ROYAL TYRRELL MUSEUM

tyrrellmuseum.com

Alberta

2017 STORY IDEAS: BEHIND THE SCIENCE

OVERVIEW

The Royal Tyrrell Museum of Palaeontology is Canada's only museum dedicated exclusively to the science of palaeontology (the study of plants and animals, or traces of their activities, through the fossil record). In addition to housing one of the world's largest displays of dinosaurs, the Museum is a world leader in palaeontology research and offers a wide variety of creative, fun, and educational programs that bring the prehistoric past to life. There are thousands of stories waiting to be told.

What Kind of Fossils Are Found in Alberta?

Ancient Alberta looked nothing like it does today. Dinosaurs and other animals lived in a lush, coastal environment dotted with swamps, ponds, and marshes. There are many dinosaurs here, but there are also turtle, fish, amphibian, and plant fossils. Most fossils in Alberta are from the Late Cretaceous (between 84 and 66 million years ago), the time of *Triceratops* and *T. rex*, although occasionally much older fossils are found. Mammal fossils from the more recent Quaternary Period (2.6 million years ago to the present), including camels and primates, are also found here.

The Thrill of Discovery

When palaeontologists are in the field, much of their time is spent prospecting—hiking and looking at the ground, searching for fossils. Specimens are collected from multiple sites every year. This year, our scientists will be working on excavations in Dinosaur Provincial Park (where the Museum's field station is located), Calgary area, and in the southwest part of the province. Many fossils in the Museum were also found by the public or at industrial sites, such as mines and pipeline excavations. Each year, the Museum receives hundreds of reports from the public and follows up on 10 – 20 of them with field investigations. Some of the Museum's most significant finds came from these sources.

The Journey of the Fossil

Fossils don't come out of the ground ready to be studied or displayed. It is a long process from discovery to museum exhibition. First, the fossil must be carefully excavated out of the ground, wrapped in a protective jacket, and carried away from the site, by foot, boat, truck, horse, or even helicopter. Fossils are kept in the Museum's unprepared storage area until they are brought to the Preparation Lab. Preparation technicians spend hours, months, or even years carefully removing fossil from the surrounding rock using specialized tools, such as awls, air scribes, and dental picks. From there, the fossil might go to prepared storage, to one of our palaeontologists for research, on display, or all three.

Big News – From Feathers to Armour

There is always something new to discover in palaeontology, which continues to evolve our understanding of ancient life. The Museum reported the discovery of the first feathered dinosaurs in North America in 2012, a discovery that shed light on the reasons for feather evolution. The Museum unveiled a new species of dinosaur, *Regaliceratops peterhewsi*, nicknamed 'Hellboy,' in 2015 that has changed our understanding of horned dinosaur evolution. And this year, the Museum will be naming a new species of nodosaur, a rare dinosaur with bony plates of body armour.

Not all of our discoveries are dinosaurs. In 2013, the Museum collected a block containing an assemblage of gar fish, preserved perfectly in three dimensions; and in 2015, Museum researchers named two new kinds of fossil frogs from Alberta, the very first from the province. One was named *Hensonbatrachus kermiti*, after Jim Henson and Kermit the Frog.

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Who looks after fossils in the province of Alberta?

Legally, all fossils found in Alberta belong to the people and are held in trust at official repositories such as the Royal Tyrrell Museum. Alberta has some of the strictest fossil protection laws in the world. These laws are covered under the *Historical Resources Act*, which provides for the use, designation, and protection of historic resources in Alberta.

Palaeontology and the World of Today

Climate change, evolution, and extinction are hot-button topics in the current world. Palaeontologists can offer a unique perspective on these issues because they study the entire prehistory of the Earth and its species. They understand global climate change (both warming and cooling) on the scale of millions of years and what effects such changes have on both the land and its inhabitants. They can also speak to the causes of mass extinctions and how species survive, recover, evolve, and diversify afterwards.

Palaeontologist for a Day

Anyone can experience the thrill of palaeontology through simulated digs as part of a public program. Participants head out into the badlands outside the Museum to a simulated dig site, where they dig up fossil replicas using real palaeontological tools and techniques. The Museum has a wealth of visual assets including images and broll of the work of palaeontologists and public participants that are available for use. Journalists and filmmakers can also apply to accompany one of the Museum's palaeontologists on an excavation in one of the many fossil-rich localities throughout Alberta.

OUR PALAEONTOLOGISTS & THEIR RESEARCH INTERESTS

Andrew G. Neuman, M.Sc.
EXECUTIVE DIRECTOR

Mesozoic Era fishes from western North America, and the importance of cultural tourism to the diversification of Alberta's economy.

Donald B. Brinkman, Ph.D.
DIRECTOR, PRESERVATION & RESEARCH

How ancient animals, and turtles in particular, lived in their ancient environments, and the effects of climate change on ancient communities.

Dennis R. Braman, Ph.D.
RESEARCH SCIENTIST, PALYNOLOGY

Organic-walled microfossils like plant spores, pollen, algae, and fungal spores, and the end-Cretaceous extinction.

David A. Eberth, Ph.D.
RESEARCH SCIENTIST, SEDIMENTARY GEOLOGY

The ancient environments of fossil-bearing rocks and the evolution of dinosaur ecosystems worldwide.

James D. Gardner, Ph.D.
CURATOR OF PALAEOHERPETOLOGY

Fossil amphibians (such as frogs and salamanders) and reptiles (particularly turtles).

Craig S. Scott, Ph.D.
CURATOR OF FOSSIL MAMMALS

Late Cretaceous and Palaeocene mammals from about 84 – 55 million years ago and their evolution during the end of the Age of Dinosaurs and the beginning of the Age of Mammals.

Donald M. Henderson, Ph.D.
CURATOR OF DINOSAURS

Dinosaurs and marine reptiles, and the use of mathematics to study dinosaur locomotion.

François Therrien, Ph.D.
CURATOR OF DINOSAUR PALAEOECOLOGY

The lifestyle and behaviours of extinct animals and of the environments and climate in which they lived.

Caleb M. Brown, Ph.D.
BETSY NICHOLLS POSTDOCTORAL FELLOW

The diversity and biology of herbivorous dinosaurs, including the anatomy and evolution of display structures (horns, frills, and crests), and the diversity and preservation of small-bodied dinosaurs.

For expanded scientist biographies, visit:
www.tyrrellmuseum.com/research/our_scientists.htm

CONTACT

The Museum works with media and film crews year-round. To arrange a visit get further information, or to brainstorm ideas for a story you would like to develop, please contact:

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