



National Park Service
U.S. Department of the Interior
Pictured Rocks National Lakeshore
www.nps.gov/piro/forteachers.htm

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“The Web of Life Game” Winter Fourth Grade In-Class Activity

Michigan Science Objectives: At the end of this lesson, students will be able to:

1. Explain the concept of connectedness (or inter-relationships) by describing how certain animals and plants meet their basic needs (Ecosystem 2 and 3).

Thinking Skills: Reason deductively and inductively.

Overview of Activity: Following a review of basic needs of plants and animals, students will become active participants in a story read to them by “becoming” the plant or animal in the story. The students identify a connection or basic need to something else identified in their circle by the name card around each person’s neck.

National Park Connection: National Parks across our country preserve a mosaic of our natural and cultural resources and the interrelationships found in these places with the land and the people.

Materials needed: Pine marten mount, red squirrel mount, colored chalk (brown, dark blue, light blue, yellow, green, red), white macramé roll, forest poster, 5x7 character cards.

Procedure:

1. **Review Basic Life Needs:** This was covered during fall program. Food (also known as energy), water, shelter and space. On the board, list these words in different colored chalk: food energy (yellow), water (dark blue), air (light blue), minerals (brown), shelter (green), and space (red).
2. Add two more words: soil (for nutrients and minerals plants need to grow) and air (what almost all living things need to survive). Explain that these are relationships or connections living things have!
3. Introduce the story. When there is a blank line in the story, identify the student playing the role.

“I will read you a story. It is a mystery to be solved. During each part of the story, I will ask you to listen to the connection being described and come up with a detective conclusion, identifying which of the six connections is being described. At the end of the story, I will ask you to deduce the answer to this mystery by creatively applying things you have learned today about connections!

“Today I would like you to help me tell a story of the pine marten and the forest. Please try very hard to imagine this pine marten traveling through the forest as I read the story and please listen carefully. As I tell the story, I will give each of you a picture ID card and you will become that character in the story! I will also connect each character by a white string. Please hold on to the string when I give it to you and do not let go until I tell you to. This string shows that you are connected to something else in the forest.”

"Each time I make a connection or show a relationship between two characters, raise your hand if you can tell which of the six connections written on the board this represents. For example, you might say, "the connection is that the mouse needs the plant for food". Any questions? Okay, let's get on with the mystery!

PINE MARTEN MYSTERY

FOREST CHARACTERS: pine marten, red squirrel, fox, wood duck, owl, mouse, mole, fallen log, dead tree, cedar tree, hemlock tree, coyote, raspberry bush, woodpecker, wood frog, spring pond, dew on leaves, deer, trout, mink, worm, wood turtle, mosquito, wind, warbler, soil, algae, vole, stream (29). With fewer students, remove some of the characters.

A long time ago, pine forests covered more land than they do today. They were very thick and dense, growing close together and connected. The old timers said that the forest was so vast a pine marten could travel from Maine to Minnesota without ever touching the ground, just by hopping from treetop to treetop.

This is a story about the travels of a pine marten just last year, and the problem she encountered in the forest. It is also a story of all the relationships or connections she discovered in the forest.

One late winter day, _____ the pine marten awoke in the top of a big hemlock tree where she lived. _____ is a graceful mammal with very soft dense yellowish-brown fur. She loves to climb and is very athletic with a good sense of balance. _____ likes to live in the treetops where she is safe from animals that would like to eat her (like a coyote or fox). As she gazed out from her treetop lookout, she could see across a wide grassy field where no trees grew. At one time people were going to put a road through the forest, so they cut down all the trees and hauled them away. Something happened and they did not put in the road, so the area grew into a field on the bare soil. In the distance, _____ could see another pine marten! She had not seen another pine marten in years and was very excited. But how would she get to the other forest? Instinct would not let her cross the open area; that was much too dangerous.

_____ knew all the other borders to her forest home, which was about five square miles in size. On two other sides were highways she would not cross and on the fourth side was Lake Superior. Was she destined to live her expected 15 years of life alone?

_____ thought to herself that she would seek out the answer to her problem from the other members of her forest community -- the soil, water, air, plants and animals.

As _____ sat there thinking, _____ the warm wind from the south blew through the trees and made her almost lose her balance. _____ was very welcome in the U.P. woods after a long cold winter. _____ stretched for miles coming up all the way from places like Florida.

