

K-4TH GRADE UNIT

LESSON 3

Taking Care of Urban Forests

NUTSHELL

In this lesson, students explore the reasons for urban forest management through an interactive board game. They then consider if those same problems and solutions can be applied to rural forests.

BIG IDEAS

- Urban forest management is the use of planning and science-based techniques (e.g., planting, mulching, pruning, removal, monitoring, evaluation) to meet desired outcomes. (Subconcept 10)
- Land development practices and poor construction techniques used to build homes, businesses, roads, etc., can kill or damage existing trees and make growing new trees difficult. (Subconcept 13)
- Trees in the urban environment may be under more stress than trees in rural areas due to harsh growing conditions (e.g., soil compaction, limited space, pollution); urban trees are managed more intensively to counteract these conditions. (Subconcept 15)
- Invasive plant and animal species, pests, diseases, and damaging weather events can create problems in urban forests; management attempts to control these. (Subconcept 16)
- Issues such as urban sprawl, tree neglect, and insect and disease infestation are changing the characteristics of urban forests. (Subconcept 21)

OBJECTIVES

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

- Explain the need to take care of trees in an urban forest.
- List things that can make it difficult for trees to grow in an urban environment.
- List things management does to control problems in an urban forest.

SUBJECT AREAS

Language Arts, Science, Social Studies

LESSON/ACTIVITY TIME

- Total Lesson Time: 75 minutes
- Time Breakdown:
 - Introduction20 minutes
 - Activity30 minutes
 - Conclusion25 minutes

TEACHING SITE

Classroom

BACKGROUND

Most people understand that rural forests are managed to maintain their health and provide the services people expect from them. We may not realize that urban forests are managed for the same reasons.

Management of urban forests does differ from that of rural forests. Urban forests have many more owners than rural forests do. Not only do municipalities own forests, but homeowners and businesses also own small pieces of the forest. Another difference is that trees in urban forests face conditions such as soil compaction, pollution, poor soil, and limited space that rural trees are unlikely to face. These conditions can challenge an urban tree's ability to survive. The building of roads, homes, and other construction can make keeping existing trees alive and growing new trees difficult. Proper management can help overcome these challenges.

Both urban and rural forests face insect, disease, invasive species, and damaging weather problems. Although these problems are not easy to address in either urban or rural forests, urban forests have additional challenges (e.g., soil compaction, pollution, limited space) that may make it even more difficult.

VOCABULARY

Arborist: A person who takes care of individual trees by pruning, removing, or treating them.

Forest: An ecosystem that is characterized by a dominance of tree cover and contains a variety of other organisms (e.g., other plants, animals).

Mulch: Material such as woodchips, bark, or straw spread on the ground to protect trees and hold in moisture.

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

Prune: Trim branches by cutting dead, unhealthy, or poorly formed branches.

Rural Forest: A forest ecosystem found in the countryside outside of cities, towns, or neighborhoods.

Urban Forest: A forest ecosystem that includes all the trees and other vegetation in and around a town, village, or city. Plants, people, and animals are part of the urban forest.



The biggest difference in managing urban and rural forests is the scale of the management techniques. It is rare for rural forests to be treated on a tree-by-tree basis; it is common in urban forests. Urban trees are located in places where people walk, live, sit, drive, and play, so they need regular inspection and attention to keep them from becoming dangerous. Many urban forests are managed by an urban forester hired by a municipality. The urban forester plans for trees in an entire city or town. Arborists are hired to care for individual trees to meet the management plans the urban forester has set. These professionals will continue to face new challenges. Urban sprawl and tree neglect will be among the things that will change the characteristics of urban forests in the future.

MATERIALS LIST

FOR EACH STUDENT

- A two-inch square piece of paper OR a colored paperclip OR other colored object

FOR EACH GROUP OF FOUR OR FIVE STUDENTS

- Copy of Student Pages  **1A-B**, *Tree's Life Game Cards* (cut out)
- Copy of Student Pages  **2A-B**, *Tree's Life Game Board* (assemble; consider color-coordinated paper for the game cards and game board to keep them organized)

FOR THE TEACHER

- Chalk/marker board
- Tape
- Scissors

PROCEDURE

INTRODUCTION (↑)

(Modified from Unit 2-3 Lesson 5 from the *LEAF K-12 Forestry Lesson Guide*.)

1. Explain to students that you are going to describe a pretend situation, and they will have to figure out how to solve the problem.
2. Tell students that in this pretend situation, the principal (or whoever would make this decision in your school) has decided that the bookshelves in the library need to be painted. Before that can happen, someone needs to take the books off the shelves and move them to a spot where they are out of the way. When the painting is done, the books will need to be put back. Your class has been chosen to be responsible for moving the books.
3. As a group, discuss some things your class will need to do, and who will be in charge of what. Plan where the books would go and when it should be done. Make a list of tools that could be used to help (e.g., bags, boxes, wagons).

