

## General characters and classification of class Reptilia.

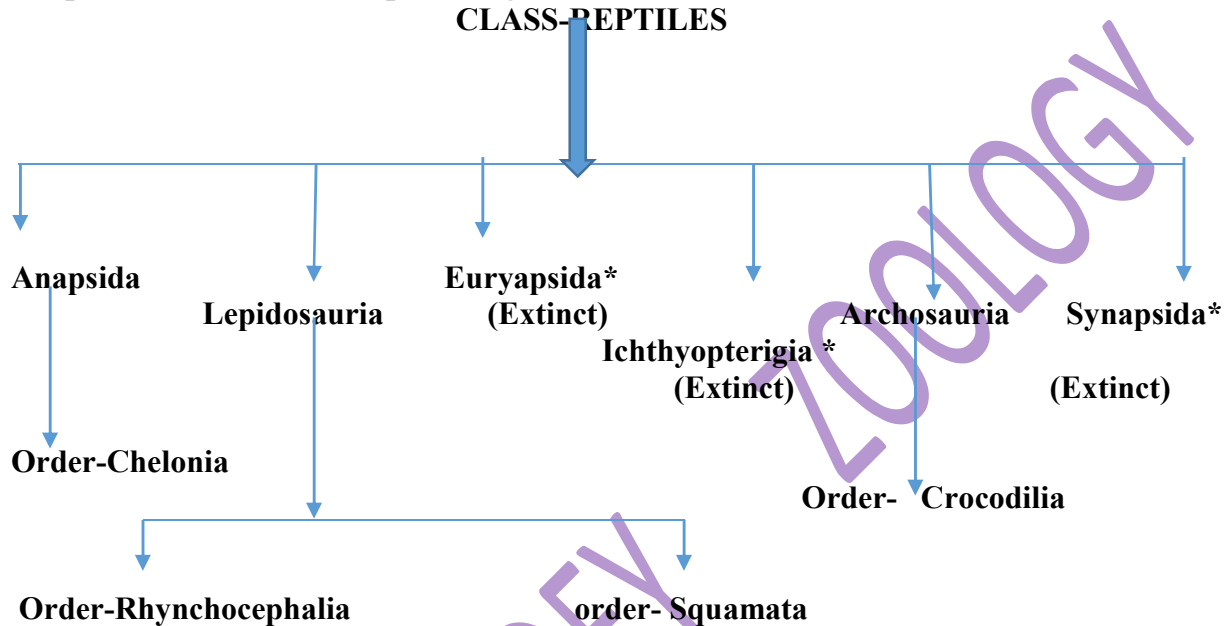
### General characters:

Reptiles represent the first class of vertebrates fully adapted for life in dry places on land. They have no obvious diagnostic characteristics of their own that immediately separate them from other classes of vertebrates. The characters of reptiles are in fact a combination of characters that are found in fish and amphibians on one hand and in birds and mammals on the other. The class name refers to the mode of locomotion (L., *reperere* or *reptum*, to creep or crawl), and the study of reptiles is called **Herpetology** (Gr., *herpeton*, reptiles). The general characteristics are as follows:

- Predominantly terrestrial, creeping or burrowing, most carnivorous, air-breathing, cold-blooded, oviparous and tetrapodal vertebrates.
- Body bilaterally symmetrical and divisible into 4 regions- head, neck, trunk and tail.
- Limbs two pairs, pentadactyle. Digits provided with horny claws. However, limbs absent in a few lizard and all snakes.
- Exoskeleton of horny epidermal scales, shields, plates and scutes. It is periodically shed off in pieces or a whole, **this is called moulting.**
- Skin dry, cornified and devoid of glands.
- Mouth terminal. Jaws bear simple conical teeth. In turtles teeth replaced by horny beaks.
- Alimentary canal terminates into a cloacal aperture.
- Endoskeleton bony. Skull with one occipital condyle (monocondylar). A characteristic T-shaped Inter clavicle present.
- Heart usually 3-chambered, 4-chambered in crocodiles. 2 systematic arches present. Red blood corpuscles oval and nucleated. Cold-blooded.
- Respiration by lungs throughout life.
- Kidney metanephric. Excretion uricotelic.
- Brain with better development of cerebrum than in Amphibia. Cranial nerves 12 pairs.
- Sexes separate. Male usually with a muscular copulatory organ.
- Fertilization internal. Mostly oviparous.
- Eggs are few, large, yolk rich and enclosed in leathery or limy Shell to prevent mechanical injury and desiccation. **This shell egg is called cleidoic egg.**
- Parental care usually absent.

## Classification:

Outline classification of class Reptilia is based on J. Z. YOUNG (1981) CLASSIFICATION SCHEME upto living order. The class Reptilia is divided into subclasses on the basis of presence or absence of certain openings (fossa) through the postero-lateral or temporal region of the skull.



### Subclass I Anapsida

Primitive reptiles with a solid skull roof. No temporal openings.

#### Order 1. Chelonia or Testudinata (Gr., *chelone*, turtle; L., *testudo*, turtle)

- Body short, broad and oval.
- Limbs clawed and/or webbed, paddle-like.
- Body encased in a firm shell of **dorsal carapace** and **ventral plastron**, made of dermal bony plates. Thoracic vertebrae and ribs usually fused to carapace.
- Skull anapsid, with a single nasal opening and without a parietal foramen. Quadrate is immovable.
- No sternum is found.
- Teeth absent. Jaws with horny sheaths.
- Cloacal aperture a longitudinal slit.
- Heart incompletely 4-chambered with a partly divided ventricle.
- Copulatory organ single and simple.
- About 400 species of marine turtles, freshwater terrapins and terrestrial tortoises.  
e.g. - *Chelonia mydas*, *Trionyx gangeticus*

### **Subclass II Euryapsida (extinct)**

Skull with a single dorso-lateral temporal opening on either side bounded below by postorbital and squamosal bones.

