**WHERE THE CITY MEETS THE TREE: URBAN FORESTRY**

**TIME ALLOTMENT:** Ten to fifteen 50-minute classes.
(plus homework)

**OVERVIEW:**
Urban Forestry is the comprehensive management of trees and related natural resources in populated areas, from the center of the city, to the outer edge of that land influenced by urbanization. As urban areas have been developed, the trees comprising the forests of urban areas have been depleted, damaged or eliminated. As our nation’s landscape is rapidly being converted from rural to urban, it is important that development include an understanding of the role green spaces play in environmental health and to the human sense of well being.

To appreciate nature, students need to interact with nature. All too often, they believe nature to be found in exotic places and to have little relationship to their lives. In this unit, students interact not with nature in far-away places but rather nature in their own neighborhoods, in schoolyards, and along roadsides – in other words, in the forest where we live.

Student interaction includes scientific endeavors: observation, data collection and analysis, drawing conclusions, sharing ideas, decision making and taking action. In addition, forestry-related careers and technologies are highlighted.

**SUBJECT MATTER:** Biology, Environmental Science, and Integrated Science

**LEARNING OBJECTIVES:** Students will be able to:
- Define the term “urban forestry”.
- Briefly discuss several problems facing urban forests today.
- Briefly discuss both government and public efforts centered on developing and maintaining sustainable urban forests.
- Identify at least five land use categories in a built (urban) environment.
- Develop procedures to use in initiating an urban environmental investigation.
- Construct and use a data collection and recording tool for some part of a built (urban) environment for data.
- Analyze data/factors that contribute to a problem in a built community and draw conclusions from the analysis.
- Develop alternatives to the present situation that would reduce or eliminate the factor causing the problem.
- Communicate findings via lab reports and presentations.
- Develop an action plan to implement an alternative.
- Analyze the feasibility of alternative solutions.
- Plan and implement a community action program.

**STANDARDS:**
- National Science Education Standards
  - Content Standard A: Science as Inquiry
    - Abilities to do Scientific Inquiry
  - Content Standard C: Life Sciences
    - Interdependence of Organisms
    - Matter, Energy and Organization in Living Systems
    - Behavior of Organisms
  - Content Standard F: Science in Personal and Social Perspectives
    - Environmental Quality
    - Natural Resources

- Excellence in Environmental Education Guidelines
  - Learning Strand 1: Questioning and Analysis Skills
    - Questioning
    - Collecting Information
  - Learning Strand 2.1: The Earth as Physical System
    - Processes that Shape the Earth
    - Changes in Matter
Louisiana Science Frameworks:
State Standards for Curriculum Development
http://www.lcet.doe.state.la.us/doe/assessment/standards/SCIENCE.pdf
SI-H-A2: Designing and conducting scientific investigations.
SI-H-A5: Recognizing and analyzing alternative explanations and models.
LS-H-D4: Exploring how humans have impacted ecosystems and the need for societies to plan for the future.
SE-H-B6: Recognizing that sustainable development is a process of change in which resource use, investment direction, technological development, and institutional change meet society’s present as well as future needs.

Media Component:
Video:
The Forest Where We Live: the Series, Program 1: Urban Forestry, What is it?
The Forest Where We Live: the Series, Program 3: Deforestation in America

Web site:
The Forest Where We Live: The Series — Teacher Resource Guide
http://www.lpb.org/programs/forestseries
This site provides the Teacher Resource Guide to the six-part urban forestry series. Materials for each unit include lesson plans for teachers, background information, and student activities.

The Forest Where We Live (the Documentary)
http://www.lpb.org/programs/forest/benefits.html
http://www.lpb.org/programs/forest/casestudies.html
http://www.lpb.org/programs/forest/action.html
http://www.lpb.org/programs/forest/lesson2.html Tour the Trees
Developed to supplement the documentary upon which the series was based, this Web site has urban forestry case studies, benefits and action plans which are incorporated into FOCUS FOR MEDIA INTERACTION activities 1 and 3 and the Tour the Trees activity used in the Learning Activities.

