

The oldest large-sized predatory dinosaur comes from the Italian Alps

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At the Natural History Museum of Milan, paleontologist Cristiano Dal Sasso (left) and co-authors Simone Maganuco and Andrea Cau (center and right) examine the bones of *Saltriovenator*, deposited in the Museum collections. Credit: Gabriele Bindellini

Early Jurassic predatory dinosaurs are very rare, and mostly small in size.

Saltriovenator zanellai, a new genus and species described in the peer-reviewed journal *PeerJ* - the Journal of Life and Environmental Sciences by Italian paleontologists, is the oldest known ceratosaurian, and the world's largest (one ton) predatory dinosaur from the Lower Jurassic (Sinemurian, ~198 Mya).

This unique specimen, which also represents the first Jurassic dinosaur from Italy, was accidentally discovered in 1996 by a fossil amateur within a quarry near Saltrio, some 80 km N-E of Milan. Many bones of *Saltriovenator* bear feeding marks by [marine invertebrates](#), which represent the first case on dinosaurian remains and indicate that the dinosaur carcass floated in a marine basin and then sank, remaining on the sea bottom for quite a long time before burial.

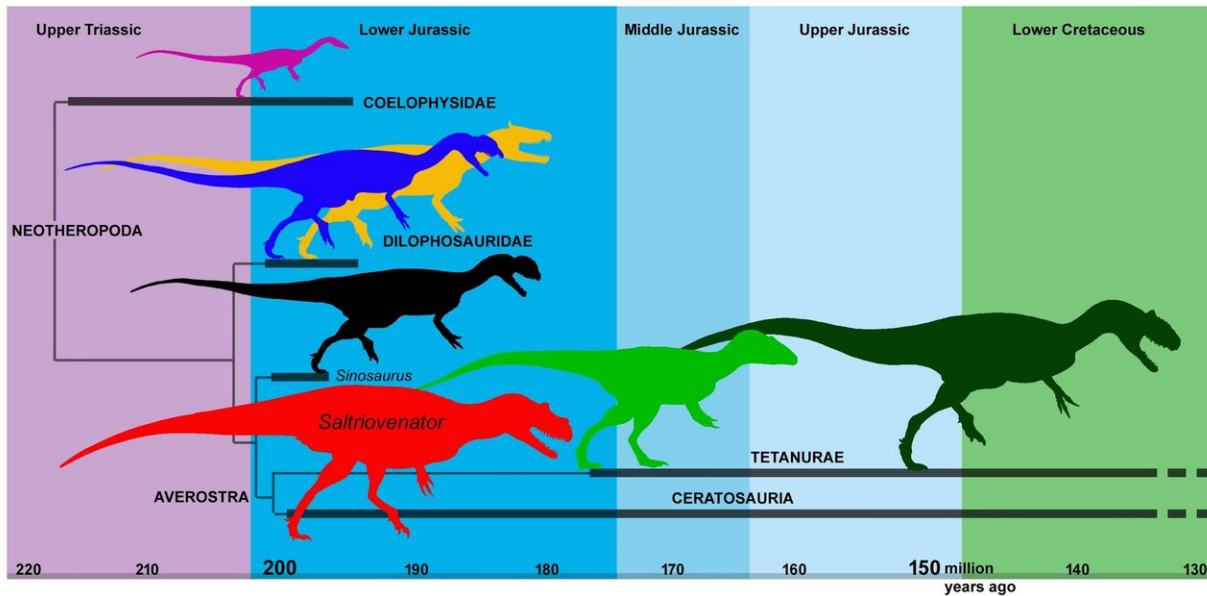
Although fragmentary, "*Saltriovenator* shows a mosaic of ancestral and advanced [anatomical features](#), respectively seen in the four-fingered dilophosaurids and ceratosaurians, and the three-fingered tetanuran theropods, such as allosaurids", says first author Cristiano Dal Sasso, of the Natural History Museum of Milan, who reassembled and studied the fossil for several years.

"Paleohistological analysis indicates that *Saltriovenator* was a still growing subadult individual, therefore its estimated size is all the more remarkable, in the context of the Early Jurassic period", says co-author Simone Maganuco.

"The evolutionary 'arms race' between stockier predatory and giant herbivorous dinosaurs, involving progressively larger species, had already begun 200 million of years ago."

The evolution of the hand of birds from their dinosaurian ancestors is still hotly debated. "The grasping hand of *Saltriovenator* fills a key gap in the theropod [evolutionary tree](#): predatory dinosaurs progressively lost the

pinky and [ring fingers](#), and acquired the three-fingered hand which is the precursor of the avian wing", remarks co-author Andrea Cau.



Simplified evolutionary tree of predatory dinosaurs (theropods). Saltrovenator predates the massive meat-eating dinosaurs by over 25 million years: it is the oldest known ceratosaurian, and the world's largest predatory dinosaur from the Lower Jurassic. During the Jurassic, the three-fingered tetanuran theropods appeared, which gave rise to birds. Credit: Andrea Cau

More information: Dal Sasso C, Maganuco S, Cau A. 2018. The oldest ceratosaurian (Dinosauria: Theropoda), from the Lower Jurassic of Italy, sheds light on the evolution of the three-fingered hand of birds. *PeerJ* 6:e5976 [DOI: 10.7717/peerj.5976](https://doi.org/10.7717/peerj.5976)

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