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USU Eastern Magazine

04/01/2016

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Dr. Ken Carpenter inspects a bone in the USU Eastern Prehistoric Museum's vast collection that is still in storage.

The naming of a new dinosaur and a new Utah-original dinosaur are among some of the bare-bone essentials that have emerged in recent weeks from Kenneth Carpenter, director and curator of paleontology at Utah State University Eastern Prehistoric Museum.

A hip bone of a young horned dinosaur found in Utah's San Rafael Swell may have an origin and age different from what scientists previously thought. With apologies to Central Asia, North America — Utah in particular — may have bragging rights to this distant relative of Triceratops.

It appears that these horned dinosaurs were roaming Utah's ancient sea shores around 98 million years ago — some 8 million years prior to the ones found in Uzbekistan and New Mexico, according to Carpenter in a paper recently published in the science journal Cretaceous Research, and co-authored by Richard L. Cifelli, curator of vertebrate paleontology with the Oklahoma Museum of Natural History.

"Prior to this discovery, it was a toss-up as to whether they originated in the United States or Central Asia because advanced horned dinosaurs of the same age were found in both places," Carpenter says. "This specimen pushes the evidence towards a North American origin and from here migrating across an ancient Bering land bridge to Asia." And in another published work, Carpenter and colleague Peter M. Galton, professor emeritus at the University of Bridgeport, Connecticut, announced the discovery of a new dinosaur that's been right under scientists' noses for the past 102 years. Meet Alcovasaurus longispinus, the dinosaur formerly known as Stegosaurus longispinus.

Over the past century, no one questioned the original species label given to the great beast when it was first uncovered in 1914 near Alcova, Wyoming. For one thing, scientists didn't have much to go on since most of the specimen was destroyed in the late 1920s when ceiling pipes in the museum holding the specimen burst and flooded the facility. All that was left was one femur, plaster casts of the two most complete elongated tail spines, and a few photographs of the quarry and of the skeleton as it was displayed in the museum gallery.

While peer reviews were lacking at the turn of the last century, by the advent of the new century, scholars showed a renewed interest in the bones. Ongoing work on stegosaurs by Galton and Carpenter found them at odds with some of their peers. One scholar from England concluded that the original species designation was invalid, that it was not, in fact, a new species of Stegosaurus at all.

Galton and Carpenter recognized anomalies as well, namely longer spikes and a shorter tail and a creature that stood a full foot taller than its Stegosaurus relative. Their research led them to conclude that what they were seeing was much more than a species of Stegosaurus, it was actually a new genus altogether based on specimen studies, both real and cast, and analysis of archival photographs.

Their paper has now been published in the Neuse Jahrbuch fur Geologie und Palaeontologie, an international journal of geology and paleontology, based in Stuttgart, Germany.

"We're presenting it and we'll see how it holds up under the test of time," Carpenter says. "Who knows, somebody may conclusively prove that it's not valid, although it would be hard to do because of the long spikes."

Spikes that were up to three-feet in length, or about twice as long as the Stegosaurus. Its rather short tail, about 25 percent shorter than Stegosaurus, made it possible for the dinosaur to accommodate the extra-long tail spikes, he says.

"Besides the short tail, this bobtailed stegosaur probably could not swing its tail as much as Stegosaurus based on

what we know of the tail vertebrae," he says. "So, having longer spikes makes sense as a way to