The USDA Forest Service Urban Forestry Laboratory Exercises
http://www.na.fs.fed.us/spfo/pubs/uf/lab_exercises/cover.htm
Urban Forestry Laboratory Exercises has been developed as a supplemental activity guide that can be used in any science or interdisciplinary class. The hands-on activities are designed to be data gathering exercises leading the student to make judgments based on analysis and synthesis of the gathered data. The inventory necessary to complete the exercises is listed in this guide.

Materials:
Per Student:
• Individual copies of handouts:
  ◦ Out on a Limb Pre-test (attached)
  ◦ Focus for Media Interaction #1 (attached)
  ◦ Focus for Media Interaction #2 (attached)
  ◦ Focus for Media Interaction #3 (attached)
  ◦ Tour the Trees instructions and handout
  ◦ Activity A Chart (page 71, The Forest Where We Live Teachers Guide)
  ◦ Activity D sheet (page 75, The Forest Where We Live Teachers Guide)
Per Group of 3-5 Students:
- Tree identification guides

Additionally Per Group of 3-5 Students:
- **INVESTIGATING A BUILT COMMUNITY MATERIALS:**
  - Map of the urban area to be studied (1 map/group)
  - Marking Pens—assorted colors
  - Newsprint, butcher paper, or easel pad
  - Masking tape
  - Activity A Chart (page 71, *The Forest Where We Live Teachers Guide*)
  - Activity B Chart (page 72-73, *The Forest Where We Live Teachers Guide*)
  - Activity C Chart (page 74, *The Forest Where We Live Teachers Guide*)

**PREP FOR TEACHERS:**

Prior to teaching the unit:
1. Download and bookmark or print:
     - *Program 1: Urban Forestry, What is it?*
     These materials serve as background information; provide teaching suggestions, activities, and related resources and activities.

     This U.S. Forest Service-created activity is part of the public domain and can also be downloaded from the Investigating Your Environment Web site. [http://www.na.fs.fed.us/spfo/ce/iye/contents.htm](http://www.na.fs.fed.us/spfo/ce/iye/contents.htm)

     - PHILOSOPHY
     - PREFACE
     - GLOSSARY
     The preface and philosophy provide excellent background information. The glossary defines most forestry-related terms that might be unfamiliar to teachers and students.

   - **D. The Forest Where We Live** (the Documentary), Lesson 2: *Tour the Trees* instructions and handout. A tree identification guide is also available [http://www.lpb.org/programs/forest/lesson2.html](http://www.lpb.org/programs/forest/lesson2.html)

2. Contact your state forestry agency and/or Cooperative Extension Service for publications specific to trees in your area. (In Louisiana, Extension Service Publication 2631, *Guide to Successful Trees*, could serve as a text or as a comprehensive reference for an urban forestry unit.) Bookstores and biological supply houses have nature guides specific to regions (and some to local areas). The National Arbor Day Foundation ([http://www.arborday.org](http://www.arborday.org)) also has a tree identification booklet available called *What Tree is That?*
3. Prepare for student activities by:
   A. Copying the necessary student worksheets.
   B. Obtaining or down-loading Tree Identification Guides.
   C. Selecting a site or sites for Tree Tour field activities.
   D. Selecting a site or sites for the Investigating a Built Community activities
   E. Obtaining administration and parent field trip permission, if necessary
   F. (OPTIONAL) Make copies of the wall charts from pages 55,57,58 of the Forest Where You Live Teachers Guide

4. When using media, provide students with a FOCUS FOR A MEDIA INTERACTION, a specific task to complete and/or information to identify during or after viewing video segments, Web sites or other multimedia elements.

INTRODUCTORY ACTIVITY

Setting the Stage

The “Scientists in Action” activity will serve as the introductory activity.

1. Distribute the attached student worksheet Out on a Limb to your students. Read the questions aloud and ask your students to carefully complete this pretest. *(Remind students that pre-tests are designed to access prior knowledge and to initiate discussion of the topic. The pre-test is not “graded for accuracy or understanding.”)*

2. After students have completed the pre-tests, have them participate in discussion of their answers. Answers will vary, few students, however will relate forests to the area where they live. After having students share their answers to the first three problems, ask them to consider the number of trees in their area and how these too comprise a forest – urban forest. *(The New Orleans area, for example, has more than 1 million trees.)* In reviewing student answers to problem 4, the publications specific to trees in your area will be useful in identifying local trees.

