

ALBERTA ENVIRONMENT

Friends of the Forest



Alberta
ENVIRONMENT

Kananaskis Country

This publication is part of a series of field study programs produced by the Environmental Education Program of Natural Resources Service in Kananaskis Country and Fish Creek Provincial Park. The publications have been written to address the mission of Alberta Environment and increase students' environmental awareness, understanding, interaction and responsibility for the natural world in which they live.

The publications are developed in a close working relationship with teachers, community educators and program writers. Programs focus on the areas of environmental education, science, social studies and language arts. They are also developed to emphasize elements of environmental literacy, lifestyle, and citizenship.

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Friends of the Forest

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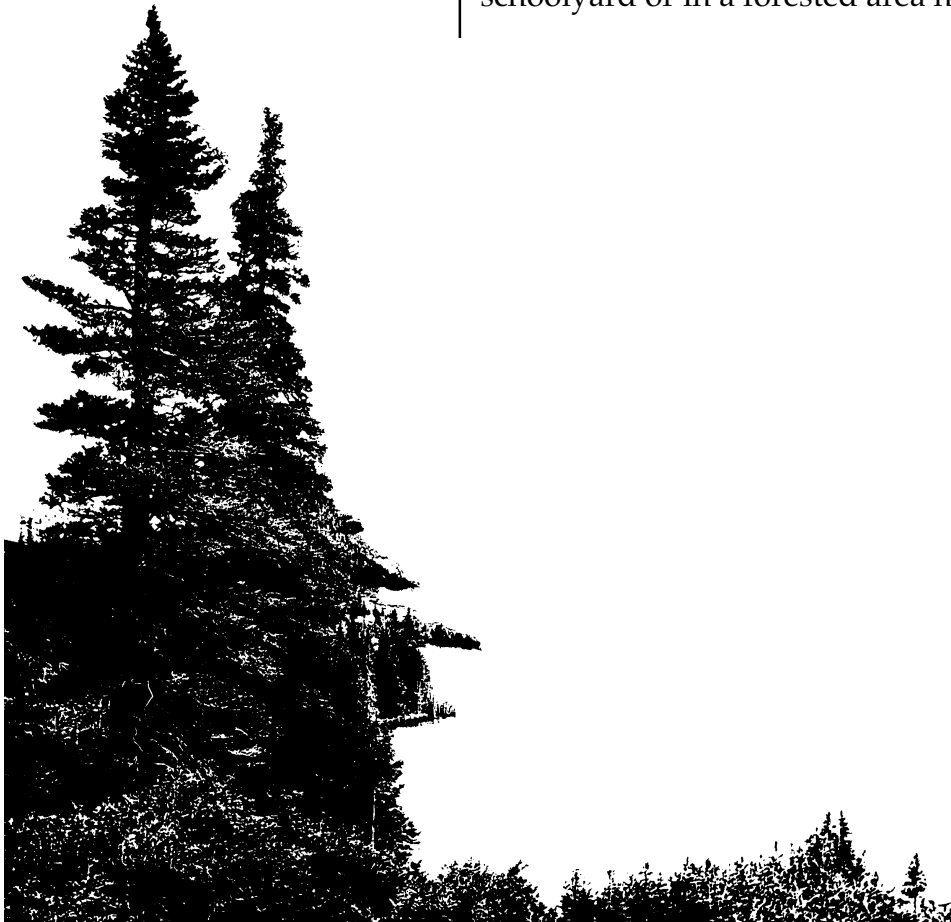
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1.0 OVERVIEW

1.1 AT A GLANCE

TOPICS	Forest Communities Interrelationships
PROGRAM LEVEL	Grades 1 - 3 / Ages 6 - 8
TIME REQUIRED	Story and Activities: 7 - 9 hours over a two week period
STAFF REQUIRED	One teacher with parent volunteers to assist with some of the activities. Kananaskis Country recommends a ratio of 1 adult: 5 students.
BEST SEASON	The story can be read at any time of the year. Some of the activities must be carried out in the fall or winter. Check each activity for details.
SUGGESTED LOCATIONS	The activities can all be performed in the classroom, in the schoolyard or in a forested area near the school.



1.2 PROGRAM SUMMARY

The program, *Friends of the Forest*, is a story and activity guide about a forest community, a community which is explored through the adventures of two boys named Derek and Ben. The story begins with the discovery of an old photograph of Derek's grandfather taken when he was a lumberjack. From this, the boys decide that they would like to build a fort under a giant tree like the one in the photograph. After much searching, they find a large tree and build their fort underneath it so they won't injure the tree itself. Over the course of a year the boys visit the tree and fort frequently. During each visit they meet many of the occupants of the forest community and find out about their lives and their connections with other members of the forest community.

Each chapter of the story has page-sized illustrations that can be shown to the class, and each chapter is followed by one or more activities which reinforce the concepts explored in the story.

This program is part of a written unit for Division I on forest communities and interrelationships. Each program can be used separately or as a unit of study. The complete unit includes:

Treelympics - a field study in which students compare their strengths with those of a tree in a series of Olympic-like activities.

Friends of the Forest - a story and activity guide about two boys who build a fort under an enormous tree in the forest. During their frequent visits to the tree, the boys meet many of the other forest inhabitants and discover some of the interrelationships that exist in a forest community. Activities related to topics covered in each chapter are included.

Canopy Communities - a field study in which students discover how plants and animals meet their needs and interact in a forest community. Pre- and post-field study activities are included.

1.3 ACTIVITY SUMMARY

There are sixteen activities included with this program. They are:

- **Man-made and Natural**
Students will identify natural and man-made components in a schoolyard.
- **Nature Hunt**
Students are given a handout with a list of man-made and natural objects. They try to find those objects in their schoolyard or in a nearby forest.
- **Blindfold Walk**
Students will follow a rope through a forested area, experiencing their environment using all of their senses except sight.
- **A Forest Alphabet Walk**
Students will explore a forested area and look for objects whose names begin with each of the letters of the alphabet.
- **Sense-a-Tree**
Students will find out all they can about a tree using all of their senses except sight.
- **The Giving Tree Bingo**
Students will look through magazines for pictures of wood products. They will use their pictures to try to complete a bingo card.
- **Seed Dispersal**
Students will walk through a field wearing a wool sock to collect seeds. Back in class they will examine the seeds they collected to discover how plants disperse their seeds in many different ways.
- **Healing Wounds**
Students will examine their own cuts and scrapes and compare them to those they find in trees in their schoolyard. They will discover that trees and people both have the ability to heal their wounds.
- **Chains and Webs**
Students will discover the food chains and food webs that exist in their own lives and in the lives of the inhabitants of the forest.
- **Animal Tracks**
In this activity, students look at animal signs in their schoolyard. They then match the signs they have found to an animal's signs handout to find which animal made the signs and to find out more about the winter habits of that animal.

- **Where's the Hare?**
Students will discover why it is advantageous for some animals to be camouflaged during the summer and winter.
- **Weaving Forest Words**
Students practice using words effectively to describe a natural environment.
- **Spring Storm**
Students create a storm through the use of imagery and class participation.
- **Nature Circle**
Students will closely examine their natural environment and then categorize, count and draw the objects they find.
- **Outdoor Vocabulary Bank**
Students are introduced to new vocabulary related to their environment and practice using new words in sentences.

1.4 PROGRAM OBJECTIVES

All of the following objectives need not be met. Teachers can select certain objectives which they may wish to emphasize during the program. Students will have the opportunity to:

1. identify parts of the environment as being man-made or natural.
2. observe the properties of objects using their five senses.
3. describe their observations of properties of objects.
4. describe plants in various ways.
5. compare, order and classify objects according to one or more properties.
6. observe and describe characteristics of seeds, e.g. size, shape, dispersal.
7. observe and describe damaged trees.
8. describe proper care of plants.
9. identify various parts of an environment and begin to infer their interdependence.
10. describe and classify animals in different ways such as locomotion and habitat.
11. be able to distinguish the tracks of several of the more common forest animals and the habitats in which the animals are usually found.
12. infer the outcomes, both man-made and natural, of changes which occur in the environment.
13. understand that animals are well adapted for the environment in which they live.
14. describe the features and the value of a natural environment.

1.5 CURRICULUM TIE-INS

This program supports selected themes and objectives outlined in the Alberta Curriculum for Division I Science and Language Arts. Selected themes and objectives are covered using the natural environment as the focus. Such a focus allows students, at their own level, to explore the concept that they are **a part of** rather than **apart from** the world in which they live.

Curriculum tie-ins are indicated in each activity. In general, the following areas are addressed:

DIVISION	SUBJECT	SUBJECT MATTER
One	Science	Matter and Energy - Properties of Objects - Properties of Matter Living Things and the Environment - Plants and Animals - Environment
One	Language Arts	Apply viewing skills. Demonstrate the ability to describe, classify and compare.

2.0 PRE-STORY ACTIVITIES

2.1 MAN-MADE AND NATURAL

This activity should be conducted before reading the *Friends of the Forest* story. In the activity students learn to recognize the difference between natural and man-made objects in the schoolyard.

Objective

Students will identify parts of the environment as being man-made or natural.

Curriculum Tie-in

Science: Living Things and Environment

Our environment includes all of our surroundings, both man-made and natural.

Time Required

40 - 60 minutes

Materials (per student)

- ☐ 1 *Man-made and Natural* handout (see page 8)
- ☐ 1 pencil
- ☐ 1 clipboard. These can be made from 30 cm X 25 cm pieces of cardboard with two elastic bands wrapped around them to hold the paper in place.

Instructions for the Teacher

1. Review the list on the handout. Feel free to add any additional items to the list.
2. Take your students on a walk in the schoolyard. While walking, point out different objects in the environment and have the students identify them as being man-made or natural.
3. On the walk, give each student one of the *Man-made and Natural* handouts. Use the handout to focus your students' attention on some of the natural and man-made components of their environment.
4. Review the list back in the classroom, and classify which objects are man-made and which are natural.

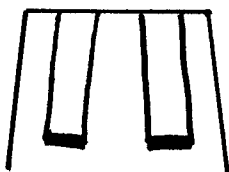
MAN-MADE AND NATURAL

My Name: _____

Place an M beside the **M**an-made things and an N beside the **N**atural things.



bug



playground



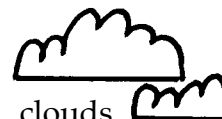
church



house



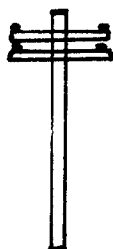
fence



clouds



grass



power line



bird



tree

2.2 NATURE HUNT

In this activity students will have the opportunity to use their observation skills to find the objects listed below. This activity should be conducted prior to reading the story. It is similar to a scavenger hunt, but instead of collecting the objects, students check them off on a list.

Objective

Students will identify parts of the environment as being man-made or natural.

Curriculum Tie-In

Science: Living Things and Environment

Our environment includes all of our surroundings both man-made and natural.

Time Required

40 - 60 minutes

Materials (per student)

- ☐ 1 set of *Nature Hunt* handouts (see pages 10 and 11)
- ☐ 1 pencil
- ☐ 1 clipboard. These can be made from 30 cm X 25 cm pieces of cardboard with two elastic bands wrapped around them to hold the paper in place.

Instructions For the Teacher

1. Give each student a handout, a clipboard, and a pencil.
2. Take students to a nearby natural area or out to the schoolyard where they can find some of the items on the *Nature Hunt* list. Have students look for and check off any of the items that they find on their list.
3. After the hunt, discuss with the students what they found and did not find. Have them think about the reasons why some things were not found.

NATURE HUNT - Sheet #1

My Name: _____

Check off these things as you see them:

___ a feather



___ a squirrel



___ a hole in a tree



___ an ant



___ a leaf



___ a spider



___ a bird



___ a tree



___ a cone



Check off these things as you hear them:

___ a bee



___ leaves in the wind



___ a bird



___ leaves crunching



___ a squirrel chattering

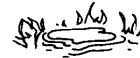


Check off these things as you smell them:

___ wet grass



___ mud



___ a flower

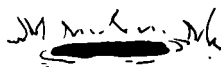


___ decaying leaves

NATURE HUNT - Sheet # 2

Check off these things as you feel them:

___ wet mud



___ tree bark



___ prickly plant



___ mosquito bite



Check off these things as you see them happen:

___ a leaf falling



___ a spider web with an insect



___ an ant moving something



What other exciting things did you discover?

2.3 BLINDFOLD WALK

Conduct this activity before or just after reading *Chapter One: The Search Begins*. In this activity, students will have the opportunity to develop their sensory awareness by exploring their environment using all their senses except sight.

Objective

Students will observe the properties of objects using their senses.

Curriculum Tie-in

Science: Matter and Energy - Properties of Objects

Objects can be identified, grouped, and ordered on the basis of physical properties such as colour, hardness, size, shape, texture, mass, volume, smell, and sound.

Time Required

30 - 40 minutes

Materials

- ☐ 1 blindfold per student
- ☐ 1 - 10 metre long thick (0.5" or 13 mm) rope for each group of 10 students

Instructions for the Teacher

1. Tie knots in the ropes at one metre intervals. The rope will be used to guide students on the walk, and the knots will give them something to hold onto.
2. Recruit adult volunteers or high school students to assist with the activity. A ratio of 1 adult to 6 students is recommended.
3. Take the class out to a forested area. Divide the class up into groups of 10. Have each group line up in single file. Help them put on their blindfolds. Extend the ropes so that each student is holding onto one of the knots. Have one adult supervise each group.
4. Slowly walk the groups through the forested area having them stop to touch, smell or listen to natural objects in the forest. Try to provide as many contrasts as possible.
Examples:
Touch: bark, leaves, needles, moss, grass, soil
Sound: crunching leaves, rustling leaves, bird songs, squirrel chattering, wind
Smell: spruce/pine sap, spruce/pine needles, soil, grass, dead leaves, air inside forest, air outside forest
5. After the walk, form a circle and have students share their experiences and sensations with one another.

2.4 A FOREST ALPHABET WALK

In this activity, students are challenged to find objects in the forest whose names begin with each of the letters of the alphabet.

Objectives

Students will describe their observations of properties of objects.

Curriculum Tie-in

Language Arts

Apply viewing skills and demonstrate the ability to describe, classify, and compare.

Time Required

30 - 40 minutes

Materials

per student:

- ☐ 1 *A.B.C.'s of Nature* handout (see page 14)
- ☐ 1 clipboard. These can be made from 30 cm x 25 cm pieces of thick cardboard with two elastic bands wrapped around them to hold the handouts in place.
- ☐ 1 *Leaf Outline* (see page 15)
- ☐ 1 pencil

for the class:

- ☐ - newsprint, brown construction paper, pencils, crayons, scissors, and tape, or glue are required for the Word Tree

Instructions for the Teacher

1. Make one copy of the *A.B.C.'s of Nature* handout for each student.
2. Give each student one handout, one clipboard, and one pencil.
3. Take the students on a walk through a forested area. As you walk, have the students find something or think of something that lives in the forest that starts with each letter of the alphabet starting with the letter "A". For example, Ant for A, or Bear for B. Keep the lists, and use them for a spelling quiz or for constructing a Word Tree.
4. To construct a Word Tree, use brown construction paper to make a one metre high shape of a tree; tack the tree to the bulletin board.
5. Make a copy of the leaf outline for each student. Have students print their favourite word from the *A.B.C.'s of Nature* handout on their leaf. Students can then colour their leaf, cut it out, and paste it on the Word Tree. Words can either be chosen randomly, or you can assign each student to a letter of the alphabet and they can choose any word they like that begins with that letter.

