

Section 5. The Horned Dinosaurs: Display or Defense?

Fun Facts

- *Psittacosaurus* was named for its beak and means “parrot reptile.”
- *Stegosaurus* had a small head, a tiny brain no larger than golf ball, and carried its head close to the ground for eating short, leafy plants, and fruits.
- *Protoceratops* took 20 years to reach full adult size; fossils have been found ranging in age from infants the size of a cat to adults up to seven feet long.
- Scientists estimate that a dinosaur’s leg will be roughly four times the length of its foot.

Q&A

Q: What do scientists think was the purpose of features such as horns, frills collars, and oddly shaped heads?

A: Dinosaurs are diverse so these were probably used for many different things. We used to think they were for defense or to keep the animal cool. We now believe they also could have been used for species recognition or in attracting or in competition for mates.

Q: Why do scientists think these peculiar body adornments were used for flirting, not fighting other species?

A: Modern animals, from beetles to bison, use horns almost always to attract mates or compete with rivals, or for species recognition. *Triceratops* may have acted like the African antelope.

Q: What color were dinosaurs?

A: There is no actual fossil evidence to document the true color of dinosaurs. For clues, we look at their closest relatives, birds and reptiles. The range probably went from the most colorful, like parrots, peacocks, and parakeets, to more subtle browns and greens.

Q: Did the thick skulls on dome-headed dinosaurs serve as “battering rams” or as decoration?

A: Dinos’ rounded skulls were poorly designed for head-butting matches; new research suggests the bone was too weak to withstand head-on blows; skulls of dome-headed dinos may have been used for species recognition or competition for mates or for attracting mates.

Q: What were dinosaur horns made of?

A: Bony core covered with thick covering of keratin, the same substance of our fingernails and hair.

Q: Why do paleontologists studying dinosaurs suspect that they had color vision?

A: Dinosaur descendants (the birds) and dinosaur relatives (present day reptiles) have color vision.

Q: Were some dinosaurs herd animals?

A: Fossil remains of large groups of plant eating horned dinosaurs have been discovered in “graveyards,” suggesting they all died at the same time as a result of possibly being buried in volcanic debris, succumbing to volcanic gases, drowning while fording rivers, etc. Also, trackways indicate that some dinos traveled in herds.

Q: Why does the baby *Triceratops* look so different from the adult?

A: Many animals change shape as they age (look at people for example). Development of large horns or frills occurs later in *Triceratops* life, bolstering the theory that they were used to attract mates, not for defense.

Q: What kinds of plants did dinosaurs eat?

A: Different dinosaurs ate different plants. Plants that existed with the dinosaurs included conifers, ferns, horsetails, and ginkgos. There were very few flowering plants during the Age of Dinosaurs.

Q: How did the heavily armored dinosaurs, or ankylosaurs, differ from *Stegosaurus*?

A: Ankylosaurs were the most heavily armored of all types; they had bony plates that formed a suit of armor that provided good defense; skull was a rigid box of bone, even eyelids were armored with bony shutters; possessed tail spikes that also were lethal; *Tyrannosaurus* or its relatives could have been crippled with well-directed blows to the ankle or shin. *Stegosaurus* had two rows of bony plates on its back but recent research seems to indicate that the plates were often very thin and contained numerous blood vessels, so they would have been too weak for defense, but instead, might have used the plates for courtship displays or to help regulate body temperature; did have sharp spikes on tail that could have been used as defensive weapons.

Q: Is there a way to sort out the many names and groups of dinosaurs?

A: Dinosaurs are divided into two main groups: Saurischians, which are identified by lizard-type hips; and Ornithischians, which are identified by bird-like hips. Beyond this, they are divided into several main types identified by appearance:
Sauropods: long necks and long tails and walked on all fours (Saurischians);
Theropods: three toed with sharp claws, largely bipedal (Saurischians);
Ornithopods: three toed with rounded toes, largely bipedal (Ornithischians);
Ceratops: horns or spikes on or around head, mostly four-legged with parrot-like beaks (Ornithischians);
Ankylosaurs: armored with bony plates, four-legged (Ornithischians).