

# New dinosaur species used fearsome claws to graze along the coast

May 31 2022

---



An artist's rendition of *Paralitherizinosaurus japonicus*, the new dinosaur species described in this study. Credit: Masato Hattori

Scientists have described the youngest therizinosaur fossil from Japan and the first in Asia to have been found in marine sediments.

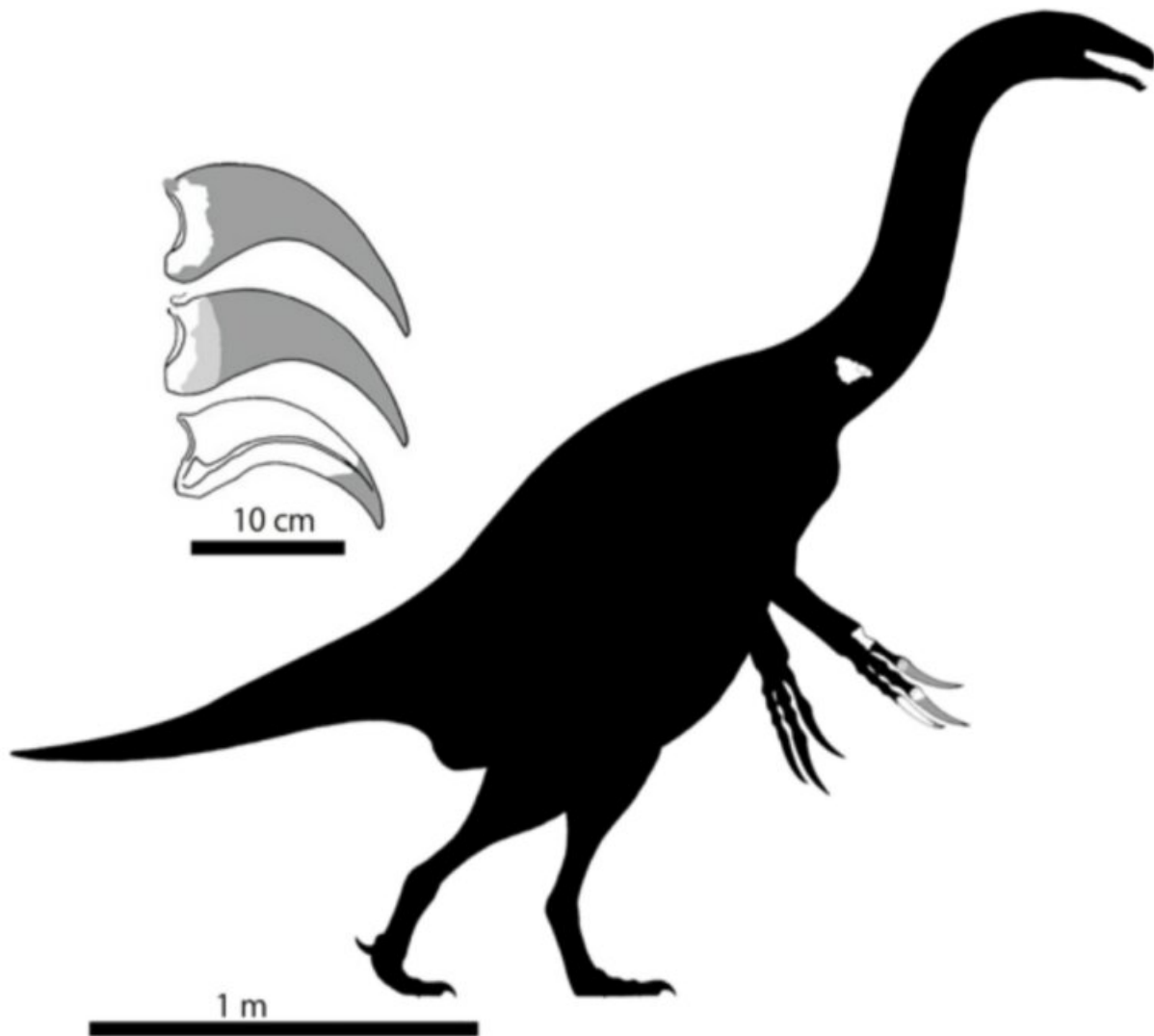
Therizinosaurus were a large group of primarily herbivorous theropod dinosaurs (dinosaurs with hollow bones and three-toed limbs).