Just then, pine marten noticed a tiny bird called a warbler float down out of the sky and land on her hemlock tree. You could say _____ had hitchhiked a ride with _____ the wind, returning from her winter migration home down south. _____ is a beautiful tiny bird with bright colors. _____ has a tiny beak for catching her favorite food -- little insects such as mosquitoes and black flies. _____ took a deep breath of air and let out a beautiful call or song on this nice spring-like day. _____ throat moved as she let out fine warbling song.

Pine marten slowly climbed down the big old hemlock tree and jumped onto _____ the old fallen log. _____ was somewhat mushy to the touch, spongy and damp. _____ smelled like the rich earth, which is what she was changing into, as bacteria, worms and insects chewed at _____ insides. Pine marten walked around a baby hemlock tree growing out of _____. That's how trees like _____ the hemlock are able to grow, by sprouting in old logs people call nurse logs, which provide a good home full of nutrients for them to grow up in. _____ had very delicate tiny needles with two white lines on them. Pine marten sipped a drop of dew hanging on the baby hemlock. Other drops like _____ shown like tiny jewels on the needles. Looking closely at _____, you could see a reflection of the entire forest scene in her as if you were looking in a mirror.

Just then, from under the log, darted _____ the white-footed mouse. How delicate were _____ tiny white feet, which looked like he was wearing tiny white socks or gloves. With big whiskers and tiny hands, _____ nibbled on a tiny spring flower he held in his hand and looked around warily with his beady black eyes.

Too bad for _____ because that was his last meal. For drifting silently toward _____ was _____, the barred owl. With a wingspan of four feet and feathers with tiny cracks in them along their edges, _____ was able to fly perfectly silent and undetected. _____ grabbed the mouse quickly with his powerful claws (called talons) then flew back to his perch on top of a nearby dead tree to have his breakfast.

Pine marten was pretty shook up by what she had seen, for it could as easily have been her instead of the mouse on the owl's breakfast table.

Pine marten crept past _____, the dead tree. _____ stood still and tall like a statue. He was unable to move anymore because the wind could no longer catch his leaves and cause him to sway. _____ felt strange without his thick outer protective bark, which had fallen off. On _____'s exposed skin were millions of holes where insects or birds had burrowed into him.

Just then, _____ the pileated woodpecker pounded loudly on the dead tree, digging out insects and making a sound that echoed through the forest. _____ was a very colorful fellow with a bright red crown on top of his head. Sharp claws at the end of his long toes held on tightly to the tree.

Pine marten moved slowly along the forest floor, trying to stay hidden behind dead logs and branches on the forest floor. She knew she must be getting to that little pond that appears in the forest every spring and fall and dries up in the summer when _____ the mosquito landed on her nose and tried to bite her. _____ has a long, slender firm nose that works just like a straw.

_____ flew off with a buzzing sound made by her wings. As pine marten watched, a frog jumped up and ate the mosquito. It was _____ the wood frog. He is a real handsome guy with very smooth skin, no warts, and a big wide mouth. Along _____'s face was a wide black mask or band.

Pine marten watched as _____ jumped into the little forest pond and disappeared. _____ the pond is a murky fellow, kind of a brown color caused by all the decaying leaves and pine needles. He is not very big, maybe the size of a basketball court or smaller. Millions of mosquito larva live and feed on the tiny green plants called algae in his _____ body.

Pine marten decided to nap in a white cedar tree by the edge of the pond. _____ the white cedar is unlike most trees. _____ roots like to be tickled by muddy soil. Most trees would die if you tried to plant them in very wet land, but not _____ she loved it. Her tiny root hairs sucked up even tinier minerals and nutrients from the rich mud. _____ the deer appeared to drink from the pond. _____ was very attractive, with a thick mat of coarse hair all over his body. It was more like wearing hundreds of paper towel or toilet paper tubes on your body because that is what the hair was really like - hollow tubes. They trapped warm body air in them to provide an insulating layer of warm air between _____ skin and the bitter cold air.

When pine marten awoke, she jumped down from the cedar into the soft soil of the forest floor. _____ the soil was hundreds of years old. That's how long it took him to be made. Over the years, dead leaves, branches, and animals changed into _____ as their bodies were broken down into tiny pieces by bacteria, insects and other things.

Just then, _____ moved and pine marten jumped. It was really _____ the mole swimming under the surface of _____. _____ was almost blind with two little flaps of skin covering two very tiny eyes. _____ located his food with a great nose for smell. _____ tunneled along in search of one of his favorite foods - the worm. The tunnels _____ left behind him actually helped the tree roots because they bring some air underground that plants need to breathe too.

