

**Core Case Study: Blowing in the Wind: Connections between Wind, Climate, and Biomes**

What is the general reason why some lands are deserts and others are forests?

Wind is an indirect form of \_\_\_\_\_ energy. Why is it an important factor in climate?

Without wind, what would the Earth be like?

Wind also transports nutrients. Give an example of why this is important.

Give 3 disadvantages to wind:

- 1.
- 2.
- 3.

**7-1: What Factors Influence Climate?**

Weather \_\_\_\_\_ vs. \_\_\_\_\_ Climate

Climate varies in different parts of the world because of \_\_\_\_\_.

3 Major factors that determine how air circulates in the lower atmosphere:

- 1.
- 2.
- 3.

Prevailing winds blowing over the ocean produces mass movements of water called \_\_\_\_\_, which redistribute \_\_\_\_\_.

What causes currents to flow in roughly circular patterns?

What happens when ocean water mixes vertically in shallow and deep currents?

The ocean and atmosphere are strongly linked in 2 ways:

- 1.
- 2.

Describe El-Nino (ENSO) and what it causes.

The Earth's air circulation patterns, prevailing winds, and configuration of continents and oceans result in \_\_\_\_\_ giant \_\_\_\_\_ cells. What do these do?

Small amounts of gases like \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ play a role in determining the Earth's \_\_\_\_\_.

These gases are called \_\_\_\_\_ because \_\_\_\_\_.

What would the Earth be like without the natural greenhouse effect?

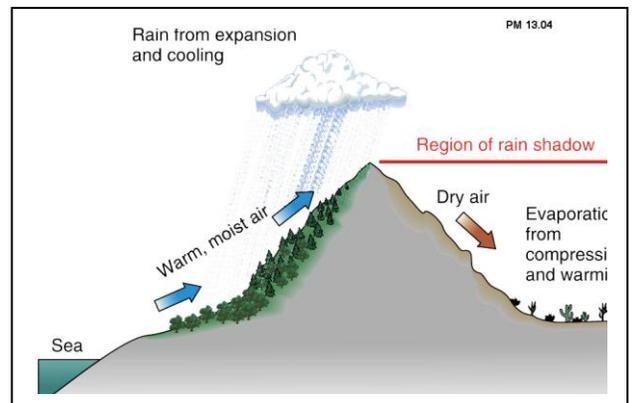
The problem occurs when human activities like \_\_\_\_\_ release more \_\_\_\_\_ into the atmosphere. This human enhanced global warming could cause \_\_\_\_\_.

As the warming intensifies, this could cause \_\_\_\_\_

What creates sea breezes?

How do mountains affect weather and climate?

Describe the rain shadow effect:



**7-2: How Does Climate Affect the Nature and Location of Biomes?**

What are biomes and what makes biomes different from one another?

Looking at figure 7-9, how does elevation effect vegetation?

Desert-		
3 Major Types of Desert:	Description:	Location:
1. Tropical Desert		
2. Temperate Desert		
3. Cold Desert		

Why are desert ecosystems fragile?

Grassland-		
3 Major Types of Grassland:	Description:	Location:
1. Tropical Grassland (Savanna)		
2. Temperate Grassland		
3. Cold Grassland (Tundra)		

Why is the tundra a fragile biome and how is global warming affecting it?

Shrubland-	Description:	Location:
aka: _____		

Forest Systems-		
3 Major Types of Forests:	Description:	Location:
1. Tropical Rain Forest		
2. Temperate Forest		

3. Cold Forest(Coniferous, aka: Boreal, aka: Taiga)		
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Looking at Figure 7-17, explain how specialized niches reduce competition in the rainforest.

Describe the importance of mountains in their ecosystems.

**7-3: How Have We Affected the World’s Terrestrial Ecosystems?**

Humans have degraded or are using unsustainably \_\_\_\_\_% of the Earth’s major terrestrial ecosystems.

How have humans impacted the following terrestrial ecosystems? Give 2 examples for each ecosystem:			
Deserts	Grasslands	Forests	Mountains
1.	1.	1.	1.
2.	2.	2.	2.

**CHAPTER 9 Sustaining Biodiversity: The Species Approach**

**Core Case Study: The Passenger Pigeon: Gone Forever**

Describe in detail the 2 main reasons why passenger pigeons were once the most numerous bird species, but are now extinct.

- 1.
- 2.

**9-1: What Role Do Humans Play in the Premature Extinction of Species?**

During the last 3.65 billion years that life has existed on Earth, there has been a continuous, low level of extinction called \_\_\_\_\_.

Extinction Rate is expressed as \_\_\_\_\_.

Define: Mass Extinction-

How many mass extinctions has the Earth gone through?

What are some of the possible causes of these past mass extinctions?

Local Extinction-	Ecological Extinction-	Biological Extinction-

Conservation biologists project that extinction rate will increase to \_\_\_\_\_ times the normal background extinction rate due to \_\_\_\_\_.

Extinction experts consider extinction rates of 0.01%-1% to be conservative because:

- 1.
- 2.
- 3.