A.B.C.'S OF NATURE

My Name is: _____

Find living or non-living things that have names beginning with the letters of the alphabet found below:

a _____ n _____

b _____ o _____

c _____ p _____

d _____ q _____

e _____ r _____

f _____ s _____

g _____ t _____

h _____ u _____

i _____ v _____

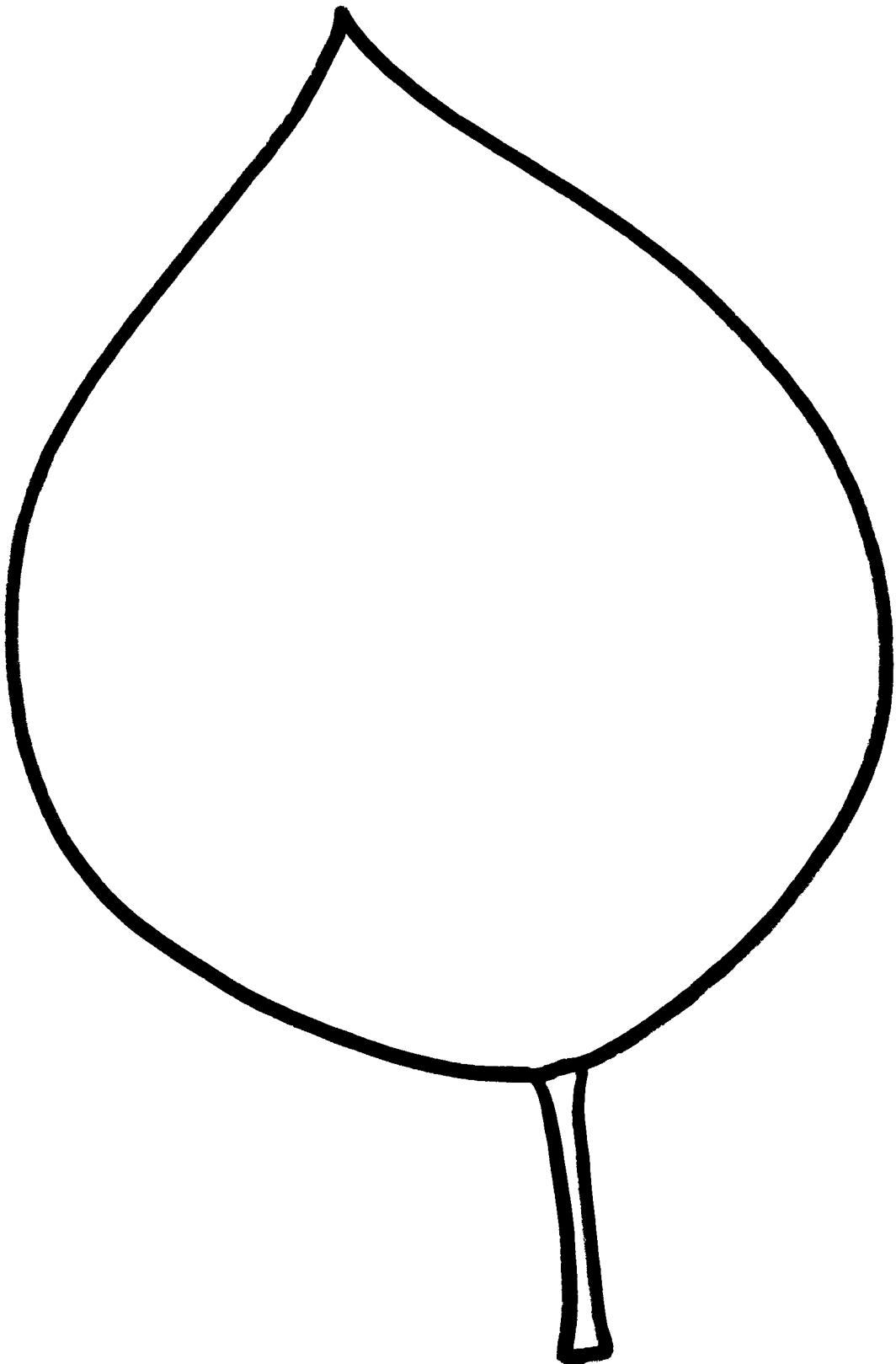
j _____ w _____

k _____ y _____

l _____

m _____

LEAF OUTLINE





Friends

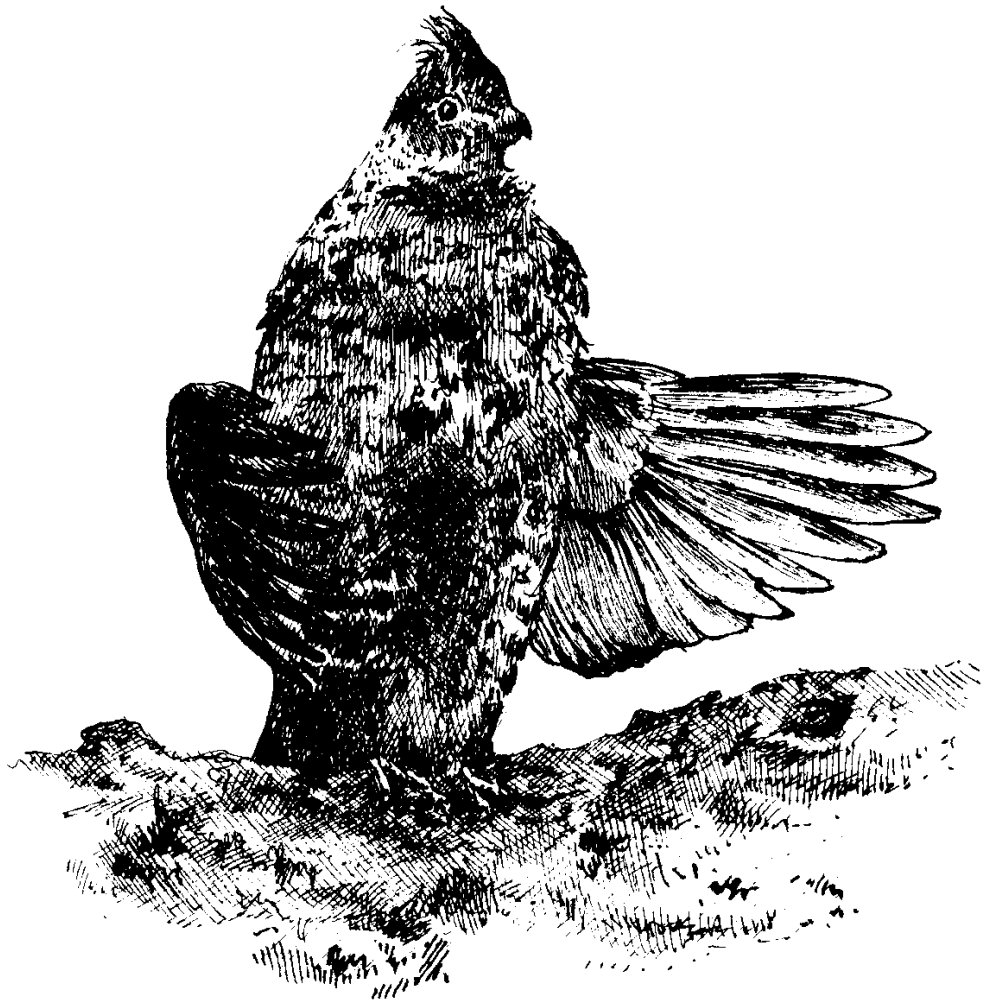
of the

Forest



Chapter One

The Search Begins



The Search Begins

Ben and Derek discover an old photograph of grandfather as a lumberjack, and decide to find a giant tree where they can build a fort.

The chattering squirrel, coyote scats and tracks, elk bed, and mushrooms all prove to Derek and Ben that the forest is home to a variety of plants and animals.

“Dead flies. Just dead flies and junk,” muttered Ben. “Let’s go back downstairs—there’s nothing up here...”

“Wait a minute,” Derek interrupted. “Look at all these old papers. I’ll bet they’re important—maybe they have something to do with money!” He shuffled through the brittle pages. “Help me look, will you?”

“Ooh, yuck!” Ben made a dirty face as he pulled a squashed fly from his pants leg. “Why are there so many flies up here?”

Derek didn’t bother to answer. “Here, look at some of these papers. I can’t figure out all these big words.”

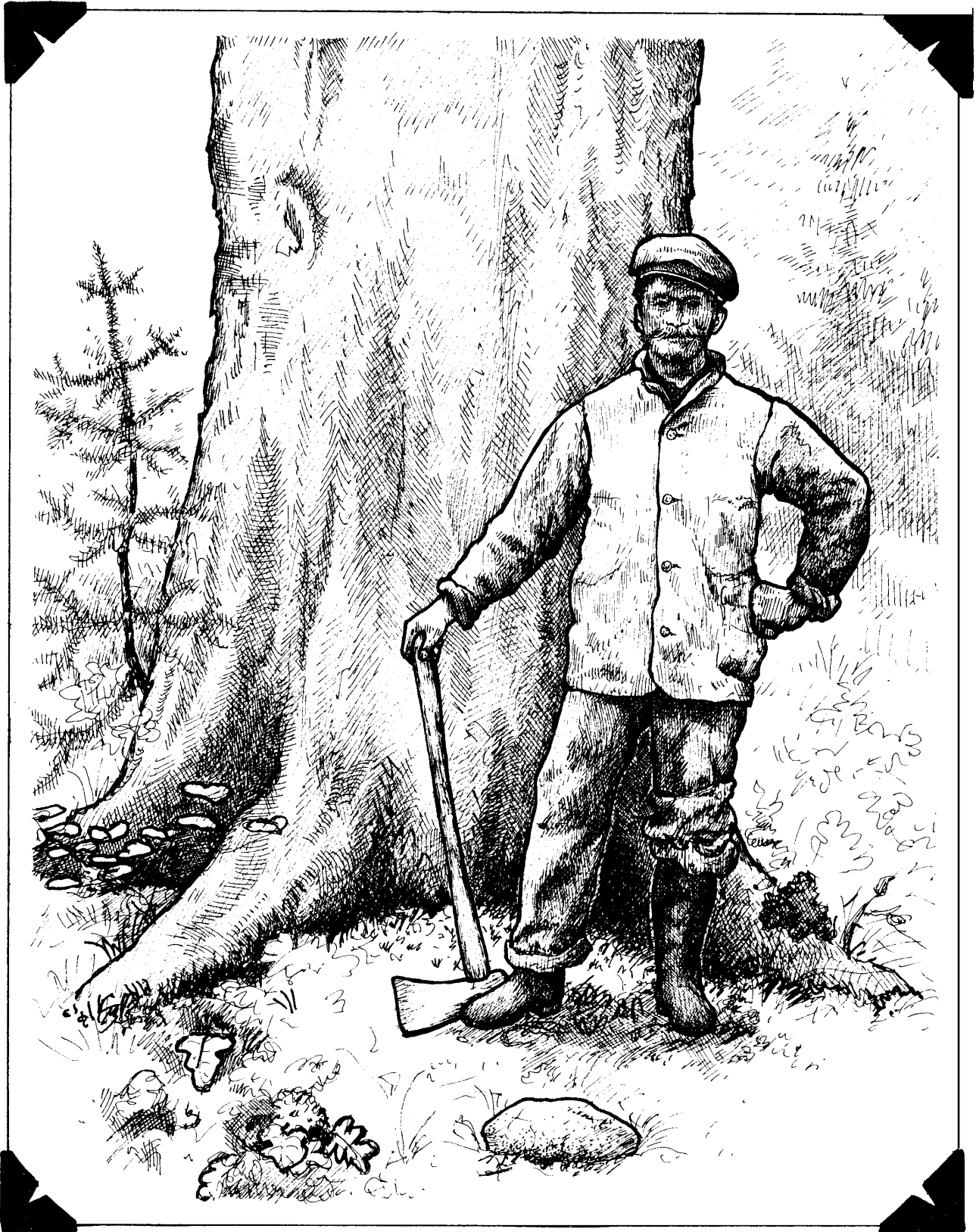
Ben couldn’t understand much of it either, and turned to poke through the dust-covered boxes beside him. He reached for a cardboard box stacked beside a wooden crate.

“Ooooh...Derek,” he whispered. Ben lifted a big leather-bound book from the box. Derek’s eyes grew large as he took the old book from Ben.

“Hey! This isn’t any ordinary book. It’s an old photo album. Must be Grandpa’s,” Derek said as he slowly turned the pages. “These pictures were taken before Mom and Dad were even born—Grandpa used to be a lumberjack, you know.”

The two boys leaned back against the old chest and stared at the faded photographs. Ben leaned over and pointed to a family photograph. “They sure are wearing funny clothes.”

“Yeah,” agreed Derek with a small giggle. “It must have been terrible wearing those tight collars.” After a moment he pointed to a small photograph of a man leaning on an axe and standing beside a huge old tree. “See! There’s Grandpa when he was a lumberjack.”



Ben whistled softly through his teeth. "So-o-ome tree! It looks thicker than a fat elephant—too bad the whole tree isn't in the picture. I'll bet it was really tall."

"Mmm," Derek looked at the photo for a moment. "Sure glad I didn't have to chop that one down." He gripped an imaginary axe tightly in his hands and took aim. He could almost hear the thunderous crash of the tree's fall; the thought made him wince.

"Derek, imagine the huge fort we could build in a tree like that!" Ben sounded excited. "Not just one fort—you could build a whole bunch of forts in a tree that size... With secret rooms, and stairs and a look-out tower way up top!"

"Yeah, that's a great idea. We could find the biggest tree in the forest and build a fort with a secret attic to hide stuff, and pull-up stairs, and a look-out tower on the highest branch..."

"But—maybe not..." Derek added, suddenly thoughtful.

"Why not? We could get the wood and there are plenty of old nails lying around and..."

"Because there just aren't any trees like that," Derek interrupted, pointing to the yellowed photograph. "Not around here, anyway."

"Well, I'll bet there are. Besides, let's not get too picky, okay? All we need to do is find the biggest tree in the forest and build a fort in that one."

Derek stood up to stretch his legs, brushing the dust off his pants. He still wasn't convinced. "We might just have to settle for a small fort, you know."

"Well, I'm still game—as long as we build a look-out tower at the top. We'll have to be able to see, in case of danger, or fire or something, right?"

"Right! And we won't tell anyone; it's a secret. A 100% secret," Derek said. "Just for the three of us."

"Three?" asked Ben, but then he knew. "Oh, McFuddy! Of course. Tomorrow, if it's sunny, we'll start looking."

The next morning, McFuddy, wagging her stubby tail and poking her wet nose into his face, nudged Derek awake.

“Hey, McFuddy, who let you in?” Derek gave his dog a playful shove. He peeked out the window, sunshine. Everything about today felt right; it was the right day to hunt for a fort-tree.

The screen door banged shut as Derek started off toward Ben’s house with McFuddy trotting beside him. A sandwich and a banana bulged in his coat pocket. “Food for the search,” Derek had explained to his mom after breakfast. “We’ll need some lunch in case we don’t find our tree right away.”

“What tree?” Derek’s mom had asked.

“Oh, the very biggest one—like the kind that Grandpa used to chop down for the lumber company.” In his mind, he could clearly see the huge tree in the old photograph.

“Let’s explore the forest at the end of the street,” Derek suggested.

“All right,” Ben agreed.

With hands shoved into their pockets, they were off. McFuddy dashed ahead and disappeared into the trees. Once they were inside the forest they slowed to a walk. The air cooled their cheeks as they moved under the shade of the trees.

For a time Derek and Ben followed an old path. Soon the path disappeared



and the boys had to make their own. Twigs snapped. It sounded like they were walking on cornflakes. They tried to walk quietly, but it didn't work too well.

"Oh, yuck. That's gross." Ben stepped back to see what he had slipped on. "A slug!" he cried with a disgusted look on his face.

Derek ran over to look. "That wasn't a slug," he laughed, "it's a slimy mushroom! The ground is pretty wet here—I wonder if that makes them grow better. Look at all the different kinds, Ben."

Ben wasn't interested. "C'mon, let's just get going," he grumbled. Derek turned to follow Ben down the trail.

* * * *

After wandering through the forest for almost an hour, Ben sat down on a grey rock and sighed. "All the trees look the same to me," he said impatiently. "I'm beginning to think that there aren't any giant trees in this forest."

"Aw, c'mon, Ben," coaxed Derek. "We've just started. And look at the trees over there; they look different from the ones we've been walking through."

It was true. The dark green-needled trees that grew so closely together were giving way to different kinds of trees. A few clumps of aspen (the same kind that grew on Ben's street) fluttered their leaves; young spruce trees grew here and there between pine trees. Derek knew they were pine and spruce because they looked like the trees that he and his family had decorated in his front yard last Christmas. "But, they still don't look big enough to build a fort in," Ben insisted.



"Chick-chick-chick-chick... chick-

chick-chick.” McFuddy jerked her head up at the sound. She bounded to the base of a large tree and jumped up, both paws against the trunk—“Grwwrroph!” Her stubby tail wagged so hard her whole rump wiggled.

A small reddish-brown squirrel perched on a branch high above their heads. Its body tensed and twitched with every chick-chick sound it made.

“What’s your problem?—EEE, EEE,” Ben tried to imitate the squirrel.

Suddenly, McFuddy dropped down and then flung herself at the tree again. She scrambled against the thick trunk, scratching frantically in an effort to reach the squirrel.

“McFuddy! Get down, you bad dog!” ordered Derek sharply. McFuddy managed one last gargled bark just as Derek clamped her muzzle shut and dragged her from the tree.

“So much for the squirrel,” Derek muttered as he loosened his hold on McFuddy. “Next time, you stay home.” He patted McFuddy’s big flat head. “Sorry about that girl, but you just get too excited out here and then we don’t get to see anything.”

Ben flopped down on a log, this time with an even bigger sigh. “I’m hungry. It feels like we’ve been out here for hours and hours.. and NO-O-O- tree yet.”

“I tell you what. If I give you half of my sandwich and banana, will you keep looking for a bit longer?” Derek knew the promise of food could get Ben to do anything.

“Okay,” Ben grumbled. “But just a little bit longer.”