- Tell students that they have just decided how to manage time and resources to reach a goal. They identified challenges and how to deal with them. There are many places where people manage things (e.g., teachers in classrooms, principals in schools). All managers make decisions to reach a goal. People who manage forests decide what they want from a forest and how to make it happen.

ACTIVITY – TREE’S LIFE GAME (↑)

(Modified from Unit 2-3 Lesson 6 from the *LEAF K-12 Forestry Lesson Guide*.)

- Explain to your students that there are things in the urban forest that make it challenging for trees to grow. Tell them that they will be playing a game to learn about some of those things, and what can be done to help trees deal with the challenges. In other words, they will see what can be done to manage urban forests.
- Pass out the two-inch squares of paper. Ask the students to write their names on the paper and fold them in half. These will be used as game pieces.
- Divide the class into groups of four or five. Give each group a Tree’s Life game board with the Tree’s Life game cards placed in the center. All students will place their game piece on “start.” Have each group choose a student to go first.
- Game cards are written as though students are trees. Each card has either a good thing done to help a tree or urban forest, or a bad thing that hurts it. The cards also have instructions to move back or ahead a specific number of spaces. If a card drawn while they are still on “start” tells them to go back, they must remain on “start.” If they draw a card that tells them to go back more spaces than there are between the game piece and “start,” they go back to “start.” Each student draws one card per turn, reads it aloud, and follows the instructions. Place used cards in the discard pile marked on the game board. Play continues until all students reach “finish.”

- Wrap up with a brief discussion of some of the things they read on their cards. Ask what some of the challenges and solutions they saw were. (*Answers based on cards.*) Ask them to think of others.

NOTE: Remember to check “LEAF LINKS” for activities to enhance student understanding.

CONCLUSION – BEYOND THE URBAN FOREST (↑)

- Ask students if they think trees in an urban forest need to be taken care of. (*Yes.*) Create a list on the board, taking suggestions from students, of what is done to manage urban forests. (Pruning, planting, mulching, watering, protecting, inspecting, etc.)
- Discuss with the class the differences between an urban forest and rural forest. (Review from Lesson 1: rural forests have many trees, few people, few buildings, many animals.) (**NOTE:** 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.) Explain that trees in the rural forest don’t usually get as much individual attention as trees in urban forests. Most trees in a rural forest are not planted by people. There are more trees, but there is also more space for them to get the water, nutrients, etc. Ask students if trees in rural forests need to be managed. (*Sometimes. They will survive if they aren’t, but trees that are going to be used by people need to be taken care of so we don’t use them up. Rural trees are managed in different ways.*)
- Ask students to choose three of the activities listed on the board in step 1 (above). Assign them to write a short paragraph about how each of those activities is used in urban forests and how they might relate to rural forests. (*Answers should be same, similar, or not at all.*) Collect the papers when they are done and use them as a summative assessment tool.

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 3*.

UNIT K-1, LESSON 1: TREE HARDWARE

Students are introduced to the parts of a tree and its life stages through songs, games, and role-playing.

Use K-1 Lesson 1 prior to teaching Urban Forest Lesson Guide: K-4 Lesson 3 to give students a background understanding of the needs and parts of trees. For a similar message for older students, see 2-3 Lesson 1 as described below.

UNIT K-1, FIELD ENHANCEMENT 1: ALL ABOUT MY TREE

Students adopt a tree and record their observations to create a class scrapbook.

Use K-1 Field Enhancement 1 on your school grounds or any area with several trees. It can be used after K-1 Lesson 1 described above and any time during Urban Forest Lesson Guide: K-4 Lesson 3 to encourage students to be aware of and care about trees around them.

UNIT 2-3, LESSON 1: TO BE A TREE

Students use their knowledge of tree parts to learn basic tree identification skills. Basic needs and life stages of a tree are also emphasized through a game and drawing activity.

Use 2-3 Lesson 1 prior to teaching Urban Forest Lesson Guide: K-4 Lesson 3 to give students a background understanding of the needs and parts of trees. For a similar message for younger students, see K-1 Lesson 1 as described above.

UNIT 2-3, LESSON 5: DECISIONS, DECISIONS

Students are introduced to forest management by creating a plan for their schoolyard. A card game and song highlight some of the people involved in forest management.

Use Activity 1 from 2-3 Lesson 5 to give students a chance to become the manager of school grounds. Insert the activity into Urban Forest Lesson Guide: K-4 Lesson 3 after the Activity and before the Conclusion. Note that the Introduction of the two lessons is the same. Also note that the objectives for 2-3 Lesson 5 Activity 2 and the Conclusion are addressed in Urban Forest Lesson Guide: K-4 Lesson 4 so they should not be completed here if you plan to conduct that lesson.