### **Subclass III Ichthyopteria (extinct)**

The roof of the skull was provided with an upper opening behind the eye and was bound below by postfrontal and supratemporal.

### **Subclass IV Lepidosauria:**

Skull with a two temporal opening on either side separated by the bar of postorbital and squamosal bones.

### **Order 2. Rhynchocephalia (L., rhynchos, snout+Gr., kephale, head)**

- Body small, elongated, lizard like.
- Limbs pentadactyle, clawed and burrowing.
- Skin covered by granular scales and a mid-dorsal row of spines.
- Skull diapsid. Nasal openings separate. Parietal foramen with vestigial pineal eye present.
- Vertebrae amphicoelous or biconcave. Numerous abdominal ribs present.
- Teeth acrodont. Cloacal aperture transverse.
- Heart incompletely 4-chambered.
- No copulatory organ in male.

Example. Represented by a single living species, the “tuatara” or *Sphenodon Punctatum* of New Zealand.

### **Order 3. Squamata (L., squama, scale or squamatus, scaly)**

- Advanced, small to medium, elongated.
- Limbs clawed, absent in snakes and few lizards.
- Exoskeleton of horny epidermal scales, shields and spines.
- Skull diapsid. Quadrate movable.
- Vertebrae procoelous. Ribs single-headed.
- Teeth acrodont or pleurodont.
- Heart incompletely 4-chambered.
- Male with eversible double copulatory organs.

e.g.- *Naja naja* , *Chameleon sp* , *varanus sp etc.*

### **Subclass- synapsida (extinct):**

They are considered as mammal like reptiles.

The skull was provided with a single and lateral temporal vacuity lying below the post-orbital and squamosal.

**Subclass: Archosauria:**

1. Skull was of diapsid type and lacked interparietal and parietal foramina.
2. The lower jaw was with vacuities between dentary and angular.

**Order 4. Crocodylia (G., *krokodeilos*, Crocodile)**

- Large-sized, carnivorous and aquatic reptiles.
- Tail long strong and laterally compressed.
- Limbs short but powerful, clawed and webbed.
- Skin thick with scales bony plates and scutes.
- Skull diapsid. Quadrate immovable. No parietal foramen. A pseudopalate present.
- Ribs bicephalous. Abdominal ribs present.
- Teeth numerous, thecodont, lodged in sockets.
- Heart completely 4-chambered.
- Cloacal aperture is a longitudinal slit.
- Male with a median, erectile, grooved penis.

Examples. *Crocodylus*, *Gavialis*, *Alligator*

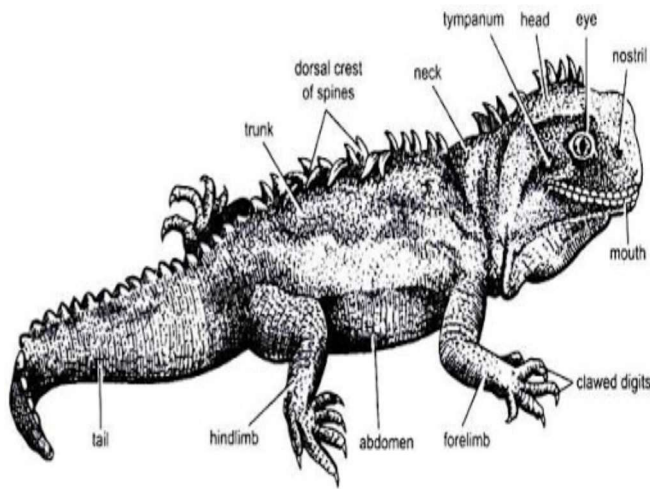
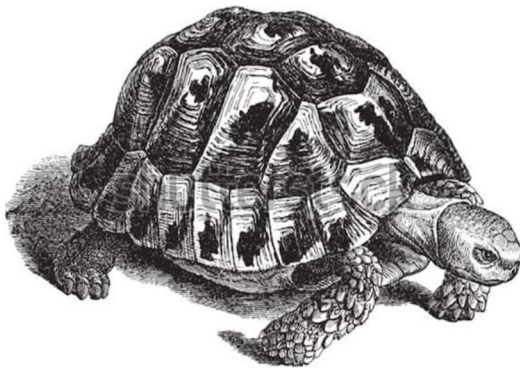


Fig. 24.3. *Sphenodon punctatum*.



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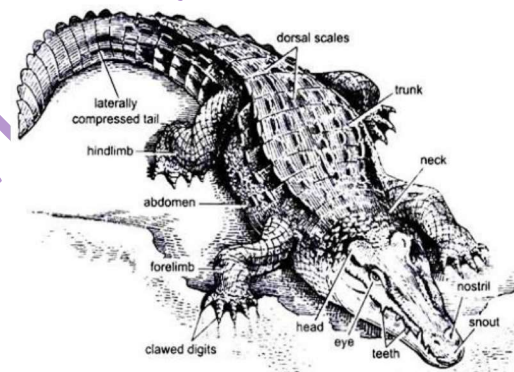


Fig. 24.7. *Crocodylus porosus* (Indian freshwater crocodile).