Endangered Species	
Definition:	Examples:

Threatened Species	
Definition:	Examples: (you will have to search for this)

The International Union for the Conservation of Nature and Natural Resources has put out a \_\_\_\_\_ Lists which lists the world's \_\_\_\_\_ species.

Describe what makes some species particularly vulnerable to ecological and biological extinction:

Characteristic:	Example:

### 9-2: Why Should We Care About Preventing Premature Species Extinction?

We should care about preventing premature species extinction because:

1. Instrumental Value-
2. Ecotourism-
3. Genetic Information-
4. Extrinsic Value-
5. Aesthetic Value-
6. Ecological Value-
7. Intrinsic Value-

### 9-3: How Do Humans Accelerate Species Extinction?

Most important causes of premature extinction:

H	
I	
P	
P	
C	
O	

Why are temperate areas more likely to be affected by habitat loss and degradation?

Define: Endemic Species-

Why are they so vulnerable to extinction?

What creates Habitat Islands?

Define: Habitat Fragmentation-

What are the 4 underlying causes for premature extinction?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

Case Study: A Disturbing Message from the Birds  
 Worldwide, \_\_\_\_\_% of birds are declining.

Major reasons are: \_\_\_\_\_ and fragmentation of breeding habitats, introduction of \_\_\_\_\_, and illegal trapping for \_\_\_\_\_.

For seabirds, an issue is being caught in \_\_\_\_\_, for migratory birds, flying into power lines, towers and \_\_\_\_\_.

Birds are important ecologically because they: control \_\_\_\_\_ & \_\_\_\_\_ populations, remove \_\_\_\_\_, and spread \_\_\_\_\_.

Like the “Cats of Borneo”, the death of vultures in India led to unforeseen consequences -*explain*.

After habitat loss and degradation, introduction of \_\_\_\_\_ species is the biggest cause of premature animal and plant extinction.

What is the Kudzu vine and what problems is it causing?

Describe how the fire ant got the southeast US. What problems are they causing?

Characteristics of Successful Invader Species:	Characteristics of Ecosystems Vulnerable to Invader Species:
	Early successional systems
High dispersal rate	Low diversity of native species
High genetic variability	

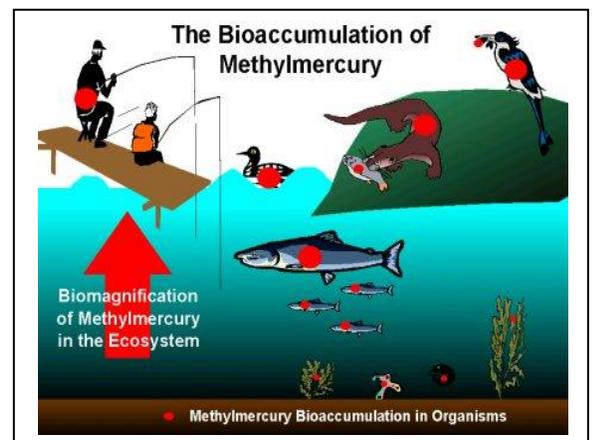
List 2 ways of controlling invasive species:

- 1.
- 2.

Pesticide Pollution Problems:

Define BIOACCUMULATION: \_\_\_\_\_  
 \_\_\_\_\_

Define BIOMAGNIFICATION: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



Two Alarming Disappearances:

Honeybees are responsible for \_\_\_\_\_% of pollination in insect-pollinated plants, but are dying due to \_\_\_\_\_, parasites, \_\_\_\_\_invasion, and bee colony collapse syndrome.

Polar bears are suffering because of less \_\_\_\_\_, and pollutants like \_\_\_\_\_ & DDT.

\_\_\_\_\_ is the illegal killing, capturing, and selling of wild species.

Reasons **NOT** to get a wild pet:

Exotic pets carry \_\_\_\_\_ (and not so exotic ones too: keeping pet \_\_\_\_\_ indoors 10 years can double your risk of developing \_\_\_\_\_)

Pet trafficking kills \_\_\_\_\_ in the process

Animals left in the wild can \_\_\_\_\_ from ecotourism

Poaching for \_\_\_\_\_ threatens African species. It is also problematic as it spreads diseases like \_\_\_\_\_/ \_\_\_\_\_ and \_\_\_\_\_ to human populations.

What is bush meat and why is it causing such problems in Africa?

Who is Jane Goodall?

**9-4: How Can We Protect Wild Species From Extinction Resulting From Our Activities?**

Law or Treaty:	Description:
Convention on International Trade in Endangered Species (CITES)	
US Endangered Species Act	

Solutions:

1. Wildlife Refuges - provide habitat for \_\_\_\_\_ of all endangered and threatened species  
\_\_\_\_\_ or \_\_\_\_\_ preserve genetic materials of endangered species
2. Botanical Gardens protect living plants, but only house \_\_\_\_% of rare & endangered plants
3. Farms can be used to raise organisms for sale (like \_\_\_\_\_ and \_\_\_\_\_)
4. Zoos preserve terrestrial species by methods like \_\_\_\_\_ pulling, \_\_\_\_\_ breeding (used for the peregrine falcon and \_\_\_\_\_), \_\_\_\_\_
  - o Red Book - to keep track of the \_\_\_\_\_ and \_\_\_\_\_ history of species
  - o SSP (\_\_\_\_\_) ex:

Define: THE PRECAUTIONARY PRINCIPLE (in your own words): \_\_\_\_\_

**CHAPTER 10 Sustaining Terrestrial Biodiversity**

**Core Case Study: Reintroducing Gray Wolves to Yellowstone**

Between 1850 and 1900, what happened to most of the gray wolves?