“That was just a snack,” said Derek as he stuffed his lunch wrapper back into his pocket. He took off his belt and wrapped it around McFuddy’s neck as a leash. “Maybe this will help. Ready, Ben? Hey, Ben.”

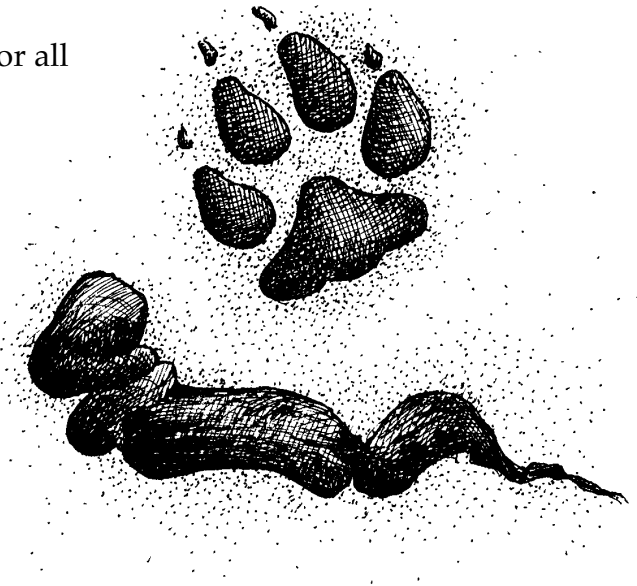
Ben was kneeling beside a muddy area, looking closely at something. Derek squatted down beside him. Tracks! Some of them were hard to see clearly. “These prints have been here for awhile,” said Ben.

Derek stretched his hand over one of the tracks; it was smaller than his palm. They were similar to McFuddy’s tracks. He stood up and shoved out his chest, pretending to be very wise. “It’s a coyote, heading north,” he asserted.

Ben looked up at him. "How do you know?"

Derek shrugged. It could have been a dog, for all he knew, but it might have been a coyote. After all, they did live in forests, he knew that much.

Looking carefully around to make sure whatever had made the tracks didn't come out of the trees, the boys followed the prints. Derek gripped McFuddy's leash tightly. The tracks disappeared into the grass, but right at the edge was a pile of long, rope-like animal droppings.



"Coyote scats," Derek announced. He grinned, and felt very wise once again. Derek used a stick to poke at the pile. He had heard that if you looked, you could often tell what the animal had eaten. Carefully, he broke the remains open and found bits of grey fur and a few bones. The bones were tiny and the fur was quite short.

"Oooh, look at that. What do you think he ate for breakfast? Or do you think it was dinner?"

"I feel sick. Put that stick down, Derek." said Ben as he turned away.

"Mouse, maybe?" mused Derek, ignoring Ben. McFuddy whined restlessly. "Well, okay, maybe it's time to turn back," Derek admitted. Ben could not hide his relief.

The boys had crossed several little, grassy clearings when all at once the leash snapped tight in Derek's hand. McFuddy glued her nose to the ground and dragged Derek to the far side of the clearing.

"What do you suppose did this—a buffalo?" Derek pointed to a large oval-shaped spot pressed into the grass as though something big had been lying there.

"No, silly," Ben snorted. "There aren't any buffalo around here any more."

Both boys laughed and carefully scanned the trees around them before moving on. "It's

only a deer.” Derek tried to sound convincing.

The trampled spot reminded the boys of a bed. Derek lay down and stretched out in the middle of it.

“I think something bigger than a deer did this... like an elk.” Ben stepped back as he spoke. Suddenly he yelped and jumped forward again.

“Oh, yuck! Yuck!” he yelled, stomping angrily in a circle.

Derek looked up and broke into a loud laugh when he saw what had happened. “What’s the matter? Did you step on another slimy slug?” he giggled.

“Yeah, you can laugh... I’m the one with all the luck around here. I’ve had it. Every gooey thing in this forest gets me. I’m going home!” Ben exploded. He turned and began to walk quickly toward home, hiding his red face. Derek followed quietly. It had been a good expedition.

After saying good-bye to Ben at his house, Derek thought about some of the neat discoveries they had made: the pine trees, the mushrooms, the grassy clearings, fluttering leaves, the saucy little squirrel, the coyote scats and tracks, the elk bed, and of course, thought Derek with a wide grin, the elk droppings. But, what about the fort-trees? Where had all the giants gone?

3.1.1 SENSE-A-TREE

Conduct this activity after reading Chapter One of the *Friends of the Forest* story. In this activity, students will discover all they can about a tree using all of their senses except sight.

Objectives

Students will observe the properties of objects using all of their senses except sight.
Students will describe plants in various ways.

Curriculum Tie-in

Science: Matter and Energy - Properties of Objects

Objects can be identified, grouped, and ordered on the basis of physical properties such as colour, hardness, size, shape, texture, mass, volume, smell, and sound.

Materials

- ❑ 1 blindfold for each pair of students

Time Required

30 to 45 minutes

Instructions for the Teacher

1. Divide the students into pairs.
2. Take the class to an area with trees. Establish boundaries for the activity. Boundaries can be delineated by large trees, pathways, or creeks. Alternatively, students can stay close enough to a central area so that they can always see the teacher, and the teacher can always see them.
3. Hand out blindfolds (one per pair). Blindfold one student of a pair (student A). Instruct student B to guide their partner to a tree and have their partner explore the tree carefully by:
 - a. measuring it by reaching their arms around its trunk and reaching up the trunk to compare its height and width to themselves.
 - b. feeling the bark - is it scaly or smooth? Does it have ridges?
 - c. feeling the leaves or needles - does the tree have broad-leaves, needle-leaves, or no leaves?
 - d. feeling for sap on wounds - is it sticky and fresh, or dry and old?
 - e. smelling the bark, sap, and leaves.
 - f. feeling the soil at the base of the tree - is it dry or damp? Is there grass at the base or any other plants or bushes?

4. After spending 5 to 10 minutes exploring, have the partners return to the starting area. Have students remove their blindfolds and then try to locate their tree. Once all of the students have found their tree (or are told), return to the starting area.
5. Blindfold student B and repeat the activity.
6. After all students have completed the activity, gather them together and discuss the activity. Focus on what they discovered about trees by using their senses. Did they discover anything that they didn't already know?

Chapter Two

Troubles Ahead



Troubles Ahead

When Derek and Ben go to find lumber and nails , the carpenter raises some questions about their fort. A question of stewardship arises for the boys when they consider the implications of damaging a live tree.

While looking for a fort-tree, Derek discovers that not all evergreens are alike and the forest, upon closer inspection, has fewer giant trees remaining than what they had hoped for.

The next Saturday, Derek and Ben headed down Main Street toward a new building. Derek had noticed a big pile of what he felt sure was left-over lumber lying beside the garbage bin.

The sound of hammering met them as they turned the corner. Derek and Ben ducked under a ladder and stopped beside a large man sawing lumber. In a short time he had cut a long board into several smaller pieces.

Derek gave Ben a small shove. "You ask him."

"No, you ask him."

"No, you ask!"

The man looked up to see two boys staring at him. "You boys looking for something?"

"Yes, sir," Derek began, "we were wondering if we could have some of the wood piled up over there for our fort?"

"Your fort?" He tipped his hard hat back with a gloved hand and smiled at the boys.

"Yes, sir. We're going to build," began Derek, but Ben interrupted;

"The very biggest and best fort, and, it's going to have six rooms, and secret places to hide stuff, and a watch tower at the very top— "

The man laughed, "Now hold on a minute. So you want to build a fort. Just where are you going to build this grand fort?"

"In a tree," Ben answered.

"Well now, it's going to have to be quite a tree to hold your fort by the sound of it," the man replied. "Have you thought about what it might do to the tree?"

Ben looked disappointed, but Derek wasn't going to give in. "But we still need lumber, sir. Would you mind if we took some of those pieces over there?"

The man paused, then had an idea and smiled. "I'll tell you what; there's a pile of scrap lumber at the back of the building that you can look through, but I want you to think about where you're going to build that fort of yours. A fort with six rooms, hiding places, and a watch tower is going to need quite a big tree, and it takes trees a long time to get that way." The carpenter brushed some sawdust off the board he'd just cut and continued, "I'd think a tree that's worked that hard doesn't deserve all the hammering and branch breaking you'd be doing. There'd be a lot less damage done if you built your fort on the ground, don't you think?"

This time Derek and Ben shrugged. What good was a fort on the ground? And what good was a fort-tree (if they ever found one) without a fort in it?

The carpenter waved his hand in the direction of the lumber pile. "Go take what you need. Just watch out for the nails, and be careful with your tree."

As they left the building site loaded down with wood, both boys thanked the man.

While at the lumber pile, Ben had also found some loose nails which he stuffed into his pocket.

"I still think we should go out and look for the fort-tree and build our fort," Ben said firmly.

"But don't you think it might hurt the tree?"

"Nah, come on, Derek. We've got the lumber and nails. We're all set. Besides, I don't think trees feel anything. They're not like people, you know. Don't worry about it. Let's just find our fort-tree and start building... okay?"

"Hmmm," Derek said, more to himself than to Ben. He was still thinking about what the

carpenter had said about how long trees took to grow. Suppose there really were a giant tree out there, and he still believed there was, one small itsy bitsy fort wouldn't hurt... would it?

Two weeks later, Derek stood alone at the edge of the forest wondering what to do. Should he go on by himself or wait until Ben could come with him? Everything seemed to have gone wrong since the day he and Ben had found their lumber and nails. First, Derek and his family went away on vacation; Ben said he would rather wait until Derek got back before going to look for the fort-tree again. When Derek returned from vacation, he found Ben sick in bed with the flu. Then, to top things off, Ben discovered that he had hidden the precious nails too carefully and couldn't remember where they were.

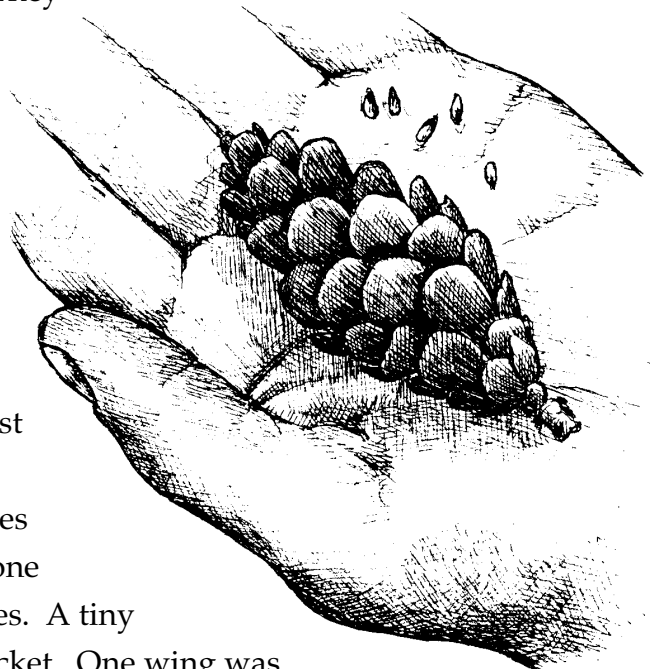
Derek peered doubtfully into the dim light of the forest. He decided to go tree hunting anyway, even though Ben couldn't come. Now he was having second thoughts. What if he got lost?—or met a bear! He turned his head to locate a sharp clacking sound and saw a bright yellow-winged locust in jerky flight. The locust looked like it was having fun.

Derek took a deep breath and started walking into the forest. He strolled down the old trail. Most of the trees in this forest were like tall, green triangles.

"Spruce and pine trees," Derek thought. They reminded him of soldiers standing at attention.

Several leaves swirled loosely in the wind; fall was coming soon; and with fall, school. Then, when would they find their giant fort-tree?

Plop! Something landed on the ground just in front of Derek. He crouched down to pick it up. It was a cone. Thin brown scales seemed to go round and round on top of one another. He peeked under one of the scales. A tiny black seed hugged the wall of the seed pocket. One wing was attached to its side.



Derek shook the seed onto his hand, it was so tiny! He looked at it a moment, then tipped his head back and gazed up at the tall spruce tree in front of him. He had never wondered where trees came from before. Could such a big tree actually come from such a small seed?

After a few moments, a puff of wind blew the seed from Derek's open hand. The seed drifted lightly to the ground, and disappeared among the moss and fallen leaves.

Derek wandered across the small clearing to the tree where the squirrel had so angrily scolded them the first time the boys had explored the forest earlier that summer.

"I'll call you the Scolding Tree," he said aloud to the heavy dark trunk. For a moment it struck him that maybe this tree was big enough for a fort. He circled it slowly several times. Not bad. It certainly looked strong. Derek circled it again. No. This tree didn't have enough branches to hold a fort properly. Their pile of lumber would have to wait until they found the right tree—a fort-tree.

Derek stared around him. Some trees had fluttery leaves, but most of the trees were covered with needles. He looked closer and realized that even the needled trees were different from each other. He knew the pine and spruce, but what were the others? He took another step, but suddenly the idea of being all by himself made him feel sort of jittery inside. Somehow it was a whole lot easier to be brave when Ben was around.

Feeling a little sheepish, he turned and headed back to the trail. He couldn't help but feel discouraged. It seemed that real giant trees weren't around anymore—except in old photographs. Maybe his plans for building the very biggest fort in the very biggest tree would never be anything more than a dream. He glanced over his shoulder, hoping at least to see his squirrel friend, but didn't see any movement at all.

Nothing was going right: Ben was sick, he had lost their only nails, and summer was almost over. "What a rotten day," Derek thought. He gave the ground a kick, exposing dark soil. A tiny beetle scuttled back under the protection of fallen needles. "There's no fort-tree here. We've looked all over and there's just no fort-tree here." Derek picked up a bumpy cone and threw it down the trail. It bounced off a tree and disappeared into the forest. "See! Nothing's going right." He turned to leave, once and for all, or so he thought.

3.2.1 THE GIVING TREE BINGO

Conduct this activity after reading Chapter Two. Refer to Derek and Ben’s discussion with the carpenter. In this discussion the boys found out how long it takes trees to grow. They also found out that although trees are a renewable resource which we use for many things, we must not waste them needlessly and we need to replant areas that we log. In this activity students will discover some of the many ways that tree products are used.

Objective

Students will recognize that many of the things we use every day are made from trees and tree products.

Curriculum Tie-in

Science: Matter and Energy - Properties of Objects

Objects can be identified, grouped, and ordered on the basis of physical properties.

Materials

- ☐ 20 - 30 old magazines
- ☐ 1 pair of scissors for each student
- ☐ 1 *Giving Tree Bingo* card for each group of 4 - 6 students (see page 34 for sample)

Time Required

45 - 60 minutes

Instructions for the Teacher

1. Have students make up enough copies of the *Giving Tree Bingo* card so that you have one for each group of 4-6 students. Fill in the boxes on the cards with the names of the wood products listed below. The order in which you write the names should vary from card to card so that each group has a different combination. The wood products might include:

wooden canoe	wooden desk	wooden baseball bat	wooden lamp
wooden table	paper	chewing gum	wooden bookshelves
wooden door	pencil	maple syrup	cutting board
wooden house	books	cardboard box	rolling pin
wooden fence	guitar	milk carton	paper coffee filter
hockey stick	piano	furniture	toothpick

2. Have the students cut out pictures of wood products from old magazines before they see the bingo cards. Each student should have 2 pictures of different wood products.
3. Divide the class into groups of 4 - 6 students. Hand out one bingo card to each group.

4. Have the groups of students work together to try to match their pictures to the wood products listed on their group's bingo card. The object of the game is to try to fill in a straight line of pictures running across or down the page or diagonally across the page.

SAMPLE OF A GIVING TREE BINGO CARD

WOODEN CANOE	GUITAR	BASEBALL BAT	WOODEN DOOR
PAPER	PENCIL	WOODEN DESK	MILK CARTON
CARDBOARD BOX	CHEWING GUM	MAPLE SYRUP	WOODEN TABLE
HOCKEY STICK	BOOK	WOODEN FENCE	WOODEN HOUSE

3.2.2 SEED DISPERSAL

Conduct this activity after reading Chapter Two. Relate it to the part of the story when the boys reflect on how long it takes a tree to grow. In this activity, students will discover that plants disperse their seeds in many different ways.

Objective

Students will observe and describe characteristics of seeds, e.g. size, shape, dispersal.

Curriculum Tie-in

Science: Living Things and Environment - Plants and Animals

As living things, all plants and animals grow, require food, water and air, respond to their environment, and reproduce their own kind.

Materials

- ☐ 1 wool sock for each student
- ☐ 1 roll of masking tape
- ☐ 1 shoe box filled with about 1 cm of gravel topped with 5 cm of potting soil for each student
- ☐ - cookie sheets or trays to place under the shoe boxes (approximately 15 for a class of 30)

Time Required

30 minutes to 1 hour for gathering seeds and discussion. In addition, a minimal amount of time will be required for watering and caring for seeds.

