

time period (105 million to 115 million years ago). The scientists, Thomas Rich and Patricia Vickers-Rich of Museum Victoria in Melbourne, Australia, figured the average yearly temperature of the area where they found the dinosaurs might have been about the same as present-day Fairbanks, Alaska—about 27 degrees Fahrenheit. It would likely take more than a giant meteorite to kill a dinosaur adapted to live in such a place, they say.

#### EXOTIC ALASKA CREATURES AND PLANTS SINCE THE TIME OF THE DINOSAURS

Compared with the Lower 48 states, Alaska today has very few species of trees. The southeast and other coastal areas with rain forest-type precipitation have towering Sitka spruce, yellow cedar and western hemlocks along with alders and willows filling in the ground beneath them. Drier areas of Alaska—such as its interior, landlocked and cut off from the modifying effects of the ocean by mountain ranges—have aspen, balsam poplar, white spruce, black spruce and birch. Add in a few-dozen species of willow, and that's about it for Alaska's trees.

But the Alaska after the time of the dinosaurs and before the last ice age was a place of oaks, hickories, beeches, chestnuts, walnuts, basswoods, elms, hollies, hazelnuts and sweetgums. A geologist named Tom Ager, with the Global Change and Climate History Team of the U.S. Geological Survey in Denver, found pollen fossils from all those species in interior Alaska. He found that all those trees grew in interior Alaska during a warming period between about 14.5 million and 17 million years ago. During the reign of the hardwoods in interior Alaska, he says, temperatures were probably 25 degrees to 30 degrees warmer than they are today.

#### BERING LAND BRIDGE, ICE AGE CHANGES

The Bering Land Bridge, thought by some scientists to be the pathway for the ancestors of all the indigenous peoples of North and South America, was a chunk of land that joined present-day Alaska with Siberia. During the last ice age, when

water that is now ocean was locked up as glacier ice, the landmass was more than twice the size of Texas. While the land bridge existed, it provided a path for animals that came after the dinosaurs, some scientists think.

During the height of the land-bridge days, about 20,000 years ago, ice covered southern Alaska while the interior was ice-free. When Earth's climate got warmer, starting about 16,000 years ago, glaciers melted and the ocean flooded over the land bridge.

#### ANIMALS THAT SUCCEEDED DINOSAURS

No Alaska dinosaur fossils date younger than that curious date of 65 million years ago when the meteor struck, but geologists, paleontologists, trappers, canoeists and gold miners have found many remains of more-recent animals that once roamed Alaska.

Eighteen thousand years ago, when immeasurable pounds of glacial ice pressed down on the present sites of New York City and Chicago, a vast, dry, ice-free belt wrapped around the northern part of the globe, according to Dale Guthrie, a retired biology professor at the University of Alaska Fairbanks. He calls this green area between ice sheets the Mammoth Steppe.

The Mammoth Steppe was rich with grasses, sedges, forbs and sages; Guthrie says the landscape was similar to short-grass prairies that exist today near Minot, North Dakota, or in northern Montana.

Back then, the dry grasslands of Alaska echoed with the roar of the American lion. The males of this species were about 25 percent larger than today's African lions. Other creatures that roamed Alaska 16,000 to 20,000 years ago, but don't today, include the horse, elk and saber-toothed cat. Also living in Alaska were woolly mammoths, camels, badgers, bison, saiga antelope and a 1,500-pound creature called the giant short-faced bear.

Bigger and lankier than the largest grizzly alive in Alaska today, giant short-faced bears were an imposing feature of the Mammoth Steppe landscape. Though it's

tempting to think of the bear as a super-predator, a researcher from Yukon, Canada Paul Matheus, thinks the giant bear may have been a scavenger. He did a study on the collagen in old bones that showed that the short-faced bear ate plant-eating animals of all varieties, which is consistent with a scavenger's behavior, and that the bear did not have the bone structure of an animal designed to make quick moves toward nimble prey.

Animals that endure in Alaska and also were around in the days of the giant bear and American lion include the ground squirrel, caribou, Dall sheep, arctic fox, lynx, musk ox, beaver, moose, wolf, wolverine and grizzly bear.

#### AFTER THE ICE AGE

The lions, woolly mammoths and bison of the Mammoth Steppe roamed Alaska until the landscape began to change about 13,000 years ago, Guthrie says. That's when birch, poplar and other trees began to sprout in wetter conditions that favored them over the grasses.

As the planet recovered from the last ice age, the great sheets of ice covering North America began shrinking and dumping lot of water into the oceans. Glaciers receded back into the mountains, leaving behind fresh soil that plant seeds wafted into. The tundra and tree species that live in Alaska today found the conditions favorable, and modern forests began to take over the landscape. Moose, bears, caribous and other creatures of the boreal forest and tundra thrived in the new ecosystems.

These large mammals, along with the creatures from the sea and the salmon that pioneered routes up new rivers, weren't aware of it, but they provided sustenance for the newest exotic creature to venture into Alaska. Striding over the Bering Land Bridge into a vast new land, or perhaps picking his way in a skin boat between the icefields along the coast, was a large-brain visitor from the West—the first human being who could call himself an Alaskan.

*Ned Rozell is a science writer living in Fairbanks.*