ROYAL TYRRELL MUSEUM

FOSSILS IN FOCUS

The Museum's collection is vast and diverse, with the majority of fossils found in Alberta. Only a fraction of our research collection is on display. *Fossils in Focus* highlights significant fossils from our collection, with new specimens reflecting current research added each year.

2019-2020 SPECIMEN FACT SHEET

EXPLODED SKULL

- Individual bones in a skull provide valuable information that can be used to identify a dinosaur species and determine its nearest relatives.
- The 41 fossilized bones of this *Daspletosaurus* skull were found separate from each other and uncrushed.
- Casts were made of some elements. The more delicate and complex bones were digitized and 3D printed so that they could be displayed in this manner.
- Although many bones were collected the first year after their discovery, crews returned to the area for 10 years to find all of them.

TELLTALE TEETH

- Mosasaurs were aquatic lizards that hunted in the world's oceans between 86 – 66 million years ago.
- This specimen was found in 2018 by workers at the Korite Mine while uncovering gem-quality ammonite shell, known as Ammolite.
- The teeth are blunted at the tips, and in many cases are missing, showing that this animal attacked, dismembered, and ingested large animals.
- Once preparation of the whole nine-metre specimen is complete, scientists will examine the stomach region for evidence of preserved gut contents.

THAT HURT... AND IT LEFT A MARK

- This right maxilla (upper jaw) belongs to the large tyrannosaur *Gorgosaurus*, and shows five different raised scars that are healed bite marks from another tyrannosaur.
- This is one of the most extreme examples of face biting scars in tyrannosaurs.
- The bite marks indicate that there was a fight between two tyrannosaurs, and that although injured, this animal survived.
- Healed bite marks are commonly found in fossilized tyrannosaur skulls, suggesting these animals regularly engaged in face-biting behaviour.

QUESTION ANSWERED

- Dinosaurs went through annual growth cycles that left rings in the internal bone structure.
- When growth stopped completely each year, a distinct line called a Line of Arrested Growth (LAG) was formed in the bone. If growth slowed, but didn't stop entirely, a change in bone texture called an annulus formed.
- Samples are collected by cutting a piece of bone and looking at it under a microscope to study its internal structure.
- This *Prosaurolophus* tibia preserves three annuli, indicating the dinosaur was three years old when it died.

TRAPPED TURTLES

- It's rare to find a bonebed, and even more rare to find a turtle bonebed.
- These soft-shelled turtles were living together when the body of water they inhabited began to dry up during a drought.
- At least 10 individuals are preserved.
- These fossil turtles represent a new species of the soft-shelled turtle *Axestemys* that lived at the very end of the Cretaceous Period, 66 million years ago.

ASKING THE TUFF QUESTIONS

- Studying the rock record that contains fossils helps scientists understand the full story of ancient ecosystems.
- The Plateau Tuff was first discovered and studied in Dinosaur Provincial Park in 1986.
- The Tuff formed from volcanic ash that was ejected, buried, and altered to bentonite during the Late Cretaceous.
- Radiometric dating of the Tuff provided an age for the fossils that were buried in the same geologic section. The Park's fossils are referred to as being 76 -75 million years old.

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