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## Minnesota School Forest Program

**Lesson Title:** The Fallen Log

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**School Forest:** Frazee-Vergas Public School

**Grade(s):** Grade 5, but can be used with grades 4-8

**Standard(s):** 5.4.1.1. Understand that living things are diverse with many different characteristics that enable them to grow, reproduce and survive. 5.4.2.1. Natural systems have many parts that interact to maintain the living system.

**Materials:** magnifying lenses, clear containers with lids, forest desks w/ paper & pencils, colored pencils (optional: field guides on insects, spiders, nonflowering and flowering plants, bug boxes, iPads, digital cameras)

**Objective(s):** 1) Students will identify some of the organisms that live in, on, and under fallen logs and explain how those organisms depend on the dead wood for survival. 2) Students will describe the process of decomposition. 3) Students will gain an understanding of how decomposition takes place and a better appreciation for microhabitats and communities.

**Time Considerations:** Preparation: 15min. Activity: 50 min.

**Subjects:** Science

**Skills:** observing, representing, organizing information, inferring, analyzing

**Concepts:** 1) Biodiversity results from the interaction of living and nonliving environmental components such as air, water, climate, and geological features. 2) Forests, as well as other ecosystems, contain numerous habitats that support diverse populations of organisms. 3) Organisms are interdependent; they all depend on nonliving components of the Earth.

**Procedure:** This activity is in the Project Learning Tree Manual, Copyright 2007.

- A. **Getting Ready:** Before doing this activity, find a place that has several dead logs, large fallen limbs, or decomposing tree stumps that are fairly close together. Logs should be 8 in. in diameter (min.) and should be in different stages of decomposition.
- B. **Doing the Activity 1:** Lead with inquiry! Some ideas are: Why aren't forests piled high with fallen trees, branches, and leaves? What happens to trees after they die? Tell the students that they are going to examine dead logs to find answers to those questions and more.  
**Doing the Activity 2:** Divide the class into teams of two to four, and explain that the teams will each examine a rotting log. Team members will need to keep track of each different kind of plant or animal they see and where

it was found. Help students develop a list of additional questions to explore during their investigation, such as:

- How might the tree have died?
- Has the tree been dead a long time or a fairly short time?
- What kinds of animals live on the bark? Under the bark? Inside the log? Under the log? Etc.
- Where do these animals get the food they need?
- Do any plants live on the log? How can they live without soil?

These questions should be written down by the students in their science journals or on paper. Students must look for evidence to help answer these questions and others they come up with.

- C. Doing the Activity 3: Take students to the area you have chosen and distribute the materials. This may be done before leaving if they have a place to store their materials, such as a forest desk. Then have each team choose a log to study. Again, the number of teams will depend on the number of fallen logs you can find in one general area. Be sure to establish safety rules before arriving on site.
- D. Doing the Activity 4: Explain that students would examine their log, disturbing it and the things living there as little as possible. They can use the containers provided to get a better look at any creatures they see or if creatures are slow moving, just the use of a magnifying lens will work, too. They should note any plants and animals they find, and if they can't identify something, they should make a sketch of it so they can look it up upon their return. Encourage them to look for evidence of animal activities such as insect holes, spider webs, woodpecker holes, animal dens, animal tracks, and piles of sawdust or patterns in the wood under the bark. *Students should disturb their log as little as possible while they examine it. Any creatures they find and put into containers to examine should be done for brief periods of time and then returned to the place they were found as quickly as possible. The students should make sure the log is in its original position when they finish. Perhaps a before examination and after examination photos could be taken to see that this happens.*
- E. When they've finished examining their logs, have students examine areas around the log. They might look in leaf litter, under rocks, around bases of trees, and so on. Have students record similarities and differences between these areas and the log. They should note which of the plants and animals that they found around their log also live in these areas.
- F. When back inside, have the students use their notes and sketches to identify the creatures they were unable to identify in the field. Also to be sure ones they did identify are correctly named. They should also go back to the questions listed in Activity 1 & 2 and determine whether they found the answers. Finally, give teams some time to prepare how they wish to present their findings to their classmates.
- G. After all teams have shared their findings, ask questions such as:
- What similarities and differences were there between each of the logs? What might explain the differences?
  - Which animals and plants were found both on the log and in nearby areas, such as in leaf litter? What do those areas and the log have in common?
  - How do animals you found in the log interact with it (the log)? What does the log provide for the animal(s)?
  - Why is it important that logs like the one you studied decompose?
  - How does the forest ecosystem benefit from a fallen log?

