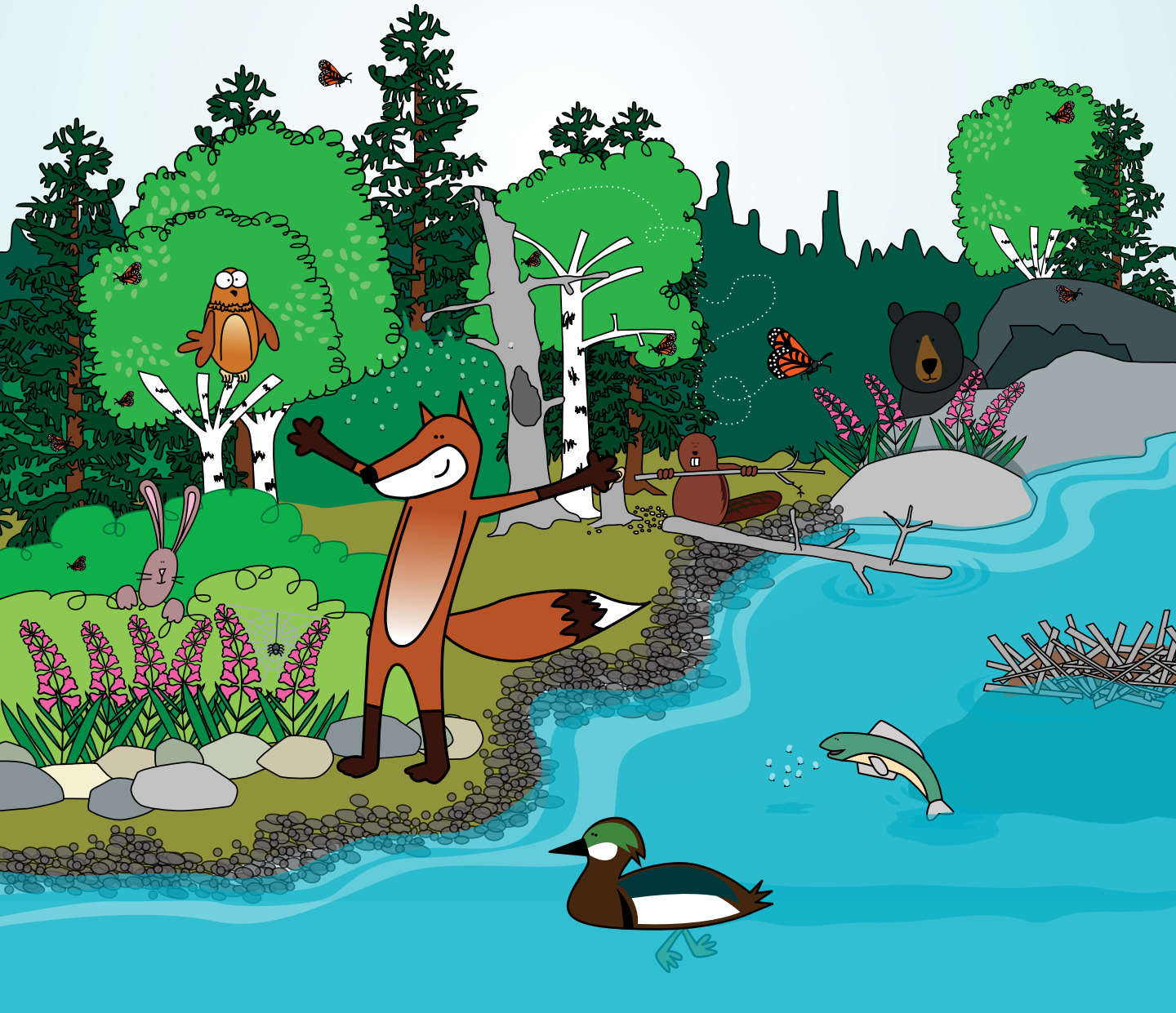
my nature journal

Name: _____

School: _____

Grade: _____



NOW THAT'S FIRESMART

DOUSE YOUR CAMPFIRE BEFORE YOU LEAVE

Northwest Territories

TO REPORT A WILDFIRE CALL
1 877 NWT FIRE

table of contents

INTRODUCTION

FALL

WINTER

SPRING

SUMMER

GLOSSARY AND TRACKS

Introduction

HAVE YOU BEEN OUTDOORS LATELY?

What birds did you see last week? What have the animals that live near you been up to lately? What do you think about when you are sitting below the branches of a large tree or when you are out on the land?

Now you can keep track of these things by using this Nature Journal to describe things you see, smell, hear and touch while you are outdoors.

It can also help you to keep track of changes that are going on with the plants and animals that share Planet Earth with you. Write in this Journal no matter where you are... in your backyard, in your school yard, at the lake, at the river, at the cabin, at the beach, or even looking out a window inside your house or school.

The Journal is divided into four seasons, beginning with fall and ending in summer. Spend a lot of time outdoors. The world of nature has much to teach us.

The Journal pages have a lot of information about trees, wildlife and nature, and the great outdoors we call our land and home. Some of the Journal pages have evenly spaced lines on them for writing on, some pages are left blank for art work. The Journal will help you explore the outdoors.

There is a Glossary at the back of the Journal that will help define the terms you find in the Nature Journal. There is also information on tracks of northern birds and animals. Web site links are also provided so that you can research some of these topics further.

Explore and learn with your Journal. But, most of all, have fun with it! Check out the Environment and Natural Resources web site at **http://www.enr.gov.nt.ca/** for more information.

fall

Poem

I'M GLAD

I'm glad the sky is painted blue;
And the earth is painted green;
And such a lot of nice fresh air
All sandwiched in between.

– Anonymous

Date: _____ Time of the Day: _____

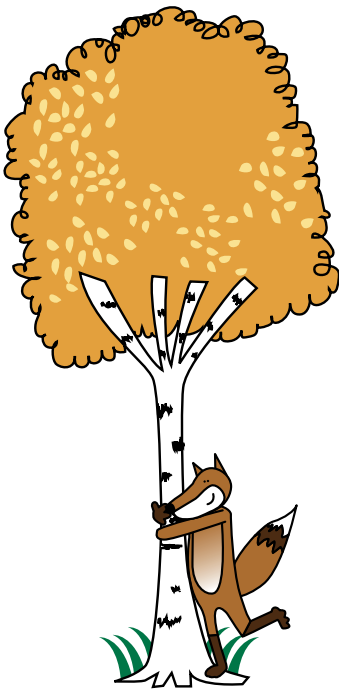
Weather: _____

Area: _____

getting started

FIND YOUR TREE

Go outdoors to your yard, the school grounds or out in the surrounding forest. Take your Nature Journal and a few pens and pencils with you. You might also want to bring colouring pencils, an eraser, watercolours and paint brushes. Choose a tree in the area that will become your very own. Draw or paint a picture of what that tree looks like at this very moment. Really study the tree so that it becomes very familiar to you.



What does the bark look like? What does it feel like? How many veins are visible on the leaves? Do the roots come up above the ground or are they all safely underneath? What is the circumference of the trunk? Use a tape measure to find out. Using the information on Trees and Common Shrubs of the NWT, find out the name of your tree. You may also wish to give it a special name. Record all of this information on the next page of your Journal, along with the date you visited your tree, above.

ABOUT YOUR TREE

Sit underneath your tree and listen to the wind blowing through it. What is the best thing about your tree?

Come back to your tree several times a year and record your observations about what is happening to it. What are your wishes for your tree for this year?

activity

NOTES ABOUT YOUR TREE

Name of Tree: (circle one)

pine spruce larch birch poplar aspen alder

Are there leaves present? (circle one) Yes No

What colour are the leaves? _____

What colour is the bark? _____

Is the bark smooth or rough? _____

Are there many branches on your tree? _____

Are the roots visible? _____

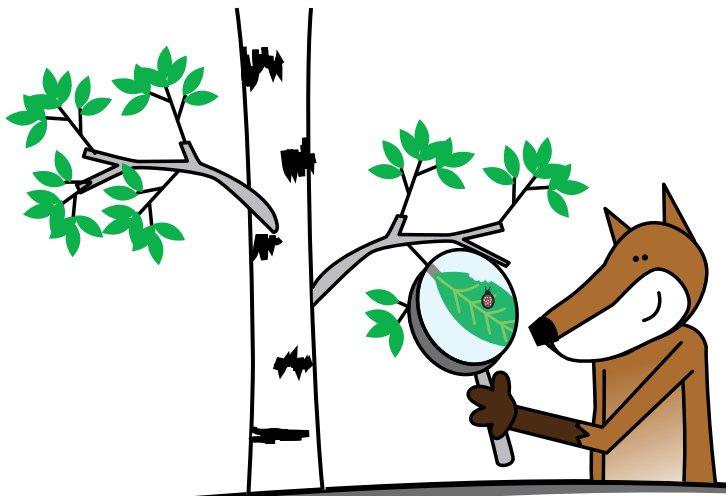
How many trunks on your tree? _____

What is the circumference of your tree (how big around is it)?

_____

Are there holes or cracks in the bark of your tree? _____

Is your tree tall or short? _____

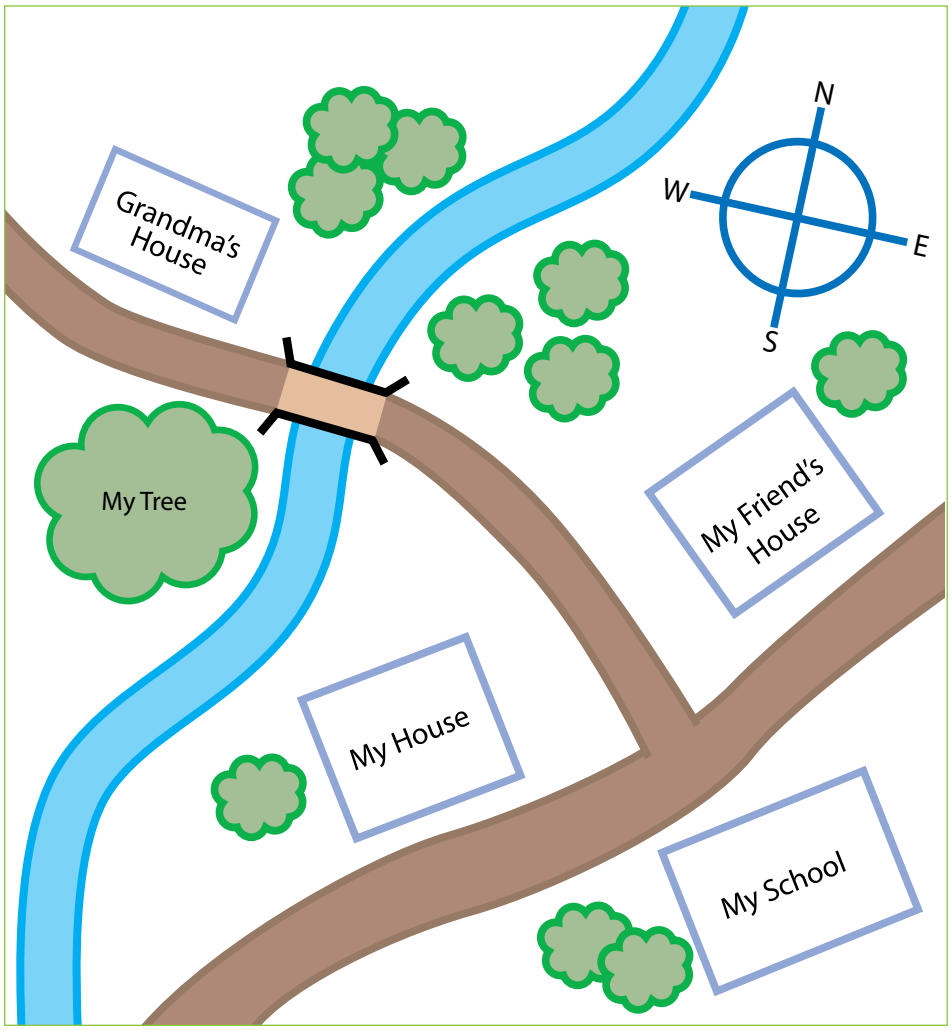


OTHER OBSERVATIONS

A DRAWING OF YOUR TREE

MAPPING WHERE YOUR TREE IS

Make a sketch map like this one, showing where your tree is in relation to your school, home or cabin. Put features on your sketch map such as the four compass directions, roads, buildings, rivers, streams and any other feature that helps identify where your tree is. Use the next page for your map.



