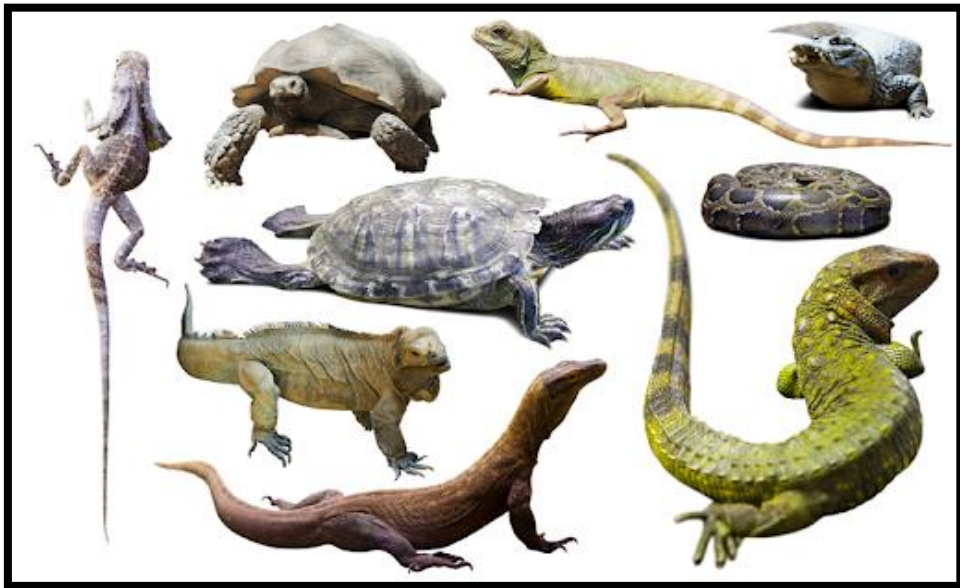




Subject	Zoology
Paper No. and Title	II-AnimalDiversity-II
Module Title	Reptiles
Module Tag	DBF-ZOO-REP

Reptiles



Name –Dr.L.C.Mushan

Assistant Professor

Department -Zoology

D. B. F. Dayanand College of Arts and Science, Solapur.

2018-2019

Title - Reptiles

- **Prerequisites** – Learners should know chordates

Learning outcomes:

Group animals on the basis of their morphological characteristics/ structures

Examine the diversity and evolutionary history of a taxon through the construction of a basic phylogenetic/ cladistics tree.

Understand how morphological change due to change in environment helps drive evolution over a long period of time.

Table of contents:

S.No.	Reptiles
1	Introduction
2	General Characters
3	Classification
4	Identification of Poisonous and Non-Poisonous snakes

Reptiles

Introduction

- Reptiles are the first vertebrates which are fully adapted for terrestrial life.
- The name reptiles refers to the mode of locomotion (Latin- Repere or reptum = to creep or crawl).
- There are about 7000 known living species of reptiles in which several species are extinct.

General characters of Reptiles:

- They are predominately terrestrial, creeping or burrowing animals, some are aquatic, tetra-pedal vertebrates.
- They are mostly carnivorous, air breathing and cold blooded animals.
- Body is bilaterally symmetrical and divisible into four regions head, neck, trunk and tail.
- Body is covered by exoskeleton of dry epidermal horny scales, shields, plates and scutes.
- Skin is dry, cornified and without glands.
- They possess two pairs of limbs, pentadactyle digits with horny claws.
- However, limbs are absent in few lizards and snakes.
- Heart 3 chambered except in crocodiles (4 chambered).
- Lungs are well developed for respiration.
- Nervous system is well developed with 12 cranial nerves.
- Sexes are separate. Fertilization is internal.
- Reptiles are oviparous animals. Cloaca is present.
- Reptiles do not show parental care.

Classification of Reptiles

Subclass 1. Anapsida:

- These are earliest primitive reptiles arose in carboniferous periods.

- Skull has complete bony roof. The subclass Anapsida includes single living order.

Order- Chelonia:

- Trunk is short, broad and enclosed in shields consisting of dorsal carapace and ventral plastron made up of outer epidermal scale and inner dermal bony plates.
- Jaws are strong without teeth.
- In aquatic forms limbs are modified into paddles.
- They are oviparous. The marine forms are called turtles and hard-shelled freshwater forms as terrapins and terrestrial forms as tortoises.
- Example: Testudo (Tortoise), Trionyx and Chelone .