Instructions for the Teacher

1. Ask the students to bring an adult-sized old wool sock to school (one which will fit over their shoe). If they forget, masking tape can be used as a substitute.
2. Ask the students to put the sock over their shoe or wrap masking tape around their shoe, sticky side out.
3. Take students outside to a field that is rich in seed-bearing plants such as grasses.
4. After walking through the area, have students carefully remove their socks or masking tape. Have them examine the seeds and other things they picked up (grass, twigs, etc).
5. In the classroom have students record with words or small drawings the different things collected on their socks. Have them count how many of each thing they collected.

6. Ask the students to describe the seeds they found. How big are they? What shape are they? Are they smooth or prickly? How easy is it to get them out of their socks?
7. Discuss how seeds are dispersed. The following list outlines some ways in which seeds move.

HOW SEEDS TRAVEL FROM THE PARENT PLANT

- float on water (e.g. water smartweed)
- eaten by animals and the seeds pass through their digestive systems to be deposited elsewhere (e.g. berries such as strawberries and blueberries)
- hook on to animal fur (e.g. burrs such as stickseed and thistles)
- collected, buried and forgotten by animals (e.g. squirrels burying pine cones)
- have parachutes (e.g. fireweed and dandelions)
- catapulted from parent (e.g. members of the pea family such as lupines)
- seeds with wings (e.g. pine and maple)

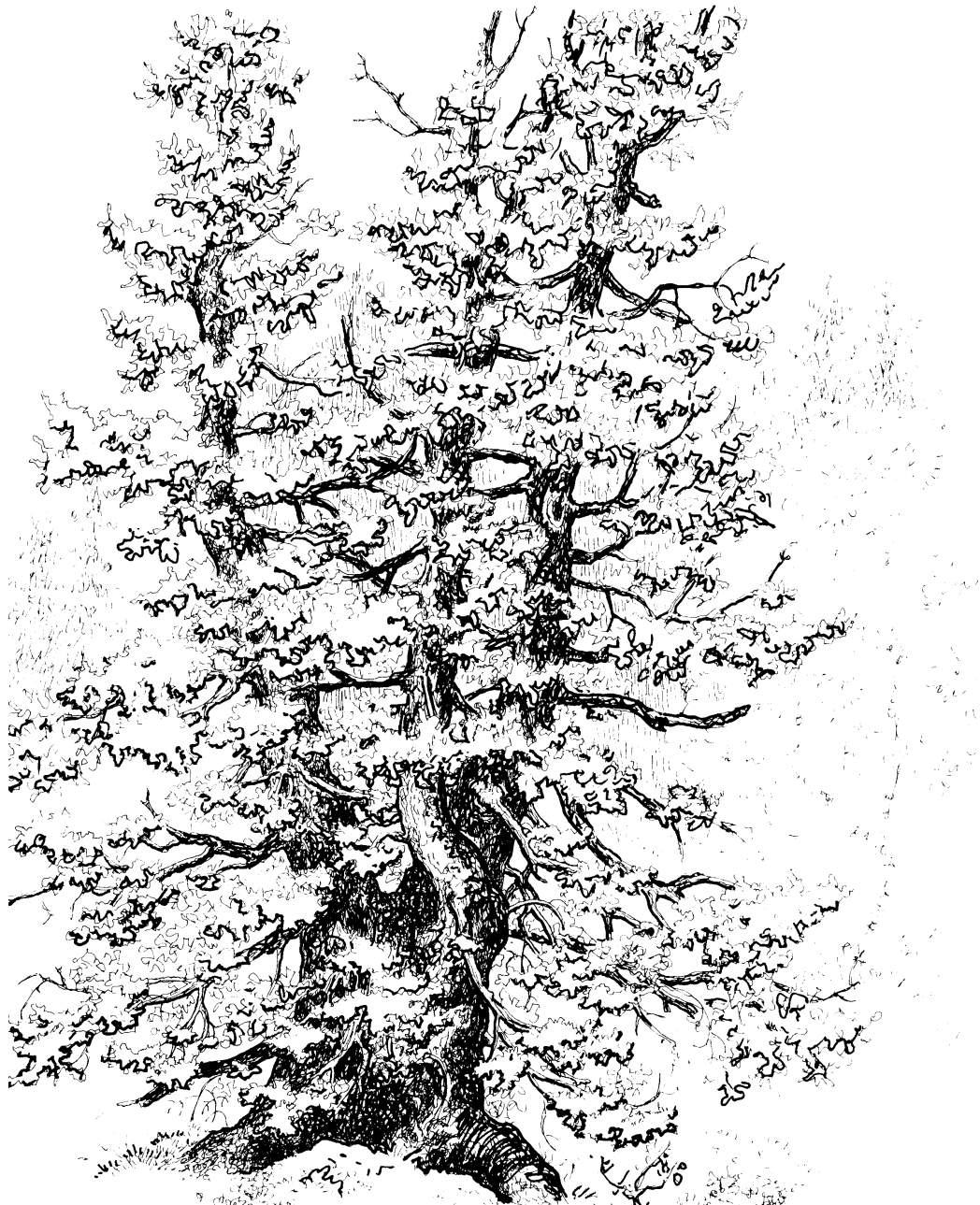
8. Compare how animals' fur picks up things in the same way their socks did. Talk about how seeds are moved around by animals, wind and water.
9. Students can plant their seeds in the shoe boxes filled with gravel and potting soil. Have students print their names on their boxes. The watering and care of the seeds may continue for several weeks.

NOTE TO TEACHER: Many wild plant seeds must be frozen before they will germinate. You may want to put the seeds in ice cube trays and freeze them for several days before planting them.

Wildflower seeds are also available through greenhouses and gardening shops.

Chapter Three

Discovering a Friend



Discovering a Friend

Derek finds a giant tree. Occasionally we are fortunate to find remnants of old forests when lumbermen leave trees for one reason or another.

Derek and Ben climb the giant tree and discover sap and beetles. Derek likens sap to human blood and realizes that the tree is home to many living creatures; and that a tree's life processes can be compared to our own. Upon these realizations, the boys reconsider the carpenter's concerns about where they build a fort and begin to respect the importance of living things.

The school bell clanged sharply. A moment later children poured out of their classrooms, eager to go home. "Meet you at the corner with the rest of the guys!" a friend yelled to Derek.

Derek nodded, zipped up his coat and ran down the stairs to the school exit. He and his friends had started playing hide-and-seek in the forest soon after school started in the fall. They always had fun, but it was also kind of scary, and that made it really exciting. Half the time they expected some wild monster or beast to jump out of the trees at them.

Today, as his friend Jason started counting, Derek ran off a little farther than usual. Just to make sure that Jason wasn't peeking, Derek turned to look behind him. That was when it happened. His foot got caught on a tree root and he went flying straight into the branches of a spruce tree. For a moment he lay on his back trying to catch his breath. Once he was able to open his eyes, he looked up. Everything was green; green needles and more green needles. A clump of them stuck straight out from a branch over his face, almost poking him in the nose.

Derek strained to look around; big, strong branches, heavy with needles spreading all around the tree almost touching the ground in places. "HMMMM, not a bad place to hide," he thought.

"35...36...37...38," Jason's voice came through the trees. Derek rolled over and crawled closer to the trunk. A big branch scratched his back. The soft dampness of the forest floor changed to a carpet of old needles and cones under his knees. "49...50... Ready or not, here I come!" yelled Jason. Derek pushed up against the tree, feeling the roughness of the trunk against his back. He sat very still and listened.

It was quiet and dark under the sheltering tree; quiet except for Derek's pounding heart and heavy breathing. They sounded terribly loud beneath the still tree branches; he tried to soften his breathing.

Off in the distance, Derek could hear shuffling footsteps as Jason tried to find the hidden players. A minute or two later someone yelled, "Home free!" Then it was quiet again. Derek waited. His hiding place was too good. No one came near the old spruce tree.

Derek decided to quietly check out his hiding spot. A thick layer of brown needles covered the ground where he sat. He could tell they were underneath him by the soft crunchy feeling under his pant legs; the bumps must be dead cones. They dug into his skin, but he was determined not to get caught so he didn't move to make himself more comfortable.

A black spider crawled along the branch in front of him. Partway down the branch, it hopped off. For a moment the spider swung back and forth in the breeze at the end of a silk thread, like the pendulum of a big clock. It hung there until the breeze stopped, and then it dropped to the ground to hide among the pine needles.

As Derek turned his head to watch the spider go, something about the trunk caught his eye. The tree had three trunks! Two huge trunks stood side by side and a third trunk wound itself around the one he was leaning on...

What a place! There probably wasn't one like it anywhere! The tiny spider, a needled carpet, and three towering trunks that made the biggest tree he'd ever seen—the biggest tree. Hey! Derek thought with a wild surge of excitement, this could be the fort-tree! This was the giant he and Ben had looked for in the summer and couldn't find.

"Home free!" sounded through the woods again. Now Derek was the only person left to be caught. Impatient voices invaded his quiet spot, "Come on out, Derek."

If he stayed where he was, no one would find him. How nice to have such a good hiding place and of all things, a fort-tree too. Derek hugged himself with excitement. What a secret! And nobody, except maybe Ben, would find out about it. The voices and footsteps moved to the other side of home base. Here was his chance! He ducked out from under the tree and raced through the woods.

“Home free!” The game was over. “Where were you?”. His friends pried for an answer, but Derek just smiled. Tomorrow was Saturday; he would ask Ben if he still felt like building a big fort in the very biggest tree in the forest.

* * * *

The wind blew circles into the carpet of loose needles in the forest. It was cold and the sun was hidden behind thick clouds.

Derek and Ben didn’t notice the changing weather. With loud puffs and grunts each boy carried his precious armful of lumber down the forest trail. It wasn’t easy carting the wood through the trees, it kept getting snagged on branches. Once Derek tripped, and the wood went flying in every direction. The noise of the crashing boards followed by a thin groan broke the quiet of the forest.

Derek was careful to follow the trail. After recognizing an old rotting stump, he turned to follow the trail that led past it. Just beyond the next clump of trees towered the giant. Derek ran the last stretch, boards bouncing along with him.

When he got to the tree, Derek stood still, looking. It must be as big as the one in the photograph with his Grandpa in it! Other trees looked small and scrawny beside it. Three trunks on one tree meant lots of branches and lots of needles. It also meant a fantastic fort-tree, and lots of good climbing.

Ben was excited. Derek had talked about almost nothing else since he had stumbled onto the tree, and by now Ben could hardly wait to see a tree as big, thick, strong and tall as the one Derek described. Three trunks; imagine that!

Ben whistled under his breath when he finally caught up. Now he knew why Derek talked about it the way he did.

“Come on, Derek, don’t just gawk. We have work to do!” Derek snapped into action.

They piled the wood against a fallen aspen lying beside the giant spruce, cleared some brush away, and sat down. With a stick, they drew plans for their fort in the dirt. It soon became clear that they didn't have enough wood, especially to build a fort with six stories. Well, one story and a watch tower might have to do.

The boys decided to climb the tree and explore before doing anything else. Still chattering about what they would do with the fort once they finished it, Derek and Ben began, branch by branch, to climb up the huge spruce tree.

Some of the lower branches were tough to climb, but Derek managed to get around them and squeezed into the fork of the tree. He wedged one foot into a crack, then reached carefully for a strong branch above his head. The higher he climbed, the braver he felt. It was hard going, one foot and one hand at a time, and scraping his body against the rough bark. Some needles scratched his neck. He pressed between two branches and sat down on one of them so that he could catch his breath.

Ben, who was a little shorter, had a hard time reaching some of the higher branches. He pulled himself up the last branch with a huge grunt and wiggled in beside Derek.

As they climbed higher, it started to get brighter; more light penetrated the branches. They also found that fewer branches were strong enough to climb on. It was a long way down to the ground by now. Derek moved slowly, straining to reach a branch far above his head. His fingers touched it but couldn't get a good hold. Shakily, he stood on tiptoe and tried again. Just as he felt the branch in his hand, he began to slip. With a gasp, he wrapped his arms around the tree trunk in a gigantic bear hug. The skin on his hands stung, but he stopped slipping.

"You okay?" Ben called to Derek.

"Hooo... man—that was close," Derek said in a small shaky voice. He leaned against the tree trunk and inspected his scrapes. Some sticky stuff was smeared on his coat sleeve. It was like gum when he touched it and smelled delicious, the smell that filled their house when his family put the Christmas tree up each year.

"Where did that come from?" He searched around the tree trunk where he had hugged it. A hole about the size of his fist oozed with the same yellow stuff that was stuck on his sleeve.

Maybe something lived in the hole. He looked a little closer. Sap coated the walls of the hole. It drained down the tree trunk and dried in hard golden drops.



"It's bleeding," Derek said to himself. He turned away and stood still on the branch. Tree blood... he'd never thought of trees that way before. Somehow trees just never seemed alive. It was funny to think of them as having blood like himself. Only then did Derek remember what the carpenter had said about hurting a tree.

If only trees could talk! Do trees have to eat and sleep, too? How do they work?

"I'm going back down. It's cold up here," said Derek. Let's start building before we freeze our fingers off!" Derek braced his body against the trunk, and then one foot at a time, hanging on very carefully, he came down the tree. It was even harder and scarier than climbing up, because he couldn't see exactly where to put his feet. Both hands clung to a branch while he slowly lowered himself. He heaved a sigh of relief when he could see the ground below him. Derek grabbed what looked like a big branch and pulled hard on it. It broke off in his hand. He tumbled down the last few feet to the ground, landing hard on his backside.

After a few seconds, Derek opened his eyes, and wiggled his toes, everything still worked. He could feel a nasty scrape on his leg. Looking up, he grinned at the clump of green needles hanging above his head.



Ben was already at work moving the boards. Ben's father had given them a small box of nails to replace the lost ones, and he stuffed a handful into his pocket.

Derek scrambled to his feet. "Wait a minute, Ben, I'm not so sure about building a fort in this tree anymore. Remember what that carpenter at the new building told us about how we could hurt a tree? It's true." He shoved his arm out so Ben could see the sticky sap.

Ben set the box of nails down on the ground with a disappointed look on his face. "So?"

"This is..." Derek paused, "tree blood." He poked at the sap with his finger. "I just never thought that trees had blood before. What would happen if we banged nails into it?" Derek waited for an answer, but Ben didn't reply.

"Do you remember the man also told us that trees grow slowly? Ben, it must have taken hundreds of years for this tree to grow..." Still no answer came from Ben. "Well... how about if we build it on the ground beside the tree?" Ben didn't look convinced.

Derek's face suddenly lit up. He picked up a cone and threw it to Ben. "Do you know what's inside this cone?" Ben shrugged a little impatiently. "Seeds! A bunch of tiny little seeds are inside."

Derek grabbed the cone and shook it until a few seeds fell into Ben's hand. "Look at that, would you? It took a lo-o-ong time to grow into a tree that size. Maybe if we leave it alone, it will get so big that we'll be able to see town, or at least the top of the new building."

"But what about a watch tower so we can keep watch over the whole forest?"

"We don't need a watch tower, Ben." Derek waved his arms toward the top of the old spruce. "All we need to do is climb as high as we can!"

Looking at the giant, Ben thought for a moment; it was a beautiful tree. Branches spiralled out in every direction from the trunks, touching neighbouring trees. Bugs, birds, and who knew what else lived in it. And three trunks! He wondered how it came to have three trunks. Maybe he would find out some day. Ben glanced at the sticky sap on Derek's arm.

"Okay, let's build on the ground, then." With a grin, Derek slapped him on the back, and the boys went to work.

3.3.1 HEALING WOUNDS

Conduct this activity after reading Chapter Three. Refer to the point in the story when Ben discovers sap on the tree and compares it to human blood. In this activity, students will compare their own cuts and scrapes to those found on the trees in the schoolyard and discover that both people and trees are capable of healing wounds.

Objectives

Students will observe and describe damaged trees.

Students will describe proper care of plants.

Curriculum Tie-in

Science: Living Things and Environment - Plants and Animals

As living things, all plants and animals grow, require food, water and air, respond to their environment, and reproduce their own kind.

