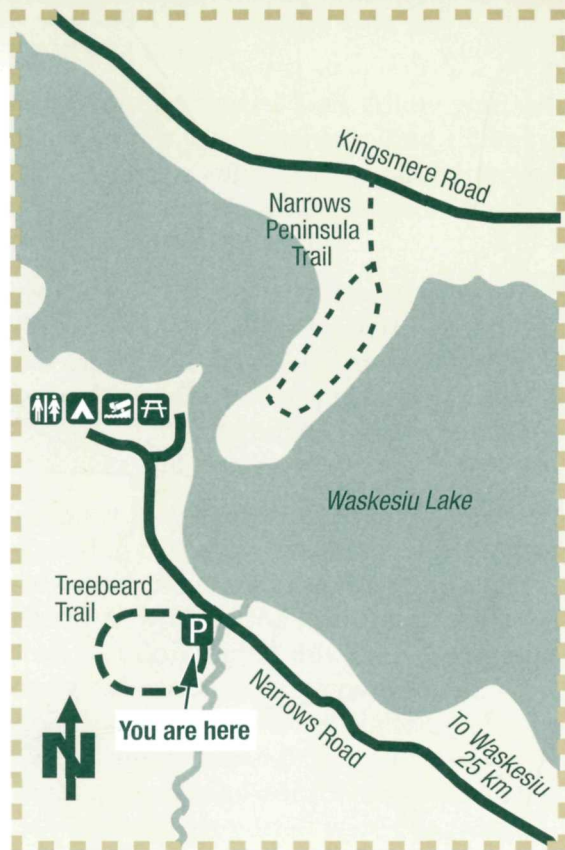
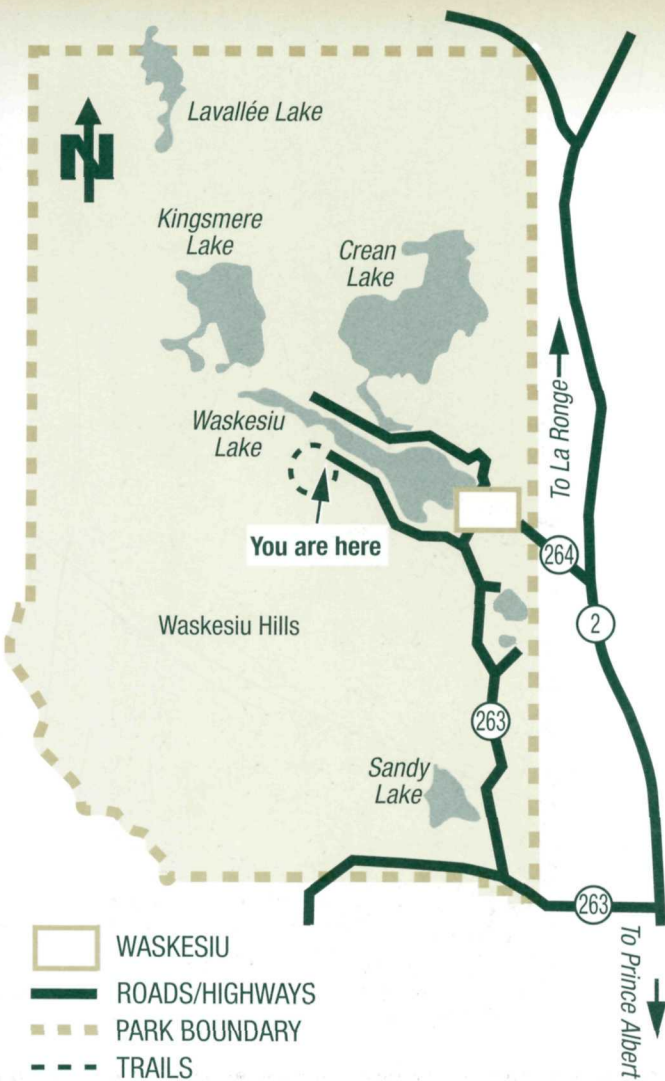
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PRINCE ALBERT

NATIONAL PARK OF CANADA

Treebeard Nature Trail



INTRODUCTION

Treebeard Nature Trail

Mi sis a kaw the Woodland Cree call it. Big Forest. Old Forest.

