

K-4TH GRADE UNIT

LESSON 2

Urban Forest Benefits

NUTSHELL

In this lesson, students listen to a story, then either draw a picture or write a new story about the benefits of trees and differing points of view about trees. Students then create a rhyme or song about how trees make them feel. Finally, students consider how trees in rural forests are beneficial by comparing illustrations representing a tree in an urban forest and a tree in a rural forest.

BIG IDEAS

- The tree canopy retains stormwater, reduces heat island effects, absorbs pollutants, and provides wildlife habitat. These benefits are important and quantifiable. (Subconcept 6)
- Urban forests affect the physical and psychological health of human residents. (Subconcept 7)

OBJECTIVES

Upon completion of this lesson, students will be able to:

- Name an animal that trees provide habitat for.
- Give an example of how shade can be beneficial.
- Explain that trees absorb pollutants.
- Describe how an urban forest might affect the way people feel.

SUBJECT AREAS

Arts, Language Arts, Science, Social Studies

LESSON/ACTIVITY TIME

- Total Lesson Time: 110 or 120 minutes
- Time Breakdown:
 - Introduction10 minutes
 - Activity 1
 - Variation 1.....30 minutes
 - Variation 2.....40 minutes
 - Activity 2.....50 minutes
 - Conclusion20 minutes

TEACHING SITE

Classroom

BACKGROUND

Urban forests provide us with a variety of benefits. The benefits may be provided by individual trees, but the impact of the entire tree canopy in an area is what is measurable. The tree canopy is the leaves and branches of a tree or group of trees. It slows rain during storms, which reduces the number of gallons of stormwater that need to be handled by stormwater treatment facilities. That also means less water flows across the ground picking up pollutants along the way. For the purpose of this lesson for K-4 students, the individual trees are the focus.

Trees provide habitat for wildlife by furnishing shelter and food. The sounds of traffic and other noises are reduced by the leaves of plants. Sound waves are absorbed by trees instead of bouncing off, as they do with hard surfaces. Trees are especially good at reducing higher-pitched sounds that are most troubling to people. Trees also help screen views to prevent us from seeing things we'd rather not.

Areas shaded by trees are cooler than those in the sun. That shade can help reduce the cost of cooling our homes because we use less energy. Because we use less energy, less pollution is created from the energy source. In addition, when cars sit in the sun, gasoline is heated and can vaporize from leaky gas tanks and hoses. These hydrocarbon emissions cause smog. Cooling the air a few degrees using the shade of trees can have a big positive impact.

MATERIALS LIST

FOR EACH STUDENT

- 8.5" X 11" sheet of unlined paper (Variation 1)
- Copy of Student Page , *Forest Tree Picture*
- Copy of Student Page , *Urban Tree Picture*

FOR EACH PAIR OF STUDENTS

- 8.5" X 11" sheet of lined paper (Variation 2)
- Copy of Student Page , *Benefits and Drawbacks* (Variation 2)

FOR THE TEACHER

- Teacher Page , *Why Not Cut It Down?*
- Overhead transparency of Student Page , *Forest Tree Picture* (optional)
- Overhead transparency of Student Page , *Urban Tree Picture* (optional)

VOCABULARY

Benefits: Things that are good.

Drawbacks: Things that are not good.

Habitat: A place where a plant or animal can get the food, water, and shelter it needs to live.

Pollution: Things put into the environment that are harmful. Pollution can be things such as chemicals, dust, and litter.

Tree leaves can actually collect small particles of pollutants from the air, and tree roots absorb pollutants in water and hold it in the wood of the tree. Particulate pollution such as dust, pollen, ash, and smoke can actually be trapped by the hairy or rough leaves, twigs, and bark. Some pollution is absorbed into the leaves. This pollution may be harmful to the tree, especially in high concentrations, but can also provide nutrients for the tree. Reduced pollution is a benefit to the health of people in communities as well as those outside of those communities.

Studies have shown that the “green” in a neighborhood actually encourages lower crime rates, increases the ability of girls to learn, helps children with Attention Deficit Disorder learn, and promotes positive interactions among residents of the area. That same green space also encourages neighbors to get outside where they can meet each other, fostering better community relationships. For the most part, trees influence our psychological and physical health in positive ways.

PROCEDURE

INTRODUCTION (↑↓)

Ask the class to name some jobs they do around their home or at school to help out. (*Take out the garbage; help with dirty dishes; help pass out worksheets.*) Tell students that trees have jobs, too, and in this lesson they’ll learn about some of those jobs.