Enrichment: Have students read the story "In the Forest of S. T. Shrew." (See attachment.) After you have read it aloud or they read it silently, ask them to name all the things Jackie saw on her trip through the rotten log. List the items on the board. Put a check mark next to the things your students also saw during their investigation out in the field.

# In the Forest of S.T. Shrew

Jackie sat down with a “humph.” “I don’t think anything lives in these woods,” she thought. “I’ve been walking around for a long time, and I haven’t seen anything except for a couple of squirrels.” Squirrels didn’t really count. She had squirrels in her front yard, and there were squirrels around school. She was supposed to be seeing all kinds of interesting, unusual animals to include in her report for school.

“Pick a place near school or home, and investigate what lives there. Then write a report about all the interesting and unusual things you find.” That was the assignment. Too bad she didn’t live near the pet shop, like Rene Navarro. Then she’d have lots to write about. But no, she had picked this patch of woods behind the playground thinking it would be loaded with animals.

“Now what am I going to do?” she wondered. She closed her eyes to think....

“So, you don’t think anything interesting lives in these woods, huh?” she heard a high-pitched voice ask.

“What was that?” she gasped as she looked around. Sitting next to her, with its head poking out from under the leaves, was a small, furry animal with big whiskers and tiny little eyes. It repeated its question.

“You don’t think anything interesting lives in these woods?”

“Well, I didn’t....” she answered. “Who are you?”

“Everyone calls me S.T.,” he answered. “I’m a shrew—a short-tailed shrew. Now, put your finger on my back.”

“What?” she asked, surprised.

“Look, you would like to know about what lives in these woods, wouldn’t you? So, c’m on. Hurry up!”

Slowly, Jackie reached out her finger and gently touched him on the back. There was a flash and she found herself standing next to S.T., looking him right in the eye. Then she realized that she was standing on four legs and was covered with

fur. She had turned into a shrew!

“There, that’s much better,” he said. “Now, follow me.”

“Where are we going?” asked Jackie.

“A lot of creatures around here are pretty upset that you don’t know they even exist. So I’ve been appointed to show you around. Besides, now that you’re my size, you’d make a tasty meal for something, so you’ll be safer if you follow me.” And with that he turned and dove down the hole he had popped up out of earlier.

As Jackie stood there wondering what to do, she looked up and saw a large bird flying overhead. “Uh-oh!” she cried and dove into the hole after S.T.

## In the Ground

Jackie had never crawled through the ground before and wasn’t sure she liked it. It was dark and damp and smelled like dirt. And there were so many roots everywhere! Tiny roots were constantly brushing by her face. She and S.T. had to crawl up, over, and around larger roots over and over again. Then all of a sudden, S.T. stopped.

“Hey, everyone! We’re here!” he yelled at the dirt walls of the tunnel. At first Jackie could hear and see nothing. Then she noticed a rumbling sound that seemed to be getting louder and louder. Suddenly, heads began popping out of the tunnel wall. There were earthworms and beetles and white grubs and many other creatures Jackie couldn’t identify.

“Do you all live in the ground?” asked Jackie in awe.

“Uh-huh, and lots of others do too,” said one particularly fat earthworm.

“But how do you live?” Jackie asked. “I mean... what is there to eat down here?”

“Well, you could say I eat my way through the soil!” replied the earthworm. “I make a tunnel by eating the dirt, then separating out bits of

plants and other food from the dirt particles. It’s not for everyone, but I love it!” he ended.

“We suck juices right out of roots,” said three white grubs together. “And one day we’ll crawl up out of the ground and become adults.”

“Did you ever wonder what happens to animals that die in the woods?” interrupted a black beetle, waving its antennae back and forth. “It’s thanks to me that they’re taken care of.”

“He means, thanks to all us carrion beetles,” said another black beetle. “We eat them up. Keep the forest clean.”

As Jackie thought about all this, S.T. thanked all the soil creatures for coming. Then he turned to Jackie and said, “Follow me. There’s still a lot more for you to see.”

## A Rotten Place to Live

Jackie followed S.T. through the soil for a short distance; then they climbed up to the surface and ran along the ground under a cover of leaves. As they traveled, the leaves crunched and rustled. Jackie could see spiders, centipedes, and other small creatures crawling around. She wanted to stop and talk to them, but S.T. kept moving and she knew she had to keep up with him. Finally, S.T. stopped at the end of a log. S.T. ran onto the top of it and Jackie followed. Most of the top of the log was covered with a thick, green carpet of moss.