YOUR TREE MAP

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

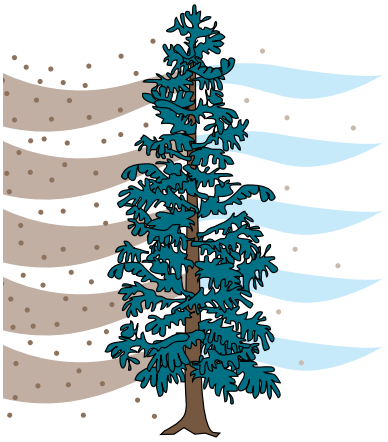
forest fact

WHY ARE FORESTS IMPORTANT?

Forests support life on our planet in many ways: providing oxygen for all living things, lumber for building our homes and even paper for offices and schools. But one of the most important jobs of forests is to remove carbon from the atmosphere.

Excess carbon created by the burning of fossil fuels, like oil and gas and other sources, traps heat in the upper atmosphere and gradually heats the earth. This excess carbon contributes to global warming and climate change. Trees store the carbon in a process called photosynthesis. This storage feature in forests ensures that some carbon is trapped and is less available to the atmosphere to add to global warming.

There are other natural processes too, that go on in forests that help to provide us with other important benefits, like good quality drinking water. Forests do this by collecting, cleaning, regulating and recycling water. Let's do our part to protect and use forests wisely.



REFLECTION

What do you think life would be like for humans and other earth inhabitants if all of the world's forests disappeared tomorrow? How long would we survive? Write your reflection here.

Date: _____ Time of the Day: _____

Weather: _____

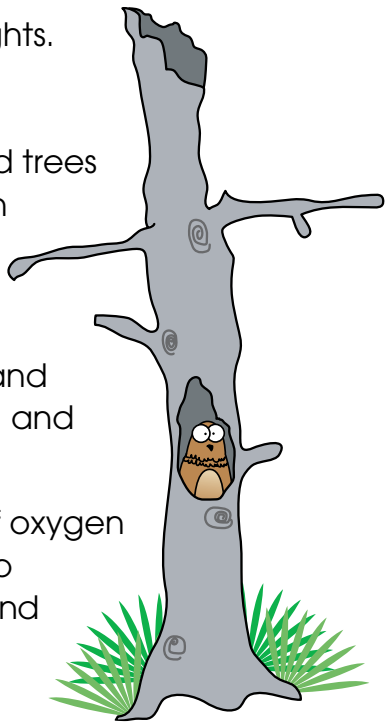
Area: _____

forest fact

LIVING AND DEAD THINGS

Forests contain living, decaying and dead trees. All of the trees, plants, animals and non-living things, like soil, rocks, rainfall and temperature, fit together to create what is called an ecosystem.

Seedlings, saplings and pole-sized trees grow besides older taller trees – all at different heights. This makes a good sheltered environment for various plants and shrubs. In the forest, dead standing trees are also important. These dead trees contain many types of insects that birds, such as woodpeckers, like to feed on. The holes made by these birds become shelter for other small birds during the winter. Dead fallen trees take a long time to decompose and as they crumble they become part of the soil and help new seedlings sprout.



Every process in a forest, from the creation of oxygen to the creation of soil for new growth, helps to support our lives and the lives of the animals and species we share Mother Earth with.

AROUND YOUR TREE

Can you find evidence in the area around your tree of the dead and living parts of the ecosystem? Group them under the two headings below.

Living

Non-living

Date: _____ Time of the Day: _____

Weather: _____

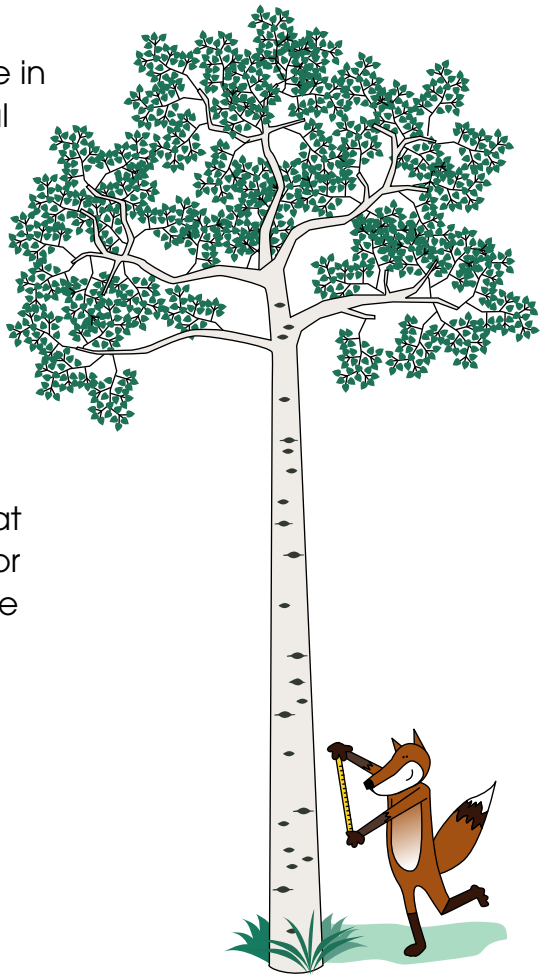
Area: _____

forest fact

HOW TALL IS YOUR TREE?

Did you know that the tallest tree in the world is in Redwood National Forest in California? It is as tall as a 30-story building (364 feet), which is even taller than the tallest building in the NWT – the Hay River highrise building at 17 stories.

We have tall trees too! The Muskeg Forest in the Deh Cho near Fort Liard had an Aspen that was over 100 feet tall. It is hard for most of us in the North to imagine a tree that tall!



activity

MEASURE YOUR TREE

Have you ever wondered how foresters measure the height of a tree without cutting it down or climbing it? They use very specialized tools to measure the height of trees. But you can figure out an approximate height for your tree without these tools, just by knowing a little bit of math, and by getting a friend to help you.

Directions:

Use a tape measure to measure the length of your tree's shadow on the ground.

Have a friend help you measure your height to find out how tall you are.

Stand next to the tree and have a friend measure the length of your shadow on the ground.

Get out your calculator. You should have three measurements now:

The length of your tree's shadow _____

Your height _____

The length of your shadow _____

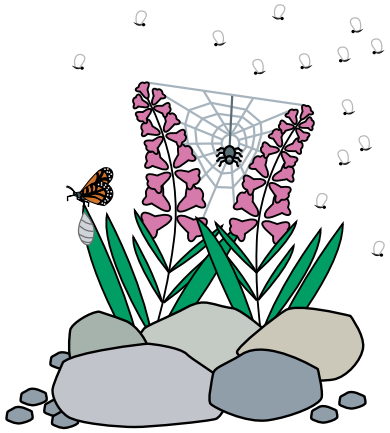
Divide the length of your tree's shadow by the length of your shadow. Multiply the answer by your height.
This will tell you how tall the tree is.
Record your tree height here.

My tree is approximately

_____ feet tall.

ON THE FOREST FLOOR

Look closely at the forest floor around your tree. Do you see any small insects? Many species of insects and spiders live around the forest floor. List the ones you find. Do any of them have special features that camouflage them and protect them from harm? Are there any unusual insects or ones you have not seen before? Write about them here too!



activity

ART FROM YOUR TREE

You can make some beautiful artwork from your tree for the pages of your Journal. Collect some leaves from your tree and make some leaf rubbings. You may overlay them one at a time to create a collage of leaf shapes and colours. You will need the next two blank pages of your Journal, wax crayons, with the paper removed, and a hard surface to work on.

Directions:

Find a hard surface to do your work on.

Place the leaves flat on the hard surface.

Open your Journal and slide a blank Journal page over the leaf.

Rub the long side of the crayon over the paper. Soon you will begin to see the outline of the leaf on the paper.

Try all different shapes and sizes of leaves. You can do rubbings of various surfaces and preserve them in your Journal. People have even done rubbings of designs on gravestones and on the walls of great cathedrals.

LEAF RUBBINGS

LEAF RUBBINGS

Poem

THE POPULAR POPLAR TREE

When the great wind sets things whirling
And rattles the window panes,
And blows the dust in giants
And dragons tossing their manes;
When the willows have waves like water,
And children are shouting with glee;
When the pines are alive and the larches –
Then hurrah for you and me,
In the tip o' the top o' the top o' the tip of
the popular poplar tree!
Don't talk about Jack and the Beanstalk –
He did not climb half so high!
And Alice in all her travels
Was never so near the sky!
Only the swallow, a-skimming
The storm-cloud over the lea,
Knows how it feels to be flying –
When the gusts come strong and free –
In the tip o' the top o' the top o' the tip of
the popular poplar tree!

– Blanch Willis Howard

BARK RUBBINGS

Make a bark rubbing by taping a page of your Journal onto a tree and rubbing it with a crayon just as you did in the leaf rubbing. Notice the texture of the bark. Would an insect or an animal have an easy or hard time climbing your tree?

BARK RUBBINGS

LEAF QUESTIONS

Collect some fallen leaves.

Where did each leaf come from?

Where do you think that leaf was in the canopy of the forest?

Why are some leaves fuzzy and others not?

How does the fuzziness of a leaf affect its ability to hold water?

Why are some leaves pointed like a needle and others flat like paper?

Are any of the leaves discoloured or missing a piece?

What do you think caused that?

Write about what you discovered.

LEAF NOTES

Date: _____ Time of the Day: _____

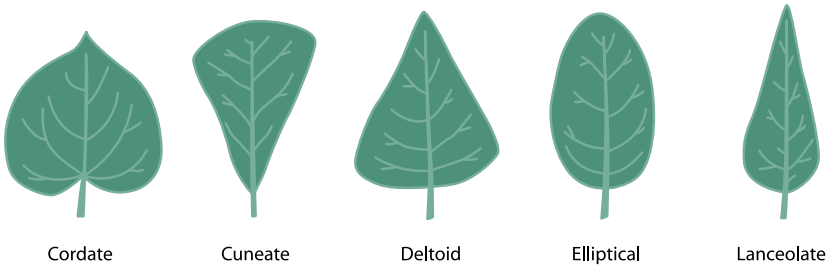
Weather: _____

Area: _____

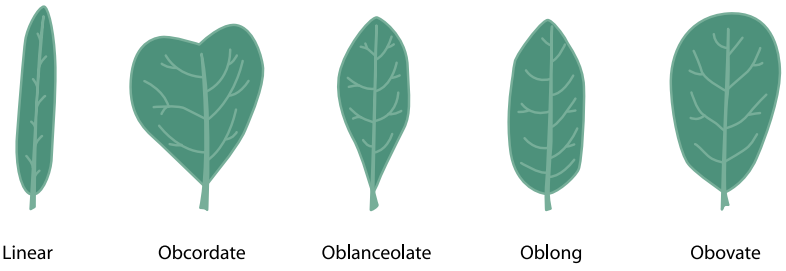
forest fact

LEAF SHAPES

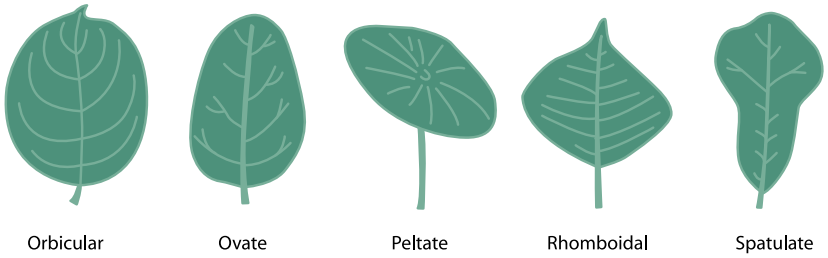
Here are the common names for the many leaf shapes in our forest. You will need these leaf shape names for the activity on the next page.



