

## Lesson C5–4

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# Evaluating Wildlife Habitats

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**Unit C.** Animal Wildlife Management

**Problem Area 5.** Game Animals Management

**Lesson 4.** Evaluating Wildlife Habitats

### **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: 3.** Demonstrate wildlife habitat enhancement techniques.

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

1. Understand how wildlife habitats are classified.
2. Describe habitat requirements.
3. Identify the stages of habitat succession.
4. Describe habitat community.
5. Describe a mixed habitat.

**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:

Stutzenbaker, Charles D. et al. *Wildlife Management Science and Technology*, 2<sup>nd</sup> ed.  
Upper Saddle River, New Jersey: Prentice Hall Interstate, 2003. (Chapters 7 & 10)

## **List of Equipment, Tools, Supplies, and Facilities**

Writing surface  
Overhead projector  
Transparencies from attached masters

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

Annual  
Aquatic biome  
Biome  
Climax stage  
Conifer  
Cover  
Desert  
Edge  
Estuary  
Food chain  
Forbs  
Grassland  
Habitat  
Habitat community  
Habitat succession  
Home range  
Interspersion  
Layers  
Marsh  
Mixed habitat  
Nutrients  
Pattern  
Perennial  
Predator  
Prey  
Savanna  
Shrubs

Space  
Stream  
Structure  
Swamp  
Taiga  
Temperate areas  
Terrestrial biome  
Topography  
Territory  
Tropical areas  
Tundra

**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.

*Begin a discussion on the differences between living in the city compared with living in the country. Create a list of the advantages and disadvantages of both. Now discuss why some people choose to live in the city and others choose to live in the country. Now relate this to wildlife habitats. Allow this discussion to lead into the content of this lesson.*

## Summary of Content and Teaching Strategies

**Objective I:** Understand how wildlife habitats are classified.

**Anticipated Problem:** How are habitats classified?

- I. Habitats are classified according to their biome. A **biome** is an area with a distinct combination of plants and animals. They can either be terrestrial or aquatic. **Terrestrial biomes** are on land. **Aquatic biomes** are areas of water.
  - A. Terrestrial biomes can take many forms:
    1. **Tropical areas** surround the equator and are characterized by warm temperatures year round. They can be heavily forested, grasslands, or deserts. The amount of rainfall varies greatly in the tropics depending on what part of the Earth they are located.
    2. **Temperate areas** cover much of the Earth and are characterized by large trees and moderate to heavy rainfall. The eastern and southern United States is temperate.
    3. Grasslands and Savannas—areas characterized by few trees and grasses are the predominant plant species. **Grasslands** are characterized by fertile soils, while **savannas** have infertile soils. The Great Plains in the United States is a grassland.
    4. Tundra and Taiga—these areas are in the colder parts of the world. **Tundra** occurs either in the arctic or at high altitudes and is characterized by ground that is perma-

nently frozen. **Taiga** is characterized by large conifer forests. **Conifers** are trees that produce cones, such as pine and spruce.

5. A **desert** is an area with very little or no rainfall. Temperatures can range from very hot to very cold.

B. Aquatic biomes can take the following forms:

1. Lakes and Ponds are natural or man made reservoirs that hold water. They usually contain fresh water. The temperature of the water varies on the climate where it is located.

2. A **stream** contains flowing water. They can vary in size from small creeks to large rivers, such as the Mississippi River.

3. Oceans and Seas are large bodies of water that cover most of the Earth. They usually contain salt water.

4. Wetlands and Estuaries are areas of land that come in contact with water. Wetlands can be **swamps**, where water stand on the land during the rainy seasons, or **marshes**, which are low lying grassy areas that are sometimes covered with water. An **estuary** is an area when a stream flows into an ocean. It contains a mixture of salt and fresh water.

*There are many techniques that can be used to assist students in mastering this material. Students need text material to aid in understanding how wildlife habitats are classified. Chapter 10 in Wildlife Management Science and Technology, 2<sup>nd</sup> ed. text is recommended. Use TM: C5–4A to aid in discussion on this topic.*

**Objective 2:** Describe habitat requirements.

**Anticipated Problem:** What must a habitat provide for animals?

II. A **habitat** is where animals live and grow. Every requirement that an animal has must be met by its habitat. A habitat must provide food, water, cover, and space. If any one of these is not plentiful enough for the wildlife species, then the species will move or decrease in population.

