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Some dinosaurs' flashy crests helped them toot their horns, scientists now say

Posted by [John Mangels/Plain Dealer Science Writer](#) October 16, 2008 13:59PM

Categories: [Breaking News](#), [Real Time News](#)



Courtesy of Michael Skrepnick.

This artist's rendering shows the helmet-crested lambeosaur called Corythosaurus.

If there was an "America's Next Top Model" competition for dinosaurs, the creatures called lambeosaurs would take first prize.

The heads of these duck-billed dinosaurs were adorned with elaborate crests of bone, arrayed in exotic variations -- Elvis-like pompadours, swooping comma shapes, and things that resembled Napoleon's cocked hat.

What were they there for? Over the years, researchers have suggested different purposes for the hollowed ridges. Long nasal passages snaked through them, so perhaps they boosted lambeosaurs' smelling ability. Maybe they were a kind of snorkel for underwater breathing. Or a mechanism for cooling the blood.

Now, scientists who probed the lambeosaurs' fossilized skulls with X-rays say the crests functioned like the brass tubing in a trombone. Their lengthy passages shaped and amplified the dinosaurs' deep, bellowing calls, helping them communicate with each other.

The scans confirmed the crests' role as a signaling device by showing that lambeosaurs had ear structures capable of detecting the calls, and a large enough brain to act on the information.

"The animals could both produce and hear the sounds," and had the brainpower to process them, said Ohio University paleontologist Larry Witmer, who directed

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the first-ever CT scans of lambeosaurs' brain housings and inner ears.

The findings were presented this morning at the Society of Vertebrate Paleontology's annual meeting in Cleveland. Scientists attending the conference saw vivid 3-D computer models of the dinosaurs' skulls, highlighted with lilac-colored brains, bubblegum-pink inner ears, and tubular, lime-green nasal passages twisting around inside the hollow head crests.

"It's beautiful work that answers important questions," said Michael Ryan, the curator of vertebrate paleontology at the Cleveland Museum of Natural History, who was not a part of the study.

Unlike bone, the soft tissue of brains and inner ears decays and isn't preserved in fossils. The scientists used computer software to digitally fill in the spaces in the skull those organs would have occupied, guided by impressions the tissue left in bone. The images are called virtual endocasts. In the last few years the technique has revolutionized paleontology.

Although the endocasts revealed that lambeosaurs had relatively big brains - about the size of a soda can -- the portion called the olfactory bulbs devoted to smelling was small compared to dinosaurs that didn't have the crests. If the lambeosaurs were using the greater surface area of their long, convoluted nasal passages as a way of heightening their sense of smell, their olfactory bulbs should have reflected that, and they didn't.

"That's the final nail in the coffin" for the theory that the crests played a role in helping lambeosaurs smell more acutely, said David Evans, the study's lead author and a paleontologist at Toronto's Royal Ontario Museum.

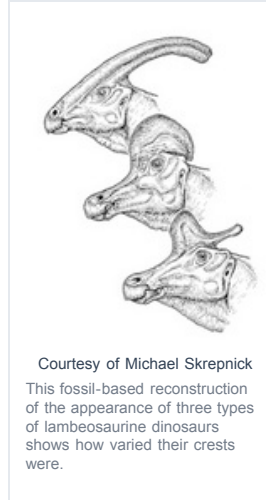
Other scientists previously had calculated the frequency of sound - a low bellow -- that the animals would have produced by snorting air through the hollow passages in their crests. By examining the size of the lambeosaurs' inner ear chambers, Evans, Witmer and their colleagues were able to estimate what frequency the dinosaurs could detect.

The sounds resonating through the crests "were definitely in the range that lambeosaurs were capable of hearing," said Evans.

Lambeosaurs' vocal ability, coupled with a large cerebrum (the part of the brain devoted to higher-level functions) "suggests they were engaging in fairly sophisticated social interactions," Witmer said. The crests probably weren't just for noise-making, but served multiple functions, the scientists said.

One possibility that will require more analysis is that they helped lambeosaurs regulate their body temperature, by providing long passages to circulate air around blood vessels like a radiator.

The crests also likely were a way of visually communicating with other dinosaurs. Their shapes varied wildly among lambeosaur species, and it's possible they were colored or ornamented distinctly too, Witmer said, meaning the crests may have helped identify potential mates.



Courtesy of Michael Skrepnick
This fossil-based reconstruction of the appearance of three types of lambeosaurine dinosaurs shows how varied their crests were.

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COMMENTS (2)[Post a comment](#)

Posted by **Scardelletti** on [10/16/08 at 5:45PM](#)

DINOSAURS LOOK LIKE THEY WERE CREATED, NOT EVOLVED

This was a very good scientific article. It stated things that most likely are facts based on solid scientific evidence. However, The Cleveland Museum of Natural History mistakenly informs people in the Kirtland Hall of Prehistoric Life that dinosaurs evolved into the beasts we find in the fossil record. Of course, nothing could be further from the truth.

From the fierce T-rex to the 30-ton lumbering sauropods like Fred

Flintstone sits upon in the famous cartoon, there's currently no fossil evidence whatsoever that proves dinosaurs evolved from anything over millions of years. Instead, the fossils clearly show that dinosaurs were created whole just about the way their bodies are found in the ground.

Thousands of scientists completely disagree with the Museum's evolutionary beliefs and there's tons of material available showing how impossible cosmological, geological, and biological evolution really is.

There's even a book entitled: GOD VERSUS THE CLEVELAND MUSEUM OF NATURAL HISTORY: WHOSE SIDE IS SCIENCE ON? which points out how unscientific many of the Museum's evolutionary exhibits really are.

Again, this was a good scientific article. But thank goodness it didn't contain any of that dinosaur evolutionary nonsense.

God Bless

Sonino John Paul Scardelletti - A Christian

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Posted by **nigelTheBold** on [10/17/08 at 10:04AM](#)

Scardelletti,

Every group has its fringe elements. There are scientists who believe the world is flat, or hollow. This does not make it so. As for the "thousands" of scientists, most scientists who actually work in fields in which evolution is a cornerstone (biology, biochemistry, palaeontology, sociology, medicine, genetics, and so on) do not doubt the process of evolution. In fact, I doubt you could come up with a hundred respectable scientists who do not believe in evolution, let alone "thousands." (A respectable scientist is one who publishes regularly in peer-reviewed journals.)

There is currently *no* material that contradicts the theory of evolution through natural selection. There is no cosmological or geological evidence contradicting it; and especially, there is no biological evidence contradicting it. In fact, modern biology would be impossible without the theory of evolution. That theory has given us medicines and treatments that are unimaginable without evolution as *the* driving force behind life.

Your assertions that dinosaur fossils have no antecedents is simply incorrect. From the vast numbers of specimens from the Cambrian period, up through the Jurassic and beyond, fossil specimens represent a fairly contiguous procession. Pick up any good book on fossils, and you'll see hundreds of specimens representing an evolutionary tree from the pre-Cambrian up through today.

Evolution has been supported by every test we've conceived. That is, after all, the key to scientific knowledge: testability. There is no other alternate scientific theory to the theory of evolution through natural selection that has withstood testing. None. Not one.

The only alternative presented today is Intelligent Design, which is not a scientific theory at all, as it cannot be tested. ID is presented by a consortium called the Discovery Institute, who has stated outright that their goal is not scientific, but philosophic: they wish to discredit evolutionary theory because they believe it encourages materialism. (It doesn't, but that's a separate discussion.) This isn't a path to knowledge, but a path to wilful ignorance. It isn't science, but politics. And it is most definitely not truth, but lies.

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