

Forests are More than Trees



In a Nutshell



Students will discover the many ways trees contribute to the forest community, why they are important, and how other plants and animals depend on trees to survive.

| | |
|-----------------|---|
| Grade | K-1 |
| Seasons | Spring, Fall, & Winter |
| Location | Rapids Lake Education Center & Bloomington Visitor Center |

Learning Objectives

After participating in this activity, students will be able to:

- Describe at least two ways trees contribute to a forest community.
- List at least three animals that depend on trees to survive.
- Describe the characteristics of at least one tree they discovered on their hike (i.e. leaf shape, branching, bark)

Literature Connections

- *The Lorax* by Dr. Seuss
- *Sky Tree: Seeing Science Through Art* by Thomas Locker
- *Under One Rock* by Anthony D. Fredericks
- *The Busy Tree* by Jennifer Ward

Especially in the Fall...

- *Why Do Leaves Change Color?* by Betsy Maestro
- *Red Leaf, Yellow Leaf* by Lois Ehlert
- *Tell Me Tree* by Gail Gibbons
- *Autumn Leaves* by Ken Robbins
- *Fletcher and the Falling Leaves* by Julia Rawlinson



Minnesota Valley National Wildlife Refuge

Pre-Activites

Reading the book *The Busy Tree* and examining a collection of forest bio-facts, students investigate the value of trees to the forest community.

On-site Activities

Students will explore a refuge forest to look for ways trees contribute to a forest community. They will use their journal to record their observations along the way.

Classroom Connection – Any of the following Project Learning Tree activities:

- Trees as Habitats: students discover how other plants and animals rely on trees to survive.
- A Forest of Many Uses: students learn how forests are managed to meet a variety of human and environmental needs.
- Adopt a Tree: students observe the seasonal changes of an individual tree. This activity encourages a greater understanding and appreciation of the student's local environment.

Teacher Resources

- ***A Beginner's Guide to Minnesota Trees*** ed. by Mary Hoff
- ***Peterson's First Guide to Trees*** by George A. Petrides
- ***Tree Finder*** by May Theilgaard Watts
- ***Tremendously Marvelous Trees*** by Minnesota Conservation Volunteer, Minnesota Department of Natural Resources



Forests Are More than Trees Pre-Activities

Materials

- Collection of forest animal puppets (not in bin – need to get from set 2 closet before using or setting up for partner teachers)
- Small tree “cookies” (1 per student/pair of students) & 1 large tree “cookie”
- Brown sheet (representing the bark of the tree)
- Artificial branches with leaves (or trimmed branches from real trees)
- *The Busy Tree* book
- Collection of forest clues: moss, oak galls, leaves, nuts, bark, berries, nests & chewed twigs
- Hand lenses – one per 2-3 students (for looking up close at forest clues)

Introduction

(60 min)

Explain to your class that during their field trip they will explore the Refuge forest habitat. Begin the activities by asking if anyone has ever gone hiking in the forest. What animals have they seen in or on trees? What were the animals doing in the trees (*eating, making a nest, resting*)? Use the forest animal puppets during the discussion to prompt students to think about how animals use trees within their forest habitat.

Pass out a small tree “cookie” to each student/pair of students. Give them a minute to examine it and then ask them what characteristics they observe about their “cookie”. Have a brief discussion about their observations (*discussing the lines and what they represent, etc.*). Show them/pass around the large tree “cookie” for comparison.

BUILD A TREE

Introduce the many different “parts” that make up a tree by building a tree using the students.

Trunk: A tree is a living thing. A tree has many parts, just as people have many parts to their bodies. The trunk is *like your main torso*. Choose several students to stand tall, with their hands at their sides to represent the tree trunk.

Branches: Ask students if they know how trees make food? Branches, *like your arms*, hold leaves or needles up toward the sky where they absorb sunlight. This sunlight, along with water and minerals and carbon dioxide (the gas we exhale and don’t need) mixes together to make sugars that feed the tree. Chlorophyll gives the leaves their green color. Select students to join the trunk holding up artificial or trimmed branches with leaves.

Bark: Ask students what protects the inside of the tree? Hold up the large tree “cookie” for them to see. Bark, *like your skin*, protects the inner parts from insects and disease. Choose a few students wrap the brown sheet around the “trunk and

Minnesota Valley National Wildlife Refuge

branches” or select several students to form a protective ring by holding hands around the “trunk and branches”.

Roots: Roots, *like your legs*, secure the tree in the ground but unlike our legs, tree roots also absorb water from the soil and carry it up the trunk, through the branches and out to the leaves or needles. Invite all the rest of your students to sit on the ground with their backs against the “trunk” with their legs straight out from the tree. They can make soft slurping noises as they pretend to suck up water from the ground.