A. Obviously, food is necessary to sustain life. The food that animals intake provide all the nutrients it needs to live, grow, move, and reproduce. **Nutrients** are chemical components of food that provide the necessary elements for the body functions of animals. When evaluating the food supply of a habitat, the food chain must be considered. The **food chain** represents the process where lower level plants are consumed by higher-level animals, which eventually die and return to the soil as nutrients that are utilized by plants. The food needs of an animal change as it matures. The food available in a habitat varies throughout the year with the change of seasons.

B. Water is a basic need for all life. Water is sometimes considered a food nutrient. Not only must a habitat have enough water, it must also have clean water.

C. **Cover** is the vegetation in the habitat that provides shelter and protection to the animals. Cover is used for making nests, shelter from adverse weather, and protecting them-

selves. The amount of cover in a habitat varies through seasonal changes of the habitat. The cover of a habitat also affects the relationships between **predators** (animals that hunt other animals) and **prey** (animals that are eaten by other animals).

- D. Space in the final requirement of a habitat. **Space** refers to the area that an animal has to live in. The space actually provides the food, water, and cover. A **home range** consists of all the space that a species uses for living. Some species have a large home range while others have a small one. Within a home range, individual animals may establish a small area that they sometimes fiercely protect, called a **territory**.

*There are many techniques that can be used to assist students in mastering this material. Students need text material to aid in describing habitat requirements. Chapter 7 in Wildlife Management Science and Technology, 2<sup>nd</sup> ed. text is recommended. Use TM: C5–4B to aid in discussion on this topic.*

**Objective 3:** Identify the stages of habitat succession.

**Anticipated Problem:** What are the stages of habitat succession?

- III. A habitat does not remain the same over time. It progresses from a stage where there is just bare ground to a stage where there are mature trees. This process is called **habitat succession** and takes many years to happen.
- A. The first stage is bare ground. As the name implies, this stage is characterized by ground with no vegetation.
  - B. In the next stage in succession, annual forbs and grasses replace bare ground. **Forbs** are low growing broadleaf plants. An **annual** is a plant that completes its life cycle in one year.
  - C. Stage three consists of perennial forbs and grasses. A **perennial** is a plant that lives for several years.
  - D. In stage four, shrubs are the dominant type of plant. **Shrubs** are medium height plants that consist of many woody stems, as opposed to a single trunk like a tree.
  - E. The next stage consists of young trees and woodland.
  - F. The last stage, often called the **climax stage**, consists of large, mature trees. This stage usually will last for very long periods of time. Occasionally, these large trees die (perhaps from fire, logging, etc.), which will cause the habitat to move back to one of the other stages. Depending on the geographic location or climate, the climax stage may be reached in stage three, four, or five.

*There are many techniques that can be used to assist students in mastering this material. Students need text material to aid in identifying the stages of habitat succession. Chapter 7 in Wildlife Management Science and Technology, 2<sup>nd</sup> ed. text is recommended. Use TM: C5–4C to aid in discussion on this topic.*

**Objective 4:** Describe habitat community.

**Anticipated Problem:** What is habitat community?

- IV. A **habitat community** consists of all the living things in an area. How these plants, animals, and other organisms interact influence a habitat community. Many factors share in the responsibility of determining what plant and animal species are in a habitat community. These include: pattern, structure, size, and layers.
- A. **Pattern** refers to how the plant and animals species are distributed throughout the community. The pattern will affect which animal and plant species will live in the community.
  - B. The **structure** of a community consists of the topography, plant species, and fallen dead trees. **Topography** is the contours and layout of the land.
  - C. Size is the actual size of the community measured in acres or hectares. Certain species require more land than others.
  - D. In a habitat community, **layers** refer to the heights of the plants in the community. As with size, certain species prefer plants of certain heights.

*There are many techniques that can be used to assist students in mastering this material. Students need text material to aid in describing habitat community. Chapter 7 in Wildlife Management Science and Technology, 2<sup>nd</sup> ed. text is recommended. Use TM: C5–4D to aid in discussion on this topic.*

**Objective 5:** Describe a mixed habitat.

**Anticipated Problem:** What is a mixed habitat?

- V. A **mixed habitat** consists of many different stages of succession that jointly form a habitat. Two factors are evaluated when looking at a mixed habitat. These are: interspersions and edge.
- A. **Interspersion** is when a habitat has many stages of succession mixed thoroughly together. A community that is interspersed will support many different species of wildlife. Interspersion of a community is often measured by taking an aerial photograph of the land.
  - B. The **edge** of habitat is where two stages of succession come together. An edge can have high contrast where it goes from grasses to mature trees. A gradual edge will consist of grasses, then shrubs, then young trees, and finally mature trees. The edge relates closely to interspersions.

