A Braincase Of The Raptor Dinosaur Saurornitholestes

December 23rd, 2020: New research from Badlands Dinosaur Museum describes part of a braincase from the dromaeosaurid "raptor" dinosaur *Saurornitholestes*.

Live reconstruction of the raptor dinosaur Saurornitholestes, by Emily Willoughby CCBY3.0

Key findings:

- Identification of a frontal bone from the dromaeosaurid "raptor" dinosaur *Saurornitholestes* from the Judith River Formation, Montana (~77 million years old).
- Easternmost occurrence of *Saurornitholestes* in Late Cretaceous rocks of western USA, 300-400 km (~200-250 miles) further east than previously known.
- Demonstrates that *Saurornitholestes* lived far out on an ancient delta floodplain, at the edge of an ancient seaway that flooded the continental interior.

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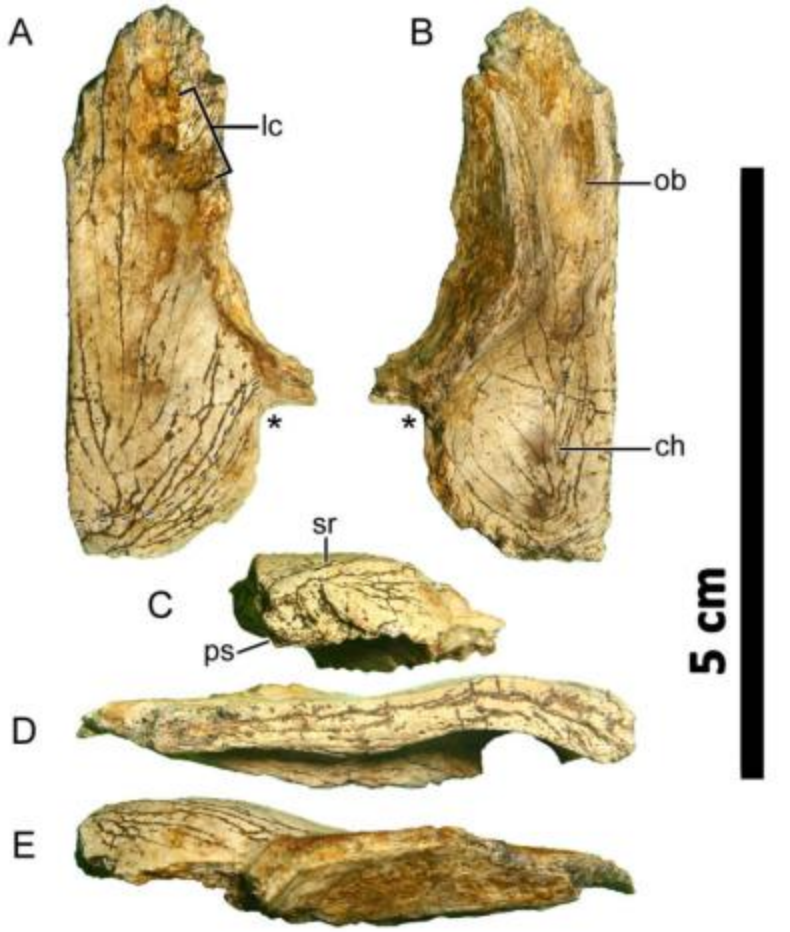
The 1993 movie Jurassic Park made a household name out of the carnivorous dinosaur, *Velociraptor*. However, many people still don't realize just how small most "raptor" dinosaurs were. In fact, even though *Velociraptor* was quite large by raptor standards, it was still only about the size of a living turkey: nowhere near the size shown in the movies!

Fossils from *Velociraptor* are only known from the Late Cretaceous rocks of Mongolia. However, other raptors (a group technically known as "dromaeosaurids") have been found in North America, including the comparatively small (~4-5ft ; 1.2-1.5 m long) *Saurornitholestes*, from Late Cretaceous rocks of Montana and Alberta.



