

AMPHIBIA: General Characters and Classification of Amphibia upto Orders with examples

Dr. Anita Kumari
Assistant Prof. (Guest faculty)
L.S.College
B.R.A.B.U., Muzaffarpur

They are the first cold blooded vertebrates from evolution point of view which came to the land. Class Amphibian includes about 3,000 species. They are amphibious in nature, viz. they can live on land as well as in water. They are mostly found in warm countries. They are ectothermic (cold blooded).

- Body is divisible into head and trunk. Tail may be present in some amphibians.
- The skin is smooth or rough having glands which keep it moist.
- They are usually without scales, but if present they are hidden beneath the skin (e.g caecilians).
- Paired fins are absent. Unpaired fins may be present. Two pairs of limbs are used for locomotion except caecilians.
- The gills are present at least in the larval stage; some adult forms also carry external gills in addition to lungs (e.g., Necturus, Proteus).
- Skull is dicondylic, i.e., with two occipital condyles .
- The respiratory organs are lungs, buccopharyngeal cavity, skin and gills.
- The heart is three chambered, having two auricles and one ventricle. In the heart, there are present sinus venosus and truncus arteriosus.

- Hepatic portal and renal portal systems are well developed. RBCs are biconvex, oval and nucleated.
- Kidneys are mesonephric. Urinary bladder is present in frog. Larvae and tailed amphibians (e.g., salamanders) are ammonotelic. Frogs and toads are ureotelic.
- Alimentary canal, urinary and reproductive tracts open into a common chamber called cloaca which opens outside through cloacal aperture.
- Ear consists of internal and middle ear. Tympanum (outer membrane) covers the middle ear. One ear ossicle, present.
- The eyes have eyelids. Nictitating membrane is well developed.
- Ten pairs of cranial nerves are present. Fertilisation is external. However in Salamander and Ichthyophis (blind worm) fertilisation is internal. They are mostly oviparous; however, Salamander is viviparous. Development is mostly indirect.
- They return to water for breeding. Male lacks copulatory organs. The metamorphosis is usually present. A fish like larva, the tadpole is present.
- They occur in fresh water and moist land. Amphibians are not found in sea water except a few.
- Example: Toad, Rana, Ichthyophysis etc.

Classification of Amphibia

According to G. Kingsley Noble (1931) classified Amphibians into six orders. Three are extinct and three are living. The classifications of three living orders are of class Amphibia is given below:

Apoda (Gymnophiona or Caecilia)

- Apoda means “without legs”. These are limbless organisms with scales on their body.
- They are also known as “blind-worms” because their eyes are covered by skin or bone.

- The tentacles on their head are the chemosensory organs that help them to detect the underground prey. Eg., Caecilians
- They possess venom glands.
- They secrete mucus to reduce water loss.
- E.g.-ichthyophis

Urodela (Caudata)

- These are the organisms with a tail.
- The body is elongated with four equally sized limbs.
- The skin is smooth with poison glands.
- Fertilization is internal.
- They feed on insects and worms. Eg., Salamanders
- They are found under leaf litter, in the soil, or in water.
- In the southern US, they reproduce primarily in winters.
- Very little differences between male and female.
- Spermatophores are utilized for internal fertilization.
- They possess hidden gills.
- E.g- *Salamander, Ambystoma, Necturus, Amphiuma*

Anura (Salientia)

- There are around 3400 species of Anura in the world.
- They have four limbs. The front limbs are elongated and modified to jump.
- The head and trunk are fused together.
- The tail is present only in the larval stage and is lost in the adults.
- Fertilization is external and the eggs are laid in water. Eg., frogs and toads