

# Dinosaurs and modern mammals developed comparable traits

by Ted Bailey

Although the dinosaurs and today's mammals are separated by more than 65 million years—an immense gap of time too great for our minds to comprehend—many of the dinosaurs developed traits comparable to those of today's modern mammals. These similarities became evident to me during the past several months while I was teaching a class entitled “The Dinosaur Renaissance” at the Kenai Peninsula College. Although some may still believe dinosaurs were obsolete, dumb, giant “lizards” that were driven to extinction by the efforts of “advanced” mammals, this is untrue. Most scientists now believe the demise of the dinosaurs was caused by a catastrophic event, probably an asteroid impacting the earth with devastating worldwide environmental destruction, rather than by any lack of adaptability on the part of the dinosaurs. An assessment of the various adaptations of dinosaurs reveals that many dinosaurs were superbly adapted to their environment, not unlike today's mammals.

Unlike many people who became fascinated with dinosaurs as a child, I became interested in them in middle age, specifically in 1975, the year my family and I returned to the United States after living for two years in Africa. That was the same year that a maverick paleontologist named Bob Bakker published an article entitled “The Dinosaur Renaissance” in the magazine *Scientific American*. In that article he proposed that unlike previous views of dinosaurs as lethargic cold-blood reptiles, new evidence suggested that dinosaurs were warm-blooded animals—like mammals and birds—and that some were very active, agile and intelligent. That article and later his book *Dinosaur Heresies* initiated a revolution in the study of dinosaurs that continues unabated today. And since then, I have attempted to keep informed of the latest findings.

Here are a few examples of dinosaur adaptations compared to mammal adaptations with which we are familiar, including mammal adaptations on the Kenai Peninsula. The earlier, more primitive and familiar plant-eating dinosaurs—the giant sauropods like *Brontosaurus* and *Brachiosaurus*—swallowed stones (gastroliths) to help grind up the plants they ate be-

cause they lacked plant-grinding teeth, just as modern spruce grouse pick up gravel for grinding food in their gizzards.

The next generation of plant-eating dinosaurs gave up the rock-and-gizzard approach, and developed complex plant snippers and plant-grinding teeth. Fast-forward roughly 70 million years to the present day and we see similar mechanisms for plant snipping and plant grinding in today's moose, caribou and many other hoofed mammals. These mammals snip off plant parts in the front of an elongated mouth with special teeth or bones, and then pass snipped-off parts through a toothless gap in the jaw to the back of the mouth where highly specialized teeth are used to grind up the plant tissue into small pieces for efficient nutrient extraction. Thus, many of today's “advanced” mammalian herbivores are using some of the same basic feeding mechanisms that the dinosaurs developed millions of years ago.

One of the most agile and intelligent predatory dinosaurs was a species paleontologists have named *Troodon*. It had one of the largest brains relative to its body size of any dinosaur. Its method of locomotion was bipedal, similar to the method used by today's famous bird of the southwest—the roadrunner. *Troodon*'s rear leg bones and other features indicate it was also swift running; its large eyes set partially forward in its head indicated it probably had binocular vision for depth perception. Its arsenal also included flexible, grasping front hands with sharp recurved claws. It may have been a stalker or a fast pursuer or perhaps both but regardless, it was an efficient two-legged predator well adapted to capturing elusive prey.

A close relative of *Troodon* was *Velociraptor*. It had the same features but was smaller and weighed only about 33 pounds. I find several similarities between *Velociraptor* and the modern lynx. The lynx, like many wild cats, has a relatively large brain; it is intelligent and has large forward-looking eyes with binocular vision for depth perception. A lynx can either secretively stalk or swiftly pursue its prey, usually a snow-

shoe hare, then grasp it in its claws while delivering a lethal bite. By the way, *Velociraptor* was the intelligent and cunning dinosaur portrayed stalking humans in the movie *Jurassic Park*. Those swift, agile, intelligent and misnamed “Jurassic” Park dinosaurs were actually modeled on yet another larger but related predatory dinosaur *Deinonychus*, a species that also had many of the same features as *Velociraptor* and *Troodon*, including a large sharp claw on each hind foot. *Deinonychus* are thought to have hunted in packs—like wolves—to bring down prey much larger than themselves.

I find these similarities between dinosaurs and today’s mammals fascinating. And I get great satisfaction watching the living descendents of the dinosaurs in my backyard and on winter walks. Yes, most biologists and paleontologists believe that today’s birds—our familiar black-capped and boreal chickadees, red-

breasted nuthatches and others—are actually nothing less than small, feathered dinosaurs whose ancestors somehow survived the great extinction event 65 million years ago. I find it even more remarkable that some of these flying “dinosaurs” have adapted so well to exceptionally harsh environments including our cold, dark and snowy Alaskan winters.

*Ted Bailey is a retired refuge wildlife biologist who has worked on the Kenai Peninsula for over 25 years. He is an adjunct instructor at the Kenai Peninsula College and maintains a keen interest in the Kenai Peninsula’s wildlife and natural history—and in dinosaurs. For more information about the Refuge, visit the headquarters in Soldotna, call (907) 262-7021. Previous Refuge Notebook columns can be viewed on the Web at <http://kenai.fws.gov>.*