Therizinosaurus were first discovered in Asia; the [fossil records](#) in Asian countries such as China and Mongolia are rich in therizinosaurus fossils, and fossil fragments have also been reported from Japan.

Scientists from Japan and the U.S., led by Professor Yoshitsugu Kobayashi at the Hokkaido University Museum and Anthony R. Fiorillo at Southern Methodist University (SMU), have described a new species of therizinosaurid from Japan, and provide new insights into the function of therizinosaur claws. The findings were published in the journal *Scientific Reports*.

Co-authors of the study include Ryuji Takasaki of Okayama University of Science, Tsogtbaatar Chinzorig of North Carolina State University and Mongolian Academy of Sciences, and Yoshinori Hikida of Nakagawa Museum of Natural History.

The fossil described in this work consists of a partial vertebra and a partial wrist and forefoot, originally collected in 2008 from the Osoushinai Formation, a fossil-rich geological feature in Nakagawa, Hokkaido. At the time, it was described as belonging to a maniraptoran dinosaur, and was believed to belong to a therizinosaur. However, the lack of comparative data at the time made confirmation impracticable.



Claws and life reconstruction of *Paralitricrinosaurus japonicus*. The white regions on the silhouette indicate recovered fossils: a partial vertebra and a partial left forefoot; grey indicates the reconstructed areas of the claws. Credit: Genya Masukawa

The scientists decided to revisit the specimen as recent developments have led to a wealth of data that allow for the classification of therizinosaurs based on the morphology of the forefoot claws. This

specimen is the third therizinosaur from Japan; however, the first two have not yet been described. Asian therizosaurs existed from the Early to Late Cretaceous, and possessed enormous claws on their hands. Based on the morphology of these claws, which relates to their function, therizosaurs are divided into basal therizosaurs and derived therizosaurs.

The claws of the [new species](#) of therizinosaur, *Paralitherizosaurus japonicus* (reaper reptile by the sea from Japan), were compared with claws from many other therizinosaur species. Analysis of the data placed *P. japonicus* among the derived therizosaurs based on four shared, derived characters. An analysis of the morphology of the claws, including their length and shape of the base of the claws indicate that the claws of basal therizosaurs are generalized and not for specific use, while the claws of derived therizosaurs were specialized to hook and pull vegetation to the mouth for grazing.



One of the three fossilized claws of *Paralitherizinosaurus japonicus* in the current study. Credit: Yoshitsugu Kobayashi

*Paralitherizinosaurus japonicus* is the youngest occurrence of therizinosaur remains in Japan. Its discovery indicates that therizinosaurs in Asia existed over a much longer timescale, and a much larger geographical area, than previously known. It is also the first therizinosaur record from marine sediments in Asia. Along with a fossil from Utah, U.S., this suggests that some of the derived therizinosaurs were adapted to coastal environments.

"This study also tells us how much more we still have to learn about the

incredible history of life on Earth," said Fiorillo, a research professor in SMU's Roy M. Huffington Department of Earth Sciences; a senior research fellow at SMU's ISEM; and curator emeritus of the Perot Museum of Nature and Science.

**More information:** Yoshitsugu Kobayashi et al, New therizinosaurid dinosaur from the marine Osoushinai Formation (Upper Cretaceous, Japan) provides insight for function and evolution of therizinosaur claws, *Scientific Reports* (2022). [DOI: 10.1038/s41598-022-11063-5](https://doi.org/10.1038/s41598-022-11063-5)

Provided by Hokkaido University

Citation: New dinosaur species used fearsome claws to graze along the coast (2022, May 31)  
retrieved 28 April 2024 from  
<https://phys.org/news/2022-05-dinosaur-species-fearsome-claws-graze.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.