The Frontal bone described in the new study

Even though it is the claws and teeth of raptors that are so engaging, the most important bones are those of the skull, as these can tell us precisely which species we are looking at. One particularly diagnostic skull bone is the "frontal", which would have been positioned between the eyes and formed the front part of the braincase. Frontals are quite sturdy compared to many raptor bones, so they are more often fossilized than fragile bones like the jaws. Even so they are quite rare, and every specimen is important.

The frontal bone is part of the braincase, shown here on a complete skeletal cast of Saurornitholestes

During Badlands Dinosaur Museum's 2017 summer fieldwork, field volunteer Jack Wilson found a small (4 cm / 1.6 in long) theropod frontal while prospecting for new sites in the Judith River Formation of eastern Montana (~77 million years old; Late Cretaceous Period). The frontal was instantly recognizable as from a small raptor dinosaur, and careful analysis back in the museum confirmed it as belonging to *Saurornitholestes* c.f. *langstoni*.

Most identifiable bones of *Saurornitholestes* have been recovered from the Dinosaur Park Formation of southern Alberta, or the Two Medicine Formation of western Montana. Our new discovery is the furthest east that anyone has ever found bones that can be definitively identified as *Saurornitholestes*: this individual lived far out on the ancient river delta that grew out into an inland sea which covered the mid-west of North America in the Cretaceous Period.

This new discovery is not too much of a surprise, but it improves our knowledge of the ancient geographic ranges of extinct species, helping better understand their ecology and evolution.

About the researcher(s)

Jack Wilson is a paleontologist from San Diego, CA.
Dr. Denver Fowler is curator of Badlands Dinosaur Museum, Dickinson Museum Center, Dickinson ND.

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The new specimen was found in the ~77 million year old Judith River Formation of eastern Montana

Where are the specimens from?
The specimen (BDM 005) was collected from BLM-administered public lands in Montana and is permanently stored in the federal repository at Badlands Dinosaur Museum, Dickinson Museum Center, Dickinson, North Dakota.

Reference: Wilson JP, & Fowler DW (2020) The easternmost occurrence of *Saurornitholestes* from the Judith River Formation, Montana, indicates broad biogeographic distribution of *Saurornitholestes* in the Western Interior of North America. Historical Biology. https://doi.org/10.1080/08912963.2020.1862828 (published online Dec. 23rd 2020)

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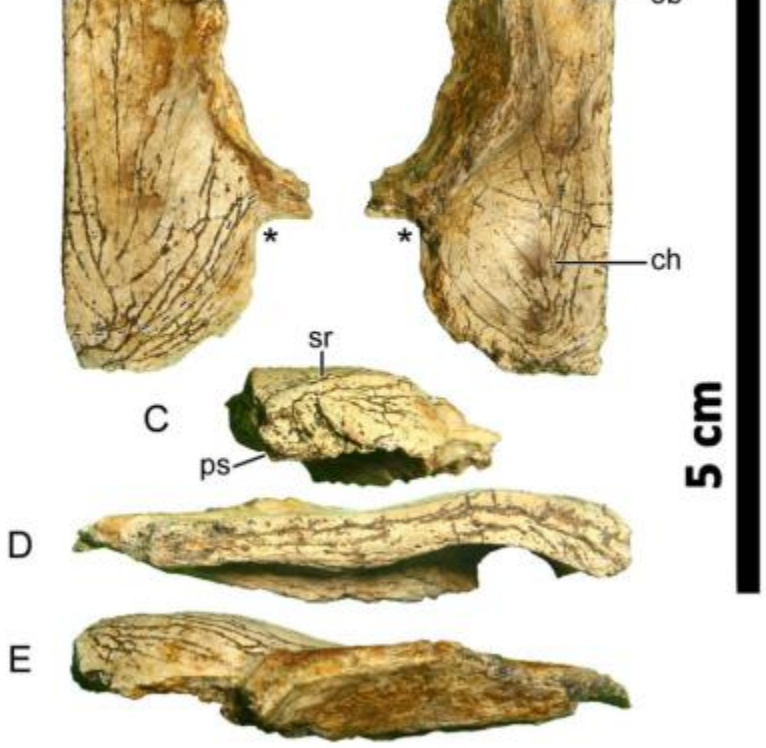
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