

UNIT 10. VERTEBRATES

1. Fish

- n Fish are perfectly adapted to aquatic life. There are two main groups of fish: **bony fish** and **cartilaginous fish**.
- n Most fish are bony fish such as hake, salmon and trout. Sharks and manta rays are examples of cartilaginous fish. There are three main external characteristics of fish:
 - Their body is **fusiform** (spindle-shaped) and **streamlined**.
 - Their skin is covered in **scales**.
 - Fish have **fins**.
- n There are three main internal characteristics of fish:
- n They breathe through **gills**.
 - Many bony fish have a **swim bladder**.
 - Fish have the same senses as humans.
- n Many fish have a varied diet of algae or plankton. There are also carnivorous fish.
- n The majority of fish reproduce through **external fertilisation**. **Viviparous** fish reproduce through internal fertilisation.

THE MAIN TYPES OF FISH:

- BONY FISH: TROUT, SALMON AND HAKE
- CARTILAGINOUS FISH: SHARKS, RAYS AND MANTA RAYS.

2. Amphibians

- n **Amphibians** were the first vertebrates to colonise land. Amphibians can be divided into two groups: **anurans**, without a tail, such as frogs and toads, and **urodeles**, with a tail, such as salamanders and newts.
- n Amphibian skin is thin, moist and slippery. It is not protected against drying out. Their bodies are divided into the head and trunk. They do not have a neck.
- n Amphibian larvae breathe through gills. Adults have lungs, but they can also breathe through the skin. This is called cutaneous respiration.
- n Amphibians are carnivores. They feed on insects and other invertebrates.
- n Most amphibians are oviparous. **Anuran amphibians** reproduce by external fertilisation. **Urodele amphibians** reproduce through internal fertilisation.

THE MAIN TYPES OF AMPHIBIANS:

- ANURA: FROGS AND TOADS
- URODELA. SALAMANDRES AND NEWTS

3. Reptiles

- n **Reptiles** were the first vertebrates to adapt to land and become independent of water. Some examples are lizards, snakes and tortoises.
- n Their main adaptations to life on land are:
 - A **waterproof** body.
 - **Internal fertilisation**.
 - An **egg** with a hard **shell**.
- n Reptiles move by crawling or slithering along the ground.

n The majority of reptiles are carnivores. They swallow their prey whole. Others eat plants and algae.

n Reptiles, like fish and amphibians, are cold-blooded animals, or poikilotherms. The temperature of their body is similar to the atmosphere.

THE MAIN TYPES OF REPTILES:

- TURTLES:
- LIZARDS: LIZARDS, WALL LIZARDS, CHAMELEONS, SKINKS, IGUANAS,..
- SNAKES:
- CROCODILES:

4. Birds

n **Birds** have some very distinct features:

- Their body is covered in feathers.
- They are **bipeds**.
- Their forelimbs have become **wings**.
- They have a hornlike **beak** without teeth.
- They have **internal fertilisation**. They are **oviparous**.
- Birds are homeothermic, or warm-blooded, animals. Their body temperature is constant (around 42 °C). It is independent of the temperature around them.
- Their **nervous system** and **sight** are more highly developed than in reptiles.

n Birds are adapted to flying:

- They have an **aerodynamic** shape.
- They have a **light skeleton** and thin, hollow bones.
- Their forelimbs have become **wings**.
- Their respiratory system consists of **lungs** and **air sacs**.

THE MAIN KINDS OF BIRDS:

- CARINATAE: GULLS, GOLFINCHES AND FALCON, PENGUINS, ...
- RATITES: OSTRICH

5. Mammals

n **Mammals** have the following characteristics:

- Baby mammals feed on the mother's milk.
- They are **viviparous** animals, as the females give birth to live young.
- Mammals, like birds, are **homeothermic** animals. Most have bodies covered in hair or fur.
- Their nervous system, especially the **brain** and the **cerebellum**, is highly developed.

n Mammals have four **limbs**. There are **flying mammals**, like bats, **swimming mammals**, like cetaceans, and **walking mammals**, which use their limbs to walk, run, climb and jump. There are three kinds of walking mammals:

- **Plantigrades**, such as bears and humans, which stand upright on the soles of their feet.
- **Digitigrades**, such as dogs, stand on their toes.
- **Ungulates**, such as horses, stand on toes that have adapted to become hooves.

n Our species is called **Homo sapiens**. We belong to the primate order. The main difference between humans and primates are:

- Humans walk upright. They are **bipeds**.
- A large part of the human **body** has little hair.

- The human **jaw** is smaller.
- The human **brain** is much larger.
- The **period of childhood** and **growth** before reaching adulthood is much longer.

THE MAIN KINDS OF MAMMALS:

- MONOTREMES: PLATYPUS
- MARSUPIALS: KANGAROO
- PLACENTAL MAMMALS: LYNX, DOGS, CATS, HUMAN BEINGS