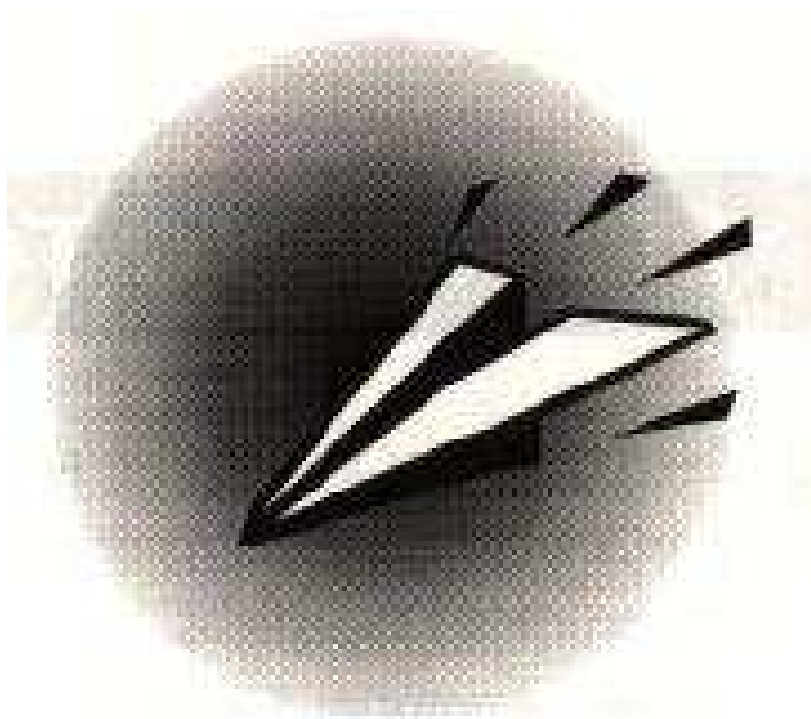


ECOGUARDIAN



STUDENT BOOK



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CHAPTER 1 - First Steps • PART I

How To Describe a Footprint Activity

VOCABULARY

Qualitative Observations: Observations that can be made using our senses, but without measurement e.g., colour, smell, texture.

Quantitative Observations: Observations that can be measured, e.g., length, volume, weight, height.

WHAT YOU NEED:

- an orange
- a box of sand/dry gravel/mud/papier mâché paste
- ruler(s)
- scale(s)

1. Describe an orange using qualitative and quantitative descriptions. Record these descriptions on a paper and place them in your portfolio.

**Qualitative
Observations**

**Quantitative
Observations**

2. Fill three boxes with different materials (e.g., wet sand, mud, gravel). Place your foot in each box and remove it to see the impression it left. Write down both your quantitative and qualitative observations .

Surface Type Observations Type Of Observation

1.		
2.		
3.		

Questions:

1. What do qualitative observations tell you?

2. What do quantitative observations tell you?

3. Why are both types of observations equally important to use?

4. Why are both types of observations important when we describe the environment?

5. List both qualitative and quantitative observations about the environment. You may use the Tree of Life posters to help you.

6. Compile a class list of your observations. Are there more quantitative or qualitative observations? Why do you think this is so?



The Journey Begins

Come closer and let us begin. We are standing in a beautiful park, with many trees. But years ago, this park was an empty lot, with only one magnificent maple tree. See this stump? It used to be that maple tree, and it provided the only shade in a lonely corner of an abandoned lot. Settle down, my friends, rest against the trees, close your eyes and the story will begin. Feel the spirits of the trees all around you. They speak of the old times. They tell a story of courage, companions and quests. Listen with your hearts as I tell the story . . .