Materials

None

Time Required

30 to 40 minutes

Instructions for the Teacher

1. Have students examine any scrapes or wounds they might have on their hands or legs. Discuss the process of healing: the cleansing effect of blood flow, the formation of a scab, and the growth of new tissue. How do we help the healing process? (*Keep cuts clean, place antiseptic cream on them, and cover them up.*)
2. Go outside to try and locate examples of different forms of damage on trees. Ask students to identify the obvious damage. What caused the injury? (*Insects, animals, humans, wind, etc.*)
3. Distinguish between old and new damage and pose some of these questions:
 - What are the differences between old and new injuries? (*Old injuries are usually covered over with hardened sap and the tree eventually grows around the injury.*)
 - What causes the globs of pitch to form on a pine or spruce tree? (*When a tree is injured, the sap from the tree oozes out and forms its own protective coating over the injury.*)
 - How does this compare to the trees that have been trimmed beside the school? (*When gardeners trim the branches off trees, they will often coat the exposed surfaces with a protective layer of paint or tar to prevent diseases from infecting the tree.*)
 - Discuss some ways we can protect trees. (*We can avoid injuring trees in the first place by not carving in their bark, not backing vehicles into them, or breaking off their branches.*)

Chapter Four

Winter Warnings



Winter Warnings

Derek and Ben find a squirrel preparing for winter. Fall is the time for winter preparations. There are certain signs which we see: squirrels stashing food, leaves changing colour and falling, and birds flying south. Derek begins to wonder how trees prepare for winter.

The giant spruce stood tall in the centre of the small clearing. Snuggled in amongst the tree's lower branches was the partially finished fort. A few tools and extra pieces of lumber lay scattered around it.

Winter was in the air. An evening breeze brought in cool air, rustling the fallen aspen leaves. The forest was preparing for the cold season ahead. The days were getting shorter.

Ben picked up a piece of the lumber they had brought earlier that day and leaned it against the fort. Its shadow stretched over the roof, down to the needle-covered ground on the other side. Darkness would come soon.

Yodel-like honks interrupted the evening. Derek and Ben ran to the edge of the clearing to catch a glimpse of a long V-shaped line of Canada Geese flying across the blue evening sky, then disappearing behind the trees.

Derek turned to his friend. "A lot happens here, eh, Ben? Especially this late in the day. Wouldn't it be great to spend a night in the fort sometime?"

Ben's eyebrows shot up. "Would you dare?" he challenged.

"If you would."

"But first you tell me."

"I might," Derek said casually.

"Then I would, too."

"But I would only do it if McFuddy could come, too." Derek walked back to the spruce and started picking up the tools.

“It’s going to get dark soon—if we don’t get going home we might end up staying the night whether we like it or not.”

The boys left the giant spruce standing in the shadows. Evening air had already cooled the ground beneath their feet.

* * * *

Derek and Ben decided to make a quick visit to the forest the next day. At the edge of the clearing they stopped. There was the squirrel, staring wide-eyed in their direction, not seeing them. It flicked its tail a few times, then decided the boys were not dangerous and ignored them completely as it busily darted about. Teeter-tottering dangerously at the edge of a skinny twig, it began to chew at a clump of green cones. Plop! They fell to the ground. The squirrel lost no time at cutting another clump, then another and another. Only after it was satisfied that enough cones had been cut did it climb down to collect them. One at a time it carried the cones to the base of a tree and tried to hide them. The squirrel stuffed some cones beside the old tree itself, some it buried in the earth, and others were piled against stumps and rocks in lumpy heaps.

Derek and Ben followed the squirrel back to the tree and watched it work. They noticed that not only was the squirrel's fur coat thicker and shinier, but the squirrel was acting differently. Almost all of its time was spent gathering and storing cones. The giant spruce wasn't the only place where it found cones. It went from tree to tree chewing off cones from both pine and spruce, and dragged or carried the cones to its storage places.

“That must be its kitchen,” Ben said with a wide yawn. “Let’s go, Derek. I’m getting tired of watching squirrel stash cones. I think I’d go nuts being a squirrel, no time for anything but work.”

All round them the forest and its creatures were preparing for winter. With the leaves gone, the forest seemed more open, especially in the small clearing by their giant spruce. Derek plucked a few rose hips as he walked past some tangled rose bushes. He popped them into his mouth. The sour taste stung his tongue.

An icy blast of wind hit the boys as they walked across the clearing toward the trail, sending chills down their backs. Derek looked up at the spruce. How does it prepare for winter, he wondered. Does it get shivers like people do? Does it even feel the cold?

Derek zipped his coat all the way shut and pulled his collar up. Right now he would rather be home. "Let's go, Ben." No answer came. He swung around to see Ben vanishing around the corner. "Looks like he has the same idea," Derek muttered. "Thanks for waiting." He ran to catch up.

3.4.1 CHAINS AND WEBS

Conduct this activity after reading Chapter Four. Refer to the squirrel feeding on cones to introduce the concept of food chains and food webs in the forest community. In this activity, students will examine some of the food chains in their own lives and compare them to the food chains and food webs that exist in a forest community.

Objectives

Students will identify various parts of an environment and begin to infer their interdependence.

Curriculum Tie-in

Science: Living Things and Environment - Plants and Animals

Plants and animals are living organisms. Each has its specific characteristics and particular needs to sustain life.

Materials

- ☐ - writing materials
- ☐ - chalkboard
- ☐ - poster board
- ☐ - drawing materials
- ☐ 1 file card for each student
- ☐ - old magazines
- ☐ 1 safety pin for each student
- ☐ - felt markers
- ☐ 2 balls of coloured yarn (optional)

Time Required

30 to 45 minutes

Instructions for the Teacher

1. Ask students, "What's for dinner?" Give them the homework assignment of making a list of all the things they will have for supper tonight. (Suggest getting help from a parent, sister, or brother.)
2. The next day, have them analyse where the food they ate for supper came from. This may require some research and assistance. All foods should be traced back to their original sources, which in all cases will be plant life. Have students draw a simple food chain showing the "story" of what they had for supper.
(e.g., grass --> cow --> milk)

3. Discuss what they have learned and emphasize these two generalizations:
 - a. all animals need food (includes people and wildlife)
 - b. all animals depend directly or indirectly on plants for food (includes people and wildlife)

Elective

4. Use pictures cut from magazines to illustrate the food chain. Have students connect them with twine or yarn.
5. For a class of 30 students, make up two sets of community cards. Each set should include cards with the following names on them: sun, water, soil, seed, pine cone, squirrel, grass, deer, coyote, tree, wapiti (elk), rotting log, mushroom, vole, hawk. Add or subtract cards if there are more or fewer students in your class.
6. Divide the class into two groups of fifteen students, and pin one recipe card to the front of each student's shirt. Have each group stand in a circle to play the food web game. Begin by explaining that the food which animals eat in the forest comes from plants and other animals (just like ours). Explain that in the game they will be playing, the students will discover how the sun, air, water, soil, plants and animals are all connected.
7. Have one student (e.g. "sun") hold onto the end of the ball of yarn. Ask which student needs the sun to survive. The "sun" should throw the yarn to one of those things (e.g. "grass"). "Grass" then holds onto the yarn and throws the ball to another thing that eats it or that it eats, e.g. "deer" or "water".

SOME EXAMPLES OF THE FOREST FOOD CHAINS:

Seed cone —> vole —> hawk

Grass —> deer —> coyote

Soil —> tree —> wapiti (elk)

Rotting log —> mushroom —> squirrel

Grass —> vole —> hawk

Soil —> grass —> vole

Sun —> tree —> cone —> squirrel

Soil —> grass —> vole —> coyote

Allow the game to continue until everyone is linked to at least two other students (sun, water and soil may have more links). The end effect is a web-like pattern of yarn connecting the circle of students.

8. Have everyone stand back so that the web is taut and discuss how everything in the forest is interconnected. Then, in sequence, have the soil, water, air and sun let go. When these elements let go, the web falls apart, showing the students how important these life support systems are in the proper functioning of the forest community and its members.

Chapter Five

A Night of Discovery



A Night of Discovery

When Derek visits the forest after a snowfall, he considers the importance of snow to the animals. He notices a Blackcapped Chickadee which has its feathers fluffed up and likens this to the warmth of his down jacket.

Derek makes plans to sleep out in the fort. He keeps in mind the key to heat conservation: “dress right and eat right - that will keep you warm.”

Tracks and scats are the clues to winter animal activity. Derek and Ben find elk tracks and pellets, as well as a spruce sapling with the top nibbled off.

A cloud of vapour drifted through the crisp air as Derek breathed out. The freshness made him feel good all over. It was cold, but sunny, and the sky looked the bluest blue he could ever remember seeing. He reached his arms to the sky, as though to touch it, then swung them around, twirling in a circle.

It had started to snow the day before; big lazy flakes had continued to fall all night long. Now, as Derek plowed toward the spruce, it was like exploring a brand new world. No tracks but his own marked the snow. Sounds were muffled. It seemed like the forest was keeping a secret, as if something magical was about to happen at any moment.

Derek looked up as he neared the clearing and saw the familiar outline of the spruce overlooking the other trees. It was covered in snow and stood quietly, like a white statue in deep sleep.

The fort had almost disappeared under the snow. Derek began to brush the snow away. He had the roof nearly cleared off, when **thunk** - a load of snow fell squarely on his head from the branch above. Derek squealed as he tried to keep the snow from falling down his back. Oh, it was cold! The bare branch swayed gently, released of its snow load. “Thanks a lot, Spruce,” Derek muttered, trying to sound grumpy. He couldn’t help but feel that the tree had just played a good joke on him.

He looked at the fort again. A snowdrift blocked the doorway making it impossible to open. Derek bent down to shovel the snow with his hands. He kicked aside the last bit and crawled inside; it felt cosy. Another pile of snow slipped from the branches above and fell onto the roof with a dull thud.

Derek hugged his knees, resting his chin on them, as he thought. Did all the little forest animals, like the squirrel, have their own forts to crawl into for shelter? They must have, otherwise how could they survive the winter? What were their forts like? Certainly not like the one he and Ben had built with wood and nails. He thought back to the squirrel again. Its kitchen must be under a meter of snow. How could it find the cones it had stored? He had to dig to get into the fort—how would the squirrel be at digging?

More snow slipped off a branch and fell softly beside the fort. Derek felt warm and protected inside. It was as though a thick, white blanket were wrapped around the fort, protecting it from the wind. Maybe this was what it felt like to live under the snow.

* * * *

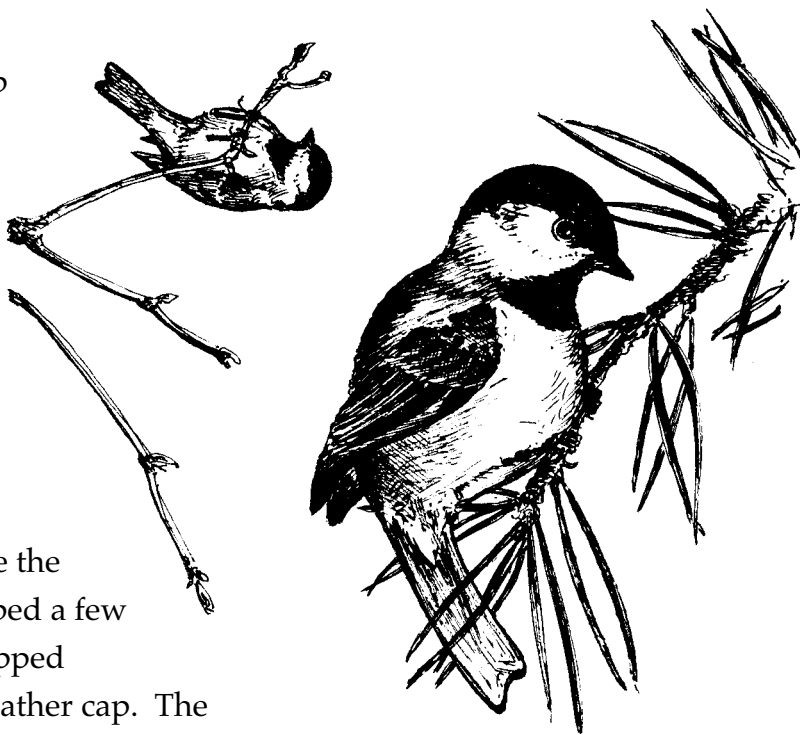
Derek pulled a sliver of wood from one of the boards. Suddenly the idea struck him again. What an adventure it would be to sleep overnight in the fort! The very thought made him squirm with excitement... probably lots of spooky noises like wolf howls—maybe even a cougar scream! That thought made him sit straight up. He bumped his head hard against the low roof. Anything could happen!

In time he grew restless in the cold and crawled through the door. The piercing light of the sun reflecting off the white snow made Derek squint his eyes. He jumped up and down to warm up again.

“Chickadee-dee. Chick-a-dee-dee-dee.”

Derek paused to listen. A tiny, plump bird flitted to a nearby bush. “Pshht, pshht.”

Derek’s imitation seemed to make the chickadee curious. The bird hopped a few branches closer. It was a Blackcapped Chickadee and he wore a black feather cap. The chickadee fluffed up his feathers. “A down-filled coat just like mine,” thought Derek.



He watched the bird dance from twig to twig. Once he flipped to the underside of a branch and pecked at some insect eggs stuck to the bark. Another chickadee landed on the branch beside him. They flitted and rushed about from one eating spot to the next, making quite a fuss. Daylight was short now and they had to feed constantly to stay warm in the freezing temperatures.

Derek thought back to a Long-eared Owl he and Ben had seen in the fall. He wondered how it was getting along. If all the mice, voles, and other small animals lived under the snow, what did the owl eat? Owls are night hunters, Derek reminded himself. Maybe when he and Ben came to sleep overnight he would find out more about the owl and other night creatures.

* * * *

It had taken a bit of convincing, but Derek's and Ben's parents had finally agreed to let them stay overnight in their fort, as long as they promised to return first thing in the morning.

Derek's mom and dad helped them prepare for their excursion. "Just two things to keep in mind, boys," his dad had told them, holding up two of his fingers, "dress right and eat right—that will help you keep warm."

Derek's dad walked with them to the fort, shouldering the heavier pack. "Ta-daaa!" Derek sang as they entered the clearing. "This is it! Our fantastic fort and the giant spruce!"

"Impressive" was all his dad could say. They stuffed the packs into the fort while Derek's dad examined their workmanship. "I'm impressed," he said again. He stepped back to eye the spruce and admired its beauty. "Not bad. Not bad at all."

After giving the boys some final instructions, he headed back home, knowing that he could find the boys easily if he had to.

* * * *

"Okay, it's all set up," Ben yelled from inside the fort. He straightened the corner of his thick sleeping bag and crawled out backwards into the snow. The boys were glad Derek's dad had come out to see their fort and find out where they were sleeping. Somehow it made them feel better.

As Derek stamped his feet to keep warm, he noticed a patch of trampled snow on the other side of the spruce. He waited as Ben stood up, then pointed it out to him. They jumped through the snow to get a closer look. McFuddy, who Derek had insisted come along, bounded after them.

Something had obviously been pawing in the snow, not too long before. Tracks were everywhere, crisscrossing over each other and making it difficult to tell what had made them. Closer inspection told them that it wasn't just one animal's tracks, but a whole bunch, although it was impossible to say how many.

McFuddy sniffed at the tracks. Here and there she buried her whole head in the snow, then pulled it out, sneezing loudly. To Derek and Ben the tracks were a puzzle, but they could tell by the size of the markings left behind that whatever animals had been there were big.

"They must have been looking for something in the snow. Do you see how much has been scraped away?" Derek asked.

Ben was about to mumble something about hungry wolves when he suddenly stopped and let out a squeal of delight. "Well, I never thought I'd be glad to see more of these," he said, grinning.

Derek glanced at what Ben was pointing to and laughed at what he saw; elk droppings. "It figures that you'd find them," teased Derek.

Once they knew which animals had been there, it seemed easier to read the signs and piece the puzzle together. The boys agreed that the elk must have been hungry and had pawed away the snow for plants to eat. A few trampled grasses, dried and brittle, were left to tell the story.

It was easy to follow the elk trail in the snow. In places where the snow wasn't too deep, the tracks would stray to a bush or the lower branches of an aspen tree where the elk had taken a bite to eat.

Derek and Ben felt like detectives trying to unravel a mystery. The whole story was written in the snow. The only trick was to read the clues right. As they carefully followed the tracks, things became clearer.

They found that elk seemed to like plants in the small forest clearings better than those in the forest itself. Grass must be their favourite food, at least that's what the tracks in the snow told them. The ripped-off twigs and peeled bark told them that aspen trees were another favourite food.

Derek followed one set of tracks that wandered to a stand of young spruce trees. Looking for more signs, he glanced up at the tree, then took a closer look. Something about it seemed strange. The little tree looked short and blunt at the top. Its thin top branch, the one that points like a skinny finger up to the sky, was missing!

Derek could picture a hungry elk sniffing at the tender branches, stretching its furry neck and nipping off the top. Derek plucked off a green needle from the tree, put it into his mouth and chewed it.

