

PROGRAM OVERVIEW

Thank you for booking Secrets of the Lost Quarry with Royal Tyrrell Museum Distance Learning!

Investigative skills will be put to the test in this interactive adventure! Journey into the Canadian Badlands to rediscover a fossil site lost over 100 years ago. Students will be transported through the Drumheller valley to collect and study evidence pointing to the location of a historic dinosaur quarry.

Audience:

Grades 3–7 * (maximum 35 students)

Alberta curriculum connections:

- Grade 3 Science (Rocks and Minerals)
- Grade 4 Social Studies (Alberta: A Sense of the Land)
- Grade 5 Social Studies (Canada: The Land, Histories and Stories)
- Grade 6 Science (Evidence and Investigation)
- Grade 7 Science (Planet Earth)

PROGRAM OBJECTIVES

Participants will:

1. Use deductive skills to gather evidence to find a lost dinosaur quarry in the Alberta badlands
2. Review the basic rock types, focusing on sedimentary rocks, and what they can tell us about the ancient Alberta environment
3. Explore the history of early fossil hunting in Alberta

Pre-program: Have the participants seated in rows, all in view of the camera.

PROGRAM FORMAT

1. Introduction
 - What are lost quarries?
2. Journey through the Drumheller valley
 - Formation of the badlands
 - Geology review
3. Palaeontological history of the area
4. Search for the lost quarry
 - Prospecting for evidence
5. Journey back to the Museum
6. Questions and conclusion

CORE CONTENT

History of Palaeontology

In 1884, Joseph Burr Tyrrell (pronounced TEER-uhl), the Museum's namesake, came to the Alberta badlands as a geologist with the Geological Survey of Canada.

- While prospecting for coal seams in the Red Deer River valley, he accidentally discovered the skull of a theropod dinosaur.

Theropod – means “beast foot”, referring to the three-toed, meat-eating dinosaurs

- The dinosaur he found was later named *Albertosaurus* in 1905 in honour of Alberta.
- As word of dinosaur discoveries spread, fossil hunters traveled to the Alberta badlands during the Great Canadian Dinosaur Rush (1910 - 1917) looking for fossils.
- Fossil hunters traveled along the Red Deer River in rafts called scows.

Scow – a flat-bottomed raft, capable of traversing very shallow waters

Search for the Lost Quarry

The clues have led to Horsethief Canyon; a canyon once used by horse thieves who hid and re-branded stolen horses among the hills.

Prospecting is how palaeontologists find fossil evidence. This process involves searching the ground for small pieces of fossils. To find a lost quarry, evidence of people working must be found. This includes old newspaper bits, remains of field jackets, tin cans, buttons, etc.

Importance of Finding Lost Quarries

Many early fossil hunters did not collect all the fossils at a quarry. For example, if they were in a rush they may have collected only the skull, leaving the rest of the body behind. If the lost quarry can be found, there may be more fossils to find and collect.

By finding a lost quarry new information can be found

- By examining the rock in which the fossils were originally buried, we can tell the approximate age of the fossil
- The type of rock can tell what the environment was like
- How the creature may have died
- If there were any other fossils not collected or associated with the original find

KEY TERMS

Cretaceous Period	The third and latest period of the Mesozoic Era, from 145 – 66 million years ago.
Deposition	The accumulation of sediments.
Erosion	The group of processes that loosen or dissolve rock material and transport it, mainly by water, ice, wind, and gravity.
Field jacket	A covering of burlap and plaster that protects a fossil during transport.
Fossil	The remains, traces, or imprints of a prehistoric organism preserved in rock.
Fossil matrix	Concentrated fossil and rock material that has been processed by screen washing.
Fossilization	The process that preserves the remnants, impressions or traces of an organism in rock, over time.
Geology	The scientific study of the origin, history, and structure of the Earth.
Glaciation	The scouring and wearing down of the Earth through erosion and deposition by glaciers.
Hoodoo	A mushroom-shaped rock formation which is caused by differential resistance to erosion.
Palaeoenvironment	The environment of the past.
Palaeontology	The study of ancient life on Earth based on the fossil record.
Quarry	A place of excavation/digging where, in this case, fossils are recovered.
Strata	Layers of sedimentary rock or soil, or igneous rock formed at the Earth's surface.
Stratification	Formation of strata.
Weathering	The group of processes, both chemical (e.g., air, rainwater, plants, bacteria) and mechanical (e.g., changes of temperature), that change the character of a rock, but does not move it.