ACTIVITY 1 – STORYTELLING (↓)

VARIATION 1 (NON-WRITING OPTION)

1. Tell students that you are going to read a story to them. They should listen carefully because you will ask them later to draw pictures about the story. Read the story on Teacher Page , *Why Not Cut It Down?* to the class.

2. After you have read the story, ask students to draw two pictures. The first picture should be about what happened in the story you read. They should include the good and bad things that were described about trees. The second picture should be about what the students think will happen next.
3. Ask students to share their pictures with the class. Discuss why students came up with the endings they did. Discuss why Mr. Montez and Marco had different views of the situation. (*Mr. Montez was focusing on the drawbacks of the tree to his livelihood. Marco was focusing on the benefits of the tree because the drawbacks did not affect him.*)

ACTIVITY 1 – STORYTELLING (↑)

VARIATION 2 (WRITING OPTION)

1. Tell students that you are going to read a story to them. They should pay attention to how the story is written, because they will be assigned to write their own story in a similar fashion. Read the story on Teacher Page 🍌1, *Why Not Cut It Down?* to the class.
2. Divide students into pairs. Pass out Student Page 🍌1, *Benefits and Drawbacks* to each pair of students. Discuss the information on Student Page 🍌1, *Benefits and Drawbacks* and give local examples as needed to help students understand. Explain that different property owners view things differently.
3. Tell students that each pair should write their own story. Just as in the story they just heard, it should include a conversation between a property owner and a kid who have different view points. They should use the information on Student Page 🍌1, *Benefits and Drawbacks* to decide who the property owner is, what drawbacks to the tree the property owner sees, and what benefits to the tree the kid sees. Their story, unlike the one you read, should also include a resolution. Stress the need to write objectively about both viewpoints, even if they don't agree personally.

4. When students have finished their stories, ask for volunteers to read their stories aloud. Discuss the different scenarios and endings to the story. Discuss why students chose the components of the story they did. Discuss why the people in their stories had differing views of the situation.

ACTIVITY 2 – HOW TREES MAKE YOU FEEL (↑↓)

1. Remind students that the people they heard/wrote about in their stories had different opinions about trees. Ask students, in groups or singly, to create a rhyme or song about how they feel about the trees and/or urban forest in their community and how the trees and/or urban forest help their community.
2. Have students present their song or rhyme to the class.

CONCLUSION – BEYOND THE URBAN FOREST (↑↓)

Remind students what an urban forest and a rural forest are, if needed. Pictures of urban and rural forests intended to aid in student discussion are available on the LEAF website. Go to www.uwsp.edu/leaf and navigate to the educator supplemental resources section. Show students Student Page 🍌2, *Forest Tree Picture* and Student Page 🍌3, *Urban Tree Picture*. (Either project the images or hand out copies.) Ask them to point out things in each picture that are the same and things that are different. (*The birds, person, and squirrel are the same. The number of trees, number of people, building, and car are different.*) Ask if they think the trees are affecting the way the people feel. (Yes.) Summarize by discussing how the rural tree and urban tree are alike, and how they are different.

LEAF LINKS

The lessons listed below, for the *LEAF Wisconsin K-12 Forestry Education Lesson Guide*, contain possible enhancements, extensions, or replacements for *Urban Forest Lesson Guide: K-4 Lesson 2*.

UNIT K-1, LESSON 3: MY FAVORITE FOREST USE

Students discover the value of forests by studying Tree Spy collages, playing the Through the Forest game, and singing a song.

Use K-1 Lesson 3 as it is written after you have taught Urban Forest Lesson Guide: K-4 Lesson 2 to expand the idea of forest benefits and values.

UNIT K-1, LESSON 5: ANIMALS NEED FORESTS TOO

Students find out what forests do for animals and play a game to search for basic needs.

Use K-1 Lesson 5 as it is written after you have used Urban Forest Lesson Guide: K-4 Lesson 2 and K-1 Lesson 3 (described above) to expand the idea of forest benefits and values beyond human use.

UNIT 2-3, LESSON 4: FORESTS ARE IMPORTANT TO ME!

Students explore forest values and discover what forest products come from Wisconsin using a checklist. Creative writing and an art project help students examine why they value forests.

Use 2-3 Lesson 4 as it is written after you have taught Urban Forest Lesson Guide: K-4 Lesson 2 to focus specifically on products we get from forests. The products are mostly from rural forests, but some can be from urban forests. Many products are manufactured in urban areas.

