

Unit A: Introduction to Forestry

Lesson 3: Recognizing the Importance of Forests

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.

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://greenpack.rec.org/forestry/importance_of_forests/13-01-01.shtml
- www.umich.edu/~nre301/forestry-02.doc
- http://wiki.answers.com/Q/What_is_the_importance_of_Forests_and_Wildlife

List of Equipment, Tools, Supplies, and Facilities

Writing surface

PowerPoint Projector

PowerPoint slides

Transparency Masters

Picture of forest

Terms: The following terms are presented in this lesson (shown in bold italics and on PowerPoint Slide #2):

- **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 again). 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.

(PowerPoint Slide #3)

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

(PowerPoint Slide #4)

60% of the earth once covered with forest. With the development of civilization, large areas have been cleared to make way for farms, mines, towns and roads. Today about 30% of earth is still forested.

(PowerPoint Slide #5)

- A. Forests are very important to our world.
 1. Wood is the raw material from which forest industries manufacture countless products for home, factory and office.

(PowerPoint Slide #6)

- 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 0.5 cubic meters per 0.4 hectares per year and not restricted from being harvested.

(PowerPoint Slide #7)

1. Afghanistan has 1,351,000 ha and 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.

(PowerPoint Slide #8)

Total forest land is the sum of timberland, reserved forest land, and other forest land. It will take quite a bit time, but through improvement of forest management practices, Afghanistan can become less dependent on other nations for its wood sources.

(PowerPoint Slide #9)

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.

**** As a quick review have repeat the definitions of the terms above and have students tell you what term you are talking about. When you feel they have a good understanding of this objective move on to the next objective.**

Objective 2: Identify the beneficial influences of trees.

(PowerPoint Slide #10)

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

(PowerPoint Slide #11)

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.

a. The **forest canopy** is a barrier to direct sunlight and shades the forest floor, influencing the air temperature, soil temperature and soil moisture.

(PowerPoint Slide #12)

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.

(PowerPoint Slide #13)

a. The litter and humus keep the soil mellow, porous and permeable, which allows seepage of water into the substratum, where it is stored.

(PowerPoint Slide #14)

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.

(PowerPoint Slide #15)

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.

(PowerPoint Slide #16)

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.

(PowerPoint Slide #17)

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.

**** PowerPoint Slide #18 shows a picture of how forests have slowed snow from melting. Have students come up with ways forests can help your particular area.**

Objective 3: Describe the economic importance of forests.

(PowerPoint Slide #19)

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

(PowerPoint Slide #20)

- 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.

(PowerPoint Slide #21)

- a. Wood is an important part of houses, apartment buildings, many commercial and industrial structures, newspapers, cereal boxes, furniture and sports equipment.

(PowerPoint Slide #22)

- 1. Worldwide about half the timber cut each year is used as fuel for heating and cooking. Some of this fuel is burned directly as firewood and some is converted into charcoal, which is widely used by urban inhabitants and some industries.
 - a. 95% of people in Afghanistan use wood for cooking, heating and other purposes

(PowerPoint Slide # 23 shows a truck load of firewood going to the main cities in Afghanistan.)

(PowerPoint Slide #24)

- 2. One-third of the world's annual timber harvest consists of logs to be converted into building materials, such as lumber, plywood, hardboard, particleboard and chipboard. One-sixth is converted into pulp used in a variety of paper products.

(PowerPoint Slide #25)

- a. Trees from forests are made into lumber, pulpwood, veneer, poles, railroad ties, and piling.
 - 1. Lumber is further used to produce furniture and other manufactured items.
 - a. In Afghanistan, wood is used for ceilings, doors, windows and furniture

(PowerPoint Slide #26)

- 1. 90 % of ceilings are made of wood.
- 2. 99% of doors and windows are made of wood.

(PowerPoint Slide #27)

- 2. **Pulpwood** is wood cut or prepared for manufacture into pulp, which can be made into paper products.
- 3. **Veneer** is a thin sheet of wood.
- 4. **Piling** is a round timber driven into the ground to support other structures.

(PowerPoint Slide #28)

- 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.

(PowerPoint Slide #29)

- 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.

(PowerPoint Slide #30)

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.

(PowerPoint Slide #31)

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.

**** Have students talk about ways they use forests and trees directly in their everyday lives. There will be a lesson later on conserving forests and deforestation, but you could also lead into a discussion of why it is important to maintain healthy forests because Afghanistan does rely heavily on wood.**

Objective 4: Explain the importance of urban forestry

(PowerPoint Slide #32)

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.

(PowerPoint Slide #33)

- 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.

(PowerPoint Slide #34)

- 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.

(PowerPoint Slide # 35 shows examples of urban forestry in Herat, Afghanistan.)

(PowerPoint Slide #36)

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.

(PowerPoint Slide #37)

1. A major benefit of trees is their shade, which lowers temperatures.

(PowerPoint Slide #38)

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.

(PowerPoint Slide #39)

- 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.

(PowerPoint Slide #40)

- 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.

(PowerPoint Slide #41)

- 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.

(PowerPoint Slide #42)

- 2. Urban forests provide watershed protection. This influence on the watershed can benefit clean water resources for drinking water or water-based recreation.

(PowerPoint Slide #43)

- 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.

(PowerPoint Slide #44)

- 3. Urban trees and forests produce oxygen and utilize carbon dioxide. This contributes to the air quality in urban areas.

(PowerPoint Slide #45)

- c. Around the world, 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.

(PowerPoint Slide #46)

- 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.

(PowerPoint Slide #47)

- 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.

(PowerPoint Slide #48)

- 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.

(PowerPoint Slide #49)

- 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.

**** A possible activity would be to visit particular trees or forested areas that well known for their beauty or have a historical value to Afghanistan. If this is not possible take pictures and share with the class.**

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 on PowerPoint Slide # 50 can also be used as review.

Application: Students will be able to discuss or visit a forested area that has a historical value to Afghanistan.

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

Sample Test

Name _____

Test

Unit A Lesson 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 | d. pulpwood | g. trees |
| b. forest canopy | e. reserved | h. veneer |
| c. piling | f. timberland | |

- _____ 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 0.5 cubic meters per 0.4 hectares 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.
- _____ 7. Thin sheet of wood.
- _____ 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 wellbeing 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?