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Adaptation in Animals



Just like plants, animals also live in different kinds of surroundings known as habitats. Some animals live on land while others live in water. There are certain animals that can live both on land and in water.

Learn about

- Why do animals need to adapt?
- Adaptations based on habitat
- Adaptations based on eating habits
- Care and concern for animals

► Why Do Animals Need to Adapt?

Different animals have different features that help them to survive in their habitat. These special features are called **adaptations**. Animals have different adaptations based on their food habits. Some animals have adaptations to save themselves from predators too. We will study about it later in this chapter.

► Adaptations Based on Habitat

Animals living in different places have adapted to their surroundings in order to find food, shelter, and protect their young ones.

Adaptations in Animals on Land

*Animals that live on land are called **terrestrial animals**.* Lions, cows, zebras, yaks, camels, and polar bears are examples of terrestrial animals. The climatic conditions may vary from one place to another. Deserts have hot climate, while mountains and polar regions have cold climate.

Animals found in hot regions show the following adaptations that help them to live there.

- There is always scarcity of water in the deserts. Desert animals drink lots of water at a time, so that they can stay without drinking water for many days.
- Camels have a thick pad of fat under their feet that prevents their feet from sinking into the sand.
- *Some animals become inactive or go for a long sleep during the hot summer months to prevent the loss of water from their bodies. This is called **aestivation**.*



Camels have padded feet.

Animals such as polar bears, penguins, walruses, and arctic foxes have the following adaptations that help them to live in the cold polar regions.

- Animals such as penguins have a thick layer of fat, called **blubber**, under their skin. It helps in keeping their body warm.
- Animals in polar regions, such as polar bear and arctic foxes, have thick fur on their body, which also helps them to keep their body warm.
- *Some animals, such as hedgehogs, become inactive and go for a long sleep until winter is over. This inactivity shown by some animals during winter months is called **hibernation**. It is also known as **winter sleep**.*
- Animals such as lions, tigers, and leopards have strong legs to run and catch their prey.



Arctic foxes have thick fur on their body.

Adaptations in Animals in Water

*Animals that live in water are called **aquatic animals**.* Fish, octopuses, turtles, and crabs are examples of aquatic animals. These animals have the following adaptations that help them to live in water.

- Most aquatic animals have fins or limbs that help them to swim in water.
- The shape of their bodies helps them cut through water, easily and quickly.
- Fish have gills, which help them to breathe in water. However, animals such as whales and dolphins have lungs that help them to breathe.



Aquatic animals

Know Your SDGs



SDG 14: Life Below Land

(Conserve and sustainably use the oceans, seas, and marine resources for sustainable development)

People go fishing for various reasons, such as food, cultural traditions, livelihood, recreation, research, and conservation. However, people have started overfishing and overstocking. This should be controlled as it affects the fish population, which takes considerable time to replenish (to make something full again).

Adaptation in Animals that Live on Land and in Water

*Animals that live both on land and in water are called **amphibians**.* Frogs and toads are examples of amphibians. These animals have the following adaptations that help them to live both on land and in water.



Frog's webbed feet

- Amphibians, such as frogs, have **webbed feet**, which help them to swim or paddle in water.
- Most of them have moist skin, which help them to breathe in water. They have lungs to breathe on land.
- Their back legs are stronger than their front legs. This helps them to jump on land.

Case Study



Navin lives in Lucknow. He has two goats. The goats have thin fur and usually graze in the morning and afternoon. During summer vacations, he went to his uncle's home in Dehradun. He was amazed to see that the goats in Dehradun were quite different from the goats he has. These goats have thick fur and graze in the afternoon.

Based on the above information, answer the following questions:

- Mention any one feature that makes the goats different from one another based on their habitat.
- How does this feature help the goats to survive?

Adaptation in Animals in Air

***Arboreal animals** are those animals that live mostly on trees.* Examples of arboreal animals are monkeys, lemurs, koalas, birds, snakes, chameleons, and some spiders. They have certain adaptive features that help them to climb up and down the trees without falling.

- Some arboreal animals have small bodies, with strong, elongated, and muscular limbs.
- Some arboreal creatures have clawed and sticky feet to grip the branches of trees.
- Monkeys have a long, muscular tail for holding the branches and swinging easily from branch to branch.



Lemurs



Monkeys

Questions



Choose the correct word to fill in the blanks.