UNIT 4, LESSON 6: FORESTS ARE IMPORTANT TO YOU AND ME

Students discover reasons why Wisconsin forests are important to our quality of life through guided imagery, brainstorming, and an interactive media presentation.

Use Unit 4 Lesson 6, Activity 1 after you have completed Urban Forest Lesson Guide: K-4 Lesson 2 to overview the importance of forests.

UNIT 4, FIELD ENHANCEMENT 2: ARE FORESTS IMPORTANT TODAY?

Students find out why forests are ecologically, economically, and socially valuable by searching in a forest and playing scavenger hunt bingo.

Use Unit 4 Field Enhancement 2 after you have completed all Urban Forest Lesson Guide: K-4 Lessons. The field enhancement can be done in any wooded area or park with some modifications to the bingo cards. Replace images on the cards that do not apply to your area. Likely this will be in the social value column.

WHY NOT CUT IT DOWN?

Marco walked past the video store whenever he went to see his friend Jackie. In front of the store was a tree. It was a tall tree with little leaves and flat brown pods that hung from it and fell on the ground every year. Marco and Jackie would pick up the pods and open them to find the small brown seeds inside. They were good to throw at each other because they didn't hurt much when they hit you. They noticed that the squirrels seemed to like the seeds too, only the squirrels ate the seeds instead of throwing them.

As Marco walked by one day, Mr. Montez, from the video store, came out with another man and said, "I'll let you know when I'm ready for you to remove the tree. Thanks for stopping."

As the other man drove away, Marco looked at Mr. Montez and said, "Mr. Montez, what did you mean, 'Remove the tree?'"

Mr. Montez replied, "I'm going to have this tree cut down. It's causing me too many problems."

Marco didn't know how the tree could possibly be a problem since it had never caused him any trouble. "What kind of problems?" he asked.

Mr. Montez explained that the pods on the tree fell onto the sidewalk, and he had to sweep them off so no one hurt themselves walking on them. When the leaves fell off the tree in the fall, they got all over the sidewalk, and people's feet would track them into the store. "Those leaves also block my sign. I'm trying to run a business, and if people can't see the sign, they won't know the store is here," complained Mr. Montez.

Marco heard what Mr. Montez was saying, but he didn't think those were very good reasons for cutting the tree down. It's not like the tree was sick, or had a lot of dead branches. Didn't Mr. Montez know that trees are important? He tried to explain. "Mr. Montez, those leaves that block your sign also shade your store and the sidewalk and the street. Lots of people park in front of your store just because the shade helps keep their cars from getting as hot. If you cut it down, they may not come anywhere near your store. Then what good is your sign?"

Marco stopped for a moment to think of other reasons the tree should stay. He remembered one and said, "Where will the robins that build their nest in the tree every spring go? They raise their young here."

Mr. Montez looked a little confused. Why was this kid trying to convince him not to cut down the tree? What difference did it make to him?

NOTE: Younger students will use Variation 1 and finish the story by drawing a picture. Older students will use Variation 2 and use this as an example to create their own story complete with resolution.

BENEFITS AND DRAWBACKS

PROPERTY OWNER (choose one)