Cordate Cuneate Deltoid Elliptical Lanceolate



Linear Obcordate Oblanceolate Oblong Obovate



Orbicular Ovate Peltate Rhomboidal Spatulate

FINDING LEAVES

Look around your tree – on the ground and on nearby bushes. How many different leaf shapes can you find? I am sure you will be surprised at how many different shapes there are. Compare them to the leaf shapes on the previous page.

Draw their outlines in your Journal on the next page and label them. Label them according to their shape name. You may also know the name of the tree or plant it comes from. Label the leaf with its tree or plant name also.

You may wish to keep your real leaves, however, it is important to ensure they are well dried then laminated or sealed between sheets of wax paper, otherwise they become very brittle and will disintegrate.

poem

TREES

Trees just stand around all day
and sun themselves and rest.
They never walk or run away
and surely that is best.
For otherwise how would a
squirrel or robin find its nest?

– Aileen Fisher

YOUR AUTUMN LEAVES COLLECTION

YOUR AUTUMN LEAVES COLLECTION

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

forest fact

WHY DO LEAVES CHANGE COLOUR?

Leaves are green in the summer because of the presence of a compound called chlorophyll. Leaves contain several other pigments too: yellow (caused by a compound called xanthophylls) and orange (caused by a compound called carotene). These pigments are masked over by chlorophyll in the summer, but when autumn comes, the chlorophyll breaks down chemically and we begin to see the yellow and orange colours.

With colder temperatures and less sunlight, chemical changes in the leaves produce the reds of fall. Strong reds depend upon a high level of sugar in the leaves. The most vibrant colours occur as a result of a period of cool nights with no frost or freezing temperatures, clear days and dry weather conditions.

YOUR TREE'S COLOURS

Write about your tree and the colours of autumn it may have. If your tree is an evergreen, pick a nearby deciduous tree to write about. Describe the colours on the tree, what shape the leaves are, what they smell like and feel like, whether they are still on the tree or on the ground.

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

forest fact

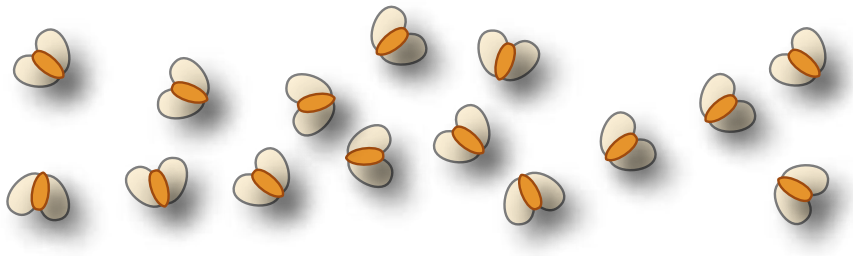
TREE SEEDS

Walk through the woods in the area around your tree and see if you can spot the seeds of the spruce trees. They will be in spruce cones.

Did you know that some trees drop their seeds in the spring and others in the fall? It is because some trees, such as the spruce that drops seeds in the fall, need a cold period where they are dormant (have a rest) before they germinate (sprout). They lay on the ground covered by snow and will sprout the following spring. They need to be frozen first.

Those that drop their seeds in spring do not require a period of dormancy before they will germinate. Birch, aspen and alder drop their seeds in the spring.

Don't forget to check your Trees and Shrubs poster if you are unsure about a tree's identify.



NOTES ABOUT YOUR SEEDS

Write here about the seeds you found in your patch of woods.

A DRAWING OF YOUR SEEDS

Draw here about the seeds you found in your patch of woods.

POETRY WRITING

Write some of your own poetry about your tree. It doesn't have to rhyme. Some of the poetry you find in the Nature Journal does and some doesn't. Be free, though, to write about your experiences out in the woods in any way you want!

poem

OCTOBER'S THE MONTH

October's the month
When the smallest breeze
Gives us a shower
Of autumn leaves.
Bonfires and pumpkins,
Leaves sailing down –
October is red
And golden and brown.

– Can Teach Songs

Date: _____ Time of the Day: _____

Weather: _____

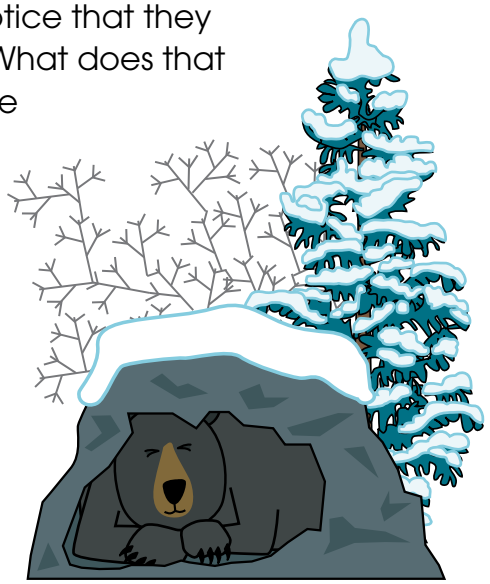
Area: _____

forest fact

WEATHER SIGNS

In the fall, the weather changes from the warm sunny days with long daylight hours in the summer to much cooler temperatures during fall days and even cooler temperatures at night. Our daylight hours have become shorter.

Have you noticed these changes yet? What changes have you made in your clothing and equipment because fall has come? What are birds like the crows or robins doing this time of year? Do you notice that they are gathering together in flocks? What does that mean? Have you noticed what the squirrels are doing?



Nature has endowed animals and birds with special features that help them to survive in colder climates. These are called adaptations.

A Canada goose will migrate to the south for the winter and a black bear will hibernate. These are their special adaptations.

YOUR SURVIVAL STORY

Write a story about preparing for winter. Pretend you are an animal or a bird and write what you are doing to get ready for winter. If you do not migrate how will you survive in winter's cold?

poem

Just before the death of flowers,
And before they are buried in snow,
There comes a festival season
When nature is all aglow.

– Author Unknown

Date: _____ Time of the Day: _____

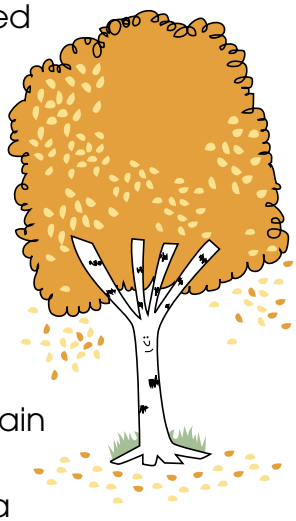
Weather: _____

Area: _____

forest fact

HOW DO TREES PREPARE THEMSELVES FOR WINTER?

Long before the first snowflake has hit the ground your tree begins to prepare itself for winter. All trees must find ways to survive the cold.



Many trees lose their leaves each fall; those are called deciduous trees. In the fall, heat, light, water and minerals becomes less available. These trees get rid of their leaves by stopping the flow of food to the leaves. Once the food supply is shut off, the leaves change colour and then fall off. Aspen, birch and willow are examples of deciduous trees. Can you find these trees in your area?

Other trees, like the spruce and pine, do not lose their needles in the fall. They are coniferous and remain green all winter long. They have needle-like leaves and produce cones. The needles drop off a little at a time throughout the whole year, especially in late summer. Although the trees remain green, they do not grow in winter.

The Tamarack or Larch, which is the official tree of the Northwest Territories, and a coniferous tree too, is the only exception to this rule; it loses its needles in late fall. It is easy to pick out a Tamarack tree against the snow with its golden colored needles. Are there any of these trees in your area?

YOUR CHANGING TREE

Do you see any signs that your tree is preparing for winter? Write about the changes here.

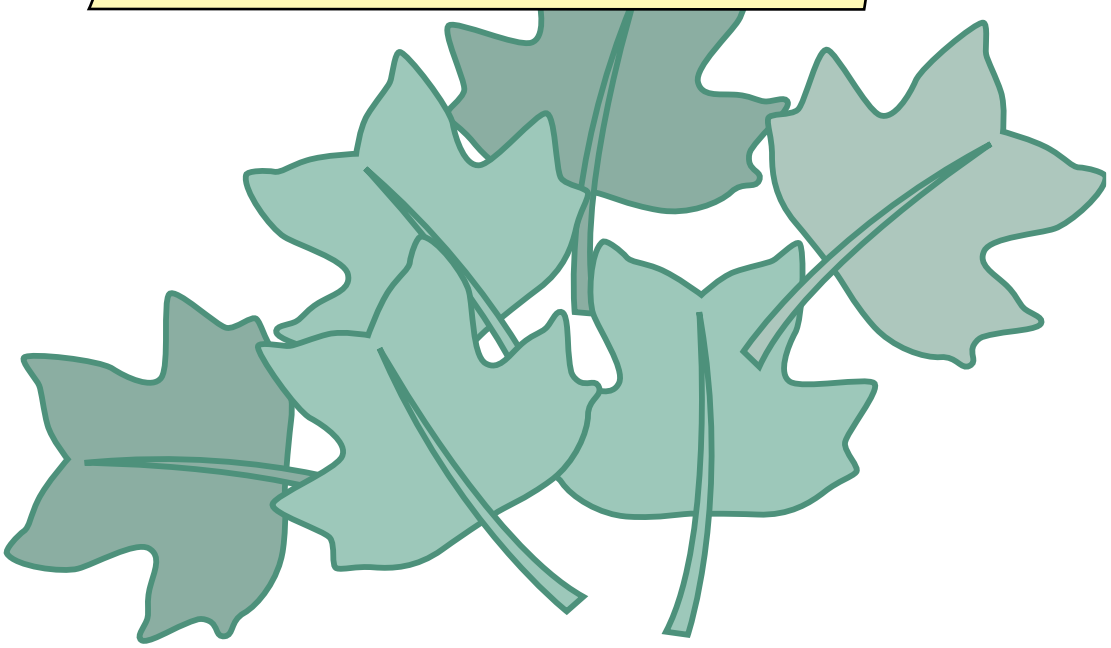
poem

LEAVES

How silently they tumble down
And come to rest upon the ground
To lay a carpet, rich and rare,
Beneath the trees without a care,
Content to sleep, their work well done,
Colours gleaming in the sun.

At other times, they wildly fly
Until they nearly reach the sky.
Twisting, turning through the air
Till all the trees stand stark and bare.
Exhausted, drop to earth below
To wait, like children, for the snow.

– Elsie N. Brady



Date: _____ Time of the Day: _____

Weather: _____

Area: _____

forest fact

HOW DO INSECTS PREPARE FOR WINTER?

Many insects migrate south in preparation for the winter. Some butterflies and moths fly very long distances. For example, Monarch butterflies spend the summer in Canada and the northern U.S. They migrate as far south as Mexico for the winter.

Most migrating insects go much shorter distances. Many, like termites and beetles, move downward into the soil. Insects look for winter shelter in holes in the ground, under the bark of trees, deep inside rotting logs or in any small crack they can find.