PARTS OF A TREE SONG (Sung to the tune of Wheels on the Bus)

Teach the students the following verses and then either have the entire class sing the whole song all together or break into parts, with each tree “part” singing just their verse. You can do this while they’re still in the formation of a tree or once they’re back at their desks/grouped on the floor.

Verse 1:

The roots on the trees go
slurp, slurp, slurp
slurp, slurp, slurp
slurp, slurp, slurp.

The roots on the trees go
slurp, slurp, slurp.

All through the forest.

Verse 2:

The trunk of the trees grow
strong and straight,
strong and straight,
strong and straight.

The trunk of the trees grow
strong and straight.

All through the forest.

Verse 3:

The bark on the trunk
protects the tree,
protects the tree,
protects the tree.

The bark on the trunk
protects the tree.

All through the forest.

Verse 4:

The branches on the tree
reach for the sky,
for the sky,
for the sky.

The branches on the tree
reach for the sky.

All through the forest.

Minnesota Valley National Wildlife Refuge

Verse 5:

The leaves on the tree make
food, food, food,
food, food, food,
food, food, food.

The leaves on the tree make
food, food, food,

All through the forest.

Verse 6 (for fall field trips):

The seeds on the tree make
twirl and plunk,
twirl and plunk,
twirl and plunk,

The seeds on the tree make
twirl and plunk,

All through the forest.

THE BUSY TREE BOOK

Read *The Busy Tree* aloud. Ask students to name the animals that visited the tree. How did the animals use the tree? How did the tree change over the seasons?

FOREST CLUES

Take a look at these items before teaching the lesson. Email or call refuge EE staff with questions if needed. You can still teach the lesson without knowing exactly what each clue represents! ***Please remind students these items are fragile and they need to be careful when handling them! The items in bags can be removed, but need to be placed back in the bags when done.***

Have students select a partner. Give each team one item from the refuge collection of forest plant and animal clues. Each item represents something from the forest community. Ask students to work together to try to identify their item. What do these items tell us about the forest? Here are a few examples:

- Swirly lines on inside of tree bark are clues that insects were burrowing under the bark, using it for protection as they grew used the tree for food.
- Bird nests and feathers show us that birds have been living in a trees, and that they use parts of the forest plant community (*including leaves, twigs, vines and grasses*) to build a shelter for their nestlings.

Ask students to explain the other clues in the refuge collection. If they do not have an answer, or you know that the answer is wrong, ask other teams to share what they think (*instead of correcting them or just telling them the answer*). After the discussion, give students a chance to see the items up close

Wrap-up

Remind students that they will be exploring outside during their field trip. Lead a brief discussion on how students should dress for their refuge field trip and answer student questions. Encourage students to wear closed-toe shoes like sneakers or boots, long pants, and jackets as well as hats and gloves if the weather is cold. Let students know that if they do not have warm outer wear, they can borrow items from the Refuge Borrowing Closet when they arrive.

Forests are More than Trees On-site Activities

Materials

- Hand lenses - 1 per student (not in bin – in classroom cupboards)
- Backpacks - 1 per adult containing
 - Bag of crayons
 - Scratch paper
 - Pencils
 - Refuge tree guide
 - Poison ivy ID cards
 - 3 clipboards (one for group leader w/ journal page to take notes for group about the trees they observe, two for sharing among group for drawing and leaf rubbings)

Introduction

(20 min)

While most people think of trees when they envision a forest, a forest is so much more. A forest is a natural community. Trees play an important role in the survival of many other living plants and animals. A **community** is a group of animals, plants, or people living in the same place or having a particular characteristic in common. Ask students for examples of communities.

Explain that during their field trip today, they will be observing trees and the rest of the community of plants and animals that make up a forest. During the hike, students will select three trees to investigate closely. Review the journal page with students so they know they'll need to choose one of the three trees to draw, name, and write something special about when they come back to the classroom from their hike.

Demonstrate how to make a bark and leaf rubbing. Show them an example of a tree seed and demonstrate making a sketch or a tracing of the seed. Pass out the field backpacks to each adult. Show the class the equipment in the backpack that they will have to use when making their field observations.

Not a Dendrologist?

...(a biologist that studies trees)

That's GOOD! You don't need to know the names of the trees you find. In fact, it is often more fun and emphasizes observation skills to let young students come up with their own tree name.

Encourage students to use descriptive features that won't change over time. For example, Warty Bark would be a good, descriptive name for Hackberry, or Triangle Leaf for Cottonwood.

Hike
(60 min)

While hiking on the hillside trail, stop at any tree you or your students find interesting that doesn't already have another group around it. **It is not necessary to know the name of the trees you and your students investigate.**

Have students sit or crouch around the tree they are observing. Ask students to describe if they see anything living on the trunk and branches. Encourage students to use their hands and magnifying lenses more closely to observe what they find. Give students plenty of time to make observations. The group leader should record them on their copy of the journal page for students to refer to once back in the classroom.