LEARNING ACTIVITIES

1. Insert The Forest Where We Live: the Series, Program 1: Urban Forestry, What is it? into your VCR. Provide your students with a FOCUS FOR MEDIA INTERACTION #1. Read the focus problems aloud and ask the students—during the video clip—to note the characteristics of urban forests and issues and concerns of urban forests and then, they should refer to the listed Web sites before/while completing problems 2-4. START the tape at the opening credits. PAUSE the tape after John Dwyer states, “They call it concrete busting, cutting out the paved areas around schools and planting trees there.” As he speaks, concrete is being busting. At the pause point, a tree is seen growing where the concrete was removed.

2. Provide your students with The Forest Where We Live (the Documentary), Lesson 2: Tour the Trees handout [http://www.lpb.org/programs/forest/lesson2.html] Divide the class into cooperative lab groups of 3-4 students. Read the problems aloud and instruct the students to observe local trees on the school ground, in their neighborhoods, or on field trips to parks in order to complete the worksheet. A tree identification guide and handout are included on the web site. This activity will take 2 to 3 forty-minute classes or might be assigned as a homework assignment. Working in small, cooperative groups, students will observe local trees on the school ground, in their neighborhoods, or on field trips to parks.

3. Provide your students with a FOCUS FOR MEDIA INTERACTION #2. Read the questions aloud and ask the students—during the video clip— to note careers associated with urban forestry and then, complete focus problem part I. RESUME PLAY of the video. *(This segment begins with “THINGS THAT YOU CAN DO” written in green over a background of leaves and continues through the closing credits.)*
4. Engage students in discussion of career opportunities related to urban forestry and have each student select one career for further exploration. Read the Focus For Video Interaction #2 Section II: Career Explorations assignment aloud and direct the students, to research a career associated with urban forestry. Students will need to be provided time (either 1-2 days in class or several days of homework time) to complete the Career Exploration activities. An additional class period, or two if the class is large, should be provided for presentations. Some career opportunities related to urban forestry are listed on page 15 of The Forest Where We Live: A Six Part Series Teacher Resource Guide materials (http://www.lpb.org/programs/forestseries) Program 1: “Urban Forestry, What is it?”

5. Insert the video, The Forest Where We Live, Program 3: “Deforestation in America” into the VCR. Provide your students with a FOCUS FOR MEDIA INTERACTION #3. Read the questions aloud and ask the students—during the video clip—to define deforestation and explain how deforestation affects urban habitats and inhabitants. Then, they should refer to the listed Websites before/while completing problems 3-5. PLAY the tape from the opening credits through the closing credits (approximately 14 ½ minutes).

6. Check for comprehension via class discussion of FOCUS FOR VIDEO INTERACTION #3. Answers will vary with student opinion.

CULMINATING ACTIVITIES
If you have not yet done so, download and print the Teacher Materials for: Program 5: And Who Should Lead the Way? “Investigating A Built Community” (pages 54-62 and 71-74) http://www.lpb.org/programs/forestseries

These materials Set the Stage, list detailed procedures for teachers, and suggest closure and transition techniques/activities.

If done in its entirety, this unit will take approximately 11 hours. It includes both field and classroom activities. The unit is subdivided into 5 sections:

<table>
<thead>
<tr>
<th>SECTION</th>
<th>TIME REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepare for the Investigation</td>
<td>= 2 hours</td>
</tr>
<tr>
<td>Conduct the Investigation</td>
<td>= 5 hours</td>
</tr>
<tr>
<td>Analyze Factors and Alternatives</td>
<td>= 45 minutes</td>
</tr>
<tr>
<td>Develop an Action Plan</td>
<td>= 45 minutes</td>
</tr>
<tr>
<td>Implement the Plan</td>
<td>= 45 minutes</td>
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</tbody>
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1. Inform the students that they will be investigating the state of your local urban forest. They will identify parts of the human-built, urban ecosystem, look at local land-use patterns, and construct an investigation of one part of the community. After their data are collected and analyzed, the students will develop an action plan to implement their recommendations.