1. Different kinds of surroundings where animals live are known as (adaptations/habitats).
2. (Camels/Hedgehogs) have thick pad of fat under their feet that prevent them from sinking in sand.
3. (Aestivation/Hibernation) is also known as winter sleep.
4. An example of an aquatic animal that has lungs to breathe is (fish/whale).
5. Frogs and toads are called (amphibian/arboreal) animals.

► Adaptations Based on Eating Habits

Different animals eat different kinds of food. Some eat plants, some eat flesh, while others eat both. Animals have different adaptations based on their eating habits.

Based on their eating habits, animals can be grouped as herbivores, carnivores, and omnivores.

Adaptations in Herbivores

*Plant-eating animals are called **herbivores**.* These animals have sharp teeth for biting and strong teeth for grinding the food. Cows, giraffes, horses, elephants, sheep, deer, and goats are a few examples of herbivores.

Fact File

The long neck of giraffes and the trunk of elephants are adaptations that help them to eat branches and leaves of tall trees.

Teeth of a herbivore



Horses, cows, and giraffe are some herbivores.

Adaptations in Carnivores

*Flesh-eating animals are called **carnivores**.* These animals have sharp teeth to tear the flesh of their prey¹. Lions, tigers, and leopards are examples of carnivores. Carnivorous birds such as eagles have strong and sharp talons² to catch their prey, and sharp beaks to tear their flesh.

Teeth of a carnivore



Lion is a carnivore.



Human beings are omnivores.

Adaptations in Omnivores

*Animals that eat plants as well as the flesh of other animals are called **omnivores**.* They have sharp and strong teeth suited for eating both plants as well as the flesh of other animals. Bears, dogs, and human beings are examples of omnivores. Omnivorous birds such as crows have strong beaks and claws.

Questions

Write **T** for True and **F** for False.

1. Herbivores have sharp teeth for biting and strong teeth for grinding the food.
2. Lions and tigers are herbivores that eat flesh.
3. Bear and dogs are omnivores.
4. A crow has a weak beak and claws.

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¹prey: an animal or a bird that is hunted and eaten by another

²talons: powerful claws of some birds

► Care and Concern for Animals

Animals are an important part of our environment.



Animals such as squirrels and monkeys eat the fruits and seeds of different plants. Some seeds pass through their droppings undigested. These seeds germinate into new plants. In this way, these seeds are scattered away from their parent plants.

Herbivores depend on plants for food. Similarly, carnivores depend on herbivores for food. This interaction between living beings for food, results in the formation of a **food chain** in the environment. The absence of some animals from the food chain will upset the balance in nature and may even result in the death of other animals and plants. Hence, we must protect animals as they help in maintaining the balance of nature. Animals can be protected in the following ways:

- Trees are the natural homes of many animals such as squirrels, monkeys, birds, and many wild animals. So, we should avoid cutting trees so as to protect their homes.
- Things such as leather bags, belts, and fur coats are made from animal skin. We should avoid using such things to save animals.

We should also take care and provide proper attention to animals. This can be done in the following ways:

- Some animals are kept at homes as pet or in farms as farm animals. We must take proper care of them.
- We should provide them adequate healthy food and clean water for drinking.
- We must clean and bathe them regularly.

Think and Discuss



Many animals, unknowingly, eat plastic waste (usually small pieces of plastic) as food. Sometimes these animals are further eaten by other animals as food. In this way, plastic enters the food chain. Think about and discuss what its consequences are and what measures we can take at our level to reduce plastic waste.



Provide adequate food to animals.



Give animals a comfortable shelter.



- We must give them a clean, cosy, and comfortable shelter.
- If they fall sick, we should call a veterinary doctor to attend them.
- Proper vaccination should be given to them on time.

Always be kind to animals. Give them lots of love, care, and attention.

Wrap Up

- Animals need to adapt themselves to the changing environment.
- With time, animals develop certain features or adaptations of their body parts or behaviour, that enable them to survive in the slow-changing environment.
- Terrestrial animals in hot regions have thick pads of fat under their feet and drink a lot of water at a time, so that they can stay alive without drinking water for many days.
- Terrestrial animals in cold regions have thick layers of fat and a thick fur.
- Aquatic animals have fins or limbs for swimming and gills for breathing.
- Amphibians have webbed feet to swim and have moist skin and lungs for breathing.
- Based on their eating habits, animals have different adaptations. They can be classified as herbivores, carnivores, and omnivores.
- We should take care of animals and plants, as they are all part of the food chain and maintain the balance of nature.