_____ was blind and moved about by contracting and expanding his big muscles. _____ liked to browse on leaves and decaying things. As _____ went to the bathroom, some thing would appear that looked more like soil than a leaf!

Pine marten walked toward the far end of the pond. She was getting hungry. In the far end of the pond swam _____ a male wood duck. He was one of the most beautiful animals of the forest. _____ feathers looked like someone had hand painted them. _____ was feeding on a tiny plant called algae, growing in the pond.

Just then, something startled the wood duck. He exploded out of the water and flew right out of the water over pine marten's head. As he flew, he dropped some of the algae on pine marten.

_____ the algae looked like the fine long stringy hair of a human baby. _____ was a beautiful bright green color and smelled like the pond water itself. Just then, pine marten saw a flash of red out of the corner of her eye, so she quickly scampered up a tree. She saw what had scared the duck. It was _____ the red fox.

_____ would eat pine marten if he could catch her. _____ has big ears and a bushy tail. He is not a fussy eater; he will eat just about anything he can catch. Pine marten noticed he already had something to eat in his mouth. It looked like _____ the vole in his mouth.

_____ is about seven inches long and is a true vegetarian. She eats only plants, preferring green leaves rather than something like a tasty raspberry. _____ has small eyes and ears and a blunt face. She's a pretty chestnut color sprinkled with grey and black.

As summer arrived, the woods were alive with many sounds like the yipping of coyotes and howling of wolves at night. Two more animals that would like to have pine marten over for dinner!

Pine marten was daydreaming. "If only I could learn how to dig like the mole. That's how I could get across the field to the other forest where I saw another pine marten," and she sighed.

Just then, a sound from below snapped her out of her daydream. It was _____ the coyote and some of his friends trotting through the forest trying to scare up something to eat. _____ weighs about 50 pounds and looks like a large collie or small German shepherd with a drooping tail. Huge ears stand tall as _____ listens for movement of an animal.

Getting tired of running, _____ stopped by _____ a small stream to get a drink of water. _____ ran quickly through the forest and sparkled and glistened with clear cold water. The coyote spooked _____ the brook trout that was hiding near a log in _____.

What a strange critter was _____. Living in freezing cold water, he was covered with a fishy slime. This slime helps protect _____'s skin from diseases. _____ had an eye on each side of his head and a strong tail to propel him through the water.

Pine marten watched as the coyote romped away then heard a splash and turned to see the trout in the mouth of _____ the mink. _____ was two feet long and a beautiful chocolate color with a bushy tail. Pine marten could see five toe prints on each foot track left by _____ as he scampered downstream with his lunch.

Pine marten thought she saw a squirrel move under _____ a raspberry bush by the stream. She tried to sneak up on a possible meal. When she got there, she was disappointed to see that it was _____ the wood turtle. _____ has the unique ability to climb a little and was partly up the raspberry bush eating some of the berries. _____ did not seem scared by pine marten. Pine marten admired the interesting designs on the shell covering his back.

As autumn began to set in, pine marten still had not solved her dilemma of how would she ever get to the other forest. She knew there was an answer somewhere; she just had not made the connection yet.

Back in her big hemlock tree overlooking the open forest, pine marten noticed _____ the red squirrel in a nearby tree. He likes to eat seeds, nuts, and bird's eggs. _____ was scurrying about quickly as he likes to do. Pine marten noticed him ripping some things off the branches then dashing away.

A few minutes later, pine marten saw _____ run out into the open field, dig in the ground and run away. This went on for about 20 minutes. How odd, she thought. Then hunger got the best of her curiosity and she decided it was time to eat her favorite meal - red squirrel.

She waited in ambush near the bottom of the tree he had been climbing. As he ran back to the tree and she grew ready to pounce something inside her said stop -- no, do not do it -- but her instinct to eat was stronger and she pounced.

After her meal, she sat gazing out over the field again and thought, "Will I ever be able to reach the other forest?" Just then, another red squirrel ran out into the field carrying a huge pinecone. She watched as he buried it in the field sand -- to eat later perhaps in the winter -- and ran away.

I wonder, she thought, how they manage to find all the pinecones they have buried. Then, the thought hit her like a lightning bolt. She turned and looked out into the field and there -- sure enough -- were tiny baby pine trees sprouting up from under the soil that she had not noticed before. Someday they would grow up and the gap between the two forests would disappear! The answer to her problem was now in her stomach!

The end. What is the answer to this mystery?

The red squirrel will help plant a forest for the pine marten to live and travel in!

Look at what we have created here. This is called the web of life – showing all the connections or interrelationships in our natural world!