One of the most interesting places is in a gall. A gall is a swelling on a plant. It is caused by certain insects, fungi or bacteria. They make a chemical that affects the plant's growth in a small area, forming a lump. The gall becomes its maker's home and food source. Check your tree and the area around your tree to see if you can find a gall.

Many insects spend the winter dormant, or in "diapause." Diapause is like hibernation. It is a time when growth and development stop. The insect's heartbeat, breathing and temperature drop. Some insects spend the winter as worm-like larvae. Others spend the winter as pupae. (This is a time when insects change from one form to another.) Other insects die after laying eggs in the fall. The eggs hatch into new insects in the spring and everything begins all over again.

INSECT RESEARCH

Research your local library to determine which insects spend winters as either larvae, pupae or eggs. Research the mosquito, the butterfly and dragonfly for starters.

Write about your findings here.

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

Wildlife fact

TRACKS OR SIGNS OF ANIMALS YOU SAW TODAY

Sometimes animals will make tracks, leave chewed twigs or branches or their droppings that show they have been here before us. Do you know what animal left the track in the picture below? Can you find some signs or tracks in the area around you? What kind of animals are they?

YOUR ANIMAL STORY

Write a short story about the animal and what it was doing in the area or write a story about the animal that left the track in the picture on the previous page.

poem

October's poplars are flaming torches
lighting the way to winter.

– Nova Bair

MAKING PLASTER CASTS OF ANIMAL TRACKS

Introduction:

If you like nature, and studying the things in nature around you, then making and collecting plaster casts of animal tracks just might be for you. Just in your area, there are many animals to make casts from. If you combine this hobby with your vacations and travel, you can collect an even greater variety of casts.

The best places to look for animal tracks are the muddy banks of creeks, ponds and lakes. The edge of open fields, a day or two after a rain, are also excellent places to look. Always have an adult with you when you go out to these places.

Before you begin, you need to get your materials together and put them in something easy to carry into the field. A small backpack or strong bag is perfect for this.

Material needed:

- Container of Plaster of Paris (plastic, with screw lid is best)
- Plastic bottle of water
- A couple spoons
- Paper cups
- Strips of thin cardboard approximately 3 inches wide (slick coated will release from the plaster better)
- Paper clips
- Scotch tape
- Scissors
- Baby powder
- Zip-lock bags for transporting casts
- Newspaper
- A good field guide (The Peterson Field Guide, Animal Tracks, by Olaus J. Murie, is a good one.)

Procedure:

When you find an animal track you want to make a cast from, here is the procedure. You can identify the track from your field guide before you make your cast or do it from the cast at home.

1. Make a ring from a strip of cardboard that is big enough to have some border around the track. Cut the cardboard with scissors and tape the ends together (inside and out) to form the ring.
2. Cut a small slit in the side of the ring, about half way up, and insert a paper clip half way. This will be the hanger for your cast. The cast needs to be about 1 and 1/2 inches deep for strength, so the exact placement of the paper clip will depend on how much of the ring needs to be pushed into the dirt to seal it all the way around. This will come easy with practice.
3. Dust the track, and the ground around it, to an area slightly larger than the ring will cover, with baby powder. Gently blow the excess powder away. This will dry the surface and keep the plaster from sticking to the dirt.
4. Place the ring in the proper position, and gently settle it to the dirt to seal it all the way around.
5. In a paper cup, mix the Plaster of Paris and water, with a spoon, to the consistency of a milkshake. If it is too thick, it won't fill the track. If it is too thin, it will take a long time to harden. With a little practice you will be able to quickly mix the plaster to the correct thickness. Be sure you mix enough to do the job.

6. Gently pour the plaster evenly over the track and to a depth just above the paper clip. You will not fill the ring to the top, just enough past the paper clip so it will be strong enough to hang.
7. An optional step is to gently tap the top of the plaster with the flat of the spoon several times. This will help bring up any air bubbles and insure that the track is completely and smoothly filled. Be careful and don't over-do this.
8. Now comes the hard part. Depending on how wet the ground is, it may take an hour or more to harden. The best thing is to note the time and go work on another track.
9. Once the plaster has hardened, carefully remove it from the dirt by slowly lifting it straight up. Carefully dust the cast off. You may want to let the plaster cure a while before trying to completely clean it. Remove the cardboard ring, being careful not to loosen the paper clip hanger.
10. Place the cast in a zip-lock bag and put it in your pack. Some newspaper for packing is a good idea.
11. When the plaster has cured, you can completely clean it. You can leave the cast natural or you can paint it. This is completely up to you.

Good luck on your track hunting and collecting!

Credit: Stephen Fuller, Instructor of Science, Kansas City, Missouri School District.

Web site: http://www.geocities.com/CapeCanaveral/Hall/1410/index.html

Conclusion

We hope that you have enjoyed the Fall section of the Nature Journal.

Happy Journaling!

The following are some web site links where you may be able to get more information about the birds and animals in your forests.

- Forest Management Division – ENR – GNWT
  http://forestmanagement.enr.gov.nt.ca/
- Wildlife Division – ENR – GNWT
  http://www.nwtwildlife.com
- Ducks Unlimited
  http://www.ducks.ca/index.html
- Hinterland Who's Who
  http://www.hww.ca/index_e.asp
- Canadian Wildlife Service
  http://www.cws-scf.ec.gc.ca/index_e.cfm
- Journey North
  http://www.learner.org/jnorth

Winter

Poem

FEBRUARY TWILIGHT

I stood beside a hill
Smooth with new-laid snow,
A single star looked out
From the cold evening glow.
There was no other creature
That saw what I could see –
I stood and watched
the evening star
As long as it watched me.

– Sara Teasdale

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

Changing seasons

WINTER IS HERE

Winter has come to the north and, with it, longer nights and shorter days. How is your tree doing? What changes has your tree undergone now that the snow has come?

NOTES ABOUT YOUR TREE

Describe what your tree looks like now. Write a description here.

A DRAWING OF YOUR TREE

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

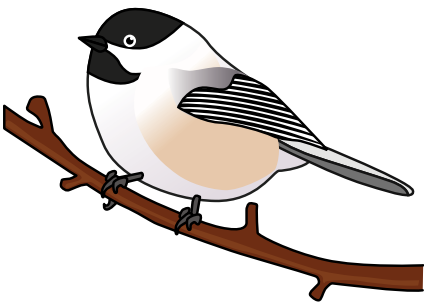
Wildlife fact

WINTER BIRDS: BLACK CAPPED CHICKADEE

The Black Capped Chickadee is one of the few birds that spend the winter in the north. It is an amazing bird for its size and weight; it manages to survive very cold temperatures and strong winds by roosting at night in the tops of dense evergreen groves or any available holes created in woodpiles or piles of brush.

It is able to keep warm by shivering to keep its skin temperature up. It also fluffs up its soft thick feathers to trap warm air around its body; something like the insulated layer we have in our coats that traps warm air against our body. In the winter it also grows double the amount of feathers it would have in the summer. Inside a small nook and cranny it can create a warm haven for the night.

In the fall and winter chickadees live in flocks of 4 to 12 birds. They can travel over several kilometres in the relentless search for food. A chickadee must continually feed or store food – during short winter days the rate of feeding is speeded up. A good insect catcher in summer, a chickadee eats mainly seeds in the winter time.



BIRDS AROUND YOUR TREE

Search the area around your tree and home – survey if it is a good habitat for winter birds. Are there seeds for the birds to eat? Are there evergreen trees in the area where chickadees may shelter during long cold nights? Can you imagine spending the winter outdoors without heat from a furnace or proper shelter like your house?

There are ways to help birds like the chickadees survive the long cold northern winters. Build or buy a birdfeeder and fill it with sunflower seeds and suet and they will come. Keep it filled all winter long and you can enjoy watching their antics as they come to the feeder each day.

Record your observations about the birds that come to the feeder.

WINTER BIRD OBSERVATIONS

Bird Name	Number of Birds Seen	Date Seen	Remarks

Date: _____ Time of the Day: _____

Weather: _____

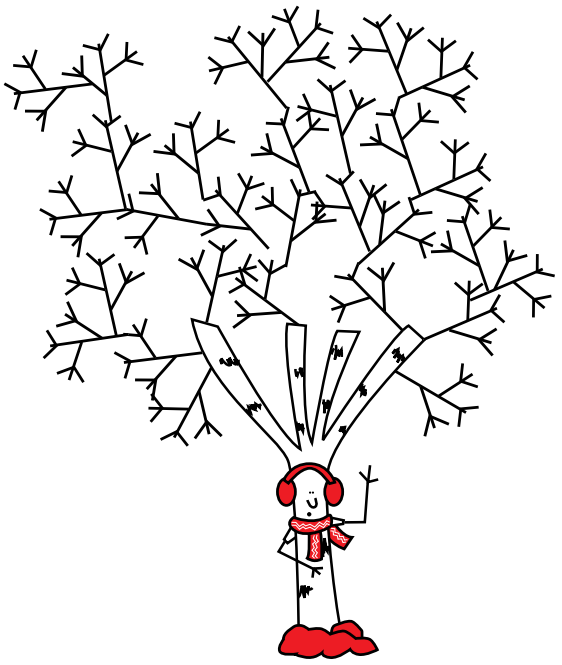
Area: _____

forest fact

HOW DO TREES SURVIVE DURING THE WINTER?

In the fall, a tree prepares for winter in several different ways; it drops its leaves, but it also makes a chemical adaptation to protect itself from totally freezing and cracking. The tree cells desiccate themselves; all of the water except for a tiny amount goes down into the roots. All of the remaining water left in the winter buds gets changed chemically into an un-freezable liquid. It is like natural antifreeze.

The whole tree – all of those parts exposed to the freezing temperatures, undergoes this transformation, so that when winter comes it does not completely freeze. If the tree liquid completely froze, the tree cells would crack and the tree would die.



LIVING TREES VERSUS DEAD WOOD

Did you know that living trees feel warmer than dead wood in winter? Try this: Put your bare hand on a wooden fence post or wood fence or telephone pole for a few moments, then place your hand on the bark of your tree. Describe what you discovered here.

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

Story

THE PROMISE

I trudged over snowy roads – my boots kicking up snow behind me, my dogs were running ahead exploring this new snowy day. The snow was falling in large flakes and though the sky was overcast I could see a set of tracks in the ditch. I drew closer and saw that they were rabbit tracks. A big rabbit had made these. He must have hopped away when he heard us coming down the road. I could see that he had headed deep into the bush to escape us. My dogs smelled his tracks and their ears perked up, knowing that there was a promise of good running and chasing ahead. They would not be able to catch him or her, but they gave no thought to that. They just charged into the bush, but soon they were back, having floundered in chest deep snow. Their tongues hung out of their mouths; they panted with big jets of vapor coming out of their mouths, their tails wagged, and soon they were off looking for another promise in the ditches.

TRAVELLING OVER SNOW

The snowshoe hare has big feet that can carry him over deep snow without sinking. The dogs did not have this adaptation and sank into the snow. Look in your glossary and find the definition for adaptation. What would you need to be able to travel over the deep snow and not sink? Write about travelling over snow and the best way to do it.

YOUR SNOW STORY

Write a short story about travelling in the deep snow.

Date: _____ Time of the Day: _____

Weather: _____

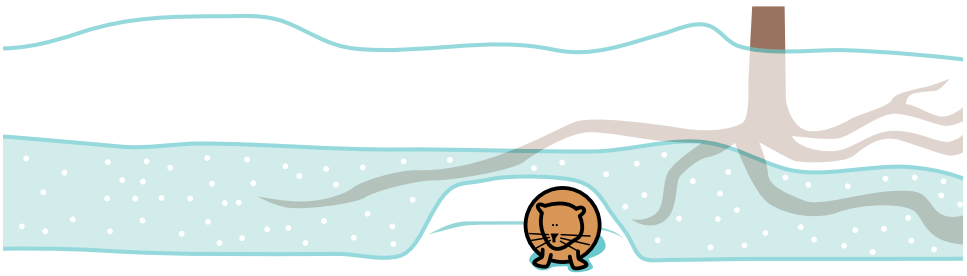
Area: _____

Wildlife fact

HOW DOES SNOW KEEP ANIMALS WARM?

