Unit E: Urban Forestry

Lesson 1: Defining Urban Forestry

Student Learning Objectives: Instruction in this lesson should result in students

achieving the following objectives:

1. Define urban forestry.
2. Explain the benefits of an urban forests and urban trees.
3. Describe various aspects of urban forest management.

Recommended Teaching Time: 2 hours

Recommended Resources: The following resources may be useful in teaching this

lesson:

- A PowerPoint has also been developed with use of this lesson plan
- http://en.wikipedia.org/wiki/Urban_forestry
- http://www.fs.fed.us/ucf/

List of Equipment, Tools, Supplies, and Facilities

Writing surface
PowerPoint Projector
PowerPoint Slides
Transparency Masters

Terms: The following terms are presented in this lesson (shown in bold italics and on

PowerPoint Slide #2):

Arboriculture	Tree ordinances
Arborist	Tree protection ordinances
Certified arborists	Urban forestry
Street tree ordinances	View ordinances

Interest Approach: Use an interest approach that will prepare the students for the lesson.

Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

Choose a tree at the school or within the community with which all the students are familiar. Ask the students to put a monetary value on the tree. Have them volunteer their opinions. Then lead a discussion in which the students are challenged to identify what makes a tree valuable. Compile the list of values on a chalkboard or computer and projector for all to see.

Summary of Content and Teaching Strategies

Objective 1: Define urban forestry.
(PowerPoint Slide #3)
I. ***Urban forestry*** is a specialized segment of forestry.
    A. Urban forestry takes place in the populated areas of cities, towns, and suburban areas. Populated areas offer unique challenges in managing the trees not often found in traditional forests. Air pollution, confined growing space, and compacted soils are some factors that can make the management of trees difficult.
(PowerPoint Slide #4)
    B. Urban forestry requires a great deal of management by people. The culture or care of trees is ***arboriculture***. Professionals that see to the culture of trees are known as ***arborists***.
(PowerPoint Slide #5)
    C. Certification enhances an arborist's credentials. State and national organizations provide certification training and testing. ***Certified arborists*** have proven through studies and exams that they are qualified for tree care work. They are typically regarded as being "professionals" in the areas of tree nutrition/fertilization, tree identification/selection, tree installation/establishment, safety/climbing, tree risk assessment, tree biology, pruning, diseases diagnosis/treatment, soil and water relationships, forest ecology, tree preservation/construction, and cabling/bracing.
**Have students think of areas that trees are being used in urban settings. Have them create a list that they will be reexamining after Objective 2.

Objective 2: Explain the benefits of an urban forests and urban trees.
(PowerPoint Slide #6)
II. Benefits from urban forests may be related to the quality of life, the environment, and economics.
    A. Healthy urban forests improve the quality of life. Trees clean the air. They remove smog, dust, and pollutants from the air we breathe. That is important since we take 23,000 breaths in a day!
    B. Trees produce oxygen. Half of a hectare of trees produces enough oxygen everyday for 25 people.
(PowerPoint Slide #7)
    C. Trees absorbs carbon dioxide. Half of a hectare of trees absorb enough carbon dioxide in one year's time to offset the amount produced in driving a car 41,843 kilometers.
(PowerPoint Slide #8)
    D. Trees serve as barriers. Trees can lower sound pollution. Reduced noise levels near places of work and residence improve quality of life. Trees can block unsightly views such as industrial areas or highways. Trees also serve as windbreaks, which is particularly useful in the winter months.
(PowerPoint Slide #9)
    E. Trees have a cooling effect on hot summer days. Air temperature under a large shade tree can be 15 degrees cooler than the temperature in the sun. As a result, cooling costs can be 10-50 percent lower.
    F. A single large deciduous tree in leaf provides protection from ultraviolet radiation. The Sun Protection Factor (SPF) has been estimated at 10-20.

(PowerPoint Slide #10 shows a good example of urban forestry in Afghanistan. These trees can help provide shade around the building as well as for the people walking down the streets)
(PowerPoint Slide #11)
    G. Trees are beautiful. Many trees have showy flowers, attractive foliage, interesting bark, and stunning fall colors. Well-landscaped houses with mature trees can be valued at 10- 15 % more than houses lacking trees.
(PowerPoint Slide #12 shows a picture of a landscaped house and one that is not.)
(PowerPoint Slide #13)
    H. Although difficult to measure, trees have a positive psychological affect on humans. Research has shown urban forests to be good for mental health.
    I. Urban forests contribute to a healthy environment. They can reduce storm water runoff and reduce soil erosion. Trees produce oxygen needed by animals. Urban forests provide food and shelter for wildlife.

