



Low Rates.  
Low Closing Costs.



## Animals

[Subscribe to RSS](#)
[View all Articles](#)

## Bizarre Dinosaur Headgear Used For Shouting

 By **Jeanna Bryner, Senior Writer**

posted: 16 October 2008 08:31 am ET

24 Comments | 7 Recommended

The ornate headgear worn by duck-billed dinosaurs millions of years ago was used to make eerie, bellowing calls, suggests a new study.

The study also showed that as the dinosaurs matured into adults, their voices probably changed from high-pitched to deep, just like ours do (at least for guys).

The researchers specifically looked at a subfamily of [duck-billed dinosaurs](#) (plant-eaters with long, flattened snouts) called lambeosaurs that sported [flashy caps](#) that would have put to shame any "Star Wars" hairdo. The caps enclosed nasal passages that looped through the head crest to form large air chambers before passing into the airway (throat).

Past explanations for the wonky headgear have proposed that it was used to boost the dinosaurs' sense of smell, to regulate temperature or to allow sound to [resonate for communication](#).

The new project represents the first time scientists have pieced together both the structures of the crests and nasal passages, along with reconstructions of the brain, the researchers say. The result confirms one of the theories, that the head crests were used for vocal communication — not as supersized sniffers.

The upshot is a picture of lambeosaurs shouting out to one another, wooing mates and warning one another of nearby enemies.

And if the study results hold true, when a lambeosaur made calls, air would travel through the nasal passages enclosed by the head crest. Since the sizes and shapes of head crests (and nasal passages) differed among lambeosaurs, each one had its own voice — their calls also would have sounded distinctive individual by individual, the researchers found.

"Dinosaurs vocalized through their mouths, but because the nose connects to the mouth, the nasal passages act as resonance chambers," said researcher Lawrence Witmer of Ohio University's College of Osteopathic Medicine.

The results will be presented today by the researchers at a meeting of the Society for Vertebrate Paleontology in Cleveland, Ohio. In addition, the research will be detailed in a forthcoming issue of the journal *Anatomical Record*.

### Dino-sound system

Witmer, Ryan Ridgely, also of Ohio University's College of Osteopathic Medicine, and their colleagues used computed tomography scans to peek inside the head crests and reconstruct the brains and nasal cavities of individuals from four genera of the lambeosaur subfamily, including *Parasaurolophus*, *Corythosaurus*, *Lambeosaurus* and *Hypacrosaurus*.

"The shape of the brain can tell us a lot about what senses were important in a dinosaur's everyday life, and give insight into the function of the crests," said study lead author David Evans, a paleontologist at the Royal Ontario Museum and the University of Toronto. Evans worked with Witmer and Ridgely on the research.

In addition, Evans' team examined such systems in dinosaurs' closest living relatives, birds and



The helmet-crested lambeosaur *Corythosaurus* sported a bony head crest that probably served as a resonating chamber for making sounds. Credit: Michael Skrepnick.



1 of 2

Full Size

Advertisement

Continuing Teacher Education Courses

- Administration
- Special Education
- Technology
- More

[Click Here](#)

University of Phoenix

Phoenix.edu Ads by Goooooogle



Like this article? Show your support.  
Click here to buzz it up on Yahoo!

### Related Items from the LiveScience Store



Antworks Gel Ant Habitat with Illuminator  
\$29.95

[Buy Now](#)


Velociraptor Skeleton Model  
\$249.95

[Buy Now](#)

More Stores to Explore

[ORION](#) [Go to Store](#)
[Starry Night](#) [Go to Store](#)

### Most Popular

Recommended

Commented

1. [Skull of Large Extinct Primate Reconstructed](#)
2. [Animals Have Personalities, Too](#)
3. [Oldest 'Footprints' on Earth Found](#)
4. [Rare White Lions Get Wild](#)
5. [Animals Stressed Out, Too](#)

### Community

From Our Blogs

[blogs](#)

#### From Our Blogs

10.10.08 | by [Leonard David](#)  
[Lunar Lander Challenge Back On](#)  
 The on/off switch for the Northrop Grumman Lunar Lander Challenge is now in the "on" position. It now will be held at the Las Cruces ...

10.09.08 | by [Leonard David](#)  
[NASA's Mars Science Laboratory: Blastoff in 2009...or Slip City?](#)  
 Tomorrow, a NASA decision may be forthcoming on the cost-overrun

crocodilians.