Fresh, undisturbed snow is composed of a high percentage of air trapped in the crystals of the snowflake. Snow lying on the ground contains a lot of trapped air. Since the air barely moves inside the snow bank, heat transfer is greatly reduced. Fresh, uncompacted snow typically is 90 to 95 percent trapped air.

Often there is a difference in temperature between the snow at the bottom of the snow pack (the area that meets the ground) and the top layer (exposed to the air). In winter, when the air is very cold, the air at the top of the snow layer is also cold, but the air at the bottom can be much warmer, allowing animals to avoid extreme temperature changes, wind chill and predators. This area, known as the subnivean area, is where many small animals live. Animals like the weasels, voles and shrews live in this layer and find plenty of food such as buds, roots, stems and carrion.



activity

SNOWBANKS HOTEL

Draw a cross-section of what this snowbank hotel might look like and where each of these animals may be.

Date: _____ Time of the Day: _____

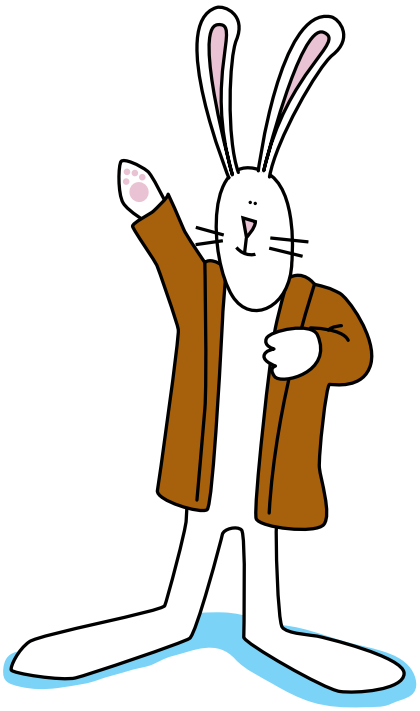
Weather: _____

Area: _____

Wildlife fact

HOW DO ANIMALS LIVE IN THE COLD NORTHERN WINTERS?

Amazingly, there are animals that thrive in snow and cold because of arctic adaptations. Adaptation means to change to be able to be more fit for existence under the conditions of the environment. So animals that stay here for the winters are fit in special ways to be able to survive.



SURVIVING WINTER

Write about some of the adaptations wild animals undergo in order to survive in winter. Hint: Snowshoe hares turn white. What other animals use changing coat colours to help them survive? You may be able to research this at the library or on the internet. Write about your findings here.

Date: _____ Time of the Day: _____

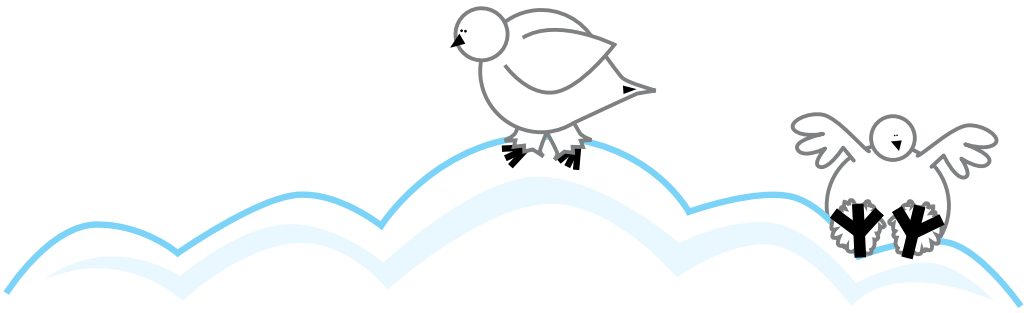
Weather: _____

Area: _____

Wildlife fact

ADAPTATIONS: TRAVELLING IN THE SNOW

Northern animals that travel easily in the snow because of other unique arctic adaptations include the snowshoe hare and the ptarmigan. They both have large "snowshoe feet" allowing them to float atop the snow as they travel. The hare's hind feet have extra stiff hairs that also help it to stay "afloat" on snow. The ptarmigan even grows feathers on the soles of its feet. The lightweight weasel bounds across the snow, or tunnels straight though it, torpedo style! No need for snowshoes.



Date: _____ Time of the Day: _____

Weather: _____

Area: _____

Wildlife fact

ADAPTATIONS: SHELTERING AND FINDING FOOD

To stay warm, the ptarmigan plunges into a snowbank from mid-air and burrows beneath the snow. By diving in, it leaves no tracks for a predator to follow. It makes a nice snow cave to keep warm over night. It can rise, almost "explode", out of the snow in a blink of an eye and has often startled people or other animals who have strayed too close to his snowbank lodge.

The hare grows a luxurious winter coat and shelters beneath the boughs of evergreen trees.

Each of these animals' food is consistently available in winter. The weasel catches rodents (mice and voles) beneath the snow pack (and lines its snowy den with rodent fur!), And the hare and ptarmigan nibble plant buds and shoots.

ANIMAL ADAPTATIONS

Which animal has the best adaptations? Why? Which animal would you chose to be if you could be an animal? Write about it here.

NATURE HAIKU

Haiku is a fun form of poetry. And nature-themed haiku is a popular form.

Haiku is a traditional form of Japanese poetry and is written in three lines of 5-7-5 syllables.

For example:
we keep on waiting (5 syllables)
waiting for the world to change (7 syllables)
we can't keep waiting (5 syllables)

– Melissa Gullo

The National Wildlife Federation had a haiku contest in 2007 and here are some of the winning entries. Read them and count the number of syllables in each haiku to see if they meet the requirements.

The leaves of the tree _____

Sway back and forth in the warmth _____

Of a summer breeze. _____

– Eric Lee, Waipahu, HI

A snail leaves its trail _____

A butterfly leaves its dust _____

I leave my footprint. _____

– Chris Chandler

YOUR HAIKU

Compose some winter haiku – it may be about your tree, how you are feeling about your tree, about animals or the sky. Haiku can be about any subject as long as it follows the 5-7-5 syllable rule.

Date: _____ Time of the Day: _____

Weather: _____

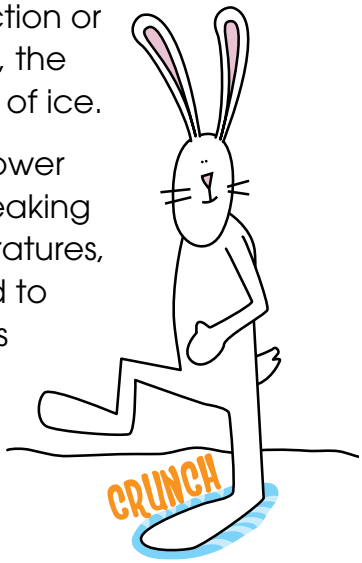
Area: _____

forest fact

CRUNCHY SNOW

Why does snow crunch when you step on it? At what temperature does it crunch?

A layer of snow is simply composed of ice grains, with air in between the ice grains. Because the snow layer is mostly empty air space, when you step on a layer of snow you compress that layer – a little or a lot, depending on how old the snow is. As the snow compresses, the ice grains rub against each other. This creates friction or resistance; the colder the temperature, the greater the friction between the grains of ice.



The sudden squashing of the snow at lower temperatures produces the familiar creaking or crunching sound. At warmer temperatures, closer to melting, this friction is reduced to the point where the sliding of the grains against each other produces little or no noise. It's difficult to say at what temperature the snow starts to crunch, but the colder the snow, the louder the crunch.

TESTING CRUNCHY SNOW

Can you test this? Try to determine when the best, loudest crunching takes place. Find the air temperature, record it and then walk over snow. Record what you think about the crunch level. Record at different times and different temperatures. Determine when snow is the crunchiest and when walking over it is very quiet. Write about your findings here. You have all winter to do it!

Time	Temperature	Remarks

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

Wildlife fact

ANIMAL AND BIRD TRACKS IN WINTER

All northern animals are wild and wary of human beings, so they are hard to see anytime of the year. But there are many tracks northern animals leave around us all the time, in our towns and in many different habitats. A good way to tell what animals are in an area is to observe tracks. Winter is a good time to spot tracks and identify animals.

RECORDING TRACKS

Record any animal and bird tracks you find as you travel in winter. Compare them to the tracks in the back of your Journal to identify them. Draw the tracks here and tell about the animal that made them.

Take time to appreciate local winter animals. Enjoy watching chickadees at your birdfeeder, watch for ptarmigan along the edges of lakes and rivers, and find the tracks of the snowshoe hare in your local parks. Don't hibernate!

Date: _____ Time of the Day: _____

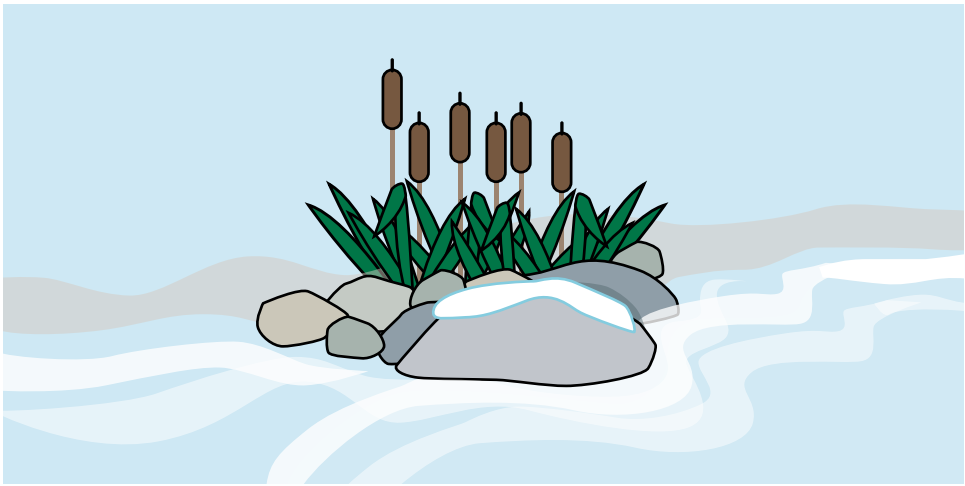
Weather: _____

Area: _____

Wildlife fact

ICE ON LAKES: HOW IT FORMS

In the late fall, a lake loses heat to the atmosphere and then, on a day or night when the wind is not blowing, ice forms. The ice gets thicker as long as the lake can continue to lose heat. When snow thickly covers the lake, it insulates the lake and it neither gains nor loses heat. The bottom sediment, which has stored heat from the summer, slowly releases it throughout the winter and prevents the deeper lakes from completely freezing to the bottom.



YOUR ICE DRAWING

Look at the lakes and ponds around your area. Are they frozen over or not? Draw what you have found here.

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

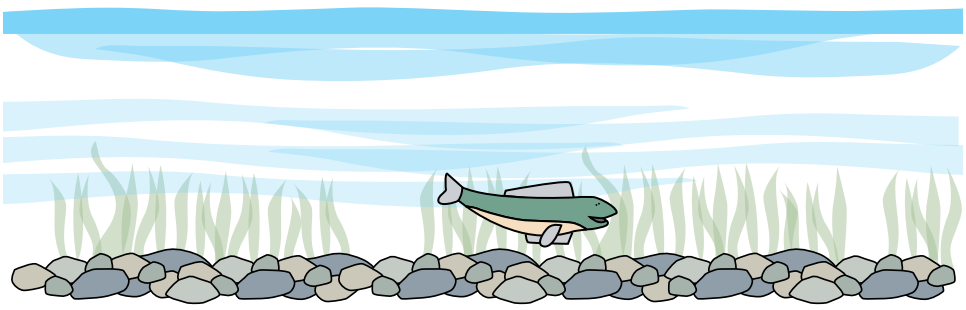
Wildlife fact

WHAT HAPPENS TO FISH DURING WINTER?