Welcome to Treebeard Trail. Allow yourself about an hour to enjoy this rolling 1.2 km trail. Travel in a counter-clockwise direction and be prepared for a steep section along Treebeard's terraced slope.

Treebeard Trail. A small peek into the world of big trees. Just one part of a larger landscape - and the great northern forest. The health of the entire northern ecosystem depends on maintaining a variety of all forest ages and types.

To protect the health of our northern forests we need to better understand how the forest works, how we can work with it, and with each other. In 1993, the Prince Albert Model Forest was born out of this goal. It brought Aboriginal communities, government, industry and Prince Albert National Park of Canada together to find ways to sustainably manage our forests. Among the many projects supported were educational products like the original interpretive brochure for Treebeard Trail.

Located 0.2 km east of the Narrows campground on the Narrows Road and 25 km from Waskesiu townsite, Treebeard Trail awaits you.

PARTNERS IN NATURE

Watch for the *old man's beard* lichen hanging from dead branches along the trail. The lichen is not killing the branches – they were already dead from lack of sunlight before the lichen arrived.

Lichen is one of nature's great wonders. It is actually two life forms – algae and fungi – growing together in a mutually beneficial relationship called *symbiosis*. The algae have the chlorophyll necessary to carry out photosynthesis. The sugars and carbohydrates produced by the algae feed the fungi. The fungi in turn provide a structure to support the algae.

Lichen literally live on air. Dangling from branches, they can capture the sunlight, nutrients and water they need from the atmosphere.

Prince Albert National Park of Canada and its partners can also be seen as a symbiotic association – sharing a common vision to protect the health of our northern forests and to promote its features.

What role can *you* play?

Old man's beard or
Treebeard





STOP # 1

Treebeard Trail wears two faces

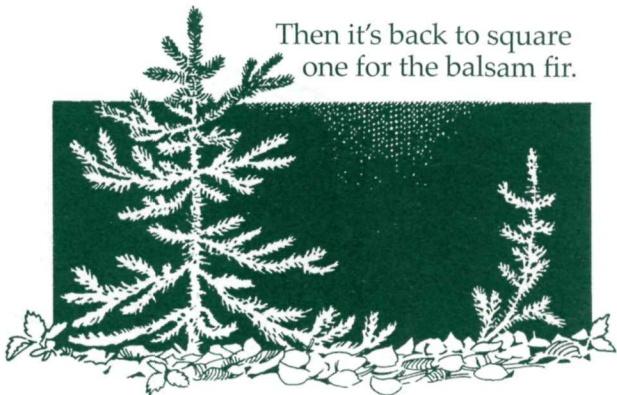
You have arrived at a world of shadows and shafts of sunlight.

In 1890 a fire burned over where you are now standing. Aspen and spruce grew back. The aspen are in their twilight years. In the dim understory, balsam fir have grown.

Balsam fir have a hard time of it. Being shade tolerant, they may start their life cycle in a mature forest. As they begin to grow, browsing moose will nip their buds, stunting their growth.

Before they can reach the tree top level and the sunlight necessary to trigger the growth of cones for reproduction, a fire may burn the forest .

Then it's back to square one for the balsam fir.



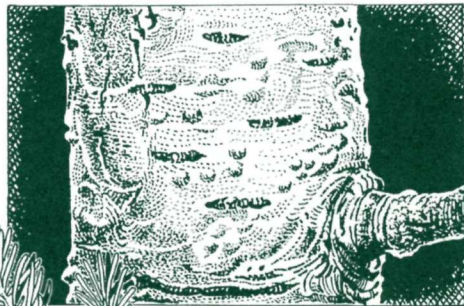
The branches close to the ground are weighted down by snow in winter. Part of the branch remains buried in the ground, and it puts down roots. The tip of the branch takes over as a main stem and one day a new tree is born. This is called layering.

