

Chapter 11

Biodiversity and Conservation




Section 1 :

Biodiversity

Q1. What are the three types of Biodiversity?

Biodiversity refers to the number of different species that live in a region.

Three main types of biodiversity are,

Genetic Diversity	Species Diversity	Ecosystem Diversity
The number of different genes within a species. 	The number of different species in a community. 	The number of different ecosystems in the area. 

Exercise 1

Choose the correct answer.

Study the photo below. The people all have different physical characteristics, such as eye color and hair color. This indicates great diversity.



(a) Genetic Diversity

(b) Species Diversity

(c) Ecosystem Diversity

A(n) species ✓ ▼ is a group of individuals of the same kind that are genetically related.

A(n) community ✓ ▼ includes all of the plants and animals in a region, but not the soil, rocks, or water sources.

Q2. Why is biodiversity important?

We need to preserve and protect all species on Earth for future.

Biodiversity has economic, aesthetic value and scientific value, so people protects biodiversity.

⚙️ *Select the statement that describes an aesthetic value of natural ecosystems.*

☐ Ecosystems provide resources for food and shelter.









☐ Ecosystems are popular places for people to take photographs.

☐ Ecosystems contain plants that are used to make medicine.

☐ Ecosystems provide clean water for human populations.

Q3. What are the direct and indirect value of Biodiversity?

Economic value of Biodiversity

Direct Economic	Indirect Economic
Natural Resources we get from the ecosystem for human, and helps economy.	The process that are performed by ecosystems that benefits humans.
	
food	Photosynthesis
	
clothes	wet lands
	
Medicine	Water sheds
	
wood	Nutrient recycling

Exercise 2

Classify options below into direct economic and indirect economic value.

Direct Economic Value	Indirect Economic Value
<div>controlling flood waters</div> <div>nutrient cycling</div> <div>sustainable lumber supply</div> <div>adequate food supply</div> <div>genetic diverse plants used to make clothes</div> <div>photosynthesis</div>	

Biodiversity in wetland ecosystems provides indirect economic value by providing flood control

Planting trees in urban environments provide indirect economic value by exchanging gases in the air

The word economic ✓ ▼ refers to the production and availability of goods and services, such as natural resources in an ecosystem.

Section 2 :

Threats to Biodiversity

Q4. What are the Threats to Biodiversity?

1) Over Exploitation

The excessive use of species that have economic value.



Cutting trees for wood



Hunting animals
For food and skin.

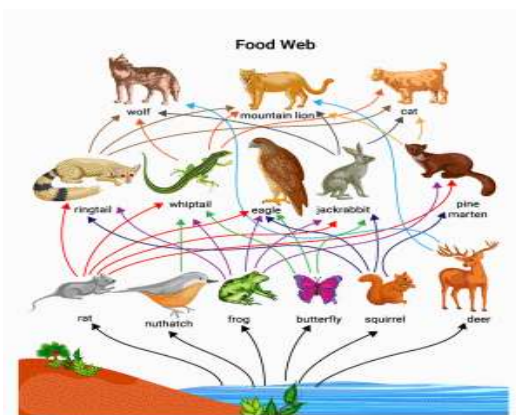
2) Destruction of Habitat.

Human activities like clearing forest, damage the habitat of animals .



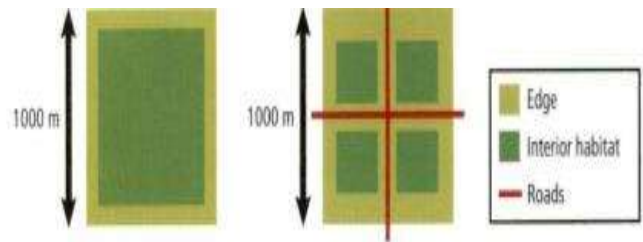
3) Disruption of Habitat

Declining of one member of food web affects other animals.



4) Habitat Fragmentation.

Separation of ecosystem into smaller pieces of land.



5) Pollution

Pollution changes composition of air, water and soil.



Q5. How is current extinction rate different from background extinction rate?

- Extinction means an entire species completely disappear from earth.
- Background extinction is the gradual and normal process of species becoming extinct because of climate change or natural disaster. It is not a worry.
- In last 500 years many species of plants and animals are extinct because of human activity like cutting trees, making roads and cities, and pollutions.
- Introducing non-native species like cats, rats or human made native species unable to survive for food and diseases.

Q6. How can a decline of a single species affect an entire ecosystem?

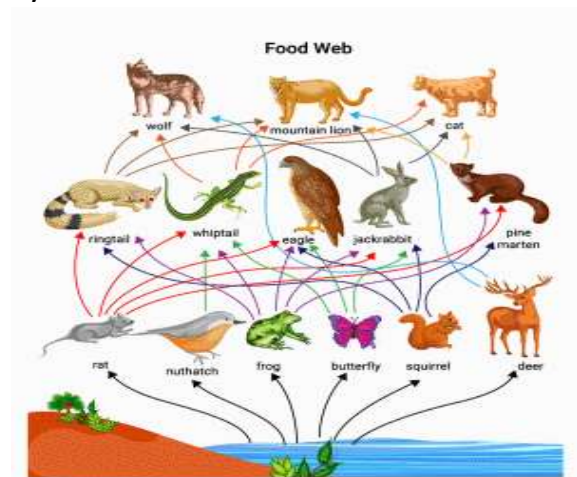
Declining many members of single key species of a food web, may affect the entire ecosystem.