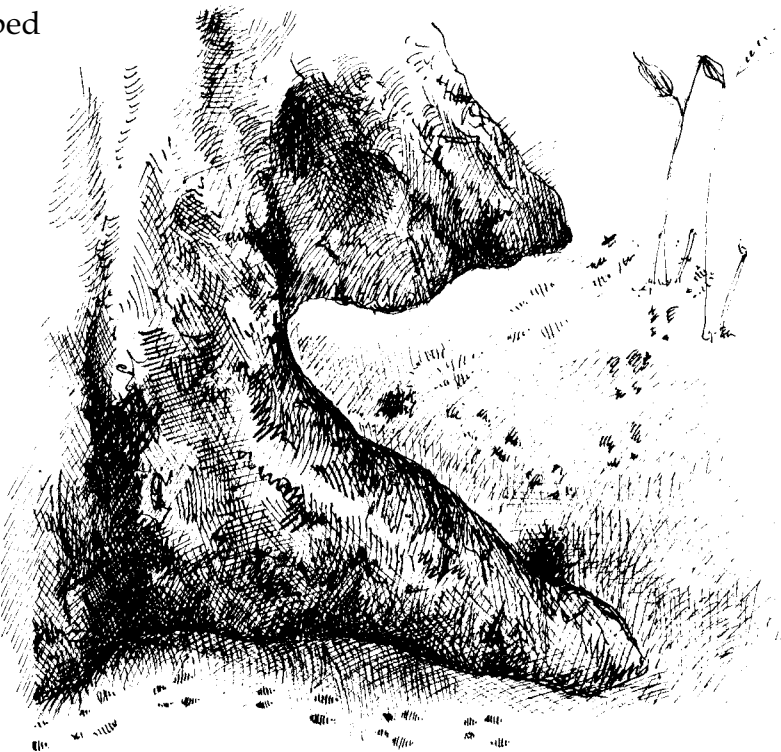
"Pteuwe!" Derek spit the needle out with a sour look. Glad I'm not an elk, he thought, spitting again to get rid of the bitter taste. He made a note in his mind to come back someday to see what would happen to the chewed top branch once the tree started to grow in the spring.

"Der-r-r-rick!" came Ben's voice through the trees. "Where are you?"

"Hang on! I'm coming." Derek shook off the snow and stamped back through the bushes to where Ben was waiting to show him a new discovery.

"I've found out where an animal lives!"

Grabbing Derek by the arm, Ben steered him to a tree where the snow sank like a bowl around its trunk. A few small holes in the snow told of tunnels leading to a network of passages underneath it.



Tracks tinier than the boys' fingernails led from the tunnels to twigs sticking up above the snow. The bark had been gnawed off by a pair of very tiny teeth. What animals would live under the snow like this and make such small tracks? The boys looked at each other. "Mice!" they said at the same time and laughed.

So animals did live under the snow. "I wonder what it would be like to live underground," Derek said. "Probably dark and cold."

"Warmer than out here, I'll bet." Ben stamped his feet to show he was getting chilly. "Maybe we should get going. It'll be getting dark soon."

The boys followed their own footprints back to the clearing. The spruce tree stood quietly. Beside it, half hidden in the branches, was their home for the night. They ate the food they had brought and watched the shadows gradually lengthen.

Derek thought back to his squirrel friend, it must live under the snow too. He wondered what it did to entertain itself during the long winter months; just eat and sleep? Derek yawned. It was early but the cold made him tired. Thoughts turned to the warm, soft sleeping bag inside the fort. "Let's get into our beds and tell ghost stories!"

After pulling on a fresh pair of socks and keeping their boot liners on as slippers, the boys crawled into their bags, grateful for the warmth. Derek bunched up his coat to use for a fluffy pillow. McFuddy made herself at home and curled up between them. With the three of them side by side, it felt warm and cosy.

It wasn't long before their story-telling slowed to a sleepy murmur and finally to a light snore. Night settled over the forest. The boys slept until...

"What's that noise?" Ben gasped. He jabbed Derek with his elbow.

"Huh? Noise?" Derek raised a groggy head. His hat had slipped over his eyes and he couldn't see anything. Then he snapped awake. Something was outside their fort.

McFuddy's ears stood straight up, listening. She was tense, but for some reason she didn't bark. Derek opened his eyes painfully wide as he tried to look around him. Ben groaned as if he were about to burst into tears. "My feet are freezing and I'm scared. What are we going to do? Oh, I knew this was a lousy idea..."

More noise—and it came from more than one place - they were surrounded.

Suddenly Derek had an idea. He grabbed McFuddy by the collar and tried to push her out the door of the fort. She refused, stiffened, and pulled back stubbornly.

“Aw, come on, McFuddy,” whispered Derek fiercely. “You’re supposed to protect your master, what kind of a guard dog are you?”

The bumps and whispers coming from the fort must have made whatever was outside curious. The noise came a little closer.

“You go out and scare them away,” Ben whimpered from inside his sleeping bag.

“Are you kidding? If you think I want to get my head bitten off by a bunch of hungry bears, you’re crazy.”

“Okay, okay, We’ll both scare them away. Uh... you grab the flashlight, and I’ll throw open the door, and then you start yelling at the top of your lungs. Wild animals are scared silly of noise.”

Derek just huffed.

“Okay,” Ben finally said, sounding a lot braver than he felt. “We’ll both go out and start yelling.”

Cautiously, Derek who was nearest, opened the door just a crack while Ben fished around for the flashlight. Derek peeked out into the moonlight. Suddenly, Derek sucked in his breath and yanked the door shut.

3.5.1 ANIMAL TRACKS

Conduct this activity indoors after reading Chapter Five. Relate it to the part of the story where Derek and Ben discover animal tracks in the snow. In this activity, students will play detective to find out which animals made which tracks. By following the tracks in the picture, students will discover where animals live in the winter.

Objectives

Students will describe and classify animals in different ways, e.g. locomotion, habitat, etc. Students will be able to distinguish the tracks of several of the more common forest animals and the habitats in which the animals are usually found.

Curriculum Tie-in

Science: Living Things and Environment - Plants and Animals

Each animal has specific characteristics and particular needs to sustain life. Animals live in the habitat for which they are best suited.

Time Required

40 - 60 minutes

Materials

- ☐ 1 *Animal Tracks* Sheets #1 and #2 for each student (see pages 62 and 63)
- ☐ - scissors, glue or tape for each student
- ☐ 1 *Animal Tracks Teacher's Answer Guide* (see page 64)

Instructions for the Teacher

1. Make one copy of *Animal Tracks* Sheets #1 and #2 for each student.
2. Ask students to imagine what their house looks like after a fresh snowfall. As they plow through new snow, what will they see behind them in the snow? (*Their tracks.*) How would they know if someone had come home before they had?
3. If possible, take students outside before or after recess to look for tracks in the snow in the schoolyard.
4. Back in the classroom explain to the students that people have a home where they eat and sleep. Animals also have places where they return to regularly. We can discover these animal homes by the signs the animals leave behind. What kinds of signs might we find in the forest? (*tracks, scats, beds, browse marks on the trees, etc.*)
5. Animal and plant homes are called **habitats**. Habitats often change with the seasons. In this activity, the students play detective, just as Derek and Ben did in the story. By matching the animals' tracks with the cutout animals, the students will associate a particular habitat with specific animals.

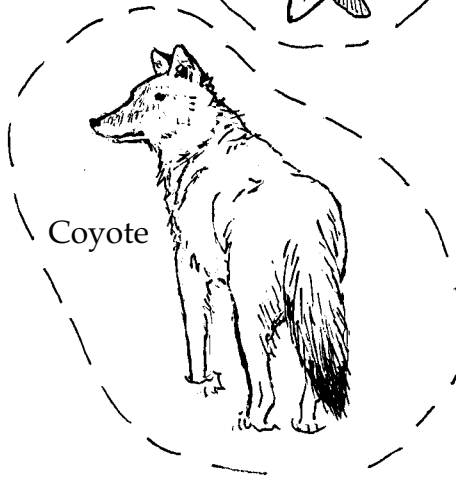
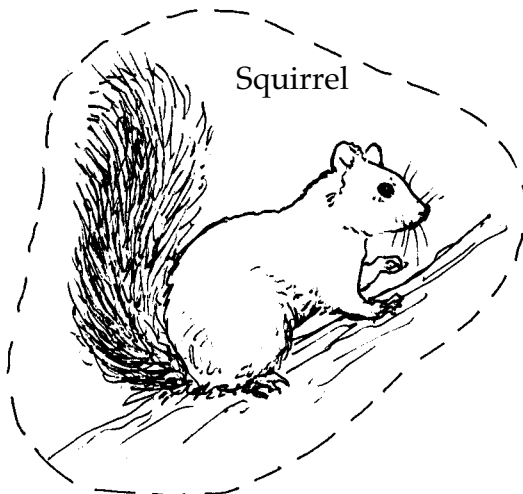
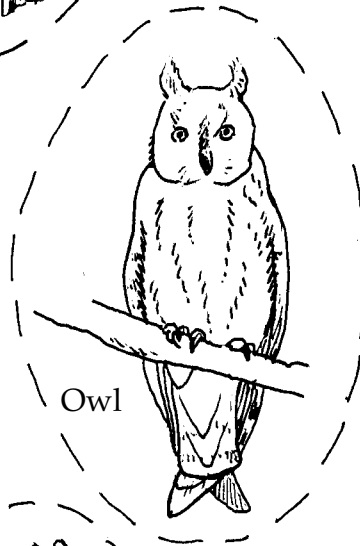
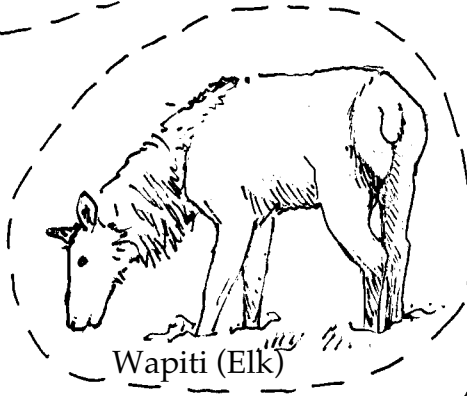
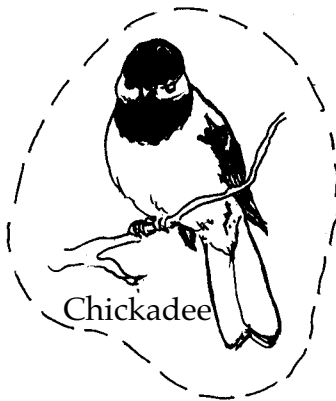
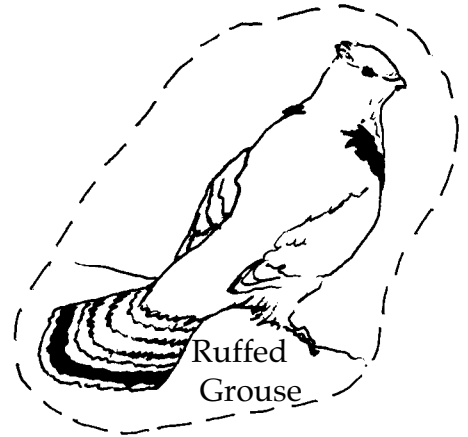
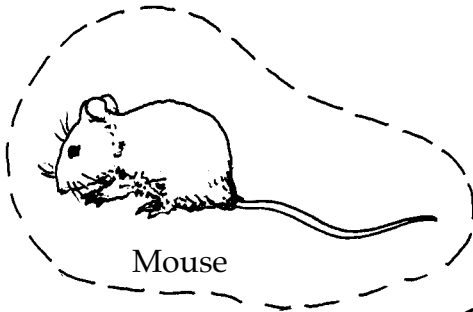
6. Give each student a set of handouts and have them try to match the animal cutouts with their appropriate habitats and tracks.
7. Once the students have completed the handouts, ask them the following questions:
 - How do the habitats illustrated in the exercise meet the animals' needs. (*Each habitat provides the animal with food, water and shelter.*)
 - What do you think the animals eat? (*Owls eat mice, grouse eat buds and berries, Chickadees eat insects, insect eggs and larvae, and seeds, squirrels eat seeds from cones, snowshoe hares eat buds and bark, wapiti (elk) eat grasses and branches, and mice eat seeds and berries.*)
 - How are the prey animals (mice, squirrels, hares) protected from predatory or meat-eating animals, such as owls or coyotes? (*They are protected by camouflage, underground tunnels or fast running.*)
 - How does the snow help the animals keep warm and safe? (*The snow acts as an insulator to protect the animals from wind and extreme temperatures.*)
8. The children could role play the actions and sounds made by the animals.

ANIMAL TRACKS - Sheet #1



ANIMAL TRACKS - Sheet #2

Cut out these animal pictures and match them up with the pictures of their habitats and tracks on Sheet #1.



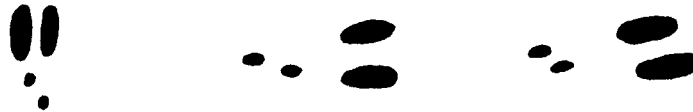
ANIMAL TRACKS - Sheet #3

TEACHER'S ANSWER GUIDE

1. Ruffed Grouse



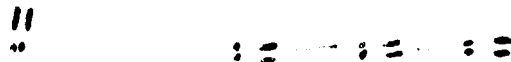
2. Snowshoe Hare



3. Wapiti (Elk) (Two ruts are formed when elk move through deep snow.)



4. Mouse



5. Red Squirrel (Tracks begin and end at trees)



6. Chickadee (Chickadees can be seen sitting in trees during winter.)

7. Coyote



8. Owl (Owls nest in holes in trees, protected from the cold and wind.)

3.5.2 WHERE'S THE HARE?

Students will discover why it is advantageous for some animals to be camouflaged during the summer and winter.

Objectives

Students will understand some of the ways in which animals are adapted for the environment in which they live.

Curriculum Tie-in

Science: Living Things and Environment - Plants and Animals

Each animal has specific characteristics and particular needs to sustain life. Animals live in the habitat for which they are best suited.

Time Required

30 - 40 minutes

Materials

- ☐ 5 sheets of white paper or construction paper
- ☐ 5 sheets of brown construction paper
- ☐ 1 pair of scissors for each student
- ☐ - coloured construction paper to make up a winter scene and a summer scene

Instructions for the Teacher

1. This activity will emphasize the importance of camouflage to animals during winter.
2. Divide the class into two groups. One group cuts snowshoe hare shapes out of white paper, while the other group cuts snowshoe hare shapes out of brown construction paper.
3. Make two forest scenes out of coloured construction paper - 1 winter and 1 summer.
4. Let students experiment with where the white and the brown hares would live and why.
5. Discuss the concept that animals are adapted to the environment in which they live. These adaptations help the animals survive. Some examples of adaptations are as follows:
 - a ptarmigan changes colour from brown to white in winter
 - bighorn sheep have special pads on their feet which enable them to run across rocks without slipping
 - birds have special beaks which enable them to eat different kinds of food, e.g. hawks have hooked beaks for ripping up flesh, hummingbirds have long, thin beaks for probing into flowers to get the nectar.

Chapter Six

Night-time Neighbours



Night-time Neighbours

Derek and Ben find tiny animal tracks leading to tunnels in bowl-shaped depressions in the snow. The snow cover provides warmth and protection for small animals.

The boys are awakened by elk, and Derek sees an owl in the moonlight. Forest animals are most active during the evening and early morning. Deer and elk will display a natural curiosity if unthreatened. Owls are night-time hunters and their keen sense of hearing helps them locate their prey.

“What did you see?” demanded Ben, forgetting to whisper.

“I think I saw... a horse.”

“A horse? What would a horse be doing out here in the middle of the night? You’re dreaming, Derek.” With a surprising show of courage, Ben crawled over McFuddy and Derek to the door. “Here, give me the flashlight.”

“Those aren’t horses, silly,” Ben said pulling on his coat and boots. “We’re surrounded by elk!” said Derek as he wormed his way out of his toasty sleeping bag.

“What do you think McFuddy would do if we let her out?” Ben asked.

“Better keep her in,” Derek said, strapping up his boots. “She would scare them away—on second thought, they might scare her,” he added. She had somehow crawled into his sleeping bag and obviously had no intention of braving the cold, even for the sake of adventure.

The boys slowly crawled from the fort; their hearts beating with excitement. Silvery moonlight outlined the small herd of elk milling about the clearing. A few backed away. The more timid ones bolted for cover in the trees.

“Euh! Euh!” A large cow elk took several stiff-legged steps toward the boys. “Euhh!” she challenged, in her bark-like cough.

As soon as Derek and Ben stood up, even the brave cow elk lost courage and ran into the trees. The others followed. The boys heard rustling noises as the dark shapes moved restlessly in the shadows.

The boys waited and didn't make a sound. They knew the elk were watching them, maybe they would come back. More curious than nervous, several elk stepped out into the clearing again. They sniffed the air, trying to figure out what the boys were. Still Derek and Ben made no noise or motion; they waited, breathless.

The large cow, apparently the leader of the small herd, took another stiff step forward, just when McFuddy let out a long, plaintive whine from inside the fort. Derek had forgotten all about her and he abruptly turned to look back at the fort.

That did it, suddenly the magic was broken. The cow barked sharply, stamped her hooves, and trotted into the forest. The herd disappeared into the night. Twigs snapped as they ran through the trees, and very quickly all was quiet.