But a balsam fir has certain advantages for survival. Its seeds can germinate and grow in thick humus on the forest floor better than the seeds of other trees. It can also reproduce by layering.

Watch for balsam fir layering along the trail.

The source of seed for these young balsam fir comes from mature fir you will encounter further up the trail. You will know it by its thin, silvery-gray, blistered bark.

Although this stand may be considered old, Treebeard Trail wears two faces. You have yet to meet the oldest trees along the trail.



Run your hands along the flat needles of the young balsam fir.

Rub the needles between your fingers and smell.

What does it remind you of?



STOP # 2

Hearing the forest – the birds of Treebeard Trail.

There are fewer stands of older aspen and spruce in Saskatchewan, due to the combined effects of logging and fires. Old forests provide habitat for many species of animals – from warblers and barred owls to fishers and northern flying squirrels.

Birds and forest form a partnership. The forest provides food and a dwelling place. The birds in turn help to control insects,

such as the spruce budworm and to disseminate seeds of forest plants.

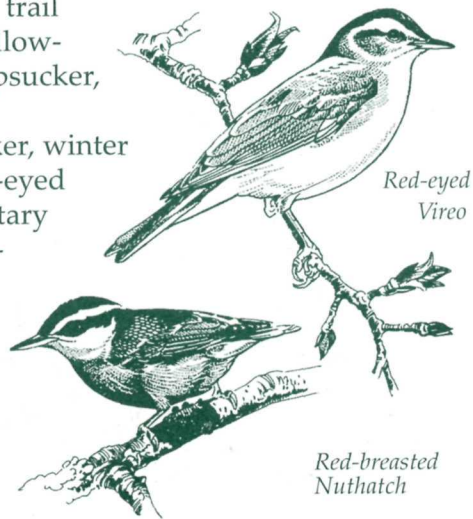


*Yellow-bellied
Sapsucker*

Listen – the forest is alive with bird song. How many different melodies can you count? You are visiting the summer residence of many warblers which spend their winters in Central or South America – the Cape May, blackburnian, black-throated green, yellow-rumped, bay-breasted, magnolia and Tennessee.

Will you hear their songs tomorrow? Deforestation, global warming, the fragmentation of habitat, both in the tropics and in northern Saskatchewan, are affecting the future of these warblers. A larger community protects more wild land than a national park alone. Add your voice to the song of the warblers.

Other birds you might encounter along Treebeard trail are the yellow-bellied sapsucker, pileated woodpecker, winter wren, red-eyed vireo, solitary vireo, red-breasted nuthatch and brown creeper.



*Red-eyed
Vireo*

*Red-breasted
Nuthatch*



STOP # 3

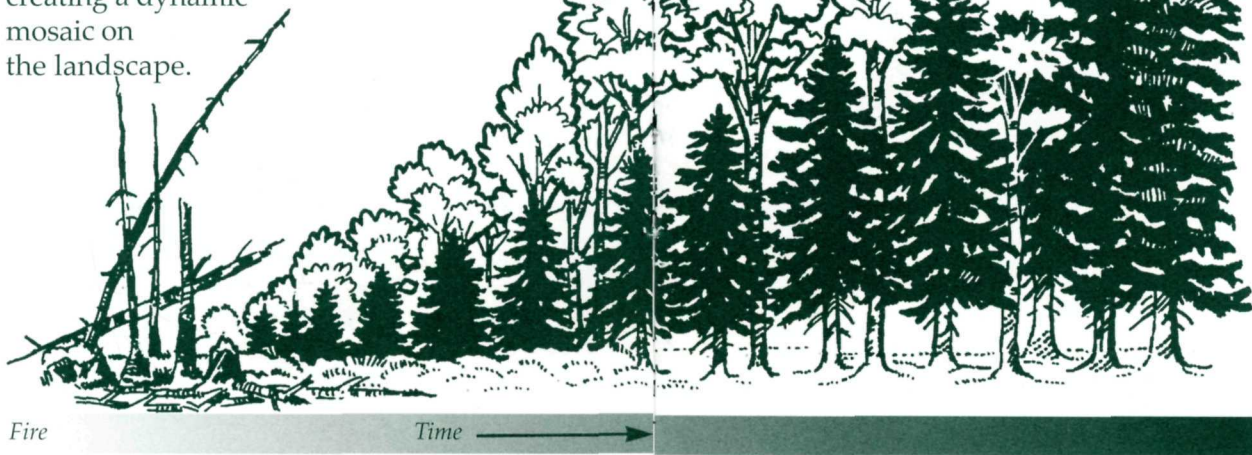
Fire beats the rhythm in the dance of life

