Walking Among Ancient Giants:

Preserving the Riches of Dinosaur Provincial Park

By Andrea Johancsik, *AWA Conservation Specialist*

In the distance, a child cries out: "I found a bone! I found a bone!" I catch myself thinking that our young visitor to Dinosaur Provincial Park instead probably found a piece of bone-shaped sandstone. I'm guiding two dozen people through the park and I'm trying to listen in all directions to manage my tour. I hastily postpone trying to explain 76 million years of local geological history to a very curious parent in three sentences or less – not an easy task. "I'll be right back I say apologetically as more screams echo in the sandstone valley. "ANDREA!" "Com'ere!" "I found a bone!"

Dinosaurs spark our imaginations and dinosaur fossils are one of the most exciting discoveries for children and adults alike. During my summer as an interpreter, I was able to live that excitement every day through guided tours. The history of dinosaurs also reminds us of the precariousness of life. As we piece together stories about the rise and fall of dinosaurs, we should reflect on the story we are writing and leaving for future generations to discover.

Though fossils are abundant across sediment in North America, they're only accessible where erosion has swept away some surface rock. Alberta's environment in the late Cretaceous (145.5 to 65.5 million years ago) was more like Vancouver's wet temperate forest, full of braided streams and rich in vegetation. When the creatures died from the dog-eat-do—er... dinosaur-eat-dinosaur world, some were quickly buried in wet, oxygen-free sediment where their bodies were not eaten or decomposed; this preserved them for fossilization. Unique chemical conditions in surface water slowly transformed once-living material into rock. Millions of years later after the last ice age and long after the terrestrial dinosaur extinction, continental glaciers retreated and uncovered late Cretaceous sedimentary rock. Now, the Red Deer River Valley opens a window into that geologic time by revealing fossils from dinosaurs and other creatures.

A commonly found fossil in Dinosaur Provincial Park PHOTO: © C. JOHANCSIK

As I suspected, my young guest found only an oddly shaped piece of sandstone. But on a tour at Dinosaur Provincial Park, it would only be a matter of minutes before I would run over and respond, "yes, that's a fossil!"

Protecting an unparalleled fossil resource

Interpreters at Dinosaur Provincial Park have the privilege and challenge to show this unique resource to tours of up to 24 people. Visitors take a bus into the 'Natural Preserve,' a large area open only to guided tours, staff, park rangers, and paleontological excursions. I was lucky enough to attend

Overlooking the Red Deer River from the coulee edge near the entrance to Dinosaur Provincial Park. Staff housing in on the shoreline. PHOTO: © A. JOHANCSIK

one such excursion with a paleontology student and a couple other parks staff. Walking through the Natural Preserve, we found a micro-site (a concentration of small fossils such as teeth and fish scales) that had never been documented.

Zoning is a management technique used in numerous parks across Canada and around the world. It restricts certain uses in order to protect spiritual, ecological, geological, or historical values. Dinosaur Park's Natural Preserve is an example of zoning. Another example of zoning in Alberta provincial parks is found in Writing-on-Stone Provincial Park on the Milk River in southern Alberta. Writing-on-Stone has a large restricted area known as an 'Archeological Preserve.' A large concentration of very fragile ancient petroglyphs (rock carvings) and pictographs (rock paintings) are found there. Sadly, vandalism from the time of the earliest European settlers through to the mid-1900s destroyed or damaged much of the rock art before the Preserve was established. In Canada's National Parks, zoned areas that receive the highest level of protection are usually small and localized to safeguard a particular feature, such as the Cave and Basin Marsh in Banff National Park. Large areas that exclude people entirely, such as Dinosaur Park's Natural Preserve, are rare. The main reason for the Natural Preserve is to protect the fossil resource, as fossils in Dinosaur Park are fragile and can crumble under a single footstep.

Crumbling fossils aren't the problem in and of themselves. After all, paleontologists can only find fossils once they're already exposed and beginning to weather. The motivation for protecting most of Dinosaur Park came as visitation increased and it received a World Heritage Site designation in 1979. Jarrid Jenkins, Visitor Services Program Head in the Parks Division at Dinosaur Provincial Park, remembers the days when people could wander anywhere they wanted. "My grandparents used to take visitors down to the badlands to have picnics at the clam beds," he says, referring to areas of layered fossil clam shells that now can't even be accessed on guided tours. "People remember the 'good old days,' when they could walk around and explore and bring fossils home with them, but there were also many less visitors then." Now, Dinosaur Park welcomes 100,000 visitors through its gates each year, many of whom are international travelers checking off a box on their World Heritage Site bucket list.

