Lesson B1–3

Recognizing the Importance of Forests

Unit B.  Plant Wildlife Management

Problem Area 1.  Introduction to Forestry

Lesson 3.  Recognizing the Importance of Forests

New Mexico Content Standard:

Pathway Strand:  Natural Resources and Environmental Systems

Standard:  I: Recognize importance of resource and human interrelations to conduct management activities in natural habitats.

Benchmark:  I-D: Employ environmental and wildlife knowledge to demonstrate natural resource enhancement techniques.

Performance Standard:  2. Demonstrate forest stand improvement techniques.

Student Learning Objectives. Instruction in this lesson should result in students achieving the following objectives:

1. Explain the importance of forests.
2. Identify the beneficial influences of trees.
3. Describe the economic importance of forests.
4. Explain the importance of urban forestry.
List of Resources. The following resources may be useful in teaching this lesson:

Recommended Resources. One of the following resources should be selected to accompany the lesson:


Other Resources. The following resources will be useful to students and teachers:

List of Equipment, Tools, Supplies, and Facilities

- Writing surface
- Overhead projector
- Transparencies from attached masters
- Copies of student lab sheets

Terms. The following terms are presented in this lesson (shown in bold italics):

- Forest
- Forest canopy
- Piling
- Pulpwood
- Reserved forest land
- Timberland
- Total forest land
- Urban forestry
- Veneer

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.

Ask students to visualize a forest (or show a picture of a forest). Ask them to list five important things that come from forests. Direct the class discussion to introduce the lesson.
Summary of Content and Teaching Strategies

**Objective 1:** Explain the importance of forests.

**Anticipated Problem:** What is the importance of forests?

I. Trees have had an influence on human progress and welfare. Trees provide food, medicines, fuel, shelter, protection, shade, tools and other needs.

   A. Forests are very important to our nation.
      1. Wood is the raw material from which forest industries manufacture countless products for home, factory and office.
         a. A forest is a living, complexly interrelated community of trees and associated plants and animals. Timberland is forest land capable of producing wood in excess of 20 cubic feet per acre per year and not restricted from being harvested.
            1. The United States has 540 million acres of timberland and is only producing about half of their biological potential. The United States is dependent on wood imports.
            2. Reserved forest land is defined as forest land restricted from harvesting. Other forest land has trees but does not meet the minimal required stocking level of timberland. Total forest land is the sum of timberland, reserved forest land, and other forest land. Through improvement of forest management practices by timberland owners, the United States can become less dependent on other nations for its wood sources.
            3. The social values of forests are the benefits they provide for outdoor recreation activities such as: hunting, fishing, bird watching, nature study, camping, picnicking, hiking and scenic or aesthetic value.

Use TM: B1–3A as material for lecture and discussion. An alternative approach is to transfer the information from the transparency masters to a multimedia presentation. Use text material to strengthen student understanding of concepts. Chapter 1 and 7 in Forests and Forestry and Chapter 9 in Natural Resources and Environmental Technology are recommended.

**Objective 2:** Identify the beneficial influences of trees.

**Anticipated Problem:** What are the beneficial influences of trees?

II. Besides the direct benefits forests provide in the way of products, other values are derived from trees.

   A. Over an extended area, forests do not affect climate. However, in a localized area, they do have an effect on climate conditions.
      1. Forests influence temperature, humidity, and wind velocity.
1. The forest canopy is a barrier to direct sunlight and shades the forest floor, influencing the air temperature, soil temperature and soil moisture.

2. The leaves and branches of trees break the impact of rain, causing it to drip rather than to reach the earth with force. Upon reaching the forest floor, rain is absorbed by the ground litter and humus, reducing surface runoff.
   a. The litter and humus keep the soil mellow, porous and permeable, which allows seepage of water into the substratum, where it is stored.
   b. The forest soil tends to not freeze as deep, as it absorbs more water from melting snow. By delaying the melting of the snow and by the absorption of snow water into the soil, forests prolong the period of runoff, which helps to reduce flooding and to equalize stream flow in the streams and rivers.

3. Forest vegetation shades water courses from the full heat of the sun preventing excessive stream temperatures and producing clear streams that are ideal for fish life.

4. In forested watersheds, where management is carefully practiced, extremes of water flow in winter and summer are avoided, aiding in flood control. Forest streams usually have a minimum amount of sediment, even during periods of high stream flow.

5. Many kinds of wildlife are found in the forest, where they obtain food and shelter.

6. Forests help to reduce wind erosion. The harmful effects of the wind drying out and blowing the soil, protection against drifting snows and shelter crops, livestock, homes and barns from hot or cold winds.

