2 Animal Classification

There is a vast diversity among animals that live in our environment.

It is easy to study about them by classifying organisms, based on different criteria. **Categorizing animals in a systematic way by considering their common features is known as animal classification.**

Animals can be classified on different criteria.

In grade 7 you learnt how to classify animals based on presence or absence of a vertebral column (backbone).

Let us do Activity 2.1 from the knowledge and facts you learnt in grade 7.

Activity 2. 1

Method:-

- Observe given pictures of the animals living in your surroundings.
- Divide and tabulate them into two groups using the feature, presence or absence of a vertebral column.

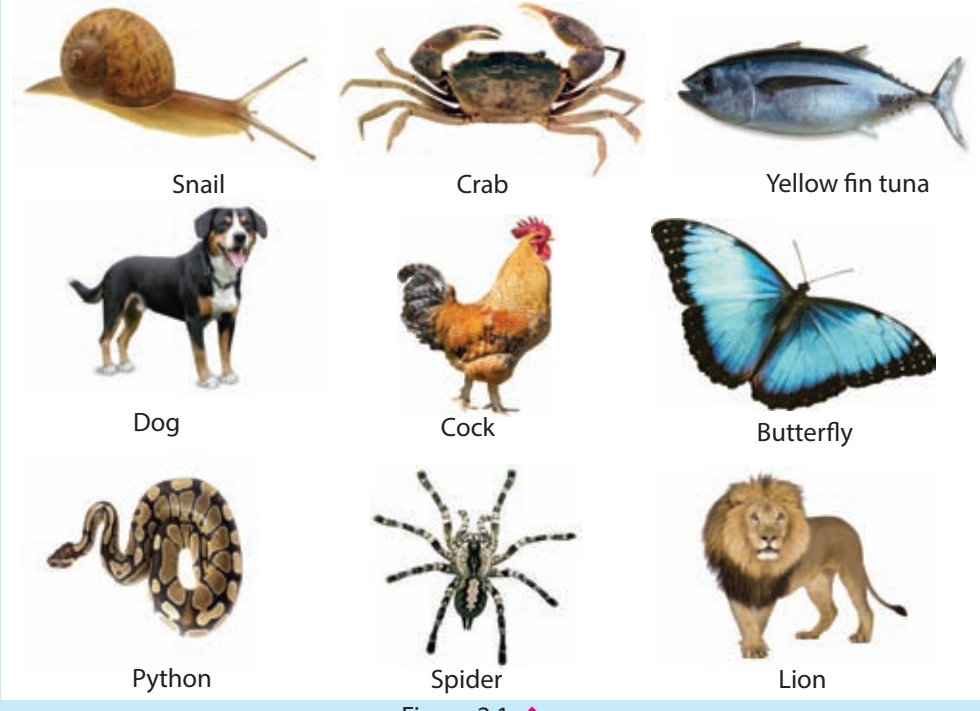


Figure 2.1

Among those animals yellow fin tuna, dog, cock, python and lion have a back bone. Snail, crab, butterfly and spider do not have a backbone.

The animals without a back bone / vertebral column are known as **invertebrates** while the animals with a back bone / vertebral column are known as **vertebrates**. Therefore, animals can be classified into two groups;

- Invertebrates
- Vertebrates

2.1 Main invertebrate groups

Engage in Assignment 2.1 to study about invertebrates.

Assignment 2.1

- Observe given diagrams of the invertebrate animal species.
- Classify them based on different criteria.

Figure 2.2

You have already classified the animals based on different criteria.

Invertebrates are scientifically classified by using their common features.
Some of the groups are given below.

1. Cnidaria
2. Annelida
3. Mollusca
4. Arthropoda

Let us consider the features of each of the above groups.

Cnidaria

The animals belong to Cnidaria are predators and live in water. Hydra, sea anemone, jellyfish are some examples for the group of Cnidaria.


Hydra


Sea anemone


Jellyfish

Figure 2.3 ▲ Some Cnidarians

The features of Cnidaria are given below.