In Dinosaur Park, any constant wear on the ground, whether caused by hundreds of human footprints or motorized recreation, would cause rapid erosion of the fossils and hoodoos. Everything about this area is fragile, even the grassland areas. On one of the tours, I showed my guests a wagon trail still imprinted in the native grass that was made by settlers or explorers over 100 years ago. Most were shocked that a simple wagon trail could have such a long-lasting impact on the landscape.

Wagon Trail PHOTO: © D. LLOYD

Without people, what happens?

Alberta's Provincial Parks Act and *Historical Resources Act* provide the legal mechanisms to restrict access in the Natural Preserve. In addition to protecting fossils there are other benefits to Dinosaur Park's Natural Preserve. According to Jenkins, public safety is a major consideration. Anyone accessing the preserve must bring a radio for safety reasons, as there is no cellphone service. The harsh badlands environment poses a variety of potential threats or dangers, including lack of water, sinkholes, crumbling slopes, and cactus. For the unprepared, the preserve can be a disaster in the waiting – and there are park legends to prove it.

The Natural Preserve also provides ecological benefits, such as letting coyotes, snakes, and migratory birds live free from human interference. For researchers, this intact and representative ecosystem is perfect for studying bats, rattlesnakes, and other poorly understood wildlife. The river valley's extensive riparian areas provide essential habitat for species like beaver, moose, and threatened/at-risk birds such as ferruginous hawk, short-eared owl, and Sprague's pipit while the badlands are home to scorpions

Public access to Dinosaur Provincial Park's Natural Preserve area generally is restricted. PHOTO: © A. JOHANCSIK

and cactus, found in very few places in Canada.

Educating children about parks is also easy when the distinction between protected and non-protected areas is so obvious. School groups go on a guided tour in the public area and then travel by bus to the Natural Preserve. The difference in abundance of fossils between the two places is dramatic. It's easy to understand why: fossils in the campgrounds and publicly accessible badlands have been trampled, pocketed, or simply eroded by visitors. "Kids see huge fossils and micro-sites [in the Natural Preserve] that they wouldn't see anywhere else," says Jenkins. "It demonstrates why we have parks, which is preserving resources for the future. Going into the protected area helps people understand why we're protecting it."

Can Tourism and Restricted Access Coexist?

Understandably, adventurous visitors may be frustrated or disappointed to not have access to the beautiful valley bottoms they can see from the coulee edges on prairie level. But, on the other hand, some visitors may place more value on restricted areas because it becomes a privilege to enter them. This can help tourism boom while keeping ecological and historical values intact.

On balance I hope most people realize that since Dinosaur Provincial Park has so many unique features, and because the 'badlands' are difficult to live in, the current level of restricted access should be maintained. It's important to recognize that protection doesn't mean absolute exclusion or expulsion; rather, it means exclusion of certain uses and limitations of how much use is allowed. E.O. Wilson, one of the world's most renowned evolutionary biologists, suggests in his recent book *Half Earth* that 50 percent of the world's surface must be protected in order to save the planet from, as the expression goes, going the way of the dinosaurs. At the same time I think he recognizes that human visitation and use may be compatible with that goal. As he states, effective conservation includes "the necessity of accommodating people living within those reserves."

There are some people who remember Dinosaur Park when it wasn't so precisely managed. The only Dinosaur Park I've known is one that has a world-class visitor centre and display houses, but it still has the charm of a back-country destination. Dinosaur's best chance of staying authentic is to recognize the reason why people come: fragile fossils, delicate wildlife habitat, and constantly weathering rocks. Showing this sensitive environment to people is important, so long as accessing it doesn't compromise its integrity. Incorporating a Natural Preserve in Dinosaur Park is crucial to making the park a great example of successful ecotourism, with benefits for environment, the economy, and the people.

The Cretaceous-Paleogene mass extinction that is known for the death of the dinosaurs was the fifth mass extinction in earth's history. E.O. Wilson and other scientists say we are in the midst of a sixth, the Holocene extinction, and the best way to avoid this is to protect and value the habitat and biodiversity we have left. Dinosaur Provincial Park affirms Wilson's hope. Though the dinosaurs that roamed its landscape have been gone for millions of years, these ancient giants will continue to teach us the importance of life well into the future.