

Amphibia Classification

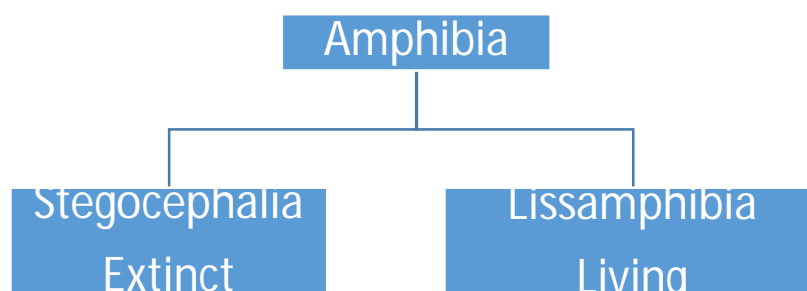
Transition from aquatic to terrestrial mode of life was the greatest event in the phylogenetic history of chordate and Amphibians were the first to invade the land. Amphibians are neither terrestrial nor aquatic instead they are adapted for both types of environment. The term Amphibia, itself, indicates dual mode of life. Hence, Amphibia are between fish (aquatic) and reptile (terrestrial). About 2500 living amphibian species are present today.

Important Characters

- 1) Poikilothermic, carnivorous, oviparous, aquatic or semiaquatic (freshwater)
- 2) Limbs 2 pairs, some limbless,
- 3) Paired fins absent, median fins, if present, devoid of fin rays
- 4) Chromatophores and glands present in skin
- 5) Exoskeleton absent, some with concealed dermal scales
- 6) Endoskeleton mostly bony, skull dicondylic
- 7) Cloaca present
- 8) Teeth homodont, protrusible tongue
- 9) Larva with external gills
- 10) Heart 3-chambered, aortic arches 1-3 pairs
- 11) Erythrocyte large, nucleated, and oval
- 12) Kidneys mesonephric, ureotelic
- 13) Cranial nerves 10 pairs
- 14) Aquatic adults with lateral line system
- 15) Middle ear with single rod-like one called columella
- 16) Males devoid of copulatory organ
- 17) Development indirect, larva tadpole, cleavage holoblastic unequal

CLASSIFICATION

Following classification is based mainly on the classification provided by G. Kingsley Noble (1924).



Subclass I. Stegocephalia (Extinct)

- 1) Limbs pentadactyle
- 2) Skin provided with scales and bony plates
- 3) Skull with solid bony roof
- 4) Permian to Triassic

Order 1. Labyrinthodontia

- 1) Oldest known tetrapod, also known as **stem amphibia**
- 2) Freshwater or terrestrial
- 3) Salamander or crocodile like
- 4) Teeth large with much folded dentine
- 5) Carboniferous to Triassic
Example *Eryops*



Figure 1 *Eryops*

Order 2 Phyllospndyli

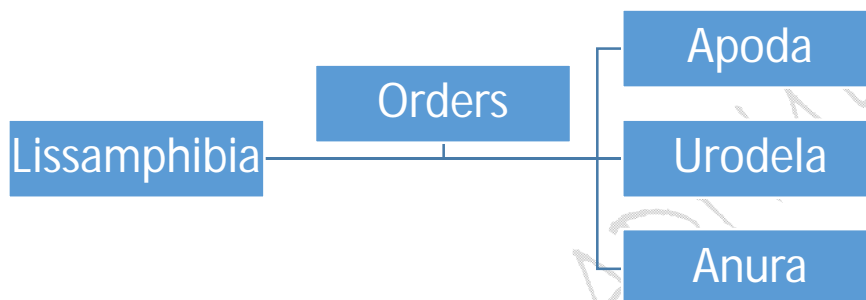
- 1) Head large, flat
- 2) Vertebrae tubular
- 3) Notochord and spinal cord in common cavity
- 4) Gave rise to Salientia and Urodela
- 5) Carboniferous to Permian
Example *Branchiosaurus (Ichthyostega)*

Order 3. Lepospondyli

- 1) Vertebrae cylindrical, each made up of single piece
- 2) Neural arch and centrum continuous
- 3) Ribs articulate intervertebrally
- 4) Ancestor to Gymnophiona
- 5) Carboniferous to Permian
Example. *Diplocaulus, Lysorophus*

Subclass II Lissamphibia (living)

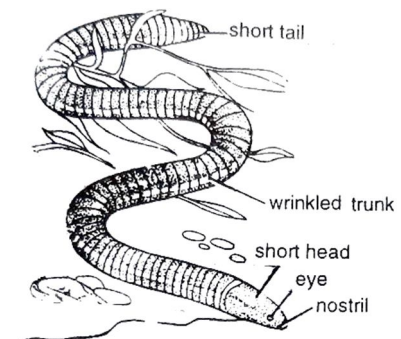
- 1) Modern amphibia
- 2) Lack dermal bony skeleton
- 3) Teeth small simple



Order 1. Gymnophiona or Apoda

- 1) Limbless, blind, elongated worm like
- 2) Burrowing tropical generally called caecilians
- 3) Limb girdles absent
- 4) Some have dermal scales embedded in skin
- 5) Males have protrusible copulatory organ
- 6) About 55 species

Example. *Ichthyophis*, *Uroaeotyphlus*



Ichthyophis

Order 2. Uropoda or Caudata

- 1) Lizard-like with a clear tail
- 2) Skin devoid of scales
- 3) Tympanum absent
- 4) Gills permanent or lost in adult
- 5) Males have no copulatory organ
- 6) Larvae aquatic, adult-like, with teeth