

Timeline (Triassic-Jurassic-Cretaceous)

Dinosaurs existed long ago during the Mesozoic ('middle life') era. This was between the Palaeozoic ('old life') era and the Cenozoic ('new life') era. We are still in the Cenozoic era. The Mesozoic era was from 252 Ma to 66 Ma. [Ma means million years ago]. The Mesozoic era is sometimes called the Age of Reptiles and the Cenozoic period is sometimes called the Age of Mammals.

The Mesozoic era is broken up into smaller periods, the Triassic, Jurassic and the Cretaceous periods.



The Triassic (252-201 Ma)

Pangaea

300 million years ago



The Triassic period was first. It started after most of the life on Earth died off. This happened in a huge global extinction, called the Great Dying. However, some life managed to survive and eventually recover. There were strange reptilian animals, but no dinosaurs yet. All of the continents were still joined together in a large super-continent called Pangaea. The Early Triassic was a bleak period in Earth's history.

During the Middle Triassic period woody trees grew again and new types of coral developed. Marine reptiles thrived in the ocean and Pangaea started to split apart. The northern continent we named Laurasia and the southern continent we named Gondwana. Before the split the climate of Pangaea was hot and dry, and it is thought that deserts covered the middle of the land. As the super-continent broke up, the climate changed and became more humid.

The Late Triassic was the period where the first true dinosaurs, such as Coelophysis, started to appear. The first true mammals also began to appear. By the end of the Triassic period another mass extinction would occur, leading to the Jurassic period.

Sub-periods: Early Triassic (252-247 Ma), Middle Triassic (247-237 Ma) and Late Triassic (237-201 Ma).

The Jurassic (201-145 Ma)

The Jurassic period began with the Triassic-Jurassic extinction event. At least half of all life on Earth died off. Scientists aren't sure what caused this event. It may have been gradual climate change, changes to the ocean, an asteroid impact or even massive volcanic eruptions. However, it allowed new types of dinosaurs to evolve and thrive. They became the dominant [main] life forms.

Pangaea continued to divide into the new smaller continents, Gondwana and Laurasia. Many deserts became more humid and



turned into rainforests. Many new animal types first appeared in this era. These included birds, lizards, amphibious ancestors of frogs and salamanders and even primitive mammals. Crocodylian ancestors left the land and became aquatic animals.

With a large new sea dividing the previous super-continent, marine reptiles and pterosaurs thrived. This sea was still quite narrow, but would eventually become the Atlantic Ocean as it spread and grew. Conifers were the main plant species of the time. Grasses had not yet appeared, so the world would have looked very different than it does today, even though some plants and animals would have been familiar.

The oceans were filled with marine reptiles, such as the dolphin-like Ichthyosaurus and the plesiosaurs. They would gradually evolve [change] into animals like Elasmosaurus by the end of the Cretaceous period. On land massive sauropods, such as Brachiosaurus and Diplodocus reigned. Other well-known dinosaurs, such as



Tyrannosaurus Rex, Allosaurus, and the various stegosaurus had evolved by the Late

Jurassic period. New plants including ginkgoes, cycads and ferns were becoming common by the Middle Jurassic. Many of these plants still exist today.

Sub-periods: Early Jurassic (201-174 Ma), Middle Jurassic (174-163 Ma) and Late Jurassic (163-145 Ma).

The Cretaceous (145-66 Ma)



The last period of the Mesozoic Era was the Cretaceous Period. This period lasted about 79 million years, until a massive extinction event killed most life on Earth, including all non-avian [bird-like] dinosaurs.

At this time the oceans and seas were filled with marine reptiles. Dinosaurs were still the dominant type of life form on land. Pterosaurs ruled the skies. New types of mammals and birds evolved. Rays, modern sharks, and ray-finned fish also evolved.

Marsupials and the first true placental [born well developed] mammals also evolved in this period. Many dinosaur fossils found in the layers from this period show hair like feathers. Scientists think these might be transition animal types, the link between dinosaurs and birds.

There were more species [types] of dinosaurs during the Cretaceous than during any other periods. Species such as Tyrannosaurus Rex, Triceratops and Velociraptor belonged to this period. Also present were Pteranodon, Mosasaurus and Elasmosaurus.

The Early Cretaceous saw a decline in the ichthyosaurs. They had disappeared by the Late Cretaceous. For the first time flowering plants appeared, and with them the first bees. More insect species such as ants, termites, grasshoppers and butterfly-like animals appeared.

Grasses still did not evolve until near the very end of the Cretaceous, maybe not until after the end of the Mesozoic.

In the Late Cretaceous mammals and birds became common, while pterosaurs started to die out. Tyrannosaurs were the dominant predators of North America. Abelisaurus (such as *Abelisaurus*, *Carnotaurus* and *Majungasaurus*) and carcharodontosaurs (such as *Mapusaurus*) were the top predators in the southern continent of Gondwanaland.

The Cretaceous period and the Mesozoic era ended in a massive extinction event that wiped out most life on Earth. It ended the age of the dinosaurs!

Sub-periods: Early Cretaceous (145-100 Ma) and Late Cretaceous (100-66 Ma).