

Forests are More than Trees

In a Nutshell



Students will discover the many ways trees contribute to the forest community, why trees are important to the forest community, and how other plants and animals depend on trees to survive. Students will then journal their observations as they hike through refuge forest habitat.

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 (AD490L)

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 (580L)

Red Leaf, Yellow Leaf by Lois Ehlert (AD680L)

Tell Me Tree by Gail Gibbons

Autumn Leaves by Ken Robbins (IG630L)

Fletcher and the Falling Leaves by Julia Rawlinson (AD650L)

Minnesota Valley National Wildlife Refuge
3815 American Blvd E Bloomington, MN 55425
15865 Rapids Lake Rd Carver, MN 55315



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Pre-Visit Suggestion

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

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Forests Are More than Trees Pre-Activities

Materials

- Story, *The Busy Tree*
- Collection of forest animal puppets
- Collection of forest clues: moss, oak galls, leaves, nuts, bark, berries, nests & chewed twigs
- Artificial branches with leaves (or trimmed branches from real trees)
- Tree “cookie”
- Brown butcher paper or bark colored fabric, long enough to wrap around a group of 6 students.

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.

Build A Tree

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

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)*

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. This chlorophyll gives the leaves their green color. (Select several students to join the trunk holding up using artificial or trimmed branches. Have them hold needles representing a coniferous or evergreen tree or branches with leaves to represent a deciduous or broad-leaved tree.

Using the tree cookie, ask students what protects the inside of the tree? **Bark** (like your skin) protects the inner parts from insects and disease. *(Have several students wrap the brown butcher paper or bark colored fabric around the “trunk and branches” or select several students to form a protective ring by holding hands around the “trunk and branches”)*

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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.)*

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.

Parts of a Tree Song (Sung to the tune of Wheels on the Bus)

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 3:

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

The bark on the trunk
protects the tree.

Verse 5:

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.

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.

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

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food, food, food,
food, food, food.

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

All through the forest.

The seeds on the tree go
twirl and plunk,
twirl and plunk,
twirl and plunk.

The seeds on the tree go
twirl and plunk.

Verse 6: (for fall field trips)

All through the forest.

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?

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:

- Holes in tree bark are clues that woodpeckers used the tree for food.
- Bird nests 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).

Forests are More than Trees On-site Activities

Materials

- Journal pages- 1 per student
- Clipboards- 1 per students
- Pencils – 1 per student
- Hand lenses- 1 per student
- Backpacks- 1 per adult containing
 - Bag of crayons
 - Refuge tree guide
 - Poison ivy identification card

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. What is a community? (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 to students 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.

Tree Journal Page

During the hike, students will select three trees to investigate closely. Review the journal page with students, discussing the type of information students should collect during 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. Divide students into teams, assigning at least one adult to each group of students.

Hike **(60 min)**

The following options are available for the Forest Journal Hike. Select the option that best fits your group.

Option 1: Mystery Tree Trail

Hang a set of Mystery Tree cards (up to ten) along a section of trail, with the length and terrain to be determined by time of the field trip and physical abilities of the students. Starting anywhere along the trail, lead your students to one of the numbered trees on the trail not already selected by another team. It is not necessary to visit each tree or to visit them in any specific order. **While each tree is identified by common name on the back of the card, it is not necessary to call the tree by name.**

Option 2: Student Tree Discovery

Start anywhere along the trail. Stop at any tree you or your students find interesting. It is not necessary to know the name of the trees you and your students investigate.

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 .

During either Option 1 or Option 2, start by having 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 and record them on their journal pages. The following questions will help guide their observation.

- ⦿ Can you spot a bird or squirrel nest, chewed leaves/twigs, or 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?

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. Ask students if they have found any of the items they saw in the classroom. *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.*



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. Ask students for examples of how 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. Dead trees 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.

Wrap-Up

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.

Forests are More than Trees Rainy Day Hike Alternatives

Forests are More than Trees Learning Stations

Select as many station activities as needed to complete the field trip. A staff, volunteer or teacher will be needed to lead the activity at Station 1, Station 4 and Station 5.

Divide the class into groups with an adult leader. The number of groups should match the number of stations selected. Walk the entire class through the station rotation explaining what to do at each. Assign groups a place to start. Rotate each group through each station you set-up.