Look around and you will notice the forest has changed. The fire that gave birth to the forest behind you in 1890, missed the forest you are standing in.

In nature's dance of life, fire beats the rhythm.

After a fire the beat of life goes on – decomposers break down charred wood into soil. Flowering plants invade. Trees begin to sprout. Competition, replacement, death and renewal, are all changes, choreographed by fire. The health of our northern forests depends on recurring fires.

Prince Albert National Park of Canada recognizes the value of the fire cycle in creating a dynamic mosaic on the landscape.



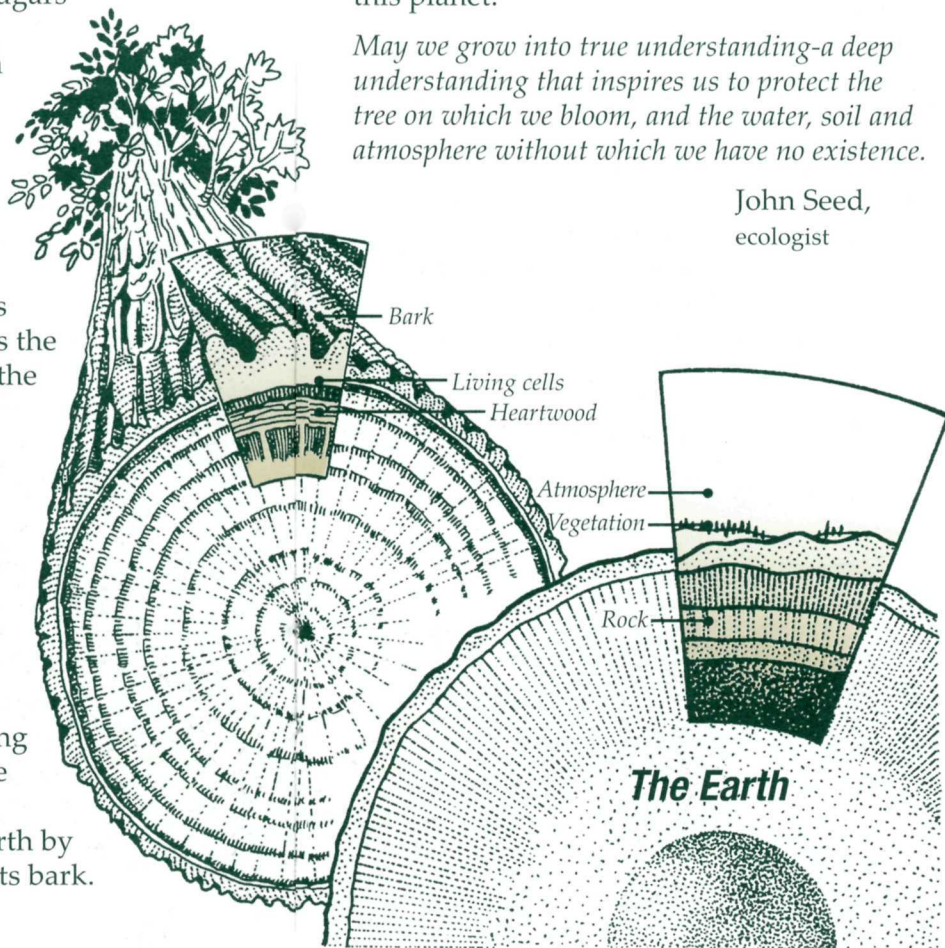
Be a tree. Look up, close your eyes and spread your branches. You may begin to sway. Your dance partners have reached old age and many are no longer standing. This is not the end of the forest, nor the dance. The partners may change but the tune remains the same.