Encourage students to look on the ground around the base of the tree for fallen leaves, twigs, bark, seeds, fruit, or nuts that might also show signs of animal or plant life. **If your students want to make a leaf rubbing, adults may pick 1-3 leaves that students can use to make their rubbings. This minimizes damage to the tree.**

The following questions will help guide their observation.

- ⦿ Can you spot a bird or squirrel nest, chewed leaves/twigs, other animal signs?
- ⦿ Do you see any animals climbing on, around or in the tree? How about flying to and from the tree?
- ⦿ Do you see any plants growing on the tree?



A NOTE ABOUT PLANTS

Stinging nettle, thistle, and poison ivy may be present close to the trail. Pictures and specimen collections are available at the refuge to introduce these plants to your students. Please point these plants out to your students if you encounter them along the trail.

Management Connection: Habitat Protection

Review with students why trees are an important part of the forest community. Trees provide shelter, food, and add nutrients to the soil. Refuge biologists manage the forest community to provide habitat for forest animals (*large and small*). Dead trees are as important as living trees. They provide homes and food for other plants (*moss*) and animals (*woodpeckers*). As trees decompose, the solid part of the tree will break down and create new soil. The decomposing tree will release soil nutrients for other trees, bushes and flowers, which will help these plants to grow bigger and stronger.

Minnesota Valley National Wildlife Refuge

Wrap-Up

Ask students if they have found any of the items they saw in the classroom during their pre-activity. Lead a brief discussion of what students discovered about trees and the forest community while on their hike. Have students share their observations and sketches – either “pair and share,” or have them share with the whole class if time allows. If possible, allow students time in class to finish up their journal page, but this can be done back at school if time runs out.

Forests are More than Trees Rainy Day Hike Alternatives

Every Tree for Itself – Project Learning Tree activity

Do the activity described in the “Every Tree for Itself” with your students. Refer to page 118 of the laminated PLT activity guide pages in the bin for instructions. This game will need to be adapted for younger grade levels.

Materials

- Poker chips (representing water (blue), sunlight (yellow), nutrients (green) (in set 1 onsite bin)

Forests are More than Trees Learning Stations

Divide the class into three groups. Walk the entire class through the stations rotation explaining what to do at each. Assign groups a place to start and rotate each group through.

Station 1: Tree Cookies (15 minutes)

Materials

- Paper Plates- one per student
- Example Tree ring paper plate
- Crayons/Markers/Colored Pencils (in classroom cupboard)
- Large Tree Cookie (in pre-activity bin)
- Small Tree Cookies – one per student (in pre-activity bin)
- *Reading Tree Rings* background information and instruction tips
- Forest animal puppets (in puppet bin, curriculum closet #2)

Introduction

The following activity was adapted from the Project Learning Tree activity *Every Tree for Itself*.

Begin by asking students to describe a forest habitat. Discuss how many trees together make up a forest. What animals depend on trees for survival? Use the puppets to illustrate how animals depend upon trees, living and dead.

1. Using the refuge tree cookie kit provided, pass out cross-sections from several tree branches and ask students to examine the growth rings, or, use the large tree cookie to show students the growth rings. Explain to students the number of rings indicate the age of the tree branch or trunk at the time the it was cut. *Note: The dark and light ring together is considered one year’s growth. The light ring is wood produced during the summer growing season. The dark ring is wood produced during the fall growing season.*
2. Provide each student with a paper plate and marker. Use the sample in the kit and illustrated below to explain how students can create a timeline that

Minnesota Valley National Wildlife Refuge

represents their own life. Have students start with the year they were born and then list of a few significant life events. Ask students for suggestions. What would they put on their “life cookie?” Have students add dates and events to correspond with a “life ring” on their paper plate.

Station 2: Leaf and Bark Rubbings (15 minutes)

Materials

- Laminated leaves
- Bark samples
- Thick crayons with paper removed
- Scratch paper

Show students how to properly place a leaf of their choice, underside up, under a piece of blank paper. Select a crayon and demonstrate how to hold the crayon lengthways as you rub it across the area of the paper that is covering the leaf.

Take a second piece of paper and place it on top of a bark sample. Again demonstrate how to hold the crayon lengthways as you rub it across the area of the paper that is covering the bark sample.

Station 3: Forest Tree Observation (15 minutes)

Materials

- Large window (s) students can observe a tree
- Forest Are More than Trees Journal Page
- Binoculars
- Crayons/Markers/Colored Pencils (in classroom cupboard)

At this station instruct students to sit quietly and observe a tree from the window. What is happening below the tree? What do they see within the tree’s branches? Do they see any activity along the trunk of this tree? Students should draw a picture of the tree and what they observe on their Forest Journal Page.