Station 1: Tree Cookies (15 minutes)

Materials

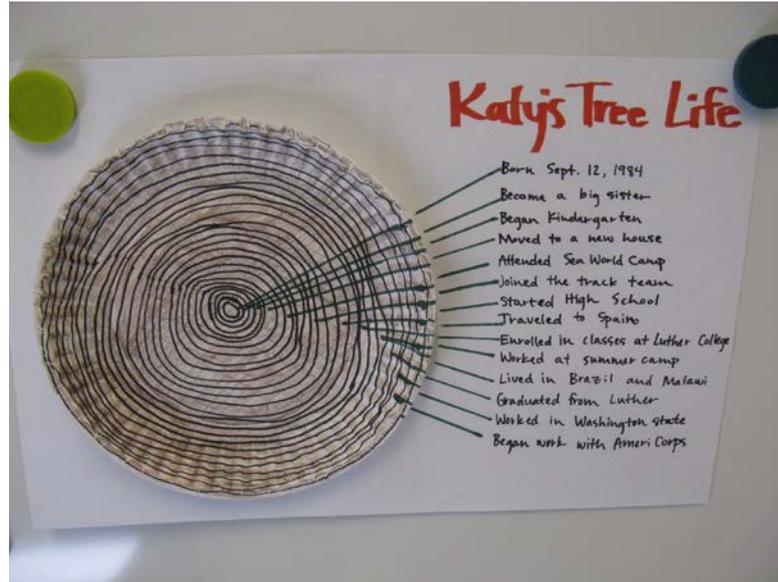
- Paper Plates- one per student
- Example Tree ring paper plate
- Crayons or Markers
- Large Tree Cookie
- Small Tree Cookies – one per student, if available
- *Reading Tree Rings* background information and instruction tips

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 tree 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 at the time the tree 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 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- at least one per student
- Variety of bark samples
- Assortment of thick crayons, paper covering removed
- White paper – enough for two per student
- One example bark rubbing
- One example leaf rubbing
- Labelled photos that identify the tree species the bark and leaf samples came from.

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.

Students may wish to compare the leaf and bark samples with pictures to identify the species of tree they took a rubbing from.

Station 3: Forest Tree Observation (15 minutes)

Materials

- Large window (s) students can observe a tree
- Forest Are More than Trees Journal Page

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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.

Station 4: The Lorax DVD and Discussion (30 minutes)

Materials

- DVD set-up in one of the classrooms

Show the DVD and then lead students in a discussion of any of the following questions:

1. The Lorax says that the Once-ler is greedy. Greed is defined as a selfish desire for food, money, or possessions over and above what one needs. Can you think of ways that the Once-ler proves his greed?
2. The Once-ler says, "I biggered my money which everyone *needs*." Is it true that everyone needs money? How much money do people need? Is it right to make a ton of money while destroying the environment?
3. Discuss the difference between a want and a need. Did people *need* Thneeds?
4. What are some ways humans pollute the air? Fires, smoking, vehicle fumes (cars, airplanes, boats), household products (paint, aerosols, cleaners), wasting electricity
5. What are some ways humans can care for the air? Riding a bike or walking to school, recycle, plant a tree, conserve energy, choose natural products.
6. Ask students "What is pollution?" Something in the environment that is harmful or poisonous. Discuss examples of pollution in *The Lorax*.
 - a. Water Pollution: All the Gluppity-Glupp and all the Schloppity-Schlopp made by the machinery is being dumped into the pond. What happens to the fish when you put all of all of this pollution into the water? Can you think of some other problems this might cause? (no drinking water, no swimming)
 - b. Air Pollution: The smogulous smoke being put in the air by the Thneed factory made the Lorax cough, whiff, sneeze, snuffle, snarggle, snuffle, and croak. The Swomee-Swans were no longer able to sing! The Lorax had to send the birds away to find some cleaner air to live in. Is air pollution only dangerous for birds? Where are our lungs? How do they work? Breathing dirty air damages our lungs and makes us sick.
7. How do you think National Wildlife Refuge might help to protect wildlife and people from air and water pollution?

Station 5: Forests are More than Trees Power Point (30 minutes)

Materials

- Power Point Presentation and Script: Forests are More than Trees
- Dry erase board or flip chart
- Markers
- Assortment of laminated pictures of forest plants and animals

Power Point Presentation

Start by drawing a tree on the dry erase board. On the dry erase board, tape laminated pictures of plants and animals where they might live. Ask students to name the picture, and then write the name on the board. For example, a squirrel would be placed near the tree, and a flower would be placed near the bottom of the board (the forest floor). Explain to students that a forest is a community, and discuss this using the suggestions below about how plants and animals are interconnected in this community.

Follow the discussion with the power point presentation.

Discussion Suggestions

1. Describe differences between a flower, tree, or shrub. Ask students to name some of these plants that would live in a forest.
2. List some animals that fly, crawl, hop, or walk in a forest. Have students act out the animal movements.
3. Give examples of non-living things that help animals and plants survive in the forest. (Air, water, sun, rocks)
4. Ask students how animals use trees for homes.
5. Ask students what they would do if one day they went home and found it missing. (compare to what happens when a forest is completely cleared for development).

Materials

- Power Point Presentation and Script: Forests are More than Trees
- Dry erase board or flip chart
- Markers
- Assortment of laminated pictures of forest plants and animals