Date *The day before Earth Day*

Location
*A school yard,
somewhere in Canada*

Characters
Solana: the Spirit of the Maple
Chronos: the Keeper of Time

Three friends
Kieran, a 15-year-old boy
Heather, a 12-year-old girl
Piper, an 11-year-old girl

Three companions
Arial, a peregrine falcon
Terian, an eastern cougar
Marina, a leatherback turtle

The three friends arrived very early in the morning, carrying rakes, hoes and shovels. They were ready to tidy up the Peace Garden for the annual Earth Day tree planting. Two years ago, when Kieran was a member of the Environment Club, he had been part of the school planting ceremony. He was returning today to help his two younger friends. As they approached the planting area, it was Heather who first noticed some marks in the soft soil. The marks formed a trail. There were paw prints, talon marks and indentations, and the trail seemed to lead away from the garden, through the damp grass, towards the empty lot. The three friends began to follow the trail, hoping to discover who or what had made these strange footprints. The trail led them to the base of the old maple tree, where twisted roots seemed to reach out to the four corners of the earth, and a huge trunk stretched its many bare branches sadly to the sky.

Kieran was the first one to notice a shape that looked like the outline of a woman's face in the rough surface of the tree trunk. Above the moaning of the wind, the friends heard a soft whispering that seemed to call them nearer and nearer to the tree.

"Kieran, Heather, Piper..." the wind carried the soft, sad voice.
"Kieran, Heather, Piper..." Was it just the wind, or something else? A shiver ran through the three friends.

The maple stood, her branches straining upwards, her roots anchored deep in the soil. For over a hundred years, she had provided shade, shelter and food for countless creatures. Her bark had grown grey, wrinkled and rough. Few buds grew on the old branches, and there were empty spaces in her crown. She should have died long ago, but the old tree had lived on while people tamed the wild land and made the mighty forest a meadow. Through the ages she stood as the meadow became a barren field, littered with the garbage of a generation who wanted more and more, but had less and less to fight back.

She should have died with the passenger pigeon, vanished with the great auk. But she remained standing, old and scarred, keeping a lonely watch over the land. Her spirit was weak and her voice only a whisper in the wind that rattled through her brittle branches. But still she lived, waiting for the three friends who now stood amazed before her.

"Welcome, friends. I am Solana, the spirit of the maple. My knowledge comes from the earth, which holds the wisdom of many millennia. I speak for all of Creation. Kieran, Heather and Piper, you have been chosen to lead the way back. You are to be the voyagers, the recorders, the guardians."

"What in the world!" Kieran let out a long breath, trying to stay calm. Piper hid her face in her hands and peeked out between her fingers. Heather grabbed Piper's hands, saying, "Don't worry. This looks like a friend."

"I am not talking to a tree," muttered Kieran. "Please tell me I am not talking to a tree."

A smile spread across the aged face of Solana. "Kieran, Piper, Heather, I need your help. I have a tale of great importance to share with you. My spirit has lived upon Earth for thousands of years. Within my trunk lies the balance of all life; within my roots rests the secrets of knowledge and wisdom; within my branches, the new buds and leaves of tomorrow; within my seeds, the promise of life renewed. I represent the Tree of Life. But I grow old and tired. I am weakened by the poisons in the water that I have had to drink. I grow sickened by chemicals that have become part of the soil. My roots cannot bear the weight of so many footprints on top of them. My leaves are contaminated by the air around them. Soon there will be no more buds, no more leaves, and when they are gone, no more tree. Time is passing quickly."

With these words, a look of impatience crossed Solana's face.

"Chronos, the Keeper of Time, has seen the marks, the footprints left by humankind upon the earth. Chronos grows anxious as the footprints get big-

ger and bigger, and so the Keeper of Time has declared that if humans continue to plunder the fruits of the earth, I am doomed."

"The earth will die too, won't it?" Piper inquired, her small feet digging into the dark soil at the base of the tree. She shifted uncomfortably and glanced quickly away as Solana's expression saddened.

"Nature has survived for over four billion years, Piper. Nature will survive, but humanity as we know it may not. Everything you do to the earth, you do to me, and you also do to yourselves. Earth is your home. We are ALL connected, you know, and we all have an important place in the web of life. The more that your kind takes from the land, water and air, the bigger your footprints become, and the more difficult it is to live within nature. I cannot ensure that there will be enough for all. I need your help to replace what has been lost and to purify and cleanse the earth."



Heather shook her head impatiently and pushed back the hair that had fallen over her eyes. "Well, what can we do about it? I'm only 12. I don't know anything about all this. And just who is this Chronos?"