Tortoise



Turtle

Subclass 2. Diapsida:

- Temporal region of the skull has two fossae, one above and other below, separated by squamosal bone. Such skull is called diapsid.

Order: Rhynchocephalia:

- Lizard like animals.
- Limbs are weak, teeth acrodont.
- Vertebrae are amphicoelus type.
- Copulatory organs lacking.
- Tail well developed and laterally compressed.
- All are extinct except Sphenodon.

Ex: Sphenodon



Order: Squamata:

- Body elongated, cylindrical and tail is long.
- Skin is covered by horny epidermal scales.
- Teeth are acrodont or pleurodont.
- Ribs are single headed and are reduced or absent in the abdominal region.
- Skull has lost one or both the temporal vacuities.

Suborder- Lacertilia:

- They have elongated usually depressed body.
- Two pairs of limbs. Pentadactyle, used for running, climbing and burrowing. Some forms lack one of both pairs of limbs.
- Eyes have movable eyelids.
- Tail breaks off by reflex action and is regenerated.
- Example: Calotes, Draco, Varanus, Chamaeleon



Calotes



Draco



Chamaeleon



Varanus

Suborder- Ophidia:

- The snakes have long, slender, cylindrical body.
- Limbs and girdles are absent.
- Mouth is very expansible. Teeth are fused to the jaws.
- In poisonous snakes, salivary glands are modified to form poison glands opening into fangs.
- Tongue is slender and forked or bifid.
- Majority of snakes are oviparous. Some are viviparous.
- Skin bears row of overlapping scales.
- Ten pairs of cranial nerves are present. They periodically cast off the horny layer of skin.

Example: Python, Naja, Vipera, Hydras



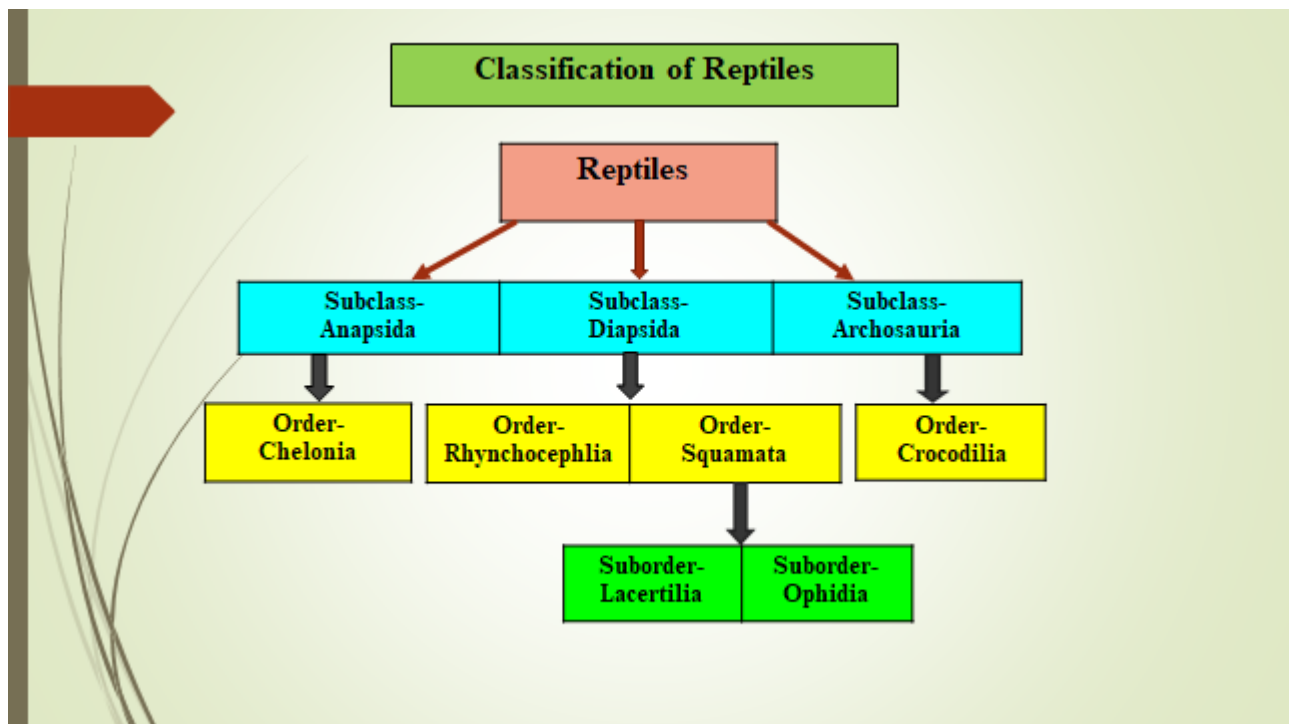
Subclass 3. Archosuria:

- Skull is diapsid. Teeth usually occur only on jaw margins are set in sockets.
- They tend towards bipedal locomotion.
- Hind limbs are vertical below the body, tibia is long and strong.
- They include living crocodilians and extinct dinosaurs.

Order- Crocodylia:

- Body is large, heavy and lizard like.
- Skin is thick and leathery. It is covered by horny, epidermal and bony plates.
- Eyes, external nares and ears lie in a straight line on the top of the head.
- Toes are webbed, cloacal aperture is a longitudinal slit.
- Tail is large, powerful, laterally compressed organ for swimming.
- Heart is four chambered.
- Urinary bladder absent. They are oviparous.
- Example: Crocodiles, Gavialis, Alligator.





Poisonous and Non-poisonous snakes

Poisonous snakes

1. Colour: Generally brightly coloured
2. Shape of head: Head is long, triangular and posterior portion is wide.
3. Neck: Neck always constricted.
4. Hood: Present in majority cases; highly developed in Cobra group (*Naja* sp.); absent in Coral snakes, Krait, Russell's viper, etc.
5. Head scales: Scales on the top of the head are usually small.
6. Tail: Tail is abruptly tapered, but in sea snakes (*Hydrophidae*) the tail is flattened to form an oar-shaped structure and in land snakes the tail is cylindrical.
7. Dorsal scales: Dorsal surface scales are smaller but the spinal (vertebral) scales are larger and hexagonal in kraits.

8. Ventral scales: Ventral scales are usually completely across the belly but in sea snakes ventral scales are not completely across the body.
9. Loreal shield: Present, shapes may be variable.
10. Mental shield: Fourth one is large.
11. Teeth: Most of the teeth are solid and uniform except maxillary teeth which are large, and provided with groove or canal. These large teeth are called 'Fangs'.
12. Poison gland: Present. Paired poison glands are on upper jaw.
13. Muscular system: Less-developed muscular system.
14. Lungs: One of the lungs has either been reduced or absent.

Non-poisonous snakes

1. Colour: Usually not brightly coloured, but pythons, common sand boa, red sand boa, anaconda, wart snakes etc. are brightly coloured.
2. Shape of head: Head is usually narrow and elongated.
3. Neck: No constriction in the neck.
4. Hood: Hood absent.
5. Head scales: Scales on the top of the head are large but in sand boas the head scales are small.
6. Tail: Tail tapered and long except burrowing snakes. In Typhlopidae and Leptotyphlopidae the tail is short and stumpy. In sand boas the tail is short and blunt.

7. Dorsal scales: Scales on the dorsal surface are longer but spinal (vertebral) scales are not longer and hexagonal.
8. Ventral scales: Ventral scales are either across the belly completely (e.g., Colubridae), or not completely across the belly (e.g., Boidae, Uropeltidae).
9. Loreal shield: Absent.
10. Mental shield: Small.
11. Teeth: Uniform and solid.
12. Poison gland: Absent.
13. Muscular system: Well-developed strong muscular system.
14. Lungs: Both lungs are present

Links:

<https://docs.google.com/presentation/d/1sJB3cEbeFZFDK2VtMo4-p75sa4nCoZC/edit#slide=id.p1>

Resources Needed –

Assessment

Units	Out-of – class activity Details of Activity	In-class activity Details of Activity	Assessment

1.1	Students should observe the specimens	Discussion on the topic Check the level of understanding through Question – answer session	Question – answer session
1.2	Students should classify the specimens Students should observe characteristics and identify poisonous and non-poisonous snakes	Discussion on the topic Check the level of understanding through Question – answer session Help students to apply the knowledge	Question to write in detail classification with examples