*There are many techniques that can be used to assist students in mastering this material. Students need text material to aid in describing a mixed habitat. Chapter 7 in Wildlife Management Science and Technology, 2<sup>nd</sup> ed. text is recommended. Use TM: C5–4E and TM: C5–4F to aid in discussion on this topic.*

**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 chapter in the textbook may also be used in the review/summary.

**Application.** Several opportunities for application are listed in the “Exploring” section at the end of Chapter 7 in the *Wildlife Management Science and Technology*, 2<sup>nd</sup> ed. text.

## **Evaluation.**

### **Answers to Sample Test:**

#### **Part One: Matching**

1 = e, 2 = j, 3 = a, 4 = c, 5 = h, 6 = g, 7 = b, 8 = d, 9 = f, 10 = k

#### **Part Two: Completion**

1. Tropical
2. habitat
3. land
4. Bare ground
5. Temperate areas

#### **Part Three: Short Answer**

1. Pattern, Structure, Size, and Layers
2. Grasslands have fertile soils, savannas do not.

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# Test

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## Lesson C5–4: Evaluating Wildlife Habitats

### Part One: Matching

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

- |                 |                       |
|-----------------|-----------------------|
| a. Annual       | f. Habitat succession |
| b. Climax stage | g. Layers             |
| c. Cover        | h. Mixed habitat      |
| d. Desert       | j. Shrubs             |
| e. Forbs        | k. Structure          |

- \_\_\_\_\_ 1. Low growing broadleaf plants.
- \_\_\_\_\_ 2. Medium height plants that consist of many woody stems.
- \_\_\_\_\_ 3. A plant that completes its life cycle in one year.
- \_\_\_\_\_ 4. The vegetation in the habitat that provides shelter and protection to the animals.
- \_\_\_\_\_ 5. Consists of many different stages of succession that jointly form a habitat.
- \_\_\_\_\_ 6. The heights of the plants in the community.
- \_\_\_\_\_ 7. The last stage of plant succession.
- \_\_\_\_\_ 8. An area with very little or no rainfall.
- \_\_\_\_\_ 9. When a habitat progresses from a stage where there is just bare ground to a stage where there are mature trees.
- \_\_\_\_\_ 10. Consists of the topography, plant species, and fallen dead trees.

### Part Two: Completion

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

1. \_\_\_\_\_ areas are around the equator characterized by warm temperatures year round.
2. A \_\_\_\_\_ is where animals live and grow.
3. Topography is the contours and layout of the \_\_\_\_\_.
4. The first stage of habitat succession consists of \_\_\_\_\_.
5. \_\_\_\_\_ are areas characterized by large trees and moderate to heavy rainfall.



# **WILDLIFE HABITAT CLASSIFICATION**

- ◆ **Terrestrial**
- ◆ **Tropical**
- ◆ **Temperate**
- ◆ **Grassland & Savanna**
- ◆ **Tundra & Taiga**
- ◆ **Desert**
- ◆ **Aquatic**
- ◆ **Lakes & Ponds**
- ◆ **Streams**
- ◆ **Oceans & Seas**
- ◆ **Wetlands & Estuaries**

