

ALASKA'S JURASSIC PARK

Colville River teases scientists with clues to extinctions, climate change

One of the most popular exhibits in years opened this fall at the Anchorage Museum of History and Art—a complete *Tyrannosaurus* skeleton replica on loan from the Field Museum in Chicago. Busloads of schoolchildren and throngs of adults have been getting a unique look at an ancient life form.

Most people associate dinosaurs with tropical jungles and would doubt dinosaurs could have lived in northern Alaska. Yet dinosaurs not only lived here more than 65 million years ago, they thrived!

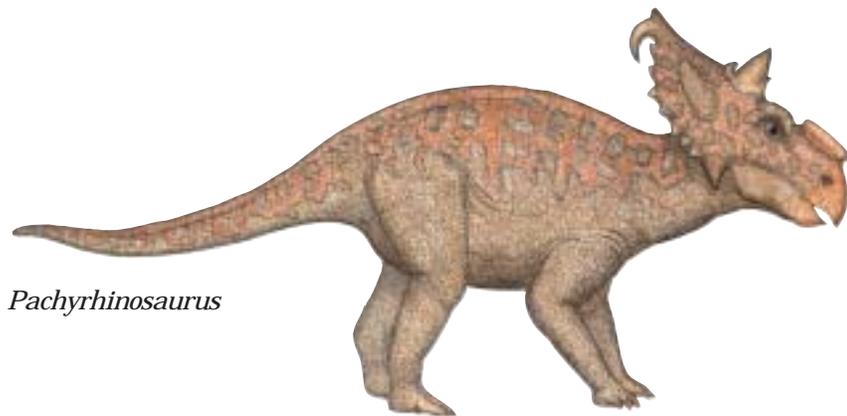
The story of dinosaurs in Alaska began in 1961 when a geologist exploring along the Colville River on Alaska's North Slope accidentally discovered what he thought were bone samples from Ice Age animals, probably no more than two million years old.

In 1978, another geologist discovered dinosaur footprints near Big Lake on the Alaska Peninsula. That revolutionized thinking. In 1984 a USGS geologist reexamined the 1961 fossils and identified them as the first dinosaur bones found in the state.

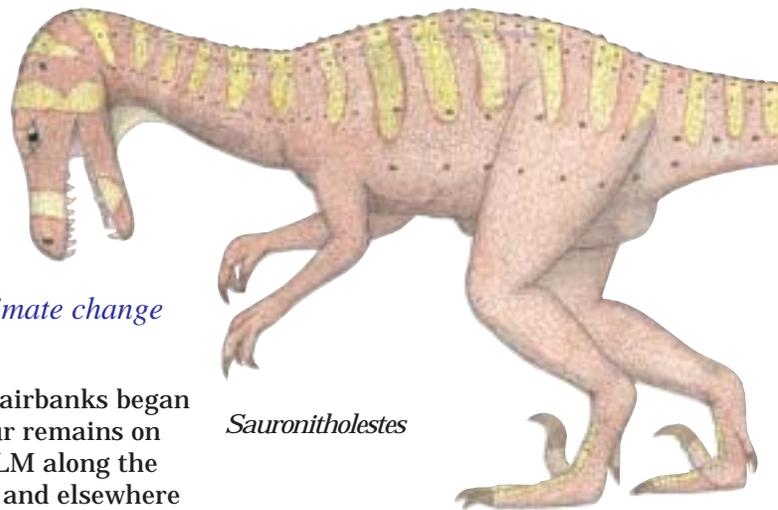
In the mid-1980s, paleontologists from the University of California at Berkeley and the University of

Alaska Museum in Fairbanks began exploring for dinosaur remains on lands managed by BLM along the Colville River region and elsewhere on Alaska's North Slope. What they found was startling. Dinosaur bones were found eroding from the riverbank along a stretch of the Colville River more than 200 miles north of the Arctic Circle. They were in such abundance at this one location that during the next few years more dinosaur bones were recovered there than from all other known polar dinosaur bone localities in the world combined, including those from Russia, Canada, Australia, and Antarctica. The enormity of this discovery is still not generally recognized by the public. It is a world-class deposit that holds many secrets that can only be revealed through future scientific work.

In 1998, an exciting new dinosaur discovery on Alaska's North Slope included extensive dinosaur footprints called trackways. These provide evidence of seven different meat- and plant-eating dinosaurs, including very odd oval-shaped tracks of a yet unknown species. Equally significant, they date from the



Pachyrhinosaurus



Sauronitholestes

middle Cretaceous period, about 90-110 million years ago, making them far older than the other bone fossils found on the North Slope.