Solana smiled at Heather's outburst. "I have chosen you three to lead the youth of today upon an EcoVoyage. You are the guardians of the future, and the decisions of life will soon rest upon your shoulders. You must not live in ignorance. You must ALWAYS seek the truth. Earth needs informed decision makers and attitude changers. The earth needs you to lead the way."

The voice grew silent, but Solana's eyes gazed hopefully at the three friends. They looked at each other, and then, timidly, Piper reached out and gently touched the wrinkled bark of the huge maple. "We'll help. You can count on us. So, what should we do? Where do we begin?"

Solana's voice was stronger and her eyes began to sparkle as she answered Piper's question. "You must set out on a voyage. . . "

"Count me out. I've got to be home by supper time!" said Heather.

"I don't think she means THAT kind of journey!" replied Kieran.

Solana continued, "The purpose of your journey is to seek ways to lessen your impact upon the earth, and to share your experiences with others so that they, too, may walk more softly on the earth. Ask for information about the footprints that are left by your communities, and your civilization. These impressions upon the earth are large

and heavy. Find out just how large they are, and how they are being made.

"They continue to grow with each passing minute because humankind does not realize what it has been doing. Chronos has put outlines around these footprints. They show the size of the wounds carved by people upon the earth. Your goal, when you have finished your quest, is to find ways to make these footprints smaller - to heal the wounds as best you can. When your quest is complete, you will be informed, prepared and committed to begin your own personal journey through time, leaving a lighter footprint upon the earth as you go."

Heather exclaimed, "That sounds impossible! We can't do this by ourselves! I barely passed my grade 7 test. Sorry, but saving the world is a tremendous job. How would we do it?"

Solana replied encouragingly, "You have already begun. Think about what has been done in your schoolyard: planting trees and shrubs. You saw a need for more green space. You made a plan, did some research and then got to work. You had a vision, and you are leaving a legacy behind you for the young people who come after you."

"You have made a good start. But there is much more to do. Chronos, the Keeper of Time, will help you with a number of tasks. Completing these

tasks will bring you wisdom. With that wisdom, you will be able to gather the special Leaves of Life, upon which you may record your plans to reduce your footprints. This record will help other travellers like yourselves, and will serve as a legacy for those who come after you, and as a testimonial to you. When the Leaves are returned to me, I will gain the strength I need to renew myself and to renew the earth." A slow smile lit up the wrinkled face of the tree spirit.

Kieran interrupted impatiently. "That's a pretty ambitious quest. We're just ordinary kids. What YOU need is some kind of superhero!"

"That's right, Kieran, the earth needs many superheroes, and superheroines, too! Your voyage will give you the power of knowledge and the strength of commitment. With this power and strength, you can develop your own visions of the future. Take one step at a time, Kieran. You cannot become an EcoGuardian overnight."

"EcoGuardian! Cool!" said Piper. "I'm willing to try. But Solana, I really think we need more help than what you've promised us so far. Superheroes need special powers, and a uniform. No, forget the uniform, but if I'm going to be an EcoGuardian, I want a shield, or a button, or an emblem so everyone will know who I am and what I'm doing."

"Good thinking, Piper! Anyone can be a superhero with commitment and from time to time, some support. Look down between my roots. Can you see a small piece of paper? Lift it out - but be careful, it's been there for a very long time. The paper has the outline of your EcoGuardian pledge and your shield."



"But Solana, there's nothing much on it. It's just a drawing of a shield, with the words, 'I pledge to. . .' on it."

"That's right, Piper. Every EcoGuardian must write his or her pledge on the shield, promising to participate in the voyage. You can roll the paper up again, and place it back between my roots. It will be quite safe there until you have completed your journey."

Solana paused for a moment, as if thinking about Piper's worries, and then she continued, "Piper, to aid you during your voyage, I shall send my companions, Ariel, Terian and Marina.