UNIT 2-3, FIELD ENHANCEMENT 1: I CAN BE A FORESTER

Students get a taste of what forests do by collecting and discussing data.

Use 2-3 Field Enhancement 1 after you have completed Urban Forest Lesson Guide: K-4 Lesson 3. Modify the field enhancement by skipping the Introduction and Activity 1. Use a wooded area (it can be small) to fill out the worksheets. Explain that these things are what foresters in rural forests look for. Talk about which might not apply to urban forests. (Number of seeds, number of seedlings, and standing dead trees may not apply, depending on use of your location.)

UNIT 4, LESSON 5: I SAW IT ON THE 6 O'CLOCK NEWS

Students learn about 150 years of events in Wisconsin that have led to the forests of today by participating in a live newscast.

Use Unit 4 Lesson 5 after you have completed Urban Forest Lesson Guide: K-4 to give students an overview of the events in Wisconsin forest history management over the last 150 years.

TREE'S LIFE GAME CARDS

<p>You are not planted too close to a house.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>Your shade cooled someone's house.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>Your fruit is food for birds and they help you spread your seeds.</p> <p>MOVE AHEAD 2 SPACES.</p>
<p>You are properly taken care of by a family.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>You are a tree that grows well in Wisconsin weather.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>Someone hung a bird house in your branches to help wildlife.</p> <p>MOVE AHEAD 3 SPACES.</p>
<p>You survived an ice storm because you were pruned.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>You were inspected for insects that could hurt you, and there were none.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>People prevented pollution from getting into the water.</p> <p>MOVE AHEAD 2 SPACES.</p>
<p>Someone put a fence around you when you were young to protect you.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>You were planted in good soil.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>You have plenty of room to grow.</p> <p>MOVE AHEAD 3 SPACES.</p>
<p>Someone hired an arborist to take care of you.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>Someone watered you during a dry summer.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>You were planted!</p> <p>MOVE AHEAD 2 SPACES.</p>
<p>Someone pruned off your broken branch.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>You have mulch on your roots to protect them.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>You are the right size for your spot.</p> <p>MOVE AHEAD 3 SPACES.</p>

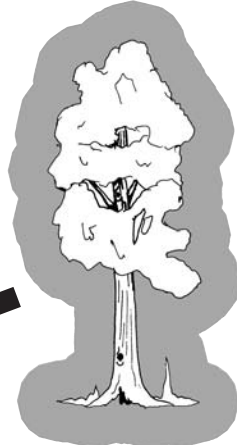
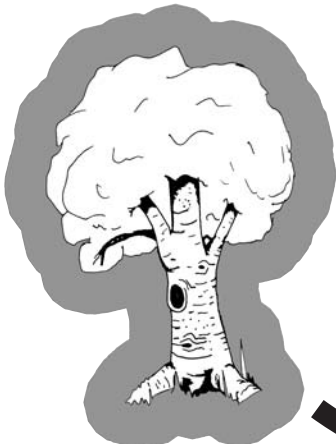
TREE'S LIFE GAME CARDS

<p>Someone fertilized you. MOVE AHEAD 2 SPACES.</p>	<p>You are a short tree planted under power lines so you fit there. MOVE AHEAD 3 SPACES.</p>	<p>Someone mowed the lawn around you carefully so your trunk did not get hit. MOVE AHEAD 3 SPACES.</p>
<p>Someone carved their initials on your trunk. MOVE BACK 1 SPACE.</p>	<p>You were planted under power lines and have grown too tall to fit there. MOVE BACK 2 SPACES.</p>	<p>Someone hung on your small branch and broke it off. MOVE BACK 2 SPACES.</p>
<p>Someone cabled their bike to you and hurt your bark. MOVE BACK 1 SPACE.</p>	<p>You were pruned at the wrong time of year and got a disease. MOVE BACK 2 SPACES.</p>	<p>A car backed into you. MOVE BACK 1 SPACE.</p>
<p>People hit you with a lawnmower. MOVE BACK 2 SPACES.</p>	<p>An insect attacked you. MOVE BACK 1 SPACE.</p>	<p>You were planted too deep in the ground. MOVE BACK 2 SPACES.</p>
<p>You can't live in the soil you were planted in. MOVE BACK 2 SPACES.</p>	<p>The road was widened and your roots were cut off. MOVE BACK 1 SPACE.</p>	<p>A new house was built on your roots. MOVE BACK 2 SPACES.</p>
<p>There is too much pollution. MOVE BACK 1 SPACE.</p>	<p>There is not enough space for you to grow. MOVE BACK 1 SPACE.</p>	<p>There is concrete too close to your roots. MOVE BACK 2 SPACES.</p>

START



Place game cards here.



Fold This Edge Under