For example :

(1) Decline of sea lions and harbor seals , makes killer whales to eat more sea otters. Which will affect kelp forests.

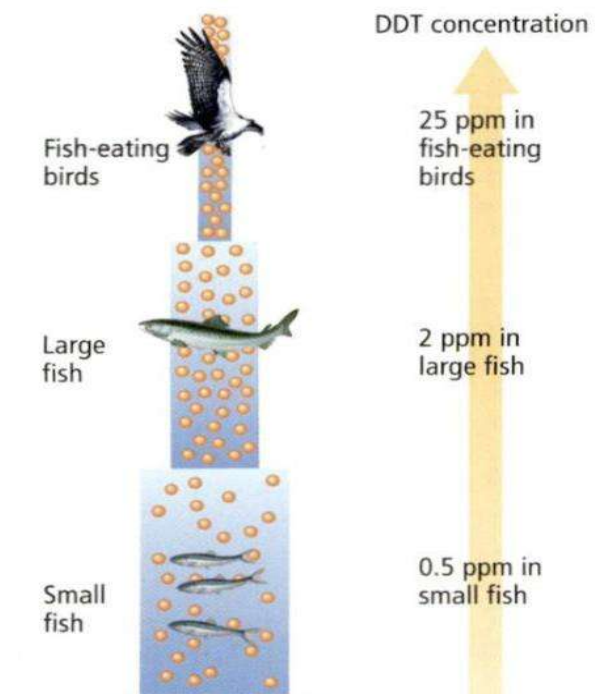


(2) Decline of ring tail affects cat and butterfly.



Biological Magnification

It is the increase in concentration of toxic substance in organisms as trophic levels increase in food chain or food web.



Exercise 7

If the ecosystem is exposed to DDT, which organisms would have higher concentration of chemicals in their bodies.

- (a) goat (b) mouse (c) snake (d) lion (e) kite



Eutrophication

Eutrophication occurs when fertilizers, animal waste, sewage, or other substances rich in nitrogen and phosphorus flow into waterways, causing extensive algae growth. The algae use up the oxygen supply



Some TextBook Questions

Use the photo below to answer questions 5 and 12.



5. Which term best describes what the rabbits in the photo demonstrate?
- A. ecosystem diversity
 - B. genetic diversity
 - C. species richness
 - D. species diversity

7. Which represents an indirect economic value of biodiversity?
- A. food
 - B. clothing
 - C. flood protection
 - D. medicines
8. Which term best describes this collection of locations: a forest, a freshwater lake, an estuary, and a prairie?
- A. ecosystem diversity
 - B. extinction
 - C. genetic diversity
 - D. species diversity

Observe Table 2 and answer the questions

Table 2		Estimated Number of Extinctions Since 1600				
Group	Mainland	Island	Ocean	Total	Approximate Number of Known Species	Percent of Group Extinct
Mammals	30	51	4	85	4000	2.1
Birds	21	92	0	113	9000	1.3
Reptiles	1	20	0	21	6300	0.3
Amphibians*	2	0	0	2	4200	0.05
Fish	22	1	0	23	19,100	0.1
Invertebrates	49	48	1	98	1,000,000+	0.01
Flowering plants	245	139	0	384	250,000	0.2

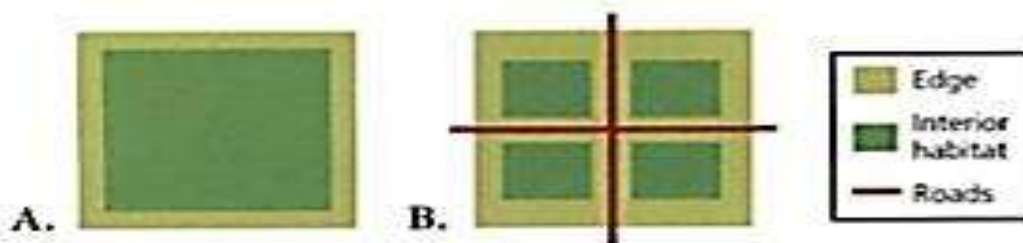
18. Which group of organisms listed in **Table 2** has the greatest number of extinctions overall?

- A. birds ☒ C. invertebrates
B. flowering plants ☐ D. mammals

19. Which group listed in **Table 2** has the greatest percentage of extinctions?

- A. birds ☒ C. mammals
B. fish ☐ D. reptiles

Use the figure below to answer questions 20 and 21.



20. Which habitat has the greatest impact resulting from edge effects?

- A. A ☒ C. A and B equally
B. B ☐ D. neither A nor B

21. Which habitat naturally supports the greater amount of biodiversity?

- A. A ☒ C. A and B equally
B. B ☐ D. neither A nor B

22. Which is not a way in which species lose their habitats?
- ☒ A. background extinction
 - B. destruction
 - C. disruption
 - D. pollution
23. Approximately how much greater is the current background extinction compared to the normal rate?
- A. 1 time
 - ☒ C. 1000 times
 - B. 10 times
 - D. 10,000 times
24. Which condition triggered the chain of events off the coast of Alaska that caused the kelp forests to begin to disappear?
- A. a decrease in the amount of plankton
 - ☒ B. an increase in the number of sea otters
 - C. overharvesting of plankton-eating fish
 - D. pollution caused by pesticides