# HABITAT REQUIREMENTS

## ◆ Food

→ Provides all the nutrients it needs to live, grow, move, and reproduce

## ◆ Water

→ Basic need for all life

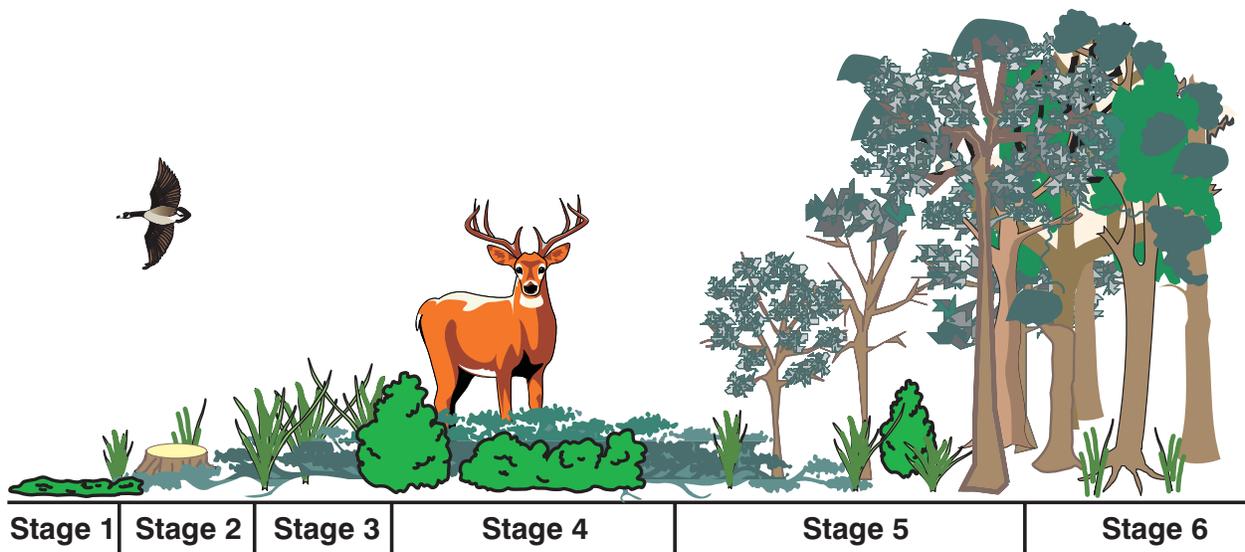
## ◆ Cover

→ The vegetation in the habitat that provides shelter and protection to the animals

## ◆ Space

→ The area that an animal has to live in

# SIX STAGES OF PLANT SUCCESSION IN WILDLIFE HABITAT GROWTH



# HABITAT COMMUNITY

## ◆ Pattern

- Distribution of plant and animal species within community

## ◆ Structure

- Physical makeup of the community
- Topography
- Plant Life
- Fallen Dead Trees

## ◆ Size

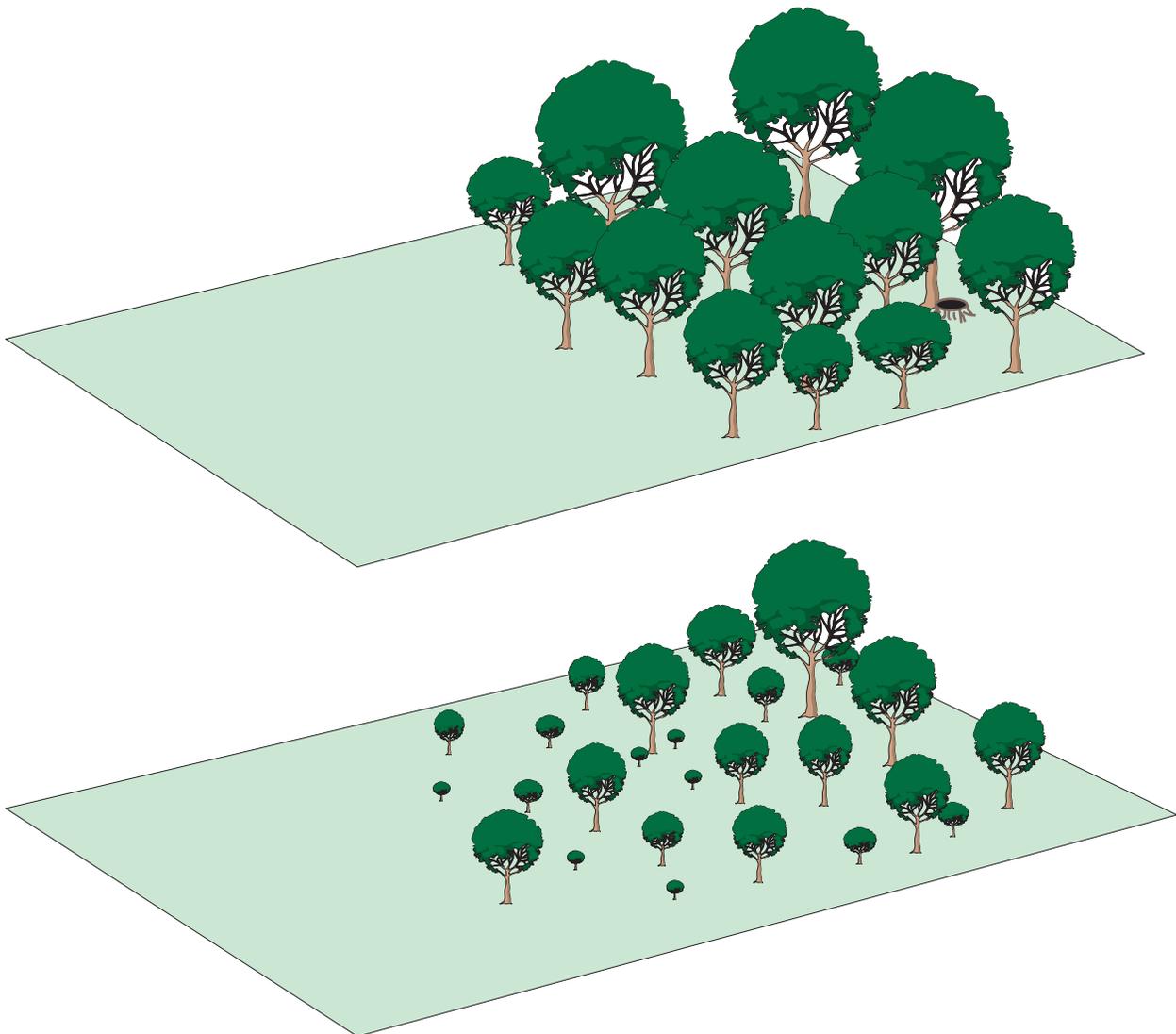
- Actual size of the community (acres or hectares)