As well, other EcoGuardians will assist you. They will help you collect and make sense of the information you need to understand the tasks that the Keeper of Time will give you. You must work as a team. It is only by working together that the voyage can be completed. Be prepared to share your information and to help each other. The voyage is very much like a puzzle, my fine young friends, and everyone holds a piece! I need you. Humanity needs you. Do your best. . . "

A loud clap of thunder silenced the soft voice. The friends jumped in surprise. From behind the tree stepped a tall, fierce-looking figure, in a robe of silver and black. A hooded cape hid the face of Chronos, the Keeper of Time. A large crystal hourglass hung from his cape, and inside the glass, grains of sand moved slowly from top to bottom.

"Wow!" said Kieran. "You must be that time-dude."

Chronos appeared to become even fiercer and angrier. "SILENCE!" thundered the voice. "This is SERIOUS! Solana, are THESE the three champions you have chosen? They're very young!"

At this, the three stood tall and defiant to face Chronos.

"You really have grown quite desperate, Solana," Chronos said, waving the hourglass ominously.

"Please excuse Chronos, my friends. As the sand in the hourglass runs out, the Keeper grows irritable," sighed Solana. "Just give them their tasks, Chronos. I have confidence in them. I trust these young ones to become fine EcoGuardians."

"It is your future that is at stake, Solana, and this is your decision. Well then, so be it!" the voice echoed from deep within the robes. Chronos reached into a hidden pocket of his long, black-and-silver robe and withdrew a scroll. He forced it into Kieran's hand. "Here is your first challenge, my young champions. Use your time wisely, while you still have time. Good luck!" With a sweep of black and silver, Chronos vanished.



Questions

EcoGuardians' 1st Chronicle

The Journey Begins

Discuss the following questions and record your answers:

1. Describe Solana. What happened to her? What is her role in this story?

2. In your own words, describe the quest that Solana has given Kieran, Heather and Piper. Who is the quest supposed to save?

3. In this story, what is meant by footprints?

4. Who is Chronos? What does he want to accomplish?

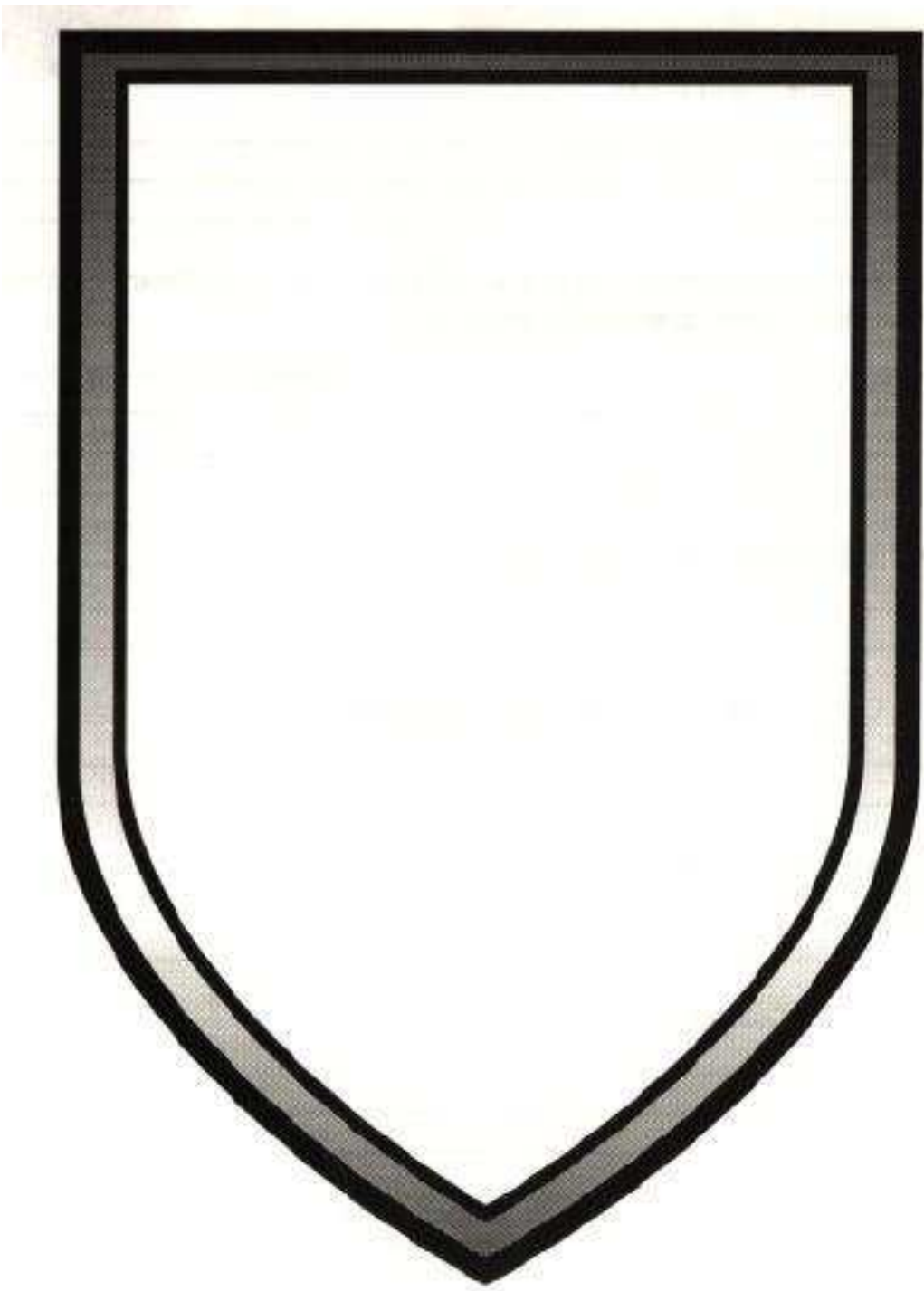
5. Solana says "Time is passing quickly." What does she mean?