2. Divide students into cooperative working groups of 3-5 students. Distribute field trip permission forms, if necessary and discuss safety procedures and fieldwork expectations.

3. Using the “STEP1: Prepare for the Investigation” materials as a guide (page 54 of the Teachers Guide), set the stage for the indoor activities, distribute the maps and markers, and have students locate and mark all the major land-use categories they come up with.

4. Have students share their conclusions and draw conclusions about land uses in the community.

5. Distribute a copy of ACTIVITY A worksheet to each student. Model use of a 3-stage data collecting chart with the students, having them complete their ACTIVITY A worksheets as examples.
6. Distribute a copy of **ACTIVITY A** worksheet to each group. Have each group pick a land-use category and complete the 3-stage chart (**ACTIVITY A**). Refer to page 57 of the Teachers Guide.

7. When students are almost through making their data-collecting chart, tell them to develop a plan of action to investigate their part of the environment and develop tables/charts for collecting data.

8. Have each group make a short presentation to describe the procedures and the tables/charts they have developed to record data.

9. Prepare for the field activity (3 hours in the field). Remind students that they will be spending 3 hours out of doors.

10. Remind students of field investigation guidelines and expectations before taking them out to the field study site.

11. After students have completed the field activities, review their experiences with them and then give them approximately 1 class period to prepare a 5-minute presentation about the investigation. Instructions for the presentation are available on page 58 of *Forest Where We Live Teachers Guide*.

12. Have each group give its presentation. Following the presentation, achieve closure by having the students discuss (verbally or in writing) the five closure questions on page 59 of the *Forest Where We Live Teachers Guide*.

13. Use the Set Stage questions on page 59 of the *Forest Where We Live Teachers Guide* to guide students through the analysis phase of their investigation. Remind the students that the process not the content is important.

14. Distribute **ACTIVITY SHEET B** example sheet (page 73). Review its use with the class.

15. Distribute a copy of **ACTIVITY SHEET B** (page 72) to each group instruct them to select one issue, concern, or problem. Give them time to complete the sheet.

16. Distribute **ACTIVITY SHEET C** to each group. Tell them to select one of the solutions they proposed on **ACTIVITY SHEET B** and to develop an action plan for solving this problem. Inform them that after thirty minutes working time, each group will give a three-minute report on their solutions and implementation steps. Remind students again that the emphasis of the lesson is the process not the content.

17. After the presentations, ask students what guidelines they would develop for consideration of future development in your area.

18. Tell students, “Now that you think you have a solution, let’s describe what we can do to help.” Distribute **ACTIVITY D** and instruct them to fill in their thoughts.

19. After completing the sheets, allow time for students to share their thoughts.

20. For lesson closure, ask the students to answer the Closure Questions on page 61.

21. Work with students in selecting and completing an urban forestry-related service project in your community.
HORTICULTURE/TREE BIOLOGY/CAREER EDUCATION:

SCIENCE/SOCIAL STUDIES/COMMUNITY SERVICE:
• Have students plan an Arbor Day planting of native trees. In addition they can investigate trees native to the area, research the uses of these trees to native peoples and/or settlers to the area, and write an article for the school or local newspaper about native ecology and advertising your planting event. For Arbor Day ideas visit, the National Arbor Day Foundation (http://www.arborday.org)

COMMUNITY CONNECTIONS:
• Invite USDA or state foresters to speak to the class about urban forestry activities and careers. A list of Urban Forestry State Coordinators can be found at: http://www.arborday.org/programs/dirComForesters.html
• Participate in Tree City USA programs sponsored by your city or state and national programs. http://www.arborday.org/programs/treeCityUSA.html
• Participate in a PROJECT LEARNING TREE (PLT) workshop. PLT is a K-12+ interdisciplinary, hands-on environmental education program that uses the forest as a “Window on the World”. Visit http://www.plt.org and click on your state’s link for info about upcoming workshops and activities.
• Contact urban forestry organizations in your area. Participate in their activities.

