

## Quadrant II- Transcript and Related Material

<b>Programme</b>	<b>: Bachelor of Science (First Year)</b>
<b>Subject</b>	<b>: Zoology</b>
<b>Course Code</b>	<b>: ZOC 102</b>
<b>Course Title</b>	<b>: Diversity of Chordates and Genetics</b>
<b>Unit</b>	<b>: 5-Reptiles</b>
<b>Module Name</b>	<b>: Mesozoic Reptiles (Dinosaurs)</b>
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### Notes

On the basis of Geological time-scale reptiles came into existence approximately 300 million years ago during Carboniferous period of Palaeozoic era. Permian period saw diversification of reptilian stock. However it was during Mesozoic era reptiles saw maximum development.

**MESOZOIC ERA** (Greek= Middle life) is the second of Earth's three major geologic eras of Phanerozoic time. The Mesozoic Era began 252.2 million years ago, roughly around the time of the end-Permian extinction. Expansion of reptiles was the most significant Mesozoic event. Reptiles underwent extensive adaptive radiation and exploited water, air and terrestrial mode of life. The ancestors of major plant and animal groups that exist today first appeared during the Mesozoic. During this era, earth's climate was warm and there was less difference in temperature between equatorial and polar latitudes than there is today.

The major divisions of the Mesozoic Era are:

- Triassic Period
- Jurassic Period
- Cretaceous Period.

The Mesozoic was a time of geological and biological transition. During this period of transition continents began to move into their present-day configurations and a distinct modernization of life-forms occurred.

On set of Mesozoic era 5 major groups of reptiles were present.

- Thecodont- ancestor of birds, crocodiles, snakes, dinosaurs.
- 2<sup>nd</sup> reptilian stock- gave rise to modern day Turtles
- 3<sup>rd</sup> and 4<sup>th</sup> group- gave origin to Ichthyosaurs and Plesiosaurs.
- 5<sup>th</sup> reptilian stock-Mammals like reptiles

Mesozoic era is also called as Age of Dinosaurs.

Thecodontia includes predaceous reptiles which were small and had a slender build. They are regarded as basal stock for ruling reptiles and gave rise to the most fantastic Mesozoic reptiles, the Dinosaurs (means Terrible Lizards). They are subdivided into two orders depending on the structure of their pelvis:

- Saurischia
- Ornithischia

### **SAURISCHIA (Reptile-like Dinosaurs)**

Reptilian triradiate pelvis with pubis entirely separate and anterior to ischium. Early Saurischians were bipedal, has short forelimb, four or five clawed digits and they were carnivorous. Later form of Saurichians became quadrupedal and herbivorous. All bipedal carnivorous (flesh-eating) forms belongs to suborder Theropoda while the quadrupedal herbivorous form belong to suborder Sauropoda.

**Suborder Theropoda** includes ostrich-like Dinosaurs (e.g., *Struthiomimus* and *Ornithomimus*) and carnivorous dinosaurs (e.g., *Allosaurus*, *Tyrannosaurus rex*).

***Ornithomimus***: Average length 3.5-4mts. Strongly bipedal with long hindlimbs with 3 toes and short forelimbs with 3 fingers. Head small, long flexible neck, jaws without teeth replaced with horny beak. Lived in upper Cretaceous in diverse habitat.

***Tyrannosaurus rex***- Heavily built, over 5 meters in height, 15 meters in length and weighed over 8 tonnes. Head massive disproportionate with large jaws, hindlimbs massive, forelimbs extremely small. They were among largest terrestrial dinosaurs which lived in upper Cretaceous

**Sub order Sauropoda**- Sub order Sauropoda included huge herbivorous quadrupedal dinosaurs. Largest and heaviest of all terrestrial and amphibious vertebrates that ever lived e.g., Brontosaurus, Diplodocus.

**Brontosaurus or Apatosaurus**- Brontosaurus was Saurischian dinosaurs of the Triassic period. The largest terrestrial vertebrate is about 20 meters long with a massive body and elongated tail. They were quadrupedal in habit and herbivorous. They had a small skull, weak jaws with small teeth. Forelimbs were short showing bipedal ancestry. Since their limbs were weak this reptile took an amphibious life.

**Diplodocus** – Diplodocus was gaint, herbivorous quadrupedal sauropod which was different from *Brontosaurus*. Skull was short and broad with weak jaws which had small teeth. It was 25 meters long with short and compact body. Neck and tail more slender were terminal 3 meter tail is like Whip.

**ORNITHISCHIA (Bird-like Dinosaurs)** -Tetraradiate bird-like pelvic girdle with pubis directed backwards parallel to ischium. They were all herbivorous. Some became quadrupedal. Grouped into four suborder 1) Ornithopoda 2) Stegosauria 3) Ankylosauria and 4) Ceratopsia.

**Sub order Ornithopoda**- E.g., *Iguanodon*

Primitive bird like dinosaurs probably descended from thecodont stalk which was about 4.5 meters in length. They were bipedal and herbivorous. Iguanodon had sharp dagger like thumb which was used for defence.

**Sub order Stegosauria**- e.g., *Stegosaurus*

They possessed a peculiar armature in the form of heavy plates (2 rows of large plates dorsally) and spines. Their size was like present day elephant. Head was reduced in size with small brain and had powerful tail.

**Sub order Ankylosauria**- e.g., *Ankylosaurus*

They are also called as 'Reptilian tanks'. Armed Dinosaurs with bulky body, quadrupedal and herbivorous

**Sub order Ceratopsia- e.g., *Triceratops***

They are also known as horned Dinosaurs. They are moderately sized dinosaurs with large head armed with long horn. They had large and bony collar frill which forms shield over the shoulder.

A dinosaur has majestic rise and dramatic fall and the extinction of this mighty race which underwent an explosive evolution is still a matter difficult to explain. Interspecific warfare, destructive slaughter of young by blood-thirsty mammals and Change in climate was the probable reason for extinction of dinosaurs.