To date, at least 12 different types of dinosaurs have been found on the North Slope. The first type found, and the one from which the greatest number of bones have been recovered, was an impressive plant-eater called *Edmontosaurus*. This is a hadrosaur, a large duck-billed dinosaur that walked on two legs, stood up to 10 feet tall, was more than 40 feet long, and weighed 3 or more tons when fully grown.

Soon, more types of plant-eaters were found, as well as sharp-toothed fast-moving carnivores which fed on hadrosaurs and anything else they could kill for food. Among the most notable of the meat-eaters were two large ones: *Albertosaurus*, up to 10 feet tall and 15-17 feet long, and *Tyrannosaurus*, up to 15 feet tall and 10-15 feet long.

Other meat-eaters found on the North Slope of Alaska include two which were similar to the scary and very lethal *Velociraptor* dinosaurs made famous for chasing children in the movie *Jurassic Park*.

Another fascinating recent dinosaur discovery along the Colville has been teeth and a skull fragment from *Troodon* dinosaurs. These were also meat-eaters, about 6 feet tall and weighing several hundred pounds. Though not equally endowed with sharp teeth and claws like the *Velociraptor*-





types, or massive size like the other meat-eaters, the advantages *Troodons* had were large brains and large eyes which, like today's cats, probably made them better adapted for hunting during twilight or at high latitudes.

Rounding out the 6 known meat-eaters is the most recent discovery of all—one not yet widely publicized. It is an ostrich-like dinosaur, called Ornithomimid, known only from a single, yet distinctive, foot bone. This animal was 11-19 feet long and weighed more than 200 pounds. It was especially birdlike in that it ran on two slim hind legs and had a long, toothless beak. Scientists believe it ate small animals as well as plants some 70 million years ago.

But perhaps the most interesting of all the North Slope plant-eaters is the *Pachycephalosaur*-type dinosaur. To date, only an egg-sized skull fragment of this most curious dinosaur has been found, yet that's sufficient to establish its presence in ancient Alaska.

There are still many mysteries about these enigmatic animals and there probably always will be! How did they survive so far north? Did they slow their metabolism or hibernate during the long sunless winters? Did they migrate southward for food and warmer climate? Indeed, how did they so successfully survive here in Alaska for at least 80 million or more years?

To develop answers, scientists turn toward the most recent dinosaur discoveries on the North Slope. For example, studies of the small meat-eaters such as the *Troodon* and *Dromaeosaurus* have provided evidence that they probably couldn't have physically migrated the 5,000 miles needed to reach areas of year-round plant growth. Instead, the scientists hypothesize that the North Slope dinosaurs probably survived without leaving



The cliffs along the Colville River have been gradually revealing the secrets to prehistoric life for more than 40 years.

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More on northern dinosaurs...
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ancient river systems that supported lush summer vegetation. Enough seasonal plants probably grew during the 24-hour sunlit summers to last during the cool-to-cold dark days of winter, thus supporting year-round the meat-eating dinosaurs at the top of the food chain.

While studies continue of the dinosaur remains in Alaska, there is equal interest in finding more evidence of what the environment was like at that time. Geologists tell us that the North Slope is still located at about the same latitude as it was when dinosaurs lived there around 65 million years ago. Yet plant fossils suggest that the climate may have been more like that of present-day Seattle.

Perhaps the most important question that Alaska's North Slope dinosaurs may help answer is "Why did the dinosaurs go extinct?" This is a question with more relevance than ever before as scientists uncover more evidence of the five or more mass extinctions during the past billion years. Did a meteor strike the earth about 65 million years ago? Did it throw up dust to block the sun,

which then set off fires and a chain-reaction collapse of the food chain leading to the end of all dinosaurs as well as many more plants and animals? Maybe, though even this is being seen by some paleontologists as a too-simple model. There is increasing scientific debate within the field of paleontology as to the importance of widespread volcanic activity that also happened about this same time.

Finally, there is very recent evidence of a possible second comet impact around 65 million years ago. So was the mass extinction of 65 million years ago more of a "one-two-three punch" of volcanism and perhaps two comet strikes? And could humans develop the technology to do anything about it in the future if our world were once again similarly threatened? Exciting questions! And further studies of the long-lost world of Alaska's fabulous North Slope dinosaurs may help provide answers.

—Robert King

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