Winter is very tough on us. How do you think fish cope with living in northern waters that are close to freezing and are covered with ice? Winter is a very stressful time for fish.

The waters in most northern lakes have low oxygen content during winters and fish have adapted by being able to drop their heart rates and metabolic rates so they require less oxygen to stay alive. Their blood is better able to absorb any oxygen available as they just sit out the cold.

A lower metabolism reduces the energy required to maintain the body. The downside of a slow metabolism is that it limits what fish can do. For instance, they are much slower to escape danger from their predators and can be caught and eaten more easily than in summer. Winter is tough on fish too!



YOUR UNDERWATER DRAWING

Draw a picture here of what you think it may look like below a stream or lake in winter and where the fish are.

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

Wildlife fact

WINTER BIRDS: THE GREAT GRAY OWL

Have you seen this bird? This is a common winter bird in the north. The great gray owl is superbly adapted to surviving in the northern cold. In this picture he is scanning the forest for a meal.

ABOUT THE OWL

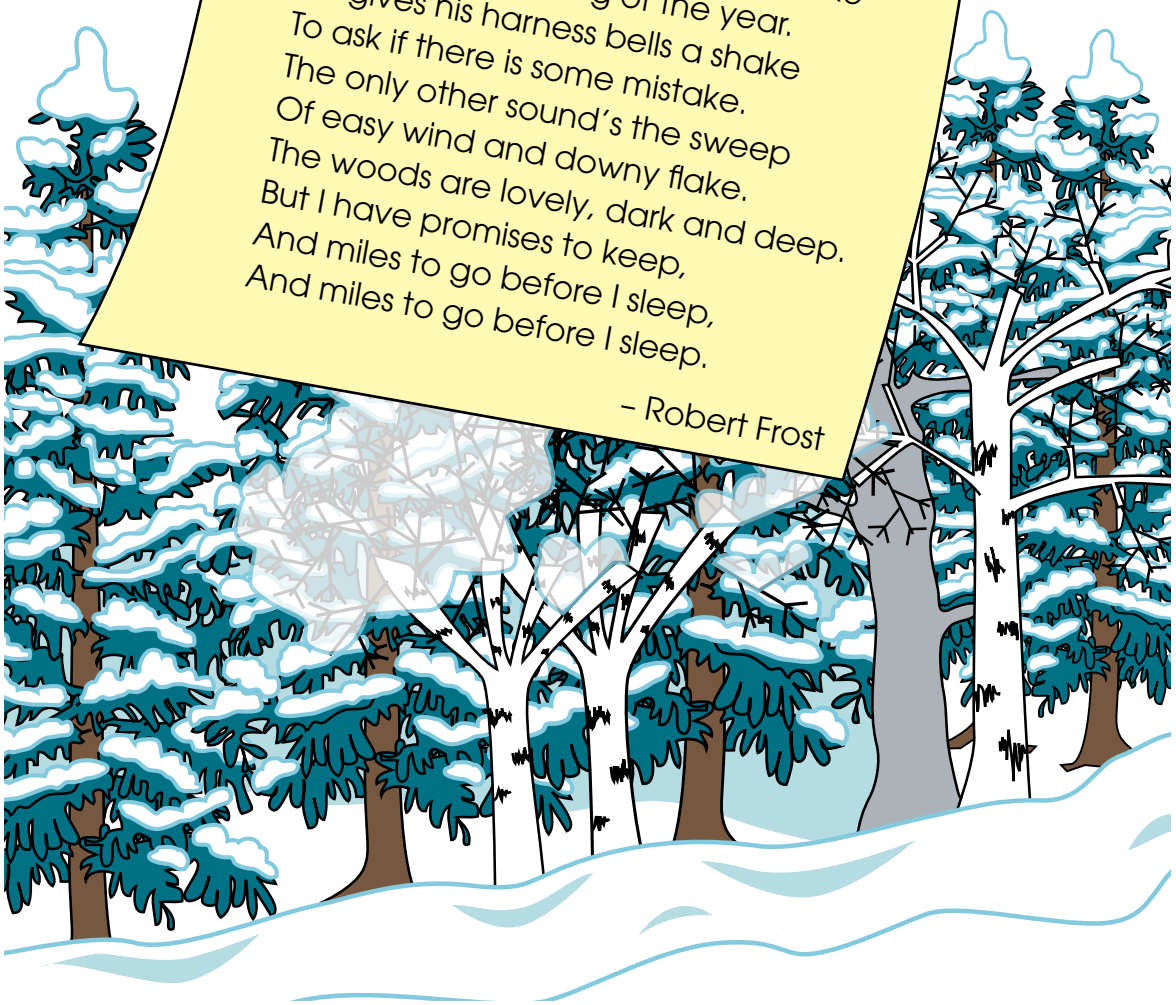
What adaptations does he have that help him locate his prey? What does he eat? Write about it here.

Poem

STOPPING BY THE WOODS ON A SNOWY EVENING

Whose woods these are I think I know.
His house is in the village though;
He will not see me stopping here
To watch his woods fill up with snow.
My little horse must think it queer
To stop without a farmhouse near
Between the woods and frozen lake
The darkest evening of the year.
He gives his harness bells a shake
To ask if there is some mistake.
The only other sound's the sweep
Of easy wind and downy flake.
The woods are lovely, dark and deep.
But I have promises to keep,
And miles to go before I sleep,
And miles to go before I sleep.

– Robert Frost



REFLECTION

What does this poem say to you? Write about it here.

YOUR WINTER POETRY

Conclusion

We hope that you have enjoyed the Winter section of the Nature Journal.

Happy Journaling!

The following are some web sites links where you may be able to get more information about the birds and animals in your forests.

- Forest Management Division – ENR – GNWT
  http://forestmanagement.enr.gov.nt.ca/
- Wildlife Division – ENR – GNWT
  http://www.nwtwildlife.com
- Ducks Unlimited
  http://www.ducks.ca/index.html
- Hinterland Who's Who
  http://www.hww.ca/index_e.asp
- Canadian Wildlife Service
  http://www.cws-scf.ec.gc.ca/index_e.cfm
- Journey North
  http://www.learner.org/jnorth

spring

Poem

SPRING HAS SPRUNG

Spring has sprung, the grass has ris',
I wonder where the birdie is?
There he is up in the sky,
He dropped some whitewash in my eye!
I'm alright, I won't cry,
I'm just glad that cows can't fly!

– Author Unknown

Date: _____ Time of the Day: _____

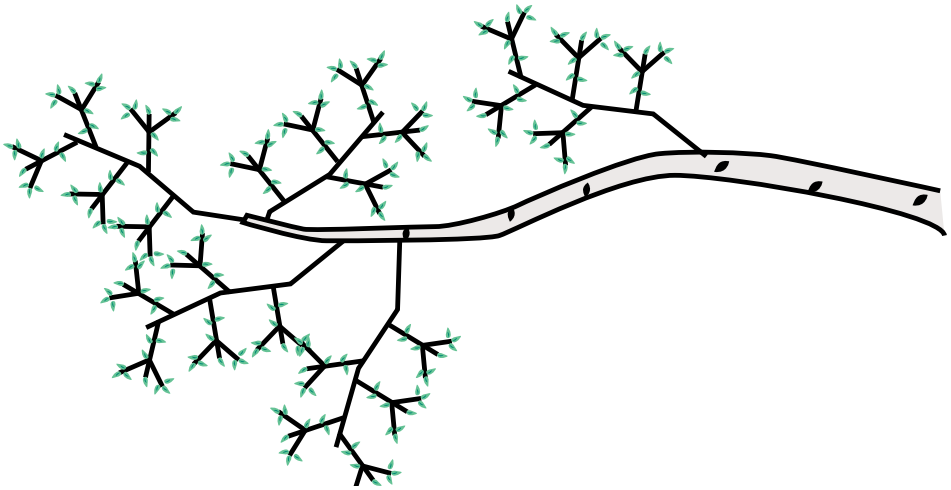
Weather: _____

Area: _____

forest fact

TREES IN SPRING

By the end of March, those of us who live in the north have been looking at bare trees for nearly six months. We become impatient to see the trees clothed in green once again. The wait seems all the harder when we realize that the spring buds have been there all along, biding their time. Indeed, they were fully formed on the trees the previous summer, long before the leaves turned their brilliant colours. They are waiting for the right time to open and leaf out.



TREE BUD OBSERVATIONS

Locate some aspen (poplar) trees and check whether there are any buds on the trees. A tree bud consists of next year's leaves, stems and perhaps flowers, which are folded, twisted, crumpled, pressed together and covered by a waterproof coating of modified leaves called bud scales. Look closely at the buds – are they closed or starting to open? Observe how long it takes for the bud to open and record those dates here.

You will have to check the tree every day to find that out as it happens in a matter of a few days when the air temperature has warmed up. This will be a different date depending upon what part of the north you are in.

Buds Type	Date	Observations

ASPEN TREE BUD DRAWING

Draw the tree and its buds and leaves. Colour the drawing and label its parts. You can find out more about the different trees of the north in the Trees and Shrubs of the NWT.

A DRAWING OF YOUR TREE

Draw or write about your tree in spring time. What does your tree look like? Does it have buds on it? Are the buds swelled or are they still tightly closed? Are there leaves on your tree?

YOUR TREE IN SPRING

Are there any colour changes on the bark? This is a very exciting time for nature – so many changes happen in spring. Write about some of the changes that will happen to your tree. If you could wish anything for your tree, what would it be? Write it here.

YOUR PUSSY WILLOW BRANCH

Cut a pussy willow branch. Bring it indoors and put it in water, then watch the leaves and flowers open and expand. Write about it here.

NATURE HAIKU

Here is another nature haiku to give you inspiration to compose your own. Go out in the woods to find an idea about which to compose a Haiku. Remember the 5-7-5 rule for haiku?

Poplar trees in bud
Green leaves pushing their way out
Green tree once again

Date: _____ Time of the Day: _____

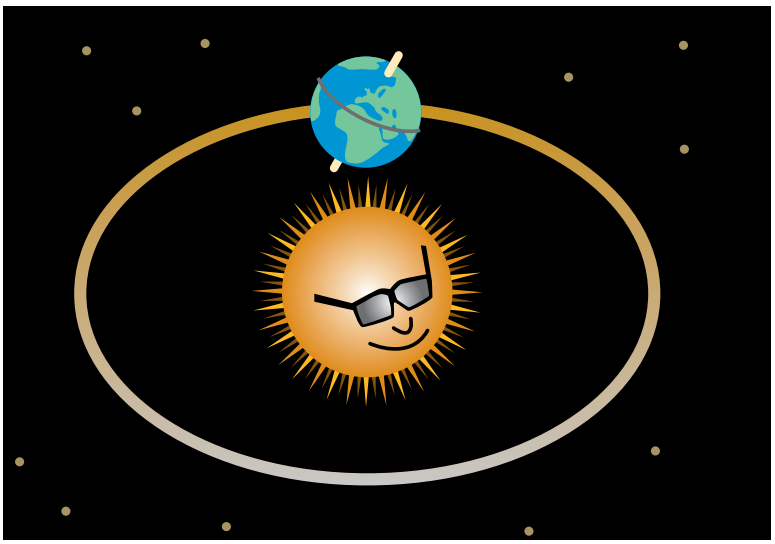
Weather: _____

Area: _____

forest fact

VERNAL EQUINOX

Spring officially begins around March 21 each year with what is called the vernal equinox. Vernal means spring. The equinox is when day and night are of equal length. During the equinox the sun is directly above the Earth's equator. In the north, sunrise comes later each day during the winter and then after Christmas it starts to rise earlier and earlier and set later and later each day. It is interesting to record these changes.