- Cnidarians have radially symmetrical body. (a basic body plan in which the organism can be divided into similar halves by passing a plane at any along a central axis).
- There are two forms as Polyps and Medusa. (Polyps are fixed to the substrate and lead a sedentary life while Medusa are free swimming organisms)
- They cripple small creatures with their special tentacles having cnidocytes and use them as food.

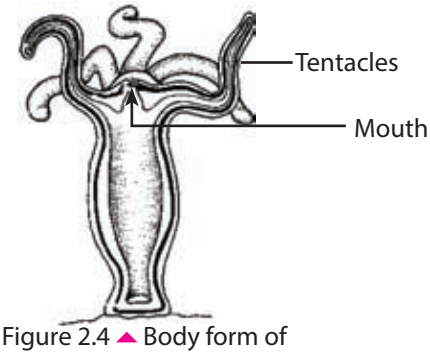


Figure 2.4 ▲ Body form of Cnidarian (Hydra)

For extra knowledge

The coral polyps belong to the Cnidaria group build up coral reefs.

Annelida

Annelids live in both marine and fresh water environments as well as in wet terrestial environments.

Earthworm, leech, *Nereis* are some examples for Annelids.

Earthworm

Leech

Nereis

Figure 2.5 ▲ Some Annelids

Common features of Annelids are given below.

- Body is bilaterally symmetrical. (a basic body plan in which the left and right sides of the organism can be divided into approximate mirror image of each other along the midline.)
- They are vermiform (worm-like body shape).
- Body consists of segments. Therefore, known as **segmented worms**.

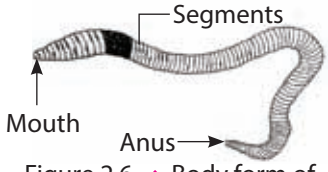


Figure 2.6 ▲ Body form of an Annelid (earthworm)

Mollusca

Molluscs live in terrestial, marine and fresh water environment. Snail, bivalve, chiton, slug, cuttle fish, octopus are some examples for Molluscs.

Snail

Bivalve

Octopus

Figure 2.7 ▲ Some Molluscs

The features of Molluscs are given below.

- They are bilaterally symmetrical.
- Soft bodied animals.
- Possess a muscular foot.
- Possess a skin moistened with mucus.
- Some Molluscs bear shells.

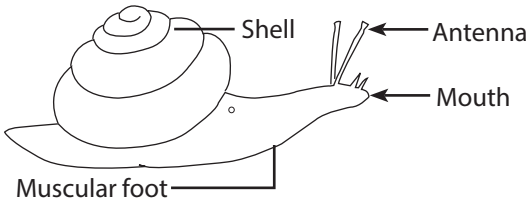


Figure 2.8 ▲ Body form of a molluscs (Snail)

Arthropoda

Arthropods live in terrestial as well as in aquatic environments. Arthropoda is the group to which the highest number of animals belongs. Insects, spiders, scorpions, millipedes, centipedes, prawns, crabs are some organisms that belong to the group Arthropoda.


Butterfly Scorpion Centipede Prawn

Figure 2.9 ▲ Some Arthropods

Features of Arthropods are given below.

- Arthropods are bilaterally symmetrical.
- Their body possesses an external skeleton/ exoskeleton.
- Some species possess wings.
- Arthropods have externally segmented body.
- All Arthropods have jointed appendages.

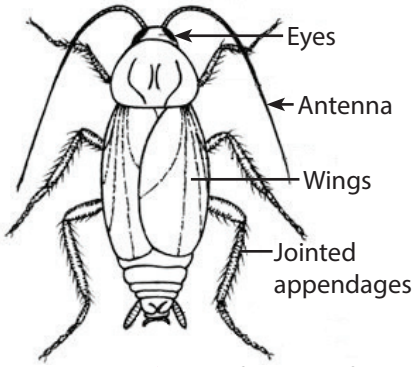


Figure 2.10 ▲ Body features of an Arthropoda (Insects)

Assignment 2.2

- Collect the bodies of dead insects.
- Get a box (wood, metal or card board) and fix a piece of styrofoam to the bottom of the box.
- Fix the bodies on the styrofoam using long pins.
- Paste a name tag for each insect. (Discuss with your teacher how to keep the bodies of insects without decaying)

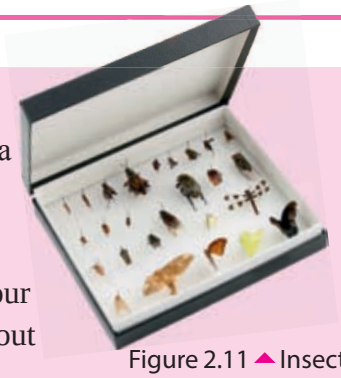


Figure 2.11 ▲ Insect box

2.2 Main vertebrate groups

Engage in Assignment 2.3 to study about vertebrates.