Exercises

SECTION I

A Choose the correct option.

1. Terrestrial animals live in/on
a. land b. water c. air d. both a. and b.
2. Porcupines have
a. spines b. spiracles c. moist skin d. shells
3. Most of the have moist skin to help them breathe in water.
a. amphibians b. aerial animals
c. terrestrial animals d. aquatic animals



4. Lions are
a. herbivores b. scavengers c. carnivores d. omnivores
5. birds have strong beaks and claws.
a. Parasitic b. Herbivorous c. Amphibian d. Omnivorous

B **Assertion and Reasoning questions.**

1. **Assertion (A):** Eagles have strong and sharp talons.
Reason (R): They help them to fly.
a. Both A and R are True b. Both A and R are False
c. A is True and R is False d. A is False and R is True
2. **Assertion (A):** Humans are herbivores.
Reason (R): They eat both plants and flesh of other animals.
a. Both A and R are True b. Both A and R are False
c. A is True and R is False d. A is False and R is True

C **Write T for True and F for False. Correct the False statements.**

- Animals that live on land are called aquatic animals.
- Dogs are terrestrial animals.
- Crow is an example of an omnivorous bird.
- Desert animals drink a lot of water at a time.

D **Name the following.**

- Animals that live in water
- A thick layer of fat under the skin of penguin
- Fish use it for breathing
- The inactivity shown by some animals during winter months
- Carnivorous birds use it to catch prey

E **Match the following.**

Column A

- Cow
- Bear
- Whale
- Tiger

Column B

- Aquatic animal
- Terrestrial animal
- Omnivore
- Herbivore

SECTION II



F Short answer questions.

1. Define adaptation.
2. What do you understand by hibernation?
3. What is aestivation?
4. Write one method of protecting animals.

G Long answer questions.

1. Arjun went on a desert safari with his parents during his summer vacations. He saw various animals that had distinct features. Name any three animals he could find there. Mention the adaptations shown by such animals.
2. Humans cannot live in water like aquatic animals. Write any three adaptations of aquatic animals that help them to live in water.
3. Animals such as frogs and toads can live both on land and in water. Name the category of animals they belong to. Also, mention any three adaptations shown by such animals.
4. Ruhi recently brought a new pet dog to her home. Explain how she should take care of him.

Picture Study



Look at the picture carefully and answer the following questions.

- a. Name the animal shown.
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- b. Where does this animal live?
.....
- c. Why does it have a thick layer of fat under its skin?
.....
- d. What is this layer of fat known as?
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My Learning Corner

A Think about

Why do carnivores have strong legs?

B Try out

1. In your Science Scrapbook, paste pictures of various animals showing adaptations based on their habitat and eating habits.
2. Collect information on Project Tiger based in India and paste pictures related to it.
3. Write a paragraph on an animal you love the most.
4. There are variety of landforms (like mountains, deserts, plains, and coastal areas) present in India. Select a state that is dominated by a particular landform. Make four similar sets of State-Landform pairs in your Science Scrapbook, for example, Kashmir-Mountain. Also paste pictures of any two animals present there in large numbers.



Self-Assessment

Now that you have completed the chapter, score each of the following tasks from 1 to 5 to indicate how well you can do them.

Score 5 = I can definitely do this.

Score 1 = I cannot do this yet.

I can...	My score
<ul style="list-style-type: none">• explain why animals need to adapt.	
<ul style="list-style-type: none">• explain the adaptations shown by animals based on their habitat.	
<ul style="list-style-type: none">• explain the adaptations shown by animals based on their eating habits.	
<ul style="list-style-type: none">• list ways to take care and show concern for animals.	

Worksheet



Look at the table given below. It mentions adaptations in animals based on different habitats and eating habits. Paste pictures; write two examples and any three adaptive features in each case.

	ADAPTATION BASED ON HABITAT		ADAPTATION BASED ON EATING HABIT	
	Land animals	Aerial and arboreal animals	Herbivores	Carnivores
Paste a picture of an animal for each adaptation				
Examples (two each)	<p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p>
Characters (any three)	<p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>