“Oooh!” cried Jackie. “It’s so soft. And look at all the other things growing up here.” Jackie ran around on top of the log. She rolled in the soft moss, touching the cool, bright orange fungi that were growing on one end of the log, and sniffing the tops of tall, red-capped lichens as though they were flowers and had a scent. There was even a tiny tree, only about three inches tall, growing out of the log.

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"Want to see the inside?" asked S.T. "OK," answered Jackie, following S.T. back over the end of the log. She waited as he called to someone named Millie. In just a few seconds a long, dark creature with dozens of legs came crawling out of the end of the log.

"I'm a little too big to go with you on this part of the trip," S.T. told her. "You go with Millie and I'll wait for you here."

"But I'm just as big as you are," said Jackie. But just then Millie reared up and touched Jackie's head with several of her legs. Just as before, there was a flash, and Jackie turned into a millipede just like Millie.

At first Jackie found it a little difficult to move all her legs in a coordinated way. But once she and Millie got inside the log, she was too busy looking around to think about how to walk and she didn't have any trouble at all.

Millie was pointing out things and explaining them to Jackie, who was having trouble absorbing all the information. But finally, she began to get the idea she was in a kind of factory—a factory that breaks logs down into soil. Everywhere they went there were things chewing, tunneling, and boring through the wood. There were wood roaches, small white termites, and hard-shelled pill bugs that rolled into tight little balls as she and Millie went by. There were also insect-eating hunters: huge, shiny-black beetles with giant jaws and centipedes with venomous fangs. And at one point, when they'd crawled deep inside the log, they saw a salamander resting in a dark damp hole in the decaying log.

Jackie had no idea there was so much activity inside a log and was really sorry when they headed back to S.T. But after Millie turned Jackie back into a shrew, Jackie and S.T. said goodbye to Millie and scurried off.

### Life at the Top

Soon Jackie and S.T. stopped at the base of a tree. Immediately, a small,

black-capped bird flew down and landed on the leaves next to them.

"I was beginning to wonder whether you were coming," said the bird. "Hello, Jackie—I'm Sitta. Ever felt like flying?" she asked, stretching one of her wings over Jackie's head. There was a flash and then Jackie slowly stretched out her own wings—she had become a nuthatch just like Sitta.

"Let's go!" cried Sitta, and she leaped into the air and flew off. "I'll wait here," S.T. called after them.

Of everything she had done that day, Jackie was sure flying was the best. First they flew up over the trees where Jackie could see many other birds flying in and out of the treetops. Then she and Sitta swooped into the top of one tree and darted in and out among its branches.

Jackie was amazed at all the insects she saw. There were grasshopper-like creatures and other "bugs" sitting on the leaves. There were wasps and flies buzzing around. And there were caterpillars crawling on many of the leaves. Then Sitta fluttered down and landed on the tree trunk. As Sitta led Jackie down the tree head first, Jackie looked closely at the trunk and was amazed at what she saw. There were caterpillars and ants crawling. She saw several spiders and a moth that was almost the same color as the bark—in fact, she almost missed it because it was so perfectly camouflaged against the bark. There were also pale greenish lichens and moss growing on the bark. Eventually, she and Sitta reached the bottom of the trunk.

"This tree is like an apartment building or something," said Jackie as she jumped onto the ground next to S.T. "There are different things living on it all the way from the leaves at the top to the base right here on the forest floor," she added. "I guess. I should say right down into the dirt—I shouldn't forget everyone I met

underground earlier!"

"Well, it's good to hear you talking about all the things that live in and on trees," said Sitta. Then she held her wing over Jackie's head again and flew back up into the trees out of sight.

### Home Again

As Jackie once more followed S.T. through the ground, she began wondering where they could be going next. It was dark and damp in the tunnel, and root hairs were brushing by her face. As they ran along, the smell of dirt filled her nose....

Suddenly, Jackie opened her eyes. She was back by the tree she'd sat down against earlier that day. Somehow she'd fallen over and was lying on the ground with her face resting on top of the leaves. Her nose was filled with the smell of dead leaves and dirt. Slowly, Jackie sat up.

Did I dream the whole thing? she wondered as she looked around. "There's a dead log over there like the one I went to with S.T. And the bark of this tree is covered with all kinds of things, just like the one I saw with Sitta," she said as she stood up. Still her adventure seemed impossible. But then Jackie looked at the ground near where she'd been sitting and reached over to the spot that seemed to be where she thought she had first seen S.T. As she carefully lifted up some of the leaves, she could see it: a small hole in the ground. Jackie laughed out loud. "Boy, do I ever have a lot to write about in my report!" she cried. Then she turned and ran all the way home.