Use TM: B1–3B as material for lecture and discussion. An alternative approach is to transfer the information from the transparency masters to a multimedia presentation. Use text material to strengthen student understanding of concepts. Chapter 1 and 7 in Forests and Forestry and Chapter 9 in Natural Resources and Environmental Technology are recommended.

Objective 3: Describe the economic importance of forests.

Anticipated Problem: What is the economic importance of forests?

III. Forest resources are managed for both economic and social values. Forest resources have economic value when they yield an income.

A. Timber, grazing, recreation, water, minerals, fish, and wildlife are all examples of income-producing values of forests.

1. The greatest economic contribution of forests is the products derived from trees.
   a. Ours is a wood-oriented society; wood is an important part of houses, apartment buildings, many commercial and industrial structures, newspapers, cereal boxes, furniture and sports equipment.

1. Trees from forests are made into lumber, pulpwood, veneer, poles, railroad ties, and piling.
   a. Lumber is further used to produce furniture and other manufactured items.
b. **Pulpwood** is wood cut or prepared for manufacture into pulp, which can be made into paper products.

c. **Veneer** is a thin sheet of wood.

d. **Piling** is a round timber driven into the ground to support other structures.

2. The same income producing resources have certain social values that may not be income producing but still have worth in terms of public good or interest.

   a. Social values are generally values related to aesthetic considerations, such as scenic qualities of a forest area.

   b. Other social values are concerned with biological aspects, such as the uniqueness of the plants and animals found in the forest.

      1. Forests with high social values are being reserved for future public and private parks and monuments. Some of these areas may have other concurrent uses, such as recreation or establishment of biological preserves.

   c. Timberland areas with suitable topography for water reservoirs are being inundated for water storage.

3. Conflict of interests often arise between economic and social uses of forest land. An example involves areas that are flooded for water reservoirs or set aside in preserve and can no longer supply timber for wood-using industries.

Use TM: B1–3C as material for lecture and discussion. An alternative approach is to transfer the information from the transparency masters to a multimedia presentation. Use text material to strengthen student understanding of concepts. Chapter 1 and 7 in Forests and Forestry and Chapter 9 in Natural Resources and Environmental Technology are recommended.

**Objective 4:** Explain the importance of urban forestry

**Anticipated Problem:** What is the importance of urban forestry?

IV. Urban forestry is a specialized branch of forestry. Urban forestry is similar to traditional forestry, in that it is the cultivation and management of trees for its benefit to society.

   A. **Urban forestry** also considers the present and potential contribution of the trees to the physiological, sociological, and economic well-being of an urban society.

      1. Regardless of where trees are located in the urban environment, they represent a large forest and play a significant role in the function, beauty, and livability of urban communities.

         a. Trees are established along streets and avenues. They are landscaped around homes, businesses, shopping centers, and parking lots. Trees are interspersed naturally or by design throughout cemeteries, greenbelts, and parks.

      2. There are many benefits derived from urban trees and urban forests. These benefits include economic, environmental, wildlife, and aesthetic and social values.
a. Trees in urban environments can have a direct economic impact by reducing associated operating costs.

1. A major benefit of trees is their shade, which lowers temperatures. Lowering air and surface temperatures around homes, schools, and office buildings by shading will reduce energy consumed for air conditioning during the summer.
   a. Not only is it cooler in the shade of the trees, but the heat absorbed in the transpiration process also cools the air in the immediate vicinity.
2. Deciduous trees lose their leaves in the autumn, which allows more sunlight in the winter. Sunlight on a structure in the winter will reduce heating costs.
3. Urban trees may also function as windbreaks that reduce the force of winter winds, thereby lowering heating costs. Windbreaks keep snow from drifting onto driveways, streets, and parking lots.
4. Trees add value to property. The value of real estate may be 10 to 15 percent higher if at least three mature, healthy trees are present. Property values can be reduced, if the trees need removal due to disease or if they are improperly located.

b. Trees influence the urban environment in many ways.

1. Because trees shade the ground, soil temperature is cooler during the summer, resulting in a better retention of soil moisture. This benefits lawn grasses and flower or vegetable gardens.
2. Urban forests provide watershed protection. This influence on the watershed can benefit clean water resources for drinking water or water-based recreation.
   a. Another benefit is storm water management to reduce flooding. Water diverted from streets is directed into storage zones, which affect the quality and quantity of runoff.
3. Urban trees and forests produce oxygen and utilize carbon dioxide. This contributes to the air quality in urban areas.

c. City parks and forests provide habitat for many wildlife species within urban areas. Maintaining a diversity of trees, shrubs, and understory plants stimulates a diversity of wildlife species.

d. One of the most important benefits provided by trees in urban settings is simply their beauty. The beauty of trees and shrubs softens the rigid lines of man-made structures and enhances pleasing environments.