Assignment 2.3

- Observe the given pictures of different vertebrate animal species.
- Classify them using different criteria.

Blue fin tuna

Turtle

Crocodile

Common commorant

Toad

Hawk

Bat

Chimpanzee

Salamander

Figure 2.12 ▲

Now you can classify vertebrates based on different criteria.
Vertebrates can be scientifically classified depending on their common features.
Let us discuss the features of each of these groups.

1. Pisces
2. Amphibia
3. Reptilia
4. Aves
5. Mammalia

Pisces

Fish, the group of animals well adapted to live in water belong to Pisces. Tilapia, skate, shark, blue fin tuna, sear, gold stripped sardine, sprat are some fish that belong to Pisces.

Tilapiya Skate Shark Blue fin tuna

Figure 2.13 ▲ Some Pisces

Features of Pisces are given below.

- Body is invariably streamlined. This feature helps them to swim through water.
- The body is covered with scales.
- Has fins to swim through water and to balance while swimming.
- Breathe using gills.
- Possess eyes without eye lids.

Amphibia

Amphibians spend part of their life cycle in water. Frogs, toads, salamanders, ichthyophis are some animals that belong to the group Amphibians.

Frog Toad Salamander Ichthyophis

Figure 2.14 ▲ Some Amphibians

Features of Amphibians are given below.

- Undergo metamorphosis.
- Skin is thin, moist and glandular. No scales in the skin.
- Some species use limbs for locomotion.
- Respiration is carried out by lungs, through wet skin or mouth.

Reptilia

Reptiles belong to this group. They are well-adapted for the terrestrial environment. Tortoise, turtle, cobra, python, viper, krait, lizard, monitor, iguana, crocodile belong to this group.

Tortoise Crocodile Cobra Viper

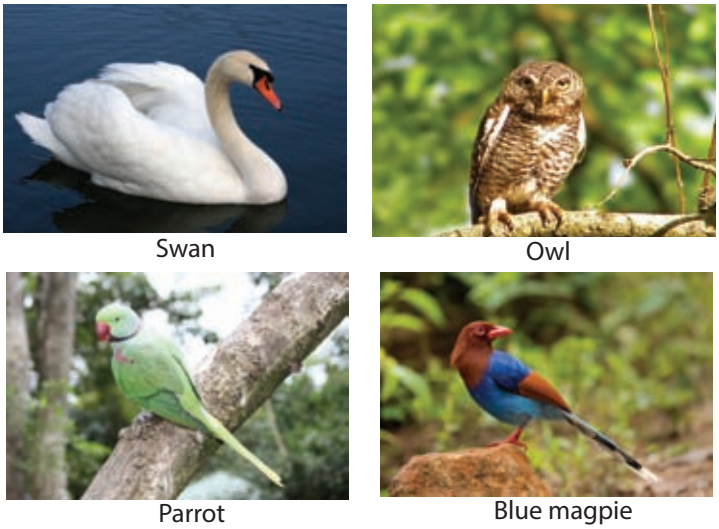
Figure 2.15 ▲ Some Reptiles

Features of Reptilia are given below.

- Possess a dry skin with scales. No glands are present in the skin.
- Use limbs for locomotion. But some reptiles are limbless. They are adapted for crawling
- Breathe using lungs.

Aves

Birds belong to the group Aves. They are well-adapted for flying. Blue magpie, swan, owl, parrot are some examples for Aves.



Swan Owl

Parrot Blue magpie

Figure 2.16 ▲ Some Aves

Features of Aves are given below.

- Streamlined body is designed for flying.
- Body is covered with feathers.
- Possess limbs for locomotion. Forelimbs are adapted as wings.
- They do not have teeth but the beak is adapted for feeding.
- Breathe using lungs.