6. What is an EcoGuardian?

7. Kieran, Heather and Piper need help in their quest. As an EcoGuardian, you must write a pledge. Record this on your shield and put it in your portfolio.



Write your EcoGuardian pledge on the shield. Decorate the shield with things that show what your pledge means.



Am I Walking Gently On The Earth?

It only took Kieran a moment to untie the large scroll. It was thick and heavy, and as soon as the cord was loosened, it fell to the ground in a number of large and small fragments. Heather and Piper rushed to pick up several large pieces of yellow parchment that tumbled out. The wind caught some smaller bits and carried them out of reach of the three young people.

"Oh no! Watch out! The scroll is falling apart!" yelled Piper.

"It's okay—I've got the big pieces. Look, there's another one. That makes seven! Quick, Piper, you're faster than we are. Run and find the bits that the wind carried away," said Kieran.

Piper was off in an instant.

Heather and Kieran gathered up the larger pieces, and carefully carried them to the open area. There they began an examination of each one, shuffling, sorting, searching for clues in the drawings and words of the fragile bits of parchment.

"Look at this one, Kieran. It looks as if there's a branch of a tree drawn on it, and there's something written on it as well."

"They're all branches," Kieran observed, as he picked up some small pebbles to hold each piece securely to the ground. "No they're not. Look again Kieran. This one seems to be much bigger than the rest, and there are roots on that one. Hey, this is like a giant jigsaw puzzle. I bet they all fit together somehow."

Heather began to arrange the pieces. "Look, Kieran, it's a huge tree. And there aren't very many leaves on it—I think it's supposed to be Solana! There's a whole bunch of stuff written on each part—like a clue or something . . ."

"Heather, you are amazing!" Kieran exclaimed. "Each branch seems to be about something different. Let's see. . . this one's about food. . . this one's about water . . ."

". . . and I've got one about transportation, and that one's about garbage, and this last one talks about energy. There are markings on the trunk. These must be some of the clues that Solana told us about," Heather added, thoughtfully.

The wind whisked several small parchment envelopes high into the air as it danced them farther and farther from the tree. Piper raced after the nearest one and was just closing her fingers on it when from out of nowhere, with a flash of feathers, a huge bird snatched the envelope and carried it high in to the branches of the great maple tree.

Piper looked up in amazement to see a peregrine falcon sitting on the branch, the paper held tightly in its talons.

"Solana, help me! That bird took one of the papers Chronos gave us!" pleaded Heather.

