

Gigantic Jurassic predators

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In popular culture, the Jurassic is synonymous with the dinosaurs but really the Mesozoic should, more fairly, be called the Era of Dinosaurs. The Mesozoic era stretched from about 252 to 66 million years ago — the Jurassic is the middle period of the Mesozoic (from 201 to 145 million years ago) after the Triassic and before the Cretaceous.

The history of life on earth is a continuous succession of the rise and fall of animal species. Extinction is one of the most common events in life and it is a fact that most species that ever existed have gone extinct. Each genus of dinosaur had a limited time-span, about seven million years on average. Therefore, most Triassic species were already extinct in the Jurassic, and those of the Jurassic were gone by Cretaceous times.

The largest land predators during the Jurassic were the 150 million year old theropod dinosaur *Torvosaurus* (from North America and Portugal) and *Saurophaganax* (from North America). These animals were up to 12 m long and were the longest terrestrial meat-eaters for their times (Hendrickx & Mateus 2014). The famous *Tyrannosaurus rex* lived during the Cretaceous, about 80 million years later. This means that the Jurassic *Torvosaurus* had already been a fossil 80 million years before the famous *T. rex* roamed the earth.

Meanwhile, in the oceans

The oceans can support gigantic animals because buoyancy supports part of the body weight. This physical property and the productivity of the oceans enables the colossal gigantism in whales. The largest and heaviest animal that ever existed still lives today: the blue whale at 170 tonnes and up to 30 m in length. Curiously, the largest predator that ever existed also lives today: the sperm whale, at 56 tonnes and up to 20 m in length, that feeds mostly on giant squid.

During the Mesozoic, the oceans also held some giants. The largest during the Jurassic were the pliosaurs such as *Liopleurodon*, that could reach up to 12 m long. Pliosaurs were a group of plesiosaurs (marine reptiles); they were not dinosaurs, which were terrestrial only.

On land, the records for animal gigantism were in the past, as today, held by

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plant-eaters: titanosaur sauropods such as *Argentinosaurus* and *Dreadnoughtus* during the Mesozoic, and the African elephant today.

Later, in the Cretaceous

The Cretaceous period saw the origin of some famous giant predators. The three largest ones were *Spinosaurus* from Africa, *Giganotosaurus* from South America, and *T. rex* in North America. The first was probably the longest (up to 17 m) while the last was among the most massive (up to 5000 kg).

Therefore, despite popular belief, *T. rex* was not the largest predator of the Jurassic:

- It lived during the Cretaceous period, not the Jurassic;
- The largest predators of the Jurassic were *Torvosaurus* and *Saurophaganax*;
- The largest land predator of all time was *Spinosaurus*; and
- The largest predator of all time is the modern sperm whale.

References

Hendrickx, C and O Mateus (2014) *Torvosaurus gurneyi* sp., the largest terrestrial predator from Europe, and a proposed terminology of the maxilla anatomy in nonavian theropods. *PLoS ONE*, e88905, 03 10.1371/journal.pone.0088905.