

Rare fossil of a horned dinosaur found from 'lost continent'

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The leptoceratopsids have a beak-shaped jaw suggesting they had a different diet to their western relatives.

A rare fossil from eastern North America of a dog-sized horned dinosaur has been identified by Dr Nick Longrich. The fossil provides evidence of an east-west divide in North American dinosaur evolution.

During the Late Cretaceous period, 66-100 million years ago, the [land mass](#) that is now North America was split in two continents by a [shallow sea](#), the Western Interior Seaway, which ran from the Gulf of Mexico to the Arctic Ocean. Dinosaurs living in the western continent, called Laramidia, were similar to those found in Asia.

However, few fossils of animals from the eastern 'lost continent' of Appalachia have been found because these areas being densely vegetated, making it difficult to discover and excavate fossils.

Dr Longrich, from the Milner Centre for Evolution based in our Department of Biology & Biochemistry, studied one of these rare fossils, a fragment of a jaw bone kept in the Peabody Museum at Yale University. It turned out to be a member of the horned dinosaurs - the Ceratopsia.

His study, published in the journal *Cretaceous Research*, highlights it as the first fossil from a ceratopsian dinosaur identified from this period of eastern North America.

Plant-eating horned dinosaur

Ceratopsia is a group of plant-eating horned dinosaurs that lived in the Cretaceous period. The fossil in question comes from a smaller cousin of the better known Triceratops, the leptoceratopsids. It was about the size of a large dog.

The specimen studied by Longrich was too incomplete to identify the exact species accurately, but showed a strange twist to the jaw, causing the teeth to curve downward and outwards in a beak shape.

The jaw was also more slender than that of Ceratopsia found in western North America, suggesting that these dinosaurs had a different diet to

their western relatives, and had evolved along a distinct evolutionary path.

Dr Nick Longrich explained: "Just as many animals and plants found in Australia today are quite different to those found in other parts of the world, it seems that animals in the eastern part of North America in the Late Cretaceous period evolved in a completely different way to those found in the western part of what is now North America due to a long period of isolation.

"This adds to the theory that these two land masses were separated by a stretch of water, stopping animals from moving between them, causing the animals in Appalachia to evolve in a completely different direction, resulting in some pretty weird looking dinosaurs.

"Studying fossils from this period, when the sea levels were very high and the landmasses across the Earth were very fragmented, is like looking at several independent experiments in dinosaur evolution.

"At the time, many land masses - eastern North America, Europe, Africa, South America, India, and Australia - were isolated by water.

"Each one of these island continents would have evolved its own unique dinosaurs - so there are probably many more species out there to find."

More information: Nicholas R. Longrich. A ceratopsian dinosaur from the Late Cretaceous of eastern North America, and implications for dinosaur biogeography, *Cretaceous Research* (2016). [DOI: 10.1016/j.cretres.2015.08.004](https://doi.org/10.1016/j.cretres.2015.08.004)

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