"That bird is the first of your companions. The peregrine has been chosen to accompany you on your voyage because she flies high and her keen eyes see far. She is also a fast bird and can bring messages to you quickly. Arial is her name. Speak gently to her, ask her for her gifts. She has much to share," explained Solana.

"Okay, Solana, I'll give it a try. Arial, Arial," Piper called in a sing-song tone. "Arial, my name is Piper. My friends, Heather and Kieran, and I are

on a voyage to become EcoGuardians. But you've got one of the pieces of paper from Chronos. Well, we really need that clue that you've got in your talons . . . if you don't mind."

The falcon flew down to a lower branch and released the scrap of paper. Piper quickly scooped it up in her small hand and went to show it to her friends.

In the meantime, Kieran and Heather had arranged the seven large pieces of parchment into a puzzle that did, indeed, outline the maple.

They were busy reading the messages found on the five branches when Piper returned, excitedly waving the small faded envelop in her hand.

"Well, it's about time! We were getting worried about you. What's that in your hand? Did you find all those small papers? Guess what we've discovered!" Heather was full of questions and Piper found it impossible to answer them all at once.

"One question at a time, please! To begin with, I found one piece. And take a look at what else I have brought back!" Piper pointed up at the first branch of the maple tree, where Arial now perched, regarding the three friends with her large, bright eyes. "Heather and Kieran, meet Arial. She will be one of our helpers on our voyage."

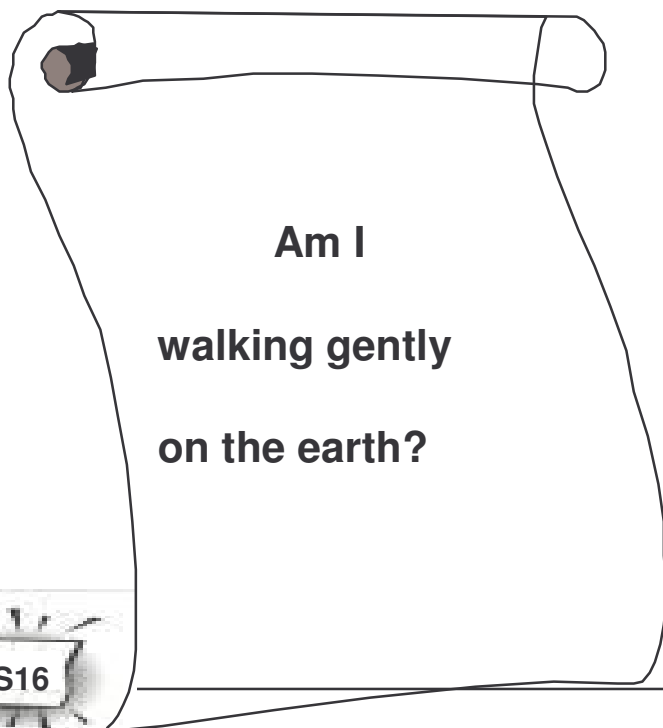
"This adventure gets more and more interesting. Imagine, a talking tree, and now a peregrine falcon. Too much!" said Kieran. "Piper, look at what we've done! See the five branches? Each one is about something different. It's like a challenge! And guess what! We're on the paper too, and--hey, wait a minute. What's this?"

"Heather, that wasn't there before!" Kieran pointed to an outline of Arial, that had appeared on the parchment just above Piper. "Way too much!" repeated Kieran.

"Arial had this paper. I think it's a clue." Piper carefully handed the flimsy paper over to Kieran.

"No, you read it, Piper. You're the one who found it."

Heather and Kieran leaned forward to read the message which Piper removed from the crumbling envelope. Piper read:



"What does this mean? 'Am I walking gently on the earth?' That's not a clue, that's a question!" Kieran shook his head in frustration. Above them, the falcon cried "WHEE, WHEE."

"Just a second." Piper smiled up at Arial. "It sounds like Arial is telling us who walks upon the earth. WE ALL DO. And we all leave impressions, just like the marks we found in the garden. Everything leaves a mark. Remember when we were planning our Peace Garden?"