**TM: E1-1—The Value Of Urban Trees can be used to illustrate points. Follow with a discussion on the benefits of an urban forest. Have the students expand their notes based on the discussion. Have students look at the list they created in Objective 1. What purpose are these trees serving? Are there any places where urban forestry could be utilized that they don't have on their list?

Objective 3: Describe various aspects of urban forest management.
(PowerPoint Slide #14)
III. There are multiple aspects to managing an urban forest.
    A. Urban forests are managed with different uses in mind. In urban settings trees impact watersheds, wildlife, fish habitats, recreational activities, aesthetics, general tree care, and wood production.
(PowerPoint Slide #15)
    B. Urban forestry management programs have a variety of objectives. One objective includes inventorying trees as to species, size, age, and value. Care and maintenance of existing trees is important. Care includes the monitoring and managing of insect pests and diseases. An urban forest is constantly changing. Therefore, removal of trees due to death, decline, or safety considerations is necessary. By the same token, installation of trees is required to maintain the urban forest. Urban forestry management programs also address the need of educating the public on the role of trees in the environment. The general goals for most community forest programs tend to be similar.
(PowerPoint Slide #16)
        1. Establish and maintain maximum tree cover.
        2. Maintain trees in a healthy condition through good cultural practices
        3. Establish and maintain an optimal level of age and species diversity.
        4. Promote conservation of tree resources.
        5. Select, situate, and maintain street trees appropriately to maximize benefits and minimize hazard, nuisance, hardscape damage, and maintenance costs.
        6. Centralize tree management under a person with the necessary expertise.
        7. Promote efficient and cost-effective management of the urban forest.
        8. Foster community support for the local urban forestry program and encourage good tree management on privately owned properties.

9. Facilitate the resolution of tree-related conflicts between citizens.

(PowerPoint Slide #17)

C. Municipalities often adopt ***tree ordinances*** to meet goals of attaining a healthy, vigorous, and well-managed community forest. Tree ordinances provide the authorization and standards for management activities. Tree ordinances can be grouped into three basic categories:

(PowerPoint Slide #18)

1. ***Street tree ordinances*** primarily cover the planting and removal of trees within public rights-of-way. They often contain rules regarding private trees, which pose a hazard to the traveling public. Tree planting requirements, such as those requiring tree planting in parking lots are generally outlined.

(PowerPoint Slide #19)

2. ***Tree protection ordinances*** involve protection for native trees or trees with historical significance. These ordinances usually require that a permit be obtained before protected trees can be removed and in some cases, pruned.

3. ***View ordinances*** outline rules pertaining to trees that block views or sunlight.

**Lead a lecture-discussion on the aspects of an urban forestry management program. Call upon students to participate in the discussion. Use TM: E1–2—Urban Forestry Management as a visual aid. If possible, invite a forester to visit the classroom and discuss the goals of their management programs. Prepare the students in advance by having them develop questions for the guest speaker. Discuss how trees are evaluated. Discuss whether or not your area has any ordinances in place. Are there any that would be good to have?

Review/Summary: At the conclusion of the lesson review the learning objectives with the students. Summarize the material that has been covered during the class discussions, supervised study, and other learning experiences. Review the terms and definitions of the terms. Have the students explain the concepts associated with each objective. Use their responses as the basis for determining any areas that need additional review. The Objectives on PowerPoint Slide #20 can also be used as a review.

Application: Students will be able to identify urban forestry in their area.

Evaluation: Evaluation should focus on student achievement of the objectives for the lesson. Various techniques can be used, such as student performance on the application activities. A sample written test is attached. Test questions found in the recommended resource materials might also be applicable.