The boys stood alone in the moonlight and stared at the trees where the last elk had disappeared. They were quiet for a moment. Ben suddenly gave Derek a pinch on the arm.

"Ouch! What did you do that for?"

"I wanted to make sure we weren't dreaming," Ben said with a wide smile. "I don't know how the elk do it, but I'm freezing out here. BR-R-R!"

McFuddy whined again and scratched at the door.

Ben crawled back into the fort and was met by a happy lick on the face from McFuddy. Derek looked up at the moon briefly, trying to picture its round pale face. He was just about to follow Ben, when a dark shape winged silently across the sky.

"An **owl**! Ben, I just saw an owl!" Ben burst out the door to see, with McFuddy right behind him. It was too late, the owl was gone.

McFuddy danced around the clearing, not quite knowing what all the excitement was about. She sniffed at a few trees and ran into the forest, but she soon returned. Derek and Ben crawled back into their sleeping bags. This time Ben wrapped his coat around his feet for extra warmth.

They lay quiet once again, listening to the sounds; the wind blew gently through the spruce branches. It felt safe beneath the tree, as if they were resting in the strong arms of a Friendly Giant.

Derek was sure he heard soft hooting as he drifted off to sleep, with dreamy thoughts of silent owls and antlered elk.

3.6.1 WEAVING FOREST WORDS

Students practice using words effectively to describe a natural environment.

Objectives

Students will describe the features and the value of a natural environment.

Curriculum Tie-in

Language Arts

Apply viewing skills and demonstrate the ability to describe, classify, and compare.

Time Required

40 to 60 minutes

Materials

- ☐ 1 pencil and one piece of paper for each student
- ☐ 1 clipboard for each student. Each clipboard can be made from a 30 cm x 20 cm piece of thick cardboard with two elastic bands wrapped around each one to hold the papers.

Instructions for the Teacher

1. Take students to the schoolyard, a park or a natural area where they can observe a forest.
2. Have them write down two words which describe the forest.
3. Then have them write three action words about the forest, words that describe things happening in the forest.
4. Have them write a sentence that tells how the forest affects what's around it; its value or usefulness, or any thought they have about the forest's importance to them.
5. Back in the classroom have students share their words and ideas about the importance of the forest.

Chapter Seven

Sights of Spring



Sights of Spring

Upon returning to their fort in the springtime, Derek and Ben hear signs of spring; a chickadee's song and a grouse drumming.

After discovering a partially decomposed elk, the boys realize how harsh winter can be on animals with low energy reserves. They also noticed two squirrels chasing each other, and discover carpenter ants living on the tree. The boys notice the "calm before the storm": no birds, squirrels, or ants are in the area, and then a spring storm hits.

Slosh, slosh, slosh. Derek and Ben sank into the mud as though they were walking through sticky, black glue. This was the first time they had been in the forest since the warm winds had come. Most of the snow had melted. Only a few old crusty patches lingered, stubbornly resisting the sun's warm touch.

Both boys felt giddy with the excitement that comes from a change in the season, no more mittens and heavy boots; no more walking home from school in the shadows of an early setting sun. Birds, wildflowers, and butterflies would return soon. Spring was here, and around the corner was summer!

Winter had been fun, but it had been a little frustrating plowing through those deep snows. During the winter Derek and Ben had watched as hares hopped lightly over high drifts. They were built well for winter with their beautiful white fur coats and wide snowshoe-like hind feet. Mind you, all this gooey mud wasn't so easy to walk through, either. Derek sucked in his breath sharply as freezing water seeped into his shoes.

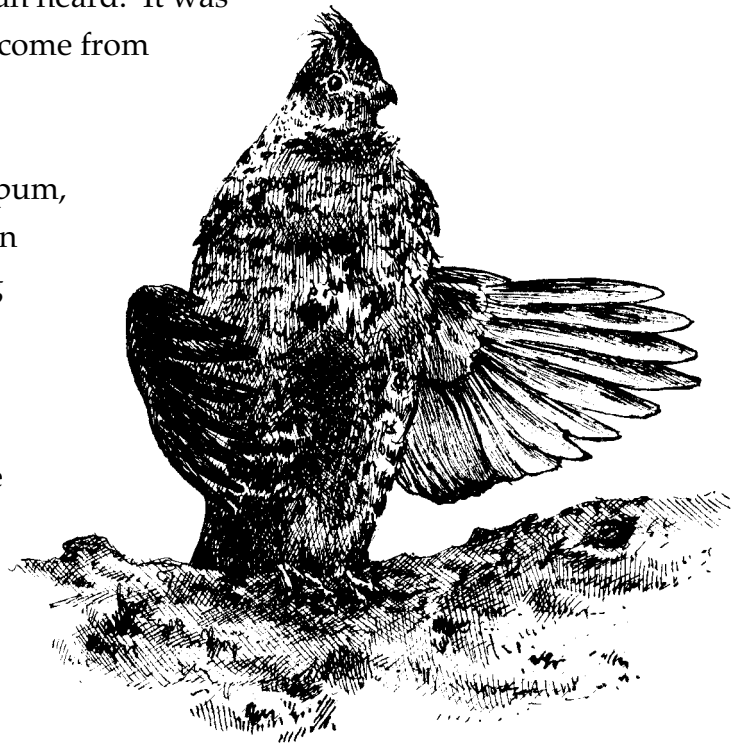
A hammer swayed from his belt; Ben's coat pocket jingled with loose nails. It was time to fix up their fort. Winter weather had done its best to test their carpentry skills. Several boards were loose and the door threatened to fall off its hinges, besides, it was a good excuse to make their fort a little bigger. It was obvious from the night they had slept in the fort that something would have to be done to enlarge it if they didn't want to spend another night restlessly tossing and turning.

"Fee dee! Fee dee dee!" a plump little chickadee sat by himself on an outstretched branch, boldly whistling his two-noted tune. The melody was cut off abruptly when, in a flurry of anger, he gave chase to a second intruding chickadee. Only after he made sure the other bird had left did he return to his perch and continue his singing.

Derek caught the mood and hummed a catchy tune. By now they were getting to know the forest quite well. It felt like home. He took in a deep breath to smell the air. Derek's thoughts wandered as he slowly walked down the path after Ben. Maybe some day he would get the chance to stay longer than just one night... maybe someday he would make the forest his home.

"Shhhhh. What was that sound?" Derek stopped suddenly in midstep, listening. Ben had stopped, too. His head was tilted to one side, trying to figure out where the sound was coming from. The boys stepped off the muddy trail and headed toward the strange drumming sound, one they felt more than heard. It was a difficult sound to follow, it seemed to come from everywhere.

Thump... thump... thump... pum, pum, pum, pum. There it was again. Derek and Ben turned toward it. Carefully, not making a sound, Derek parted a screen of branches. There, on a moss-covered log, stood a proud Ruffed Grouse. The bird lifted his stiff wings and fanned the air to make a few muffled beats. Hesitant at first, he drummed faster with his wings until it ended in a blurring throb of sound.



The grouse stopped, stretched his chicken-like neck and cocked his head to listen. Suddenly, without warning, he thundered into the air and was gone. Ben stepped back, startled. "He must have heard us."

Since they had already wandered from the main trail, Derek and Ben decided to try a new route to the spruce. Loud throaty caws met them as they turned toward a low swampy area. Black crows circled around something lying on the ground. The boys ran to see what it was.

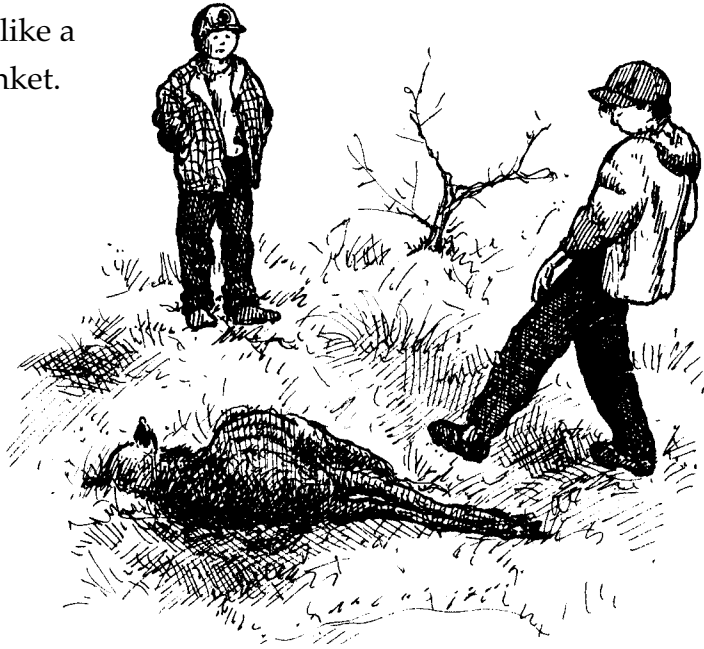
Partially sunken in the soft earth was a dead elk. It looked young. "Poor thing," Ben said sadly. He stared at it from a distance, not wanting to get any closer. "What do you think happened?"

"Maybe it starved," Derek guessed. The ribs poked out sharply from under its skin, like a skeleton covered by a loose matted blanket. "It probably died this winter."

Parts of the elk were missing, where hungry coyotes and other animals had helped themselves to a meal. Tracks lay scattered in the mud.

"I wonder if it was part of the herd that visited us on our campout night." Derek walked around the dead elk.

"Maybe he got sick and couldn't survive the cold," suggested Ben.



A sudden shiver ran down Derek's back. It was getting windy and the air had a surprising bite to it. They left the elk and walked at a brisk pace to warm up. After several turns and switches, they saw the familiar shape of the giant spruce towering over the other trees.

* * * *

The boys worked hard on their fort for the rest of that afternoon, until they were interrupted by the excited chatter of two squirrels having a lively chase through the tree tops. Swinging and leaping, the squirrels playfully tried to outrun and out-manoeuvre each other. With feet spread and tail a-flying, one squirrel hurled itself from the spruce to the top of a small pine tree several meters away and then it slipped down the straight trunk. It scampered back across the clearing and, much to Derek and Ben's amazement, jumped right between them, up and over their fort, and disappeared among the needled branches above them. Right behind it followed a slightly larger and more reddish squirrel.

Ben had a puzzled look on his face. "Were they mad at each other, or just having fun?" Derek giggled. "I don't know about you, but if that didn't look like fun I don't know what is." His face lit up. "I have an idea—let's follow them!"

"Huh?" Ben gave a little laugh, not quite sure whether Derek was trying to be funny. He pointed up. "You mean, climb up after them?"

“Yeah! Let’s see what’s up there. Maybe they’ll do more tricks for us, besides, we haven’t climbed the spruce for a long time.” And with that, it was decided.

They grabbed the thick branches above the fort and hauled themselves up. It was a surprise to find that they, and the squirrels, weren’t alone in the tree. Long, skinny black carpenter ants crawled in and out of the grooves in the bark. Whenever two of them crossed paths, they would wiggle their antennae together like two nervous little men dressed in black, shaking both hands at the same time.

The boys climbed past, careful not to squash the ants. Derek noticed holes in the trunk that he thought probably led inside to the ants’ home. He wondered what it was like to live inside a tree. Dark, Derek thought, but safe from birds. He winced as he imagined big black ants crawling all around inside and outside of himself. Yuck! Just the tickle of an ant walking on his arm drove him crazy.

They climbed to their favourite perch and sat; their muddy shoes dangling. The squirrels were no longer around, but that was okay. It felt good to be up so high and look at the forest around them.

Ben broke the silence. “It’s awfully quiet up here.” And it was, the wind had died completely. No birds twittered, no squirrels played, nothing made a sound anywhere. The temperature had dropped and the sky was darkening. Suddenly both boys felt a little funny inside. Something unpleasant was brewing. With a sense of haste, they climbed down the tree, noticing that no carpenter ants were crawling on the bark. They picked up their hammer and nails, set things in place, and left the strangely silent forest.

Back in town, people were hurrying down the sidewalk with their coats wrapped tightly around them. The wind had picked up and had a wintery bite. Even though it was only late afternoon, lights already glowed from inside the buildings.

A cozy, delicious-smelling kitchen awaited Derek when he arrived home. Supper was almost ready when the music on the radio was interrupted for an emergency weather bulletin. “... Severe thunder storms and high winds are predicted to hit this area some time tonight. Rain, changing to snow, falling temperatures, and increasing wind is expected...” The nasal voice droned on. Derek’s mother looked worried as she listened. “Police advise that people remain at home this evening and stay off the roads... I repeat, you are advised to remain indoors and heed the storm warnings...”

Derek ran to the window and looked out. Tree branches lit by the street lights, bowed and swayed in the wind. Everything looked black and cold. He thought back to the strange quiet in the forest just before they had left. It seemed as if the animals knew a storm was coming and were waiting.

The storm arrived just as Derek was falling asleep. Suddenly his room lit up with blue light, followed by the loudest crash of thunder he could ever remember hearing. Derek bolted upright, wide awake. Waves of rain pelted against his window. The house seemed to groan and tremble in the unending wind.

Another flash of lightning, this time thunder seemed to explode right over the roof. With a frightened whine, McFuddy jumped in beside Derek, and crowded against him.

“Yeeeow!” Derek whispered loudly. “That’s my neck you scratched!” He huddled with McFuddy, watching the sheets of rain beat the window. Again and again his room lit up with the flashing eerie-blue glow of lightning. Thunder rumbled in the sky.

“Wo-o-ow,” whispered Derek slowly to McFuddy after an especially loud peal of thunder, “this is the very biggest storm I’ve ever seen.” Derek lay awake for a long time, listening.

What was happening in the forest right now? Where would the squirrel and her new friend stay warm and dry? And what about the tiny Chickadees and voles? So many questions.. so many answers to be discovered... later.

3.7.1 SPRING STORM

An ideal time to conduct this activity is after reading Chapter Seven, relating it to the spring storm in the story. In this activity, students will be taken through a spring storm using guided imagery.

Objective

Students will infer the consequences or outcomes of changes, both man-made and natural, which occur in the environment.

Curriculum Tie-In

Language Arts:

Apply listening skills and demonstrate the ability to describe events orally or in writing.

Time Required

40 to 60 minutes

Materials

None

Instructions for the Teacher

1. Have the students sit or lie on the floor with their eyes closed. Once they are settled, describe a storm to them in such a way that they can visualize it in their minds. Your description or guided imagery may go like this:

"Imagine it is a warm, sunny spring day. You are sitting in a meadow in the middle of a forest. The meadow is full of flowers. Butterflies and bees flit from flower to flower. A bird flies overhead. The sky is blue except for a few puffy clouds. You quietly listen to the sounds of the meadow, a chirping bird, the grass rustling in the breeze. The air smells sweet."

"You look up in the sky and notice that it is starting to change. More and more clouds are starting to appear and many of them are dark grey. Soon, the sky grows very dark. You notice that the sounds around you have stopped. All the insects and birds have disappeared. Everything is quiet. Then a new sound starts. High in the trees, a soft wind starts to blow. It gets stronger and stronger (*make the sound of the wind through your lips*). Then a gentle rain starts to fall (*rub your hands together*). You get up and put on your jacket as you run toward a tree in the forest. You tuck yourself under its large branches which protect you from the rain. You look back out at the meadow. The rain is falling more strongly (*tap your fingers on your lap or on a table top*). Then suddenly, a flash of lightening pierces the sky and lights up the forest (*clap your hands once loudly and then continue tapping your fingers on the table top.*) A few seconds later, a rumble of thunder rolls across the sky (*stamp the floor with your feet*). You shudder. The rain is now falling so strongly that it bounces off the ground (*slap your lap loudly*).

and fast with your hands) . Another flash of lightening lights up the sky (*clap hands*). At the same time, the thunder crashes so loudly overhead that you jump (*stamp feet*)."

"Then the rain starts to let up (*tap fingers on lap*). A distant rumble of thunder tells you that the storm has gone away. Soon it's only a light drizzle (*rub hands together*). The rain stops and some rays of sun start to shine through the clouds and onto the meadow. Steam rises from the ground as it starts to dry out. You climb out from underneath the tree. You are a bit damp, but the tree kept most of the rain off you. You walk back out into the meadow. You notice that many of the flowers and grasses were flattened by the rain. You sit down on your jacket and watch as the meadow comes back to life."