"You are correct, Piper," affirmed Solana. "All things leave marks upon the earth. But humans are leaving larger and larger marks. You have become so concerned with your own needs as a species that you have forgotten to think about the importance and the needs of the other members of the web, like the trees, fish, birds and animals."

"In other words, it's time we started to think about our own footprints and the kinds of impressions we leave behind. I get it!" Piper ran over to the tree.

Kieran smiled at Piper. "For someone your size, you're pretty smart, pip-squeak. So, just what kind of footprints DO we leave?"



"Well, I wear size five. Just kidding!" said Heather. Then she added, in a more serious tone, "Actually, our shoes and the prints they make tell a lot about who we are. I mean, look at my shoes. They are my favourites, and I wear them all the time. But they were kind of expensive to buy. Maybe we could think about how they were made, and what they are made from. Do you suppose that might be part of my footprint?"

"Look at your shoes, Piper. Those old jogging shoes look like they've been around forever, and they're so tiny. Boy, you sure do have small feet compared to mine. I wonder what your shoes were made from? Then there's you, Kieran--those hiking boots look like they're size 12! You must make a pretty big trail when you go walking through the park. I wonder how our trails compare with the footprints that other kids make. Or how they are different from the marks made by people that live in other places."

"I think you're onto something there, Heather. And, by the way, they're not size 12, they're only 10!"

"Don't interrupt when I'm on a roll, Kieran. I guess the way we live leaves a sort of footprint. You know, the things we buy and use every day. Clothes, CDs, that kind of stuff—even the kinds of things we buy at the grocery store. I bet that where we live must leave a mark, too. You know, houses, apartments, cities, towns, farms."

"When you think about it, I guess we don't walk very gently on the earth at all."

"And then there are the things we do every day, like going to school or shopping, cruising the Internet or watching TV or a movie, and even going to the doctor or dentist. Good or bad, I guess they all leave their own mark," added Piper.



Kieran joined in. "You're right, the earth is covered in footprints! You know, in my school, we've been learning about the environment and how we affect it. Hmm. Are we walking gently on the earth? Piper, pass me my knapsack please. I need a pen and some paper. Here's my journal. I'll use a page from it. Let's try making up a list. Heather, can you help me? You're good with words. And Piper, you can help or maybe you could look for more clues if you'd like."

Kieran and Heather sat down beside the scroll and began to compile a list of things that make up their footprints. Piper retraced her steps around the trunk of the maple and began searching in the grass for the other small pieces of parchment. Arial flew behind her to perch at the top of the tree. Piper looked carefully, but was unable to discover any more clues. Discouraged, she sat down and tried to imagine herself as a small piece of paper at the whim of the wind. Suddenly it came to her. Of course! Arial was known for her excellent vision!

"Arial . . . Arial . . ." Piper called. The beautiful, sleek bird flew down to land at her feet. "Arial, we need to find the other clues. You can see so far, and you know where the wind blows. Can you help me find the clues?"

The falcon took off and soared into the air. She circled over the trees and then headed off towards the west, slowly gaining altitude until she was but a dot in the warm blue of the spring sky. Then she returned, swooping low over Piper's head, before flying off to the west again. Piper ran excitedly after the bird, her eyes riveted on the graceful bird in flight.

Arial led Piper to a tangle of bushes and shrubs that lined the bank of the creek. Piper, intent upon following the soaring falcon's flight path, stumbled through several willow and tag alder thickets, trampling the many green shoots that showed above the soil. Without warning, something seemed to reach out and snag the toe of her shoe, and with a startled cry, Piper tumbled headlong into a clump of alders. Seconds later, Piper's cry turned into a scream. She lifted her head and came face to face with a huge brown shape. It was crouched and ready to pounce.

Questions

EcoGuardians' 2nd Chronicle:

AM I WALKING GENTLY UPON THE EARTH?

Discuss the following questions and record your answers:

1. What do the pieces of the puzzle form? What does each branch of the tree represent?

2. What is the message on the parchment? What does this mean?

3. List things that leave marks (footprints) on the earth.

4. What do you think Piper stumbled on? What might happen next?