Answers to Sample Test:
Part One: Matching
1. e
2. a
3. c
4. h
5. f

6. b
7. d
8. g

Part Two: Completion
1. Certification
2. quality of life, the environment, and economics.
3. 18
4. sound, views, wind
5. 15
6. 10-15 percent
7. watersheds, wildlife, fish habitats, recreational activities, aesthetics, general tree care, and wood production.
8. mental health
9. Street tree ordinances
10. Tree protection ordinances

Part Three: Short Answer

1. tree nutrition/fertilization, tree identification/selection, tree installation/establishment, safety/climbing, tree risk assessment, tree biology, pruning, diseases diagnosis/treatment, soil/water relationships, forest ecology, tree preservation/construction, and cabling/bracing.
2. 1. Trees clean the air.
   2. Trees produce oxygen.
   3. Trees absorb carbon dioxide.
   4. Trees serve as barriers.
   5. Trees have a cooling effect on hot summer days.
   6. Trees provide protection from ultraviolet radiation.
   7. Trees are beautiful.
   8. Trees have a positive psychological affect on humans.
   9. Trees contribute to a healthy environment.
3. 1. Establish and maintain maximum tree cover.
   2. Maintain trees in a healthy condition through good cultural practices
   3. Establish and maintain an optimal level of age and species diversity.
   4. Promote conservation of tree resources.
   5. Select, situate, and maintain street trees appropriately to maximize benefits and minimize hazard, nuisance, hardscape damage, and maintenance costs.
   6. Centralize tree management under a person with the necessary expertise.
   7. Promote efficient and cost-effective management of the urban forest.
   8. Foster community support for the local urban forestry program and encourage good tree management on privately owned properties.
   9. Facilitate the resolution of tree-related conflicts between citizens.

Sample Test   Name_____

Test
Unit E Lesson 1: Defining Urban Forestry

Part One: Matching
Instructions. Match the term with the correct response. Write the letter of the term by the definition.

a. Arboriculture   d. Street tree ordinances   g. Urban forestry
b. Arborist   e. Tree ordinances   h. View ordinances
c. Certified arborists   f. Tree protection ordinances

_____ 1. guidelines to meet goals of attaining a healthy, vigorous, and well-managed community forest.
_____ 2. the culture or care of trees.
_____ 3. proven through studies and exams that they are qualified for tree care work.
_____ 4. rules pertaining to trees that block views or sunlight.
_____ 5. involve protection for native trees or trees with historical significance.
_____ 6. professionals that see to the culture of trees.
_____ 7. cover the planting and removal of trees within public rights-of-way.
_____ 8. a specialized segment of forestry that takes place in the populated areas of cities, towns, and suburban areas.

Part Two: Completion
Instructions. Provide the word or words to complete the following statements.

1. _____ enhances an arborist's credentials.

2. Benefits from urban forests may be related to the _____, the _____, and _____.
3. Half a hectare of trees produces enough oxygen everyday for _____ people.

4. Trees serve as barriers by blocking _____, _____, and _____.

5. Air temperature under a large shade tree can be _____ degrees cooler than the temperature in the sun.

6. Well-landscaped houses with mature trees can be valued at _____ % more than houses lacking trees.

7. In urban settings trees impact _____, _____, _____, _____, _____, _____, and _____.

8. Research has shown urban forests to be good for _____.

9. _____ often contain rules regarding private trees, which pose a hazard to the traveling public.

10. _____ involve protection for native trees or trees with historical significance.

Part Three: Short Answer

Instructions. Provide information to answer the following questions.

1. What are 12 areas in which a certified arborist is trained?

2. What are 9 contributions provided by urban forests?

3. What are nine goals common to community forest programs?

THE VALUE OF URBAN TREES

1. Trees clean the air by removing smog, dust, and pollutants from the air we breathe.

2. Half a hectare of trees produces enough oxygen everyday for 25 people.

3. Trees absorb carbon dioxide produced by cars and trucks.

4. Trees serve as sound barriers cutting noise levels where we work and live.

5. Shade trees cool the air temperature on a hot summer days.

6. A single large deciduous tree in leaf provides Sun Protection Factor (SPF) estimated at 10-20.

7. Many trees have showy flowers, attractive foliage, interesting bark, and stunning fall colors.

8. Trees have a positive psychological affect on humans.

9. Trees reduce storm water runoff and provide wildlife habitat.

URBAN FORESTRY MANAGEMENT PROGRAM OBJECTIVES

1. Inventory trees as to species, size, age, and value.

2. Care for and maintain existing trees.

3. Monitor and manage insect pests and diseases.

4. Remove trees due to death, decline, or safety considerations.

5. Install trees to maintain the urban forest.

6. Educate the public on the role of trees in the environment.