SUNRISE AND SUNSET

On the chart below, record the times for sunrise and sunset for at least two or three days a week beginning after March 21. Do it for a few weeks and see what changes occur.

Date	Sunrise	Sunset	Remarks

Date: _____ Time of the Day: _____

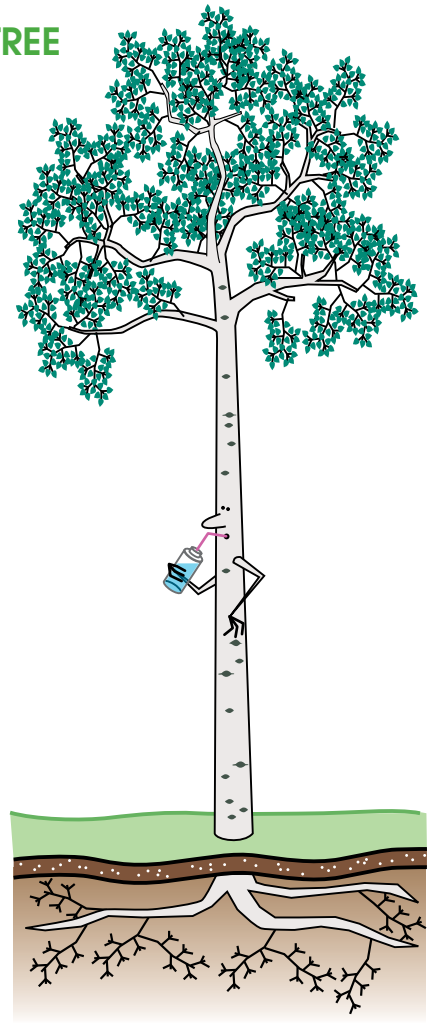
Weather: _____

Area: _____

forest fact

STREAMS OF WATER IN YOUR TREE

Water is the single most important substance to a tree – 80% of your tree is water. In fact, your tree has water flowing in it like a river. The water is important for food making and storage and transport of essentials elements for the tree's growth and survival. The largest single use of water is taking essential elements, nutrients and chemical messages from the roots up to the leaves through columns of dead xylem cells within the last few annual rings of the tree. Nature has developed many strategies to ensure that trees get the water and nutrients they need.



Date: _____ Time of the Day: _____

Weather: _____

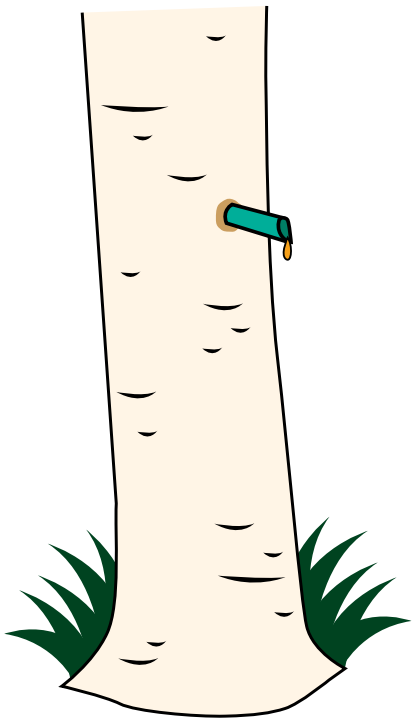
Area: _____

forest fact

SWEET WATER: BIRCH SAP

The Aboriginal peoples of the north harvested birch sap syrup in the spring time. The sap contains fructose, a natural sweetener. When it was boiled, it thickened into syrup and was used to sweeten many things. In one of the Dene languages of the north, the syrup was called k'itu which means birch water. Elders still drink the sap as a spring tonic.

The birch tree was very important for many reasons to early people. It is also valued for its beauty – a birch tree has lovely strong white bark and patterns on the bark. Birch bark baskets are made from this tree. It is also used for firewood and a birch tree campfire produces an aromatic smell and colourful flames.



BIRCH TREE DRAWING

Can you locate a birch tree in the forest. Draw a diagram of the tree. Label its parts.

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

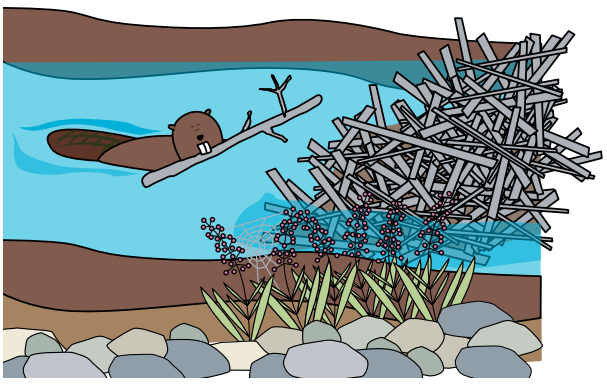
Wildlife fact

LIFE IN THE WATER: BEAVERS AND DAMS

Water is also important to aquatic mammals like beavers, muskrats and otters.

The beaver (Castor Canadensis) is North America's largest rodent. The beaver is found throughout the forested areas of the north. A beaver will live 10 to12 years in the wild. In order to survive and shelter from enemies, the beaver requires about 2 to 3 feet of water year round in which to build a home. If that is not available, the beaver will construct dams to hold water and create a pond where they build a lodge. If the water is too swift or the stream is too large the beaver will build a den in the bank of the stream.

They are very resourceful animals and have completely adapted to life in and around the water. In the spring, their activities will be very noticeable and one can see beaver very easily in rivers and ponds of the boreal forest.



BEAVER FINDINGS

Look for flooded areas around ponds that have dead standing trees in them or trees that have been knocked down. You may be able to see chewing marks on them that the beaver has put there. Write about your findings here. If you are not able to find beavers, research about them at your library.

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

Wildlife fact

OUT OF HIBERNATION

When we consider how well animals survive the long, dark cold winters, one has to think of the black bear as the supreme hibernator. He is awake this time of year and is moving around the forest, looking for food.

Perhaps you have seen them along roadsides foraging in the grass. He is eating vegetation in order to prepare his stomach for regular food. We would need to do that too when we have not eaten for several months. The grass is like medicine for the black bear.

YOUR BLACK BEAR STORY

Write a story about what it is like for the black bear when they come out of the den for the first time in the spring?

Date: _____ Time of the Day: _____

Weather: _____

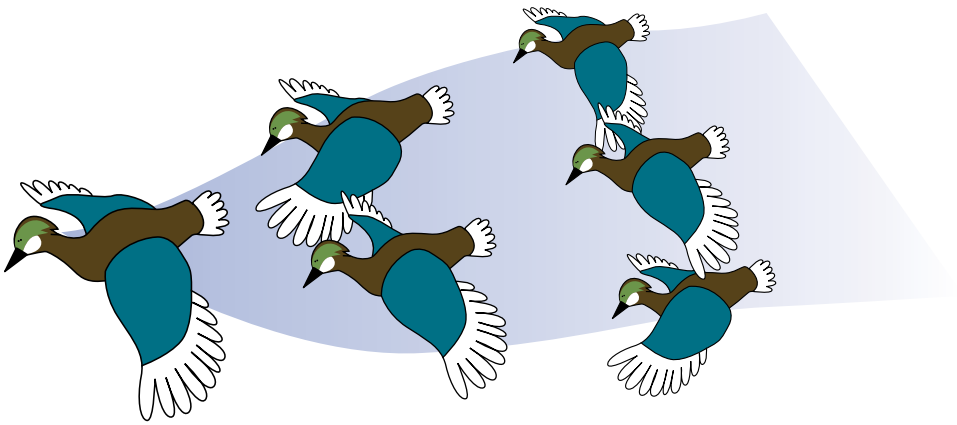
Area: _____

Wildlife fact

SPRING MIGRATION: COMING HOME

A familiar sight in spring are the long strings of geese, swans and ducks, known as waterfowl, flying overhead on their way to their nesting grounds around the north. The birds, strung out in formations in the shape of a V, look like beaded necklaces moving across the sky. The sight and sounds of their passing is quite exciting. The birds fly high in these formations, taking advantage of upper winds to move them quickly across the country, stopping only for rest, food and water.

They do not stop until they have reached their traditional summer nesting grounds. There they hatch and rear their young.



MIGRATION RECORDINGS

It is thought that about 12.9 to 15.1 million waterfowl migrate through and use the boreal forest during the spring. What amazing numbers.

Spend some time watching and listening for the spring migration. Count the number and types of birds you see. Keep a record here. Check your local library for field guides that will help you to identify the different birds that you see.

Date	Type of Bird	Number	Remarks

SOUNDS OF SPRING

Sit with your back against your tree or in a favourite spot. Close your eyes and listen for all the sounds of spring. The forest comes alive in spring, with bird song, frog choruses and all of the sounds of nature. Can you hear the water in a river or the waves on a lake?

Enjoy hearing nature's music for a few minutes. Open your eyes and list the sounds you have heard. Try to identify as many sounds as you can.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____

SIGNS OF SPRING IN YOU

How does spring make you feel? What are your responses to the warming air, the rain showers, the calling of geese and swans overhead, and the smell of the damp earth? Write about yourself here.

poem

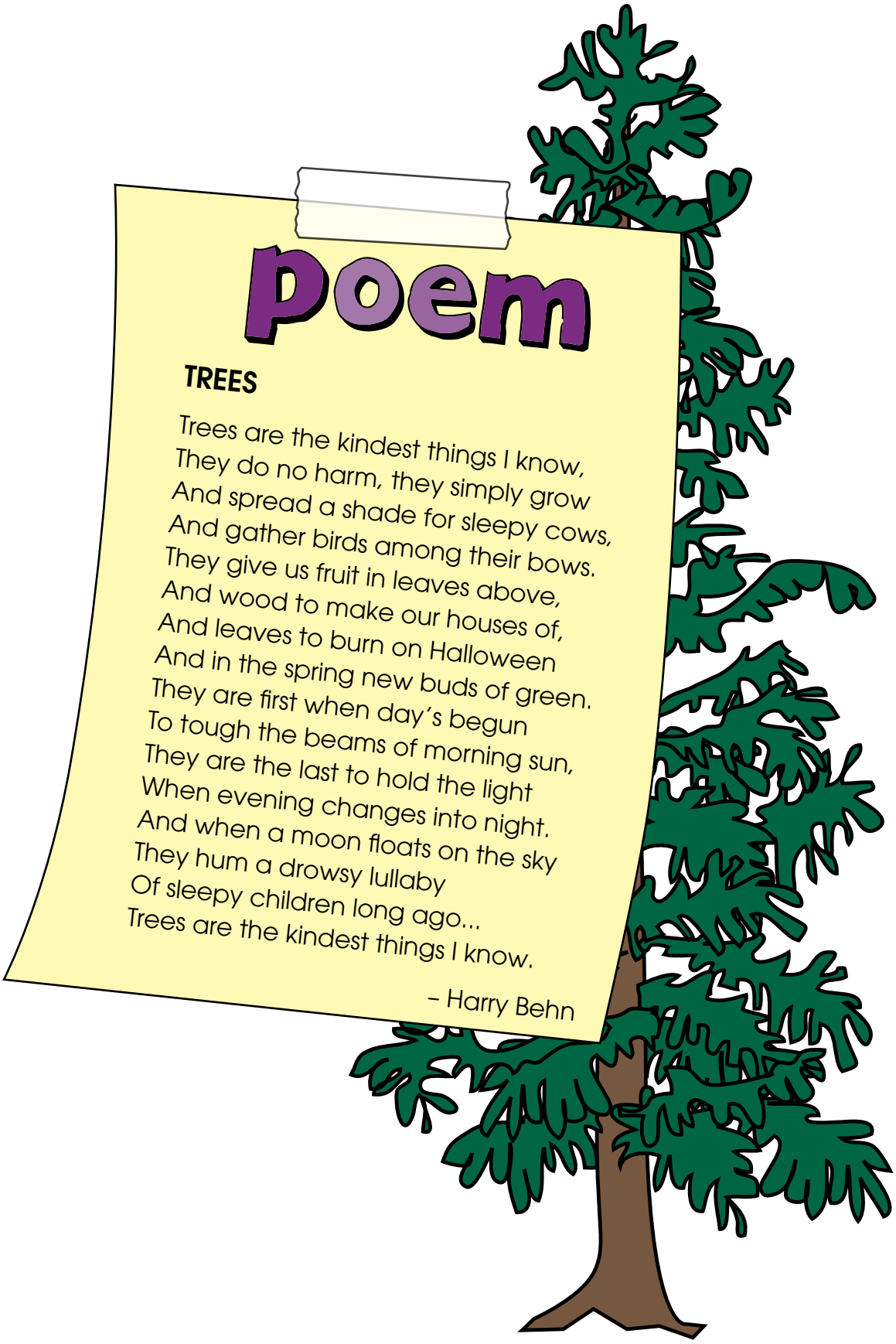
SPRING RAIN

The storm came up so very quick
It couldn't have been quicker.
I should have brought my hat along,
I should have brought my slicker.
My hair is wet, my feet are wet,
I couldn't be much wetter.
I fell into a river once
But this is even better.