They found that the brain region linked with all things olfactory was relatively small and primitive in the lambeosaurs, suggesting, the researchers say, that the dinosaurs' head crests did not evolve to improve smell. Instead, the researchers think the dinosaurs used the nasal passages within the crests to make bellowing sounds that could have been used to call for mates or warn others of predators. (The ornamented external appearances of the crests served as visual displays.)

When a lambeosaur did call out, the size and shape of [its head crest](#) would have modified the sound coming out. The same phenomenon happens for us, Witmer explained. When we get stuffy noses, our voices change. That's because our nasal passages act as sound resonators.

"We have a sense that these animals used low frequency sound, so, very deep sounds that actually travel long distances and they may have been able to use those to communicate," Witmer said.

The CT scans showed a delicate inner ear, supporting the idea that the dinosaurs could hear the low-frequency calls produced by the crest.

### Brainy beasts

If the lambeosaurs were in fact communicating with one other through vocal calls, the researchers suspected a well-developed brain could be at work to support such sophisticated behaviors. And that's what they found.

The reconstructed brains showed relatively large cerebral hemispheres, which are linked with higher thought and problem-solving.

"What it suggests is that they indeed did have the brain power to pull off some of these sophisticated behaviors," Witmer said, "that they probably did communicate in perhaps fairly subtle ways and they could make sense of it."

### Dinosaur puberty

By examining the headgear of both juvenile and adult dinosaurs, the researchers also saw evidence for new details about dinosaur development and breeding.

As the crests got bigger and the animal matured, the dinosaurs' nasal passages became longer and more convoluted.

"The idea is that as these animals grow they would actually be starting to, in a sense, develop the tools and the ornaments to enter into the breeding pool," Witmer said. "The shape and size of the crest provides visual information. The nasal passages on the inside actually probably relate to voice and vocal communication."

Their voices may have changed like teen-age boys' do as they go through puberty.

"We could easily imagine that a little pipsqueak literally would've had a higher pitched voice," Witmer told *LiveScience*, "and as they got older [their voices] would become deeper."

The variation in crests among species and among individuals of the same species suggests the dinosaurs may have produced subtly different bellows, Witmer said.

And so like us and other modern animals, a dinosaur's unique voice may have served as a distinguishing feature for relatives and members of another species.

- [A Brief History of Dinosaurs](#)
- [Avian Ancestors: Dinosaurs That Learned to Fly](#)
- [Images: Dinosaur Fossils](#)

#### [Faces of Influenza](#)

Influenza is a potentially deadly infectious disease. [Learn More...](#)

[www.facesofinfluenza.org](http://www.facesofinfluenza.org)

#### [Build a Toy Dinosaur](#)

TooBeez's 57 Piece Dinosaur Toy Kit Connect & Create Anything \$99.99

[www.BoomBeez.com](http://www.BoomBeez.com)

#### [Volunteer Work Abroad](#)

Life-Changing travel with i-to-i. Be Part of the Adventure.

[i-to-i.com](http://i-to-i.com)

Ads by Google



Hypnoticka wrote:

@Bishopice611

no it's not opinion. opinion is not evidence, these are facts

posted 10/19/2008 8:21:07 AM

[0 Recommend](#) | [Report Abuse](#)

and highly complex Mars Science Laboratory (MSL) mission. Will a decision be made to ...

09.20.08 | by [Leonard David](#)

#### [Lunar Lander Challenge - Problems Curtail October Competition](#)

The space grapevine was a buzz late last week - looks like the Northrop Grumman Lunar Lander Challenge at Holloman Air Force Base in New Mexico will ...

## Environment

[View all](#)



#### [Environmentally Friendly New Jet Planned](#)

The 'easyJet ecoJet' would emit 50 percent less CO2 than today's newest ...



#### [Scientists Get Closer to Center of the Earth](#)

A new technique pinpoints Earth's center of ...



#### [Scorching Summers in Store for Mediterranean](#)

Summers in Mediterranean could become ...

## Animals

[View all](#)



#### [Young Lizards Dressed For Success](#)

Mother side-blotched lizards know best when it comes to color patterns in ...



#### [Mysterious Bee Deaths Linked to Pesticides](#)

Scientists seeing if chemicals are responsible for honeybee ...



#### [Huge Bird-Like Dinosaur Discovered](#)

Scientists unearthed a gigantic bird-like dinosaur that weighed as much as ...

## Technology

[View all](#)



#### [Model Predicts Mob Behavior](#)

Prototype models how people behave in emergencies and crowd ...



#### [Cheap Lamps Made with Aluminum Foil](#)

Our lives may soon be lit by skinny panels made of aluminum ...



#### [Spam King Gone, Spam Rolls On](#)

The arrest of a spam kingpin does little to deter ...