- Homeowner
- Storeowner

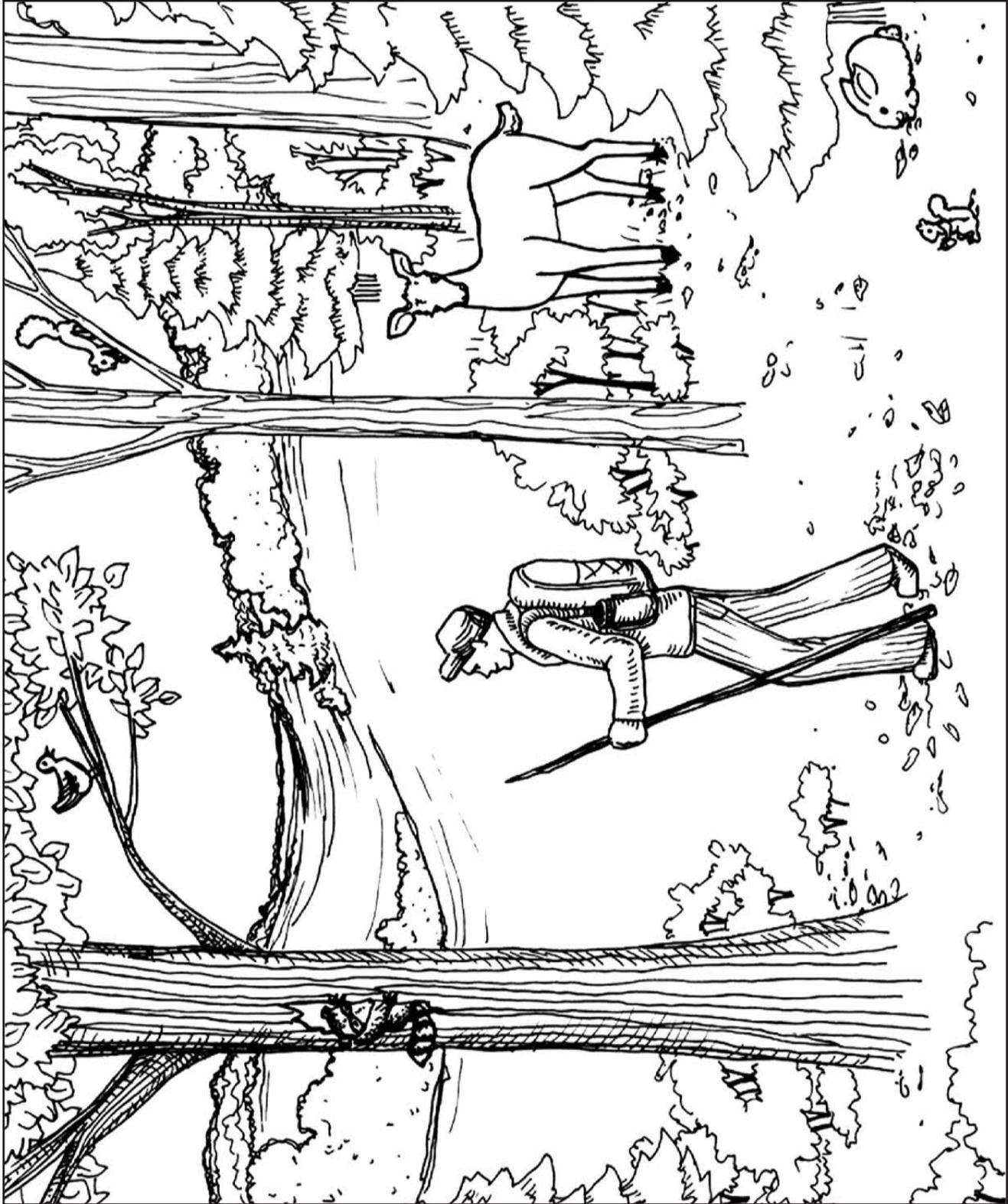
DRAWBACKS OF TREES (choose one or more from property owner's point-of-view)

- Leaves Clog Gutters** – In the fall, leaves can collect in gutters and prevent water from flowing through them. They have to be removed by hand sometimes.
- Nuts Falling Could Damage Cars or People** – Some trees have nuts that are large and heavy. If they fall on a car or person, they could do damage.
- Messy Fruit** – Some trees have fruit that can make a mess when it falls onto the ground.
- Shade Grass So It Won't Grow** – Trees can shade the ground below them so much that other plants, such as grass, don't have enough sun to grow. That is a problem if you are trying to grow grass.
- Branches Too Close to Buildings** – A tree's branches can grow into buildings and may damage the building. They need to be pruned (cut) to prevent the damage. Sometimes trees have to be cut down because they are just too close.

BENEFITS OF TREES (choose one or more from kid's point-of-view)

- Shade** – Shade can help keep buildings cool in the summer and make it cost less to use the air conditioner. Shade over parked cars can help keep them cooler too.
- Animal Habitat** – Many animals use trees for shelter and food. Trees protect animals from danger. Birds build nests in trees. Even if a bird doesn't build a nest, it can sit in a tree for safety. Squirrels spend most of their time in trees. Their nests are there, and they get food from trees too.
- Absorb Air Pollution** – Dust and other small particles in the air that are part of pollution are trapped by leaves. Trees help keep the air clean.
- Water Pollution** – Trees slow water down when it rains. That means the ground has more time to soak up the water, and not as much water has to flow across the ground into storm sewers. When water flows across the ground, it takes pollution that is on the ground with it.
- Block Unpleasant Views** – Trees that are planted in the right place can block the view of something ugly.
- Muffle Noise** – The leaves of trees can make noise from traffic and other things less noticeable because the leaves muffle the sound.

FOREST TREE PICTURE



URBAN TREE PICTURE