2. Use any of the following activities to follow up:
 - a. Ask the students to describe how they felt while you were describing the storm to them.
 - b. Have the class recreate a storm by having them all sit in a circle. Explain that they will be making a series of sounds. You will first make the sound and the sound will then be picked up by each of them around the circle. Start off by rubbing your hands together slowly to simulate the sound of a soft rain. One by one, the students join in until everyone is making the same noise. While everyone continues to rub their hands together, begin to rub your hands more briskly and have the students one by one join in. Then begin to slap your thighs with your hands, slowly at first and then faster and faster. Then clap your hands once. The sound of the clap moving through the group sounds like a thunder clap. Then slap your thighs again, fast at first and then more slowly. Rub your hands and let the sound die out. No one should talk. Other sounds like whistling wind or stamping feet can also be added.
 - c. Have students write a story about the storm from the perspective of their favourite animal.
 - d. Have students draw a picture or a series of pictures depicting a spring storm.
 - e. Have students form groups of 2 or 3 and together they can role play what happens in the forest during a spring storm.

Optional

3. An alternative to the guided imagery in #1 is to play a recording of a rainstorm.

Chapter Eight

A Friend Returns



A Friend Returns

Derek visits the forest after the storm and sadly finds the giant tree had been blown over. When he is asked to do a family tree at school he comes to the important realization that saplings grow around the base of old trees and are like children being raised by a parent. The spruce died, but new trees will grow to replace it.

Derek whistled a cheery tune and rattled a stick against the picket fence as he walked by. The day was warm and bright and he felt good all over. McFuddy sniffed curiously as they walked through town. The telephone company was still fixing wires that had been brought down by the storm that had passed through the night before. Twigs and branches cluttered the gutters, and in the shade were remnant patches of snow.

Derek walked through the trees into the forest, still whistling loudly. His tune died suddenly. He stopped and stared ahead. Something was wrong. Something was terribly wrong.

Derek called McFuddy. "Come here, girl. Stay with me, okay?" Together they stepped forward. Derek kept staring ahead with a strange look on his face. He stopped again and stared, not moving at all. McFuddy finally nudged his hand questioningly with her wet nose. He didn't even look down at her, but spoke in a tiny voice. "McFuddy... look, look at... Spruce... the tree. The storm, it must have, oh McFuddy... Look at what the storm did to Spruce." Something inside of him felt like it was going to break.

He let out a little groan and McFuddy nudged his hand again. "Come on, girl." Derek walked forward, but did not go directly to the tree. He circled the clearing and finally stood in front of the spruce. The giant had fallen.

Derek stared at the tree in disbelief. Torn, shredded wood marked where the spruce had split and fallen. Their fort lay crushed beneath it. A little cry escaped from Derek's lips. Several young trees had been pulled down by the fallen trunk and lay tangled in spruce branches. Even from where he stood, Derek could see where the carpenter ants had riddled the inside wood of the tree. He stepped closer. A few ants still crawled in confused, zigzagged patterns, but most of them were gone.

Its roots had also become old and diseased. Little by little the Giant had aged and weakened until the storm was all that was needed to finally send it crashing to earth.

“But why this tree?” Derek thought, a little angrily. “Why not some other tree, one that wasn’t a giant? This was probably the last, the very last giant.”

It all seemed so unbelievable. Derek walked closer and reached out to touch what remained of the biggest of the trunks. The wood was jagged and moist. Then he noticed the pattern of rings in the inside wood that had been revealed by the crash. They were too torn to count, but one thing Derek was sure of, the tree had to be at least several hundred years old. Clear sap oozed from the torn wood, giving a tangy smell to the air. He stood quietly for awhile, simply looking at the mass of trunks and branches.

“It’s all over,” Derek thought to himself. His shoulders sagged sadly. He shoved his hands into his pockets and looked around for McFuddy. “Here, girl, come on, let’s go.” McFuddy barked an answer from somewhere nearby, but didn’t come. Derek found her looking up into the tree under which the squirrel had stored all those cones last fall. He followed the dog’s gaze to the very tip, where he saw none other than the squirrel sitting on a branch. Derek had forgotten all about his chatty friend.

It was surprisingly quiet. Was the squirrel missing the fallen spruce, too? It had been its home. Derek remembered the ants, the spiders, and the beetles he had found crawling on Spruce. Then there were the Chickadees, crows, woodpeckers, and other birds whose names Derek didn’t even know. It was impossible to think how many creatures had made the Giant their home, including Ben and himself with their beloved fort.

Derek pulled McFuddy away from the tree. “Let’s leave her be,” he said. She sensed something in his voice, and quietly padded after him. The boy and his dog turned down the familiar trail without a backward glance.

~~~

Derek didn’t go back to the forest for a long time. Oh, occasionally he and his friends played games nearby, but he was always careful not to go near the spruce. For some reason, he didn’t want to see it for awhile.

Several years passed and once again spring warmth thawed away winter snows. The geese returned to raise their young, and plants flowered, looking like multicoloured flags amongst the grasses.

Before school started that fall, Ben and his family moved away to a different town. It was a sad time for both Derek and Ben.

One day Derek ran back from school, breathless with excitement. Each person in his class had to learn something about their family tree. The teacher had explained to them that a family tree meant learning about your family's history. They were to find out who their parents' were, their grandparents, great-grandparents, and so on, learning a little about each one.

Derek ran up the wooden stairs to the attic and stopped at the door to let his eyes adjust to the dim light. He stared at the dusty boxes around him. Where would he begin his search for information on his family tree? An open book caught his eye, his Grandpa's old photo album.

The old book lay where he and Ben had left it that one rainy day years ago. Derek brushed the dead flies and dust off, and gently picked up the album, still open to the picture of his Grandpa, proudly holding his axe in front of the huge tree.

Memories flooded back as he stared at it. He thought back to his and Ben's long search for an old, giant tree. They had wanted to build a fort in it then. He was glad they'd decided not to. He remembered the hide-and-seek game, his shock at tripping into the spruce; how he and Ben built the fort, and all the things they found in and around the clearing... the winter night they slept inside their fort and the surprising visit by the elk, and his horror at finding the spruce fallen after that huge storm... Oh, how he missed it.

Derek held the faded photograph of his grandfather a little closer. He had never noticed the sprigs growing at the base of the old tree before. Were they young trees, like children being raised by a parent?

Suddenly an idea hit Derek. Was it possible that the same thing was happening at the spruce tree? No, it couldn't be. The spruce was dead. How could new trees grow from a dead spruce? But the thought wouldn't leave his mind. Only by making another visit would he know for sure. He had to check.

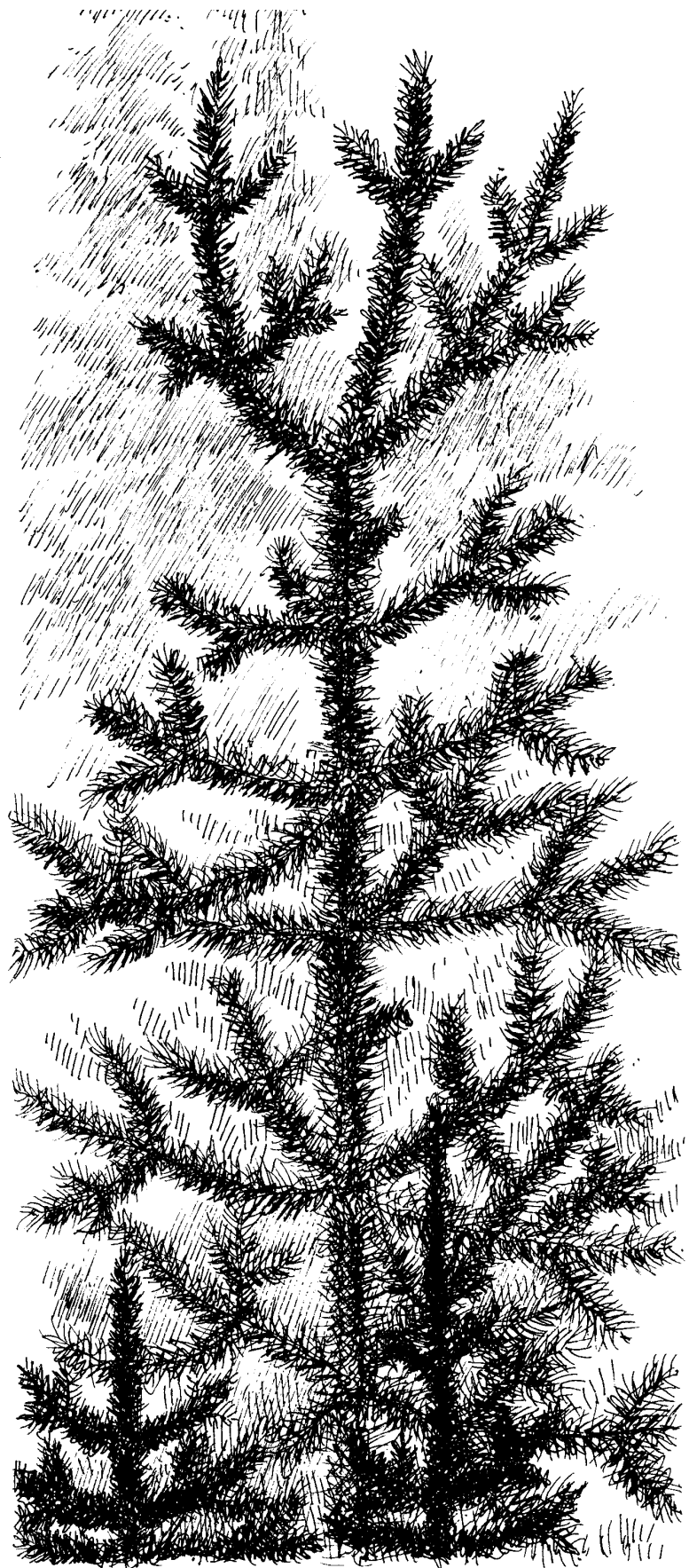
That weekend Derek set out for a long-overdue visit to the forest. He hiked down the old trail, enjoying the smells and sounds around him. He felt like he was going to see a long-lost friend. No giant tree towered over the other trees when he turned round the last bend.

Derek entered the clearing and was reminded again of the ache he had felt while standing at the same spot when he had first seen the fallen spruce. Then his expression changed. With a wide smile, he went straight to the stump.

A slender young spruce tree grew near its base, gently swaying in the breeze. Derek touched the green needles. "I hope you grow up to be the very biggest tree someday, little spruce," he said softly. Somehow the dead trunks didn't seem so sad to him anymore.

Now he understood something of life in the forest. Like the dead elk he and Ben discovered that one winter, the old spruce was returning to the soil, and out of this soil a new little tree was growing.

Thoughts of the dead elk suddenly reminded him of something he had forgotten to check for. He had always meant to return to the little tree that had its tip nipped off by a hungry elk that one winter. He decided he would check to see how it was growing on his way home.



Derek's attention returned to the fallen spruce. Most of its bark had peeled away, leaving the inner wood exposed. How long would it take to decay and become soil? He lifted a piece of bark, and touched the wood underneath it. It felt spongy and moist. Sawdust covered the underside of the bark. The ants had returned.

He looked at the three fallen trunks, riddled with woodpecker holes and laced with delicate white fungi that reminded him of tiny shelves. How different it looked now compared to when they had first climbed its strong branches long ago.

The forest was changing alright, yet never had it looked so beautiful to him. The clearing seemed unusually full and green. Derek touched the little spruce again. "Someday you will be home to all kinds of birds and animals and bugs."

He walked to the place where he and Ben had followed the elk tracks in the snow. It wasn't very easy to follow in the summer, the forest looked so different in the winter. He finally found the little clearing and scouted around for the tree.

There it was, it had to be the same one. Derek ran over to it. The tree had a trunk about the size of his arm, but was now quite a bit taller than he was. It looked the same as all the other needled trees, except for one thing, its trunk split into three at the top! The little tip that had fed the hungry elk had been replaced with three branches, all pointing to the sky.

Derek giggled. It looked like someone had tried to give the tree a new haircut, only it hadn't quite worked out. In time though, the three spindly branches would become thick sturdy trunks, just like Ben and Derek's old fort tree.

Could this be what had happened to their old spruce long ago? Derek tried to imagine their spruce as a very young tree, perhaps just tall enough to stick its top branch above the deep snow, when a hungry elk must have come along, stretched its furry neck and nipped off the top.

As Derek left the forest he realized that the death of the old giant, although sad, was as natural as the changing of the seasons. Trees would die, but new ones would always be waiting to take their places. And perhaps sometime, many years from now, another Ben and Derek might make friends with the animals around the **biggest** fort-tree in the forest.



### 3.8.1 NATURE CIRCLE

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Students will closely examine their natural environment and then categorize, count, and draw the objects they find.

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#### **Objective**

Students will discover that there are many interesting things to discover in a small piece of ground.

#### **Curriculum Tie-in**

**Science:** Matter and Energy - Properties of Objects

*Objects can be identified, grouped, and ordered on the basis of physical properties such as colour, hardness, size, shape, texture, mass, volume, smell, and sound.*

#### **Language Arts:**

*Apply viewing skills and demonstrate the ability to describe, classify, and compare.*

#### **Time Required**

60 - 90 minutes

#### **Materials**

- ☐ 1 piece of string, 1 metre long for each student
- ☐ 1 piece of paper and one pencil for each student
- ☐ 1 clipboard for each student. These can be made from 30 cm x 20 cm pieces of thick cardboard with two elastic bands wrapped around each one to hold papers.

#### **Instructions for the Teacher**

1. Give each student a piece of paper, a clipboard, a pencil, and a piece of string with the ends tied together.
2. Take the students to a natural field or treed area, and have them place their string in a circle on the ground. Have them sit inside the circle and describe all the natural things they can find inside the circle. You may choose to have them count the objects, categorize them, draw them, or write poetry about them.
3. Back in class, have the students share their discoveries with their classmates. Ask them the following questions:
  - What was the most unusual thing you found?
  - What things did you find the most of?
  - How many different categories of things did you find?
  - How did you categorize the things you found?

### 3.8.2 OUTDOOR VOCABULARY BANK

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Students are introduced to new vocabulary that relates to their environment and they practice using the new words in sentences.

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#### **Objective**

Students will practice using the new vocabulary they learned during the *Friends of the Forest* program .

#### **Curriculum Tie-in**

##### **Language Arts**

*Students will develop and demonstrate a growth in vocabulary and written language.*

#### **Time Required**

ongoing

#### **Materials**

- ☐ - recipe cards
- ☐ 1 felt pen
- ☐ - double-sided masking tape or pins

#### **Instructions for the Teacher**

1. As students use new words to describe the things they have seen and done on each of their nature walks or activities, write these words on recipe cards.
2. Have students use these words to construct sentences.
3. Display the cards by taping them or pinning them to the bulletin board so that the words can be taken down and put up again as the students use them.

## 4.0 FRIENDS OF THE FOREST PROGRAM EVALUATION

Kananaskis Country Environmental Education materials have been developed to provide you with teacher-directed units of study. These are *living documents* that undergo changes on a continual basis.

The purpose of this questionnaire is to find out if these materials are meeting your teaching needs. Your comments are valuable to us. Please take a few minutes to complete this evaluation so that we may continue to improve your materials.

School name

Grade level taught

Your name  
(optional)

- ★ How did you hear about the program?  
☐ workshop   ☐ administration   ☐ in-service   ☐ newsletter   ☐ fellow teacher  
☐ other (please specify) \_\_\_\_\_

- ★ Did you use all of the program?   ☐ yes   ☐ no  
If you answered no, which part did you not use and why?  
\_\_\_\_\_

- ★ On the bar line below how would you rate the program in the following categories:

|                                       | YES   |  | NO |
|---------------------------------------|-------|--|----|
| • appropriate for grade level (✓)     | ----- |  |    |
| • clear instructions                  | ----- |  |    |
| • text easy to follow                 | ----- |  |    |
| • relevant to curriculum              | ----- |  |    |
| • materials easy to use               | ----- |  |    |
| • did you enjoy the material          | ----- |  |    |
| • did your students like the material | ----- |  |    |
| • program of appropriate length       | ----- |  |    |

- ★ Approximately how long did it take you to complete these materials?
- ☐ 1-2 weeks      ☐ 3-4 weeks      ☐ 5-6 weeks      ☐ longer than one month
- ☐ program was spread over the year
- ★ Were you satisfied with how these materials fulfilled the curriculum objectives?
- ☐ yes   ☐ no
- If you **were not** satisfied, please elaborate: \_\_\_\_\_
- \_\_\_\_\_
- ★ Did you require any additional information to complete any part of the program?
- ☐ yes   ☐ no
- If **yes** please tell us what was required:
- \_\_\_\_\_
- \_\_\_\_\_
- ★ Would you use these materials next year?
- ☐ yes   ☐ no
- If you answered **no** please tell us why: \_\_\_\_\_
- \_\_\_\_\_
- ★ Any additional comments about the program in general? \_\_\_\_\_
- \_\_\_\_\_

Thank you for completing this questionnaire. Please place the completed questionnaire in an envelope and mail to:

Environmental Education Coordinator  
Alberta Environment, Natural Resources Service  
Kananaskis Country  
Suite 201 - Provincial Building  
800 Railway Avenue  
Canmore, AB T1W 1P1  
PH: 403-678-5508   FAX: 403-678-5505