– Marchette Chute

YOUR SPRING POETRY

Write your own poetry here.



poem

TREES

Trees are the kindest things I know,
They do no harm, they simply grow
And spread a shade for sleepy cows,
And gather birds among their bows.
They give us fruit in leaves above,
And wood to make our houses of,
And leaves to burn on Halloween
And in the spring new buds of green.
They are first when day's begun
To tough the beams of morning sun,
They are the last to hold the light
When evening changes into night.
And when a moon floats on the sky
They hum a drowsy lullaby
Of sleepy children long ago...
Trees are the kindest things I know.

– Harry Behn

Conclusion

We hope that you have enjoyed the Spring section of the Nature Journal.

Happy Journaling!

The following are some web sites links where you may be able to get more information about the birds and animals in your forests.

- Forest Management Division – ENR – GNWT
  http://forestmanagement.enr.gov.nt.ca/
- Wildlife Division – ENR – GNWT
  http://www.nwtwildlife.com
- Ducks Unlimited
  http://www.ducks.ca/index.html
- Hinterland Who's Who
  http://www.hww.ca/index_e.asp
- Canadian Wildlife Service
  http://www.cws-scf.ec.gc.ca/index_e.cfm
- Journey North
  http://www.learner.org/jnorth

summer

poem

Roses are red
and so is the crane's head.
Violets are blue
and the crane's sky is too.
Its wings are wide
and his neck is narrow.
That's why he's called a crane
and not a sparrow.

– Project Wild NWT

Date: _____ Time of the Day: _____

Weather: _____

Area: _____

Summer adventures

SUMMER BEGINS

Many students are either finished or close to finishing school for another year. June 21 is the first official day of summer and there are many wonderful opportunities to get outdoors and enjoy the warm air and the sunshine.

This section of the Journal is set up so that you can choose what to record while you are out in nature. We would like to have a picture of your tree for sure and there is a page set up for that, but most of all, we would like to hear about your summer travels and adventures outdoors.

YOUR SUMMER EXPERIENCES

Do you spend a lot of time at the beach, out in your backyard, on your ATV or out on a boat somewhere? Wherever you are, please write about it and draw, paint or take a picture of your summer experiences.

Here are some topics you may want to write about:

- weather, clouds, rain, a big thunderstorm
- the beach, shorebirds, fishing, camping
- special vacation trips
- picnics and cookouts
- lazing in the summer sun

YOUR TREE IN SUMMER

Take a good look at your tree. Has your tree changed at all now that it is summer? What is different about your tree from other trees in the area?

Write about the changes here. Make a wish for your tree for the summer and write it here.

A DRAWING OF YOUR TREE IN SUMMER

Draw your summer tree here.

NOTES

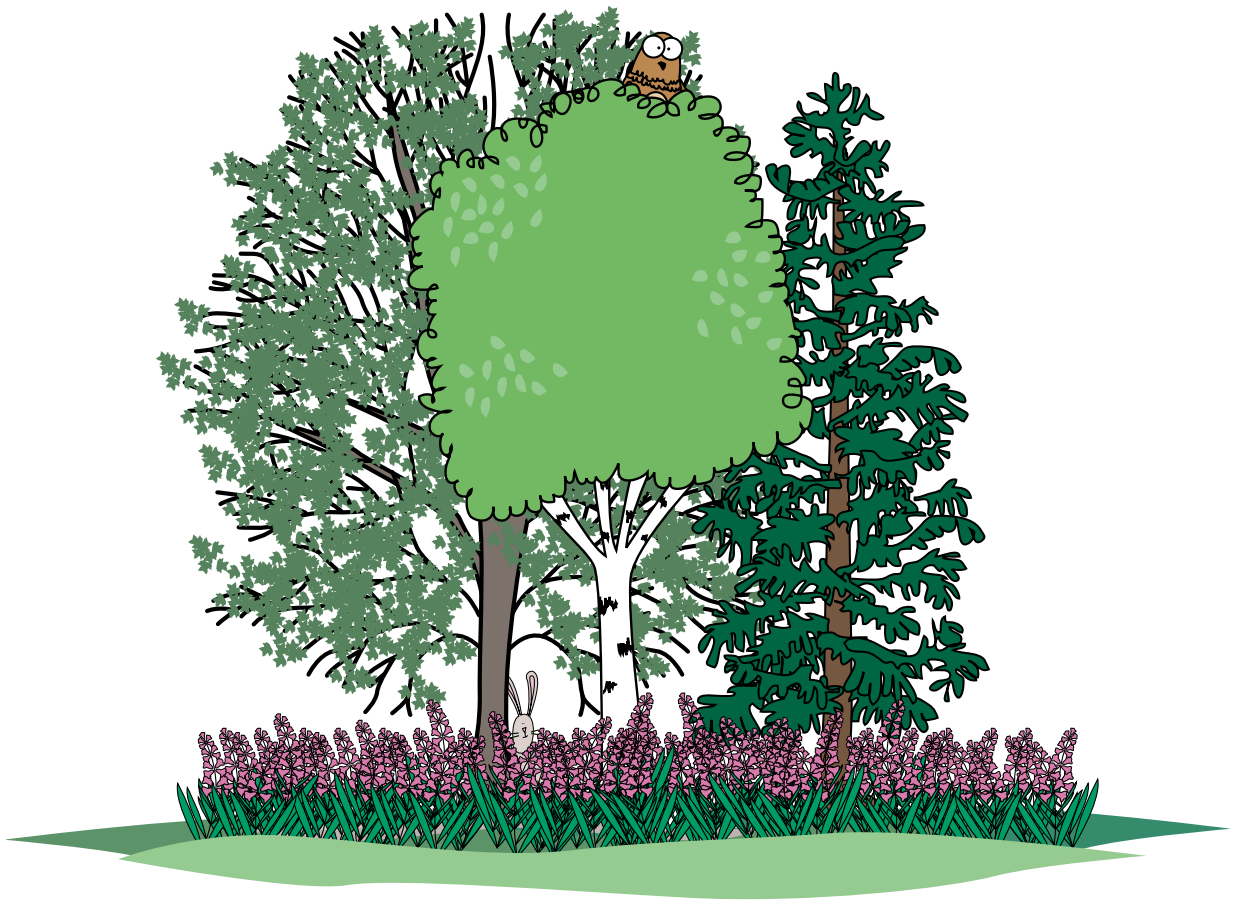
NOTES

NOTES

NOTES

NOTES

glossary and tracks



NATURE JOURNAL GLOSSARY

Adaptation – A physical or behavioural feature that helps an organism to survive in its natural habitat.

Boreal – A climatic zone in which winters are snowy and summers are short.

Canopy – The top layer of a forest, including the tops of tree branches.

Circumference – The perimeter of a circle.

Chlorophyll – The green substance in plants which, in the presence of sunlight, manufactures food.

Coniferous – Cone-bearing trees, like pines, spruce, firs and cedars.

Deciduous – Trees that shed their leaves annually; as opposed to evergreens.

Desiccate – To dry out thoroughly.

Diapause – A period of enforced dormancy between periods of activity.

Dormant – Asleep, inactive.

Ecosystem – A system made up of a community of animals, plants and bacteria, and its inter-related physical and chemical environment.

Germinate – To begin to grow.

Habitat – Environment where a plant or animal naturally grows and lives.

Hibernation – To pass the winter in a resting or inactive state.

Metabolism – Chemical changes in living cells by which energy is provided for vital processes and new material is absorbed.

Migration – To pass, usually periodically, from one region or climate to another for feeding and breeding.

Photosynthesis – The process by which a green plant uses sunlight to build up carbohydrate reserves.

Pigments – Colouring in an animal and plant cell or tissue.

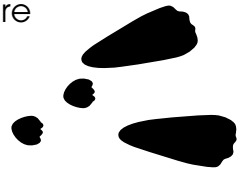
Predator – One that preys, devours or destroys.

Subnivean – Refers to the zone in and underneath the snow pack. This is the environment of many animals that remain active during the winter.

TRACKS

Fox

Snowshoe Hare



Bear

Weasel

Wolf

Mouse

Coyote

Raven

Moose

Ptarmigan

Squirrel

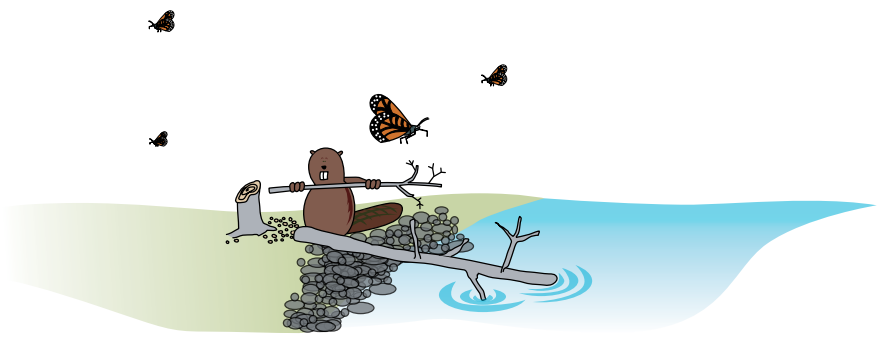
Acknowledgements

The Department of Environment and Natural Resources (ENR) wishes to thank the following people for their support and guidance during the writing and development of the Nature Journal:

- Susan Corey
  Director, Forest Management Division, ENR, Fort Smith, NT
- Tom Lakusta
  Manager, Forest Management Division, ENR, Hay River, NT
- Judy McLinton
  Manager, Public Affairs and Communications, ENR, Yellowknife, NT
- Mike Mitchel
  Outdoor Educator, Hay River, NT
- Sister Margaret Ann Beaudette
  Teacher, Chief Sunrise Education Centre, Hay River, NT

The Nature Journal was:

- Written by Beatrice Lepine, Extension Forester, Forest Management Division, ENR, Hay River, NT
- Designed by Inkit Ltd., Yellowknife, NT
- Illustrated by Janet Pacey, Yellowknife, NT



Northwest Territories Environment and Natural Resources

March 2009

978-0-7708-0183-0