For extra knowledge

There are some birds that cannot fly. Some examples are given below.


Ostrich


Rhea


Emu


Casowery


Penguin


Kiwi

Mammalia

These animals feed on mother's milk. Man, rat, loris, orangutan, gorilla, chimpanzee, bat, whale, dolphin, stag, deer are some examples for mammals.

Gorilla

Dolphin

Deer

Loris

Figure 2.17 ▲ Some Mammals

Features of Mammalia are given below.

- Has mammary glands.
- Skin has sweat glands, sebaceous glands and hair.
- Possess an external ear.
- Mammals have lungs to breathe.

Assignment 2.4

- Collect some pictures of mammals.
- Collect information about them.
- Prepare a booklet allocating one page for each animal. (Consider about the cover page, foreword, contents, acknowledgement etc.)

By studying this lesson, you have identified that there is a wide diversity among animals. You can further study about them by visiting zoological gardens and wildlife parks. All animals contribute immensely to maintain the balance of environment.

Summary

- There is a vast diversity among animals in the environment.
- Animals with a backbone / vertebral column are known as Vertebrates and animals without a back bone / vertebral column are known as Invertebrates.
- Considering the common features, invertebrates can be classified into different groups. Cnidaria, Annelida, Mollusca and Arthropoda are some groups of Invertebrates.
- Considering the common features, vertebrates can be classified into different groups as Pisces, Amphibia, Reptilia, Aves and Mammalia.

Exercise

1. Select the most suitable answer.

i. The group of animals, **not** belong to invertebrate is ?

1. Annelida
2. Cnidaria
3. Amphibia
4. Arthropoda

ii. The group with a most number of animals is,

1. Aves
2. Athropoda
3. Mollusca
4. Mammalia

iii. An animal belonging to Reptilia group is,

1. Shark
2. Salamander
3. Whale
4. Turtle

2. Fill in the blanks.

i. Sea anemone belongs to ..... group.

ii. Possessing segmented appendages is a feature of ..... group.

iii …….. breathe using lungs, wet skin and the mouth.

3. Name the invertebrate group that bears each of the features given below.

i. Muscular foot - .....

ii. Worm-like segmented body - .....

iii. Jointed appendages - .....

iv. Radial symmetry - .....

4. Write down the answers.

i. Name two forms of Cnidaria with an example for each form.

ii. Name four Arthropods that can fly.

iii. Give three basic features of Mammalia group.

iv. Give three basic features of Aves group.

Technical Terms

Classification	-	වර්ගීකරණය	-	பாகுபாடு
Radial symmetry	-	අරීය සමමිතිය	-	ஆரைச் சமச்சீர்
Bilateral symmetry	-	ද්විපාර්ශ්වික සමමිතිය	-	இருபக்கச் சமச்சீர்
Morphological features	-	රූපීය ලක්ෂණ	-	உருவவியல் இயல்புகள்
Invertebrates	-	අපෘෂ්ඨවංශීන්	-	முள்ளந்தண்டிலிகள்
Vertebrates	-	පෘෂ්ඨවංශීන්	-	முள்ளந்தண்டுளிகள்
Cnidaria	-	නිඩාරියාවන්	-	நிடாரியா / குழிக்குடலிகள்
Annelida	-	ඇනෙලිඩා	-	அனலிடா / துண்டப் புழுக்கள்
Mollusca	-	මොලුස්කා	-	மொலஸ்கா / மென்னுடலிகள்
Arthropoda	-	ආත්‍රොපෝඩා	-	ஆத்திரப்போடா / மூட்டுக்காலிகள்
Pisces	-	පිස්කේස්	-	பிஸ்ஸஸ் / மீன்கள்
Amphibia	-	ඇම්ෆිබියා	-	அம்பியா / ஈருடகவாழிகள்
Reptilia	-	රෙප්ටීලියා	-	ரெப்ரீலியா / ஊர்வன
Aves	-	ආවේස්	-	ஆவேஸ் / பறவைகள்
Mammalia	-	මැමේලියා	-	மமேலியா / பாலூட்டிகள்