1. Aesthetic and social values can be enhanced through proper planning and establishment of trees in urban environments.
   a. A tree species can be matched to a urban condition to provide a desired visual effect as well as a functional use.
   b. The beauty of the season is another important aesthetic value when establishing trees in the urban landscape. Trees such as magnolia, buck-
eye, and dogwood have showy flowers in the spring, while the foliage of maple, gum and birch provide brilliant colors in the autumn.

e. When properly considered, established and cared for, trees can greatly improve living conditions in urban environments. However, without proper planning, trees can have a negative impact.

Use TM: B1–3D as material for lecture and discussion. An alternative approach is to transfer the information from the transparency masters to a multimedia presentation. Use text material to strengthen student understanding of concepts. Chapter 1 and 7 in Forests and Forestry and Chapter 9 in Natural Resources and Environmental Technology are recommended.

**Review/Summary.** Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. Questions at end of chapters in the textbook may also be used in the review/summary.

**Application.** Refer to Forests and Forestry for an additional application of this lesson.

**Evaluation.** Use the following sample test to evaluate the students’ comprehension of the material covered in this lesson.

**Answers to Sample Test:**

**Part One: Matching**

1 = g, 2 = c, 3 = f, 4 = b, 5 = d, 6 = a, 7 = h, 8 = e

**Part Two: Completion**

1. urban forestry
2. total forest land
3. income
4. products
5. temperature, humidity, wind velocity
6. wood

**Part Three: Short Answer**

1. Hunting, fishing, bird watching, nature study, camping, picnicking, hiking, scenic, and aesthetic value.
2. Timber, grazing, recreation, water, minerals, fish, and wildlife.
3. Economic, environmental, wildlife, and aesthetic and social values.
Lesson B1–3: Recognizing the Importance of Forests

**Part One: Matching**

*Instructions.* Match the term with the correct response. Write the letter of the term by the definition.

- a. forest
- b. forest canopy
- c. piling
- d. pulpwood
- e. reserved
- f. timberland
- g. trees
- h. veneer

1. Greatest economic contribution of forests.
2. Round timber driven into the ground to support other structures.
3. Forest land capable of producing wood in excess of 20 cubic feet per acre per year and not restricted from being harvested.
4. Barrier to direct sunlight and shades the forest floor, influencing the air temperature, soil temperature and soil moisture.
5. Wood cut or prepared for manufacture into paper products.
6. A living, complexly interrelated community of trees and associated plants and animals.
8. Forest land restricted from harvesting.

**Part Two: Completion**

*Instructions.* Provide the word or words to complete the following statements.

1. The cultivation and management of trees for its benefit to society that considers the present and potential contribution of the trees to the physiological, sociological, and economic well-being of an urban society is known as ________________________.

2. The sum of timberland, reserved forest land, and other forest land is called ________________________.

3. Forest resources have economic value when they yield ________________________.

4. The greatest economic contribution of forests is the ________________________ derived from trees.
5. Forests influence __________________, __________________, and __________________.

6. The raw material from which forest industries manufacture countless products for home, factory and office is called ________________________.

**Part Three: Short Answer**

*Instructions.* Provide information to answer the following questions.

1. What are the social values that forests provide for outdoor recreation activities?

2. What are examples of income-producing values of forests?

3. What are the benefits derived from urban forests?
# Land Areas in the United States, by Major Land Class, Region, and Subregion, 1997 (Land Class: Forest Land)

<table>
<thead>
<tr>
<th>Region and Subregion</th>
<th>Total Land Area¹</th>
<th>Total Forest Land</th>
<th>Timberland</th>
<th>Reserved Forest Land</th>
<th>Other Forest Land</th>
<th>Other Land</th>
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<tr>
<td><strong>North</strong></td>
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<tr>
<td>Northeast²</td>
<td>126,817</td>
<td>85,484</td>
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<td><strong>Total North</strong></td>
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<td>159,433</td>
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<td><strong>South</strong></td>
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<tr>
<td>Southeast</td>
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<td>South Central</td>
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<td><strong>Total South</strong></td>
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<td>Great Plains</td>
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<tr>
<td><strong>Total Rocky Mountains</strong></td>
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<td>Alaska</td>
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<td><strong>Total Pacific Coast</strong></td>
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<td><strong>Total United States</strong></td>
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<td>503,664</td>
<td>51,882</td>
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</table>

¹Source: U.S. Department of Commerce 1990 Decennial Census.
²Includes 39,302 acres of Other Land in Washington, DC.

Note: Data may not add to totals because of rounding.

FOREST USES

Forests are great tourist attractions.
Well-landscaped parks enhance the metropolitan area with trees.