## ◆ Layers

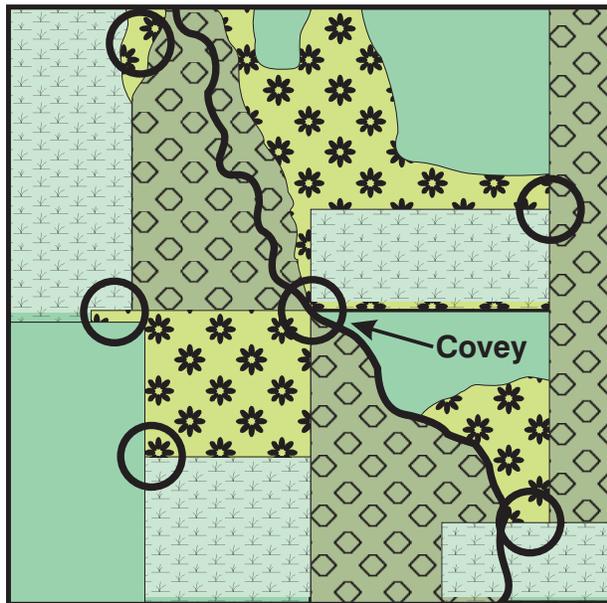
- Heights of plants in community

# EDGE

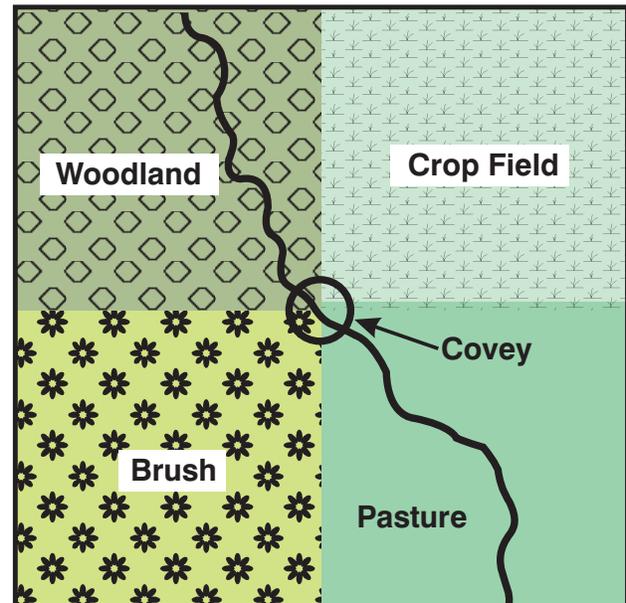
**Contrast of abrupt edge with high contrast (top) and gradual edge with low contrast (bottom).**



# TYPES OF EDGE



Good Edge



Poor Edge