STUDENT MATERIALS:
Follows as attachment:
• Out on a Limb Pre-test
• Focus for Media Interaction #1
• Focus for Media Interaction #2
• Focus for Media Interaction #3
Urban Forestry Pre-Test

OUT ON A LIMB

Name________________________

1. Define the term “forest”.

2. Describe or draw a forest ecosystem.

3. How close are forested areas to where you live?
   ____ Less than a mile (1.6 km)
   ____ Between 1-10 miles (1.6-16 km)
   ____ Between 11-20 miles (17.7-32 km)
   ____ More than 20 miles (32 KM)
   ____ Not sure

4. List the names and descriptions of at least three tree species growing in your neighborhood.

5. President and conservationist, Theodore Roosevelt said, “To exist as a nation, to prosper as a state, and to live as a people, we must have trees.” Interpret this quote.
FOCUS FOR MEDIA INTERACTION #1

FOREST WHERE WE LIVE

NAME________________________

After watching the video and completing problem 1, also use the Web sites to assist in answering problems 2-4.

http://www.lpb.org/programs/forest/benefits.html (problems 2-4)
http://www.lpb.org/programs/forest/casestudies.html (problems 3-4)

1. Define the term “urban forest” and list characteristics of urban forests.

2. Why are urban forests of interest and concern? Why have urban forests been of concern for such a short part of our history?

3. Urban forests seem to have a harder time surviving than rural forests do. Briefly discuss several (at least 4) problems facing urban forests today.

4. Briefly discuss both government and public efforts centered on developing and maintaining sustainable urban forests.
FOCUS FOR MEDIA INTERACTION #2

THE FOREST WHERE WE LIVE

NAME_________________________

Complete Section I as you watch the video. After watching the video, participate in the class brainstorming of other urban forestry-related careers. Add the class' list to yours.

SECTION I

• List a minimum of five careers associated to urban forestry and briefly describe each.

Complete Section II, after the post-video discussion and as directed by your teacher.

SECTION II: Career Explorations

• Select an urban forestry-related career.

• Conduct a Career Exploration that includes each of the items listed below. Personal interviews and Internet resources are likely sources of information.

• The Career Exploration Assignment should be complete, organized, neat, accurate and submitted on time! Remember to include a bibliography.

• It should include:
  A. Job Description
  B. Pay scale/range
  C. Required education and professional development
  D. Chances for advancement
  E. Working conditions
  F. Description of a typical day or week
FOCUS FOR MEDIA INTERACTION #3

THE FOREST WHERE WE LIVE

NAME_________________________

While watching the video clip, define deforestation and explain how deforestation affects urban habitats and inhabitants. Then, refer to the listed Web sites while completing problems 3-5.

http://www.lpb.org/programs/forest/benefits.html   (problem 3)
http://www.lpb.org/programs/forest/atlanta.html     (problem 4)
http://www.lpb.org/programs/forest/action.html      (problem 5)

1. What is “deforestation”?

2. Explain how deforestation in urban areas contributes to:
   A. Development of Heat Islands (Refer to problem 4.)
   
   B. Increased carbon dioxide levels
   
   C. Flooding
   
   D. Human emotion

3. Your parents have saved for 25 years and are now finally able to buy a lovely piece of property and build their dream home. The developer plans to remove all the trees from their property and from the other 50 lots he is developing. A community group is protesting the deforestation and has filed suit against the developer. This may delay the building for several years.

What should be done? Answer this question from the perspectives of the developer, a president of the community group, and your parents. Justify your answers.
4. Read the “Atlanta Case Study” (http://www.lpb.org/programs/forest/atlanta.html). Define “heat island effect” and discuss the role trees play in reducing this effect and making Atlanta such a “cool” place to live.

5. Your next assignment will have you investigating a human-built, urban environment, selecting a problem, recommending solutions, and implementing an action plan. What are some things you could do to reduce urban deforestation? (http://www.lpb.org/programs/forest/action.html has info that may help!)