The gray wolf is considered a keystone species. What does this mean (you may have to look back to remind yourself.)

What happened to the area when the wolf population declined?

Why are some people angry that the wolf population has been restored?

**10-1: What Are the Major Threats to Forest Ecosystems?**

Natural and planted forests account for \_\_\_\_% of the Earth's surface. Tropical Rainforest account for \_\_\_\_ of the world's forested area.

Old-Growth Forest:	Forest managers and ecologists classify forests into 2 major types. Define each.	Second-Growth Forest:

According to Figure 10-3, how long is the rotation cycle of cutting and regrowth of a monoculture tree plantation? \_\_\_\_\_ How long is the rotation cycle for tropical countries? \_\_\_\_\_

Tree Plantation a.k.a Tree Farm a.k.a Commercial Forest		
What is it? What products are made?	What happens when the trees are cut down?	Repeated cycles of cutting and replanting can lead to

List 3 Ecological Services and 3 Economic Services that forests provide that you think are most important.

Ecological Services

Economic Services

Steps to harvesting trees:

1. Build roads for access and timber removal.

What are some harmful effects of this?

2. A variety of methods are used for harvesting the trees.

A sketch may be helpful.

Selective Cutting-

Clear Cutting-

Strip Cutting-

Advantages:	Clear Cutting	Disadvantages:

Surface Fires:	Two Types of Fires that Affect Forest Ecosystems	Crown Fire:

How do foreign diseases and insects threaten forests?

How does global warming harm forests?

Define: Deforestation-

Looking 10-12, list a few problems with deforestation.

Describe what is happening to the tropical forests:	Describe the causes (basic and secondary) of tropical deforestation:

**10-2: How Should We Manage and Sustain Forests?**

List some ways to grow and harvest trees more sustainably:	
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Who is Smokey the Bear and what is his role in managing forest fires?

List the 4 strategies for reducing fire related harm to forests.

- 1.
- 2.
- 3.
- 4.

What is the Healthy Forests Restoration Act?

\_\_\_\_\_ % of wood consumed in the US is wasted. This results from \_\_\_\_\_

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How is paper made?

What is tree-free paper?

Explain why cutting trees for fuelwood is a problem, especially in tropical areas.

Haiti was once a tropical paradise. What happened?

List 4 ways to reduce the severity of the fuelwood crisis in developing countries:

- 1.
- 2.
- 3.
- 4.

Individuals Matter: Who is Wangari Maathai and why is she important?

Sustaining Tropical Forests:	Prevention	Restoration

**10-3: How Should We Manage and Sustain Grasslands?**

Grasslands provide the following ecological services:	What is a rangeland?	What is a pasture?	What is overgrazing and why is it a problem?	What is undergrazing and why is it a problem?

Describe in detail methods used for more sustainable management of rangeland.

What are conservation easements?

**10-4: How Should We Manage and Sustain Parks and Nature Reserves?**

Name 3 threats that National Parks Face:

- 1.
- 2.
- 3.

Describe 4 stresses on Public Parks:

- 1.
- 2.
- 3.
- 4.

Science Focus: Reintroducing Gray Wolf to Yellowstone National Park

Do you approve or disapprove of the reintroduction of the gray wolf into the Yellowstone National Park system? Explain.

Conservation Biologists believe the best way to preserve biodiversity is to \_\_\_\_\_, but the problem is \_\_\_\_\_.

How can protecting more of earth's land be accomplished?

Describe the buffer zone concept. A sketch may be helpful.

What are habitat corridors?

Why is Costa Rica a global leader in conservation?	
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What is wilderness and what did Theodore Roosevelt say about it?

Case Study: Describe why wilderness conservation is controversial.

**10-5: What Is the Ecosystem Approach to Sustaining Biodiversity?**

The idea of this chapter is that we have to protect ecosystems.

The ecosystem approach is a four point plan:

- a. Map ecosystems and create an \_\_\_\_\_ of the species in them.
- b. Locate and protect the most endangered \_\_\_\_\_ and \_\_\_\_\_.
- c. Seek to restore as many \_\_\_\_\_ as possible.
- d. Make development \_\_\_\_\_ - \_\_\_\_\_ by providing financial incentives.

Define: Biodiversity Hotspots-	List 6 biodiversity hotspots in the US:

Define: Ecological Restoration-

Measures that can be taken to speed up repair operations:

- 1.
- 2.
- 3.
- 4.

Case Study: What is the Blackfoot Challenge?