Open your eyes. Look where a large tree has fallen and notice the presence of more light there. This favours light-loving plants such as aspen and grasses. A new partner is always ready to cut in.

What do the Earth and a tree have in common?

Feel the tough bark of a large spruce nearby. The bark protects the cambium, a thin layer of living cells. Water and sugars flow up and down the tree in the cambium layer. Each year, new cells grow on top of old cells in the cambium, producing a ring of growth. The old cells, no longer involved in transporting nutrients, become the tree's heartwood. Heartwood has the important task of keeping the tree erect.

Consider how a tree resembles the Earth. The inner core of the Earth is inert rock, similar to the non-living heartwood of a tree. Both tree and Earth are encircled by a thin membrane of life—on Earth it's the surface layer of living organisms; on a tree it's the cambium cells. Both Earth and tree are protected: Earth by the atmosphere, a tree by its bark.



Find a fallen tree and count the rings to determine its age. What was happening in your own family tree when this tree was born? Where are your roots?

Consider our own roots, as human beings on this planet.

May we grow into true understanding—a deep understanding that inspires us to protect the tree on which we bloom, and the water, soil and atmosphere without which we have no existence.

John Seed,
ecologist



STOP # 4

The forest beneath your feet- decomposition and recycling

The secret to the forest's health lies beneath your feet – in the fascinating underworld of soil.

Soil is a mixture of minerals, air, water and organic material. The organic material is both living and dead. The living component includes millions of tiny organisms such as fungi, mites and earthworms. The organic non-living part of soil includes the decomposed bodies of dead plants and animals which started their lives above ground.

Look at a decomposing stump nearby. Chemical nutrients, once bound up in the tree's living tissue, are being returned to the soil. Time, the elements, and a host of *decomposers* work together to *recycle* a tree into soil.



Tree demolition is the promise of a free lunch that draws the demolition crews to a dead tree. While in search of carpenter ants, woodpecker crews do the heavy work of dismantling a tree's bark and tough fibres. At the same time, hungry crews of carpenter ants gnaw away at the wood, riddling it with passageways, and excreting waste. In their own search for food, the ants are preparing the site for the demolition experts – *fungi* and *bacteria*. These tiny decomposers, which are also looking for nourishment, penetrate wood fibres and break them down into fine particles.

The tree becomes the soil which nourishes the growth of a new tree. Put your index or pointer fingertips together pointing up, and your thumbtips together pointing down. This will give you the shape of a leaf. Now get close to the forest floor and use your "leaf" to frame something that is being recycled.

Whenever you compost and recycle, you are like the forest feeding the earth; everything is connected in the enduring cycle of life.

More than meets the eye- the secret world of forests, fungi and flying squirrels

Within the underground world, a specialized form of fungi weave in and around the root hairs of trees. These fungi are *mycorrhizal*. Mycorrhiza is the *symbiotic* or mutually beneficial association between fungi and roots. The mycorrhizal fungi protect the tree roots from harmful parasitic fungi and enlarge the root surface allowing for greater water absorption. They also help with the movement of nutrients from the soil to the tree roots. The roots in turn supply the fungi with necessary sugars and carbohydrates which they cannot manufacture.

