

PRESENTS

# MOSASAURUS

## *Mosasaurus hoffmannii*

They are extinct aquatic reptiles that belong to the genus *Mosasaurus*. Its name comes from the Latin *Mosa* which means river where the first specimen was found and from the Greek *saurus* which means lizard. The largest and best-studied species is *Mosasaurus hoffmannii*. It is believed to have gone extinct suddenly during the Cretaceous, at the peak of their evolutionary radiation.

### TAXONOMY

**Kingdom:** Animalia  
**Phylum:** Chordata  
**Class:** Reptilia  
**Order:** Squamata  
**Family:** Mosasauridae  
**Subfamily:** Mosasaurinae  
**Genus:** *Mosasaurus*  
Conybeare, 1822  
**Species type:**  
*Mosasaurus hoffmannii*  
Mantell, 1829



**Distribution:** In the area of present-day Western Europe, North America, South America and Antarctica.



**Diet:** It fed on fish, turtles, ammonites, and possibly smaller mosasaurs.



**Habitat:** It stayed close to the surface and although it was capable of diving, it preferred not to venture into deeper waters.

### WHEN WAS THIS SPECIES ALIVE?

They are a diverse group of scaly marine reptiles from the Upper Cretaceous. These predators lived during this period in the Mesozoic era, 70-66 million years ago.

### EONOTHEM: PHANEROZOIC EON

my = million years



### DISCOVERING THE MOSASAURUS



**1766:** the first remains known to science were fragments of a skull from a quarry of limestone on Mount San Pedro in the Netherlands.



**1780:** a second partial skull was discovered and acquired by Johann Leonard Hoffmann, a retired physicist from the Dutch/German army.



**1794:** the skull was transferred to Paris and added to the collection of the National Museum of Natural History in France.



**1798:** Adriaan Gilles Camper studies the fossil again arriving at the conclusion that the remains belonged to a giant monitor lizard.



**1808:** Georges Cuvier confirms Camper's result. The fossil had already become part of Cuvier's early speculations about the possibility of animal species becoming extinct.



**1822:** William Daniel Conybeare named it *Mosasaurus* by the Latin name (Meuse) of the river Maas (or Meuse) that passes next to the Mount Saint Peter.



**1829:** The species name *hoffmannii* was added by G.A. Mantell, in honor of Johann Leonard Hoffmann, under the assumption that he was the discoverer of the type specimen.



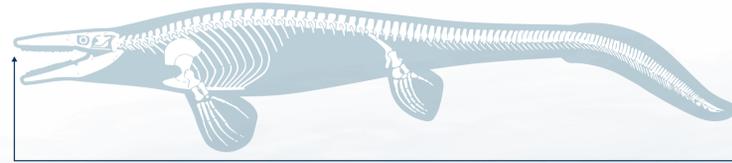
**1854:** the German biologist Hermann Schlegel was the first to speculate that *Mosasaurus* had fins instead of normal legs.



**1998:** another larger and more intact fossil skull was found in the limestone quarries of Maastricht. However, this finding was determined to represent a new species of the genus *Prognathodon*.

### ANATOMY

This marine predator was similar to a common crocodile with hydrodynamic fins instead of legs, ridges along its back, and powerful jaws with numerous teeth to destroy its prey.



**15-18 meters**  
was its maximum estimated size

**14,000 kilograms**  
was its estimated maximum weight

It had a tail endowed with a powerful fin as its main source of locomotion.

Being faster and better adapted to the aquatic environment, they replaced the pliosauroids in the late Cretaceous.

Its head had a conical shape. The skull was strongly built allowing greater force in the jaws.

Poorly developed sense of smell.

Large eyes with limited binocular vision.

It had about **100 vertebrae** on its spine.

Broad barrel-shaped body: its curved ribs connected to the sternum with cartilage, facilitating breathing and thoracic collapse during diving.

Their fins had five digits on the front and four on the back.

Large, sharp teeth specialized for cutting prey.

Large adductor muscle that allowed the lower jaw to move back and forth when biting its prey.

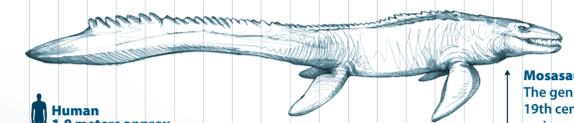
**1.30 meters**  
estimated length of its jaws

They were endothermic (warm-blooded) organisms with high metabolisms. This is probably what allowed them to colonize cold/temperate environments like Antarctica.

### MONSTER DIMENSIONS

It was among the last and largest genera of mosasaurs ever found. The largest known species of this genus is *Mosasaurus hoffmannii*, which reached 18 meters in length and was more robust than its Cretaceous relatives.

0 meters 10 meters 15 meters 25 meters



**Mosasaur**  
The genus was named in the early 19th century, with numerous species assigned to *Mosasaurus*, but only five are considered as valid by the researchers:

- *M. hoffmannii* Mantell 1829 (the type species)
- *M. lemanneri* Dollo 1889
- *M. missouriensis* Harlan 1834
- *M. conodon* Cope 1881
- *M. beaugei* Armbourg 1952



**50 km/hour**  
estimated maximum speed



**1,029 kilograms**  
estimated strength of its bite



**40 genuses**  
comprise the group of mosasaurs

### WHERE DID IT LIVE?

At the beginning of the Cretaceous, and as a consequence of the fragmentation of Pangea, there were two continents separated by the Sea of Tethys: Laurasia in the north and Gondwana in the south. This great marine predator inhabited the earth when the continents still did not take the shape we know now.



65 million years approx.

### CONTINENTAL CONFIGURATION IN THE CRETACEOUS

Possible location of mosasaur

### CURRENT CONTINENTAL CONFIGURATION

Possible location of mosasaurs

### SOURCES:

- Kowinsky, J. Mosasaur - The Great Marine Reptile. <https://www.fossilguy.com/gallery/vert/reptile/mosasaur/index.htm>
- Mosasaurus. <https://es.wikipedia.org/wiki/Mosasaurus>.
- Lingham-Soliar, T. (1995). Anatomy and Functional Morphology of the Largest Marine Reptile Known, *Mosasaurus hoffmannii* (Mosasauridae, Reptilia) from the Upper Cretaceous, Upper Maastrichtian of the Netherlands. Phil. Trans. R. Soc. Lond. B 347, 155-172 doi: 10.1098/rstb.1995.0019
- Kowinsky, J. Mosasaur - The Great Marine Reptile. <https://www.fossilguy.com/gallery/vert/reptile/mosasaur/index.htm>
- Lingham-Soliar, T. (1995). Anatomy and Functional Morphology of the Largest Marine Reptile Known, *Mosasaurus hoffmannii* (Mosasauridae, Reptilia) from the Upper Cretaceous, Upper Maastrichtian of the Netherlands. Phil. Trans. R. Soc. Lond. B 347, 155-172 doi: 10.1098/rstb.1995.0019