Northern Flying
Squirrel



The fungus-root relationship sometimes includes a third partner. This is the nocturnal and elusive northern flying squirrel. The relationship works like this: northern flying squirrels feed on the underground mushrooms (the fruit) of certain mycorrhizal fungi.

The spores (reproductive seeds) of these fungi are then transported throughout the forest in the droppings of the squirrels. When these droppings disintegrate, the spores are released to produce more mycorrhizal fungi which grow into more relationships with the roots of other trees. The squirrels assist the forest in staying healthy. In return for this service, the squirrels obtain food from the fungi, and shelter from the very trees whose roots they are helping.



STOP # 5

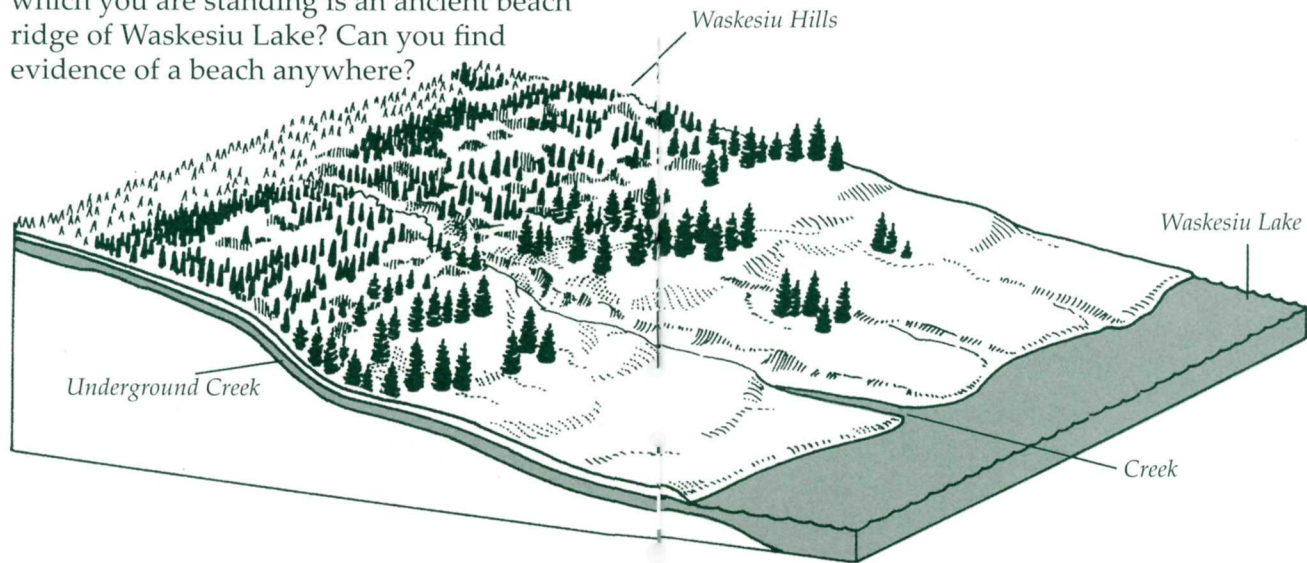
Why are the trees of Treebeard so big?

Your walk is taking you past large balsam fir, white spruce and balsam or black poplar. Why are the trees of Treebeard larger than most others you see in the park? The answer is as old as the Waskesiu Hills, which rise to the south of you.

The boggy Waskesiu Hills act like a sponge, absorbing, holding and steadily releasing water. The water flows in creeks and underground springs downhill to Waskesiu Lake. Did you know that the terrace upon which you are standing is an ancient beach ridge of Waskesiu Lake? Can you find evidence of a beach anywhere?

When the descending water reaches Treebeard's terraced slope it comes very close to the surface, which is where the roots of most trees grow. The water is rich in minerals it has collected from the soil along its downward course.

Treebeard trees are big because they've been fed by a high and nutrient-rich water table for many years, they are not subject to logging, and they have not experienced fire since about 1820. Think of well-nourished children. It's not so much age but rather rich conditions that support size.





STOP # 6

A niche in time and space

Forests of all ages, types and sizes provide places where animals can find food, mates and shelter from predators or the weather. These places are called *niches*. As the forest changes over time, so do its inhabitants. Today this aging forest is prime habitat for fishers. It provides them with a thick cover of deadfall, especially in winter, where they can hunt smaller animals such as voles, and where they can feel safe.

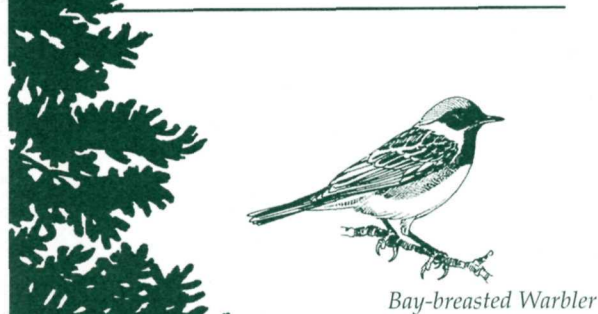
Animals can find their niche *horizontally* across a landscape, or sometimes *vertically* within a forest. The tall trees are like a high-rise apartment for migratory songbirds. Look down on the ground floor, the home of the winter wren which likes to nest and forage in deadfall.

A few floors up, at about our chest level, is the home of the magnolia warbler, which prefers to nest in young balsam fir and spruce. Higher still, about mid level of the spruce trees, is the niche favoured by the bay-breasted warbler.

Look way up to the penthouse level where the blackburnian and Cape May warblers live.

An unspoken contract of cooperation reigns among these bird species in this vertical community .

In what way do you and your family and friends cooperate to occupy niches?





STOP # 7

The rise and fall of Treebeard

Treebeard is approaching old age. Located on the crest of a hill, these trees are especially vulnerable to wind. You may feel no breeze where you are standing, but look to the treetops. With their height, trees catch the wind constantly. Winter's snow can add tremendous weight to the crown and branches. As they age, trees become weakened by disease and insects.

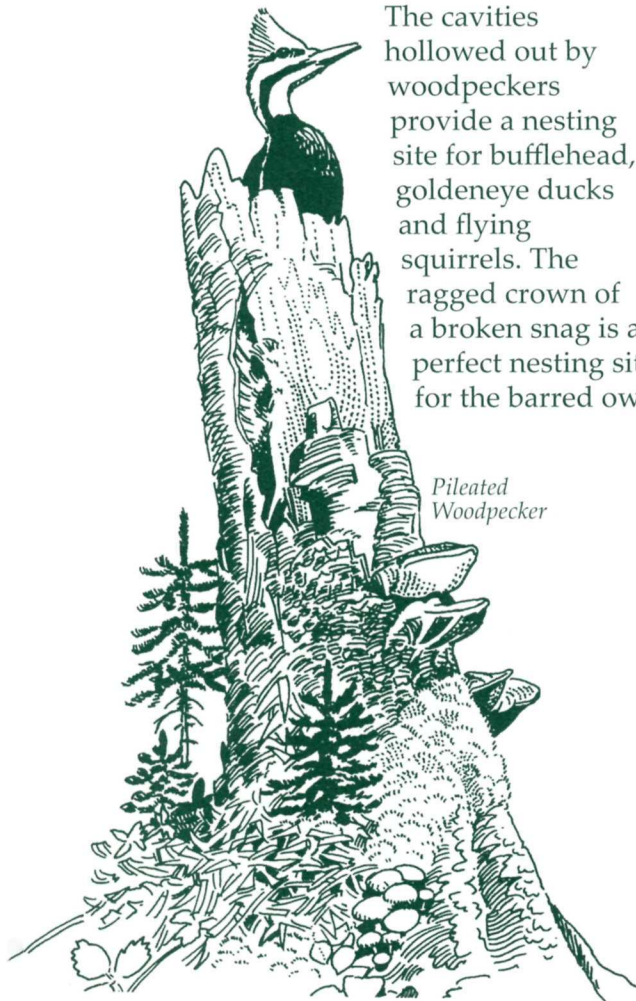
Press the palms of your hands against those of a friend. One of you is the wind and the other is the tree. Without moving your feet, try to push the other off balance. Who will win the battle today?

One day, a tree's root system will no longer be able to support it. Or the roots may hold, but the tree may snap somewhere along its trunk.

The breaking up of a forest by the elements, is truly a *windfall*. An opening is created for the sun to fuel a new cycle of growth. A jumble of berries invade, balsam fir and white spruce begin to encroach. The dead trees on the ground will gradually decompose, adding their nutrients to the soil. Older forests, with their abundance of dead and dying trees, are rich in biodiversity.

The snags left standing are a source of food for pileated woodpeckers.

The cavities hollowed out by woodpeckers provide a nesting site for bufflehead, goldeneye ducks and flying squirrels. The ragged crown of a broken snag is a perfect nesting site for the barred owl.



*Pileated
Woodpecker*



STOP # 8

The view from afar

Listen to the creek below you...the sound of the wind and water. Look at the distant landscape. You are seeing the forest on the far side of Waskesiu Lake, several kilometres away.

For thousands of years Aboriginal people travelled this wooded land and made it their home. They adapted through time to the fluctuation of resources. They wore their environment around them like a garment, weaving it from the threads of four worlds—the spiritual, personal, economic and social. This intimate connection of people to the land endures.

We are all part of the ever-evolving ecosystem, to which there is no beginning nor end.

*Earth mother, star mother
You who are called by
a thousand names,
May all remember
we are cells in your body
and dance together.
Within you we are born
We grow, live, and die –
You bring us around the circle
to rebirth,
Within us you dance
Forever.*

*Starhawk
Earth Prayers*



STOP # 9

Where water is the connector.

You have descended to where the creek flows from the Waskesiu Hills, bringing nutrients to the soil and plants along the creek bottom. Here is a micro-environment, a cool glade formed by steep slopes rising from the creek. Here, snow lingers well into May and a constant source of water nurtures the ostrich ferns, horsetails, grasses and berries .

Take time to investigate the creek. Typical of an old forest, the creek is criss-crossed by fallen trees. This tangle of trees slows the course of the descending water, guiding it into quiet pools and riffles which gently nourish the vegetation nearby.



Marsh reed grass



STOP # 10

A creek like this is a small but mighty presence in the forest. Water is the *connector* – it moves nutrients through the forest. It is the source of life for the animals which inhabit the forest.

The power of this little creek goes far beyond the boundaries of Treebeard Trail. In Canada, much of our water comes from the watersheds protected by forested land. Small creeks like this one feed into larger rivers or lakes, which in turn bring water to people, industry, farms and cities well beyond the water's source.

National parks protect forests, the guardians of our life-sustaining watersheds.

Completing the circle – seeing the forest among the trees

Treebeard Trail wears two faces. You have just left the oldest part of Treebeard Trail and returned to the somewhat younger forest in which your walk began.

Treebeard Trail is one small part of the larger forest ecosystem. The richness of this ecosystem comes from having a variety of forest ages and types across the larger landscape. Think of the enrichment of the diversity of people within your own human landscape.

There is no beginning nor end to an ecosystem. To protect the ongoing cycle of life in Prince Albert National Park of Canada, think of ways that you can become an ambassador for forests. One way you can start is by sharing the experience that you've had today.

In a few moments you will have completed the circle of Treebeard Trail. Behind you lies an aging forest. Ahead lies the future.

To find out more about the National Parks and National Historic Sites in Saskatchewan, visit: www.parkscanada.gc.ca

*"Today I have grown taller
for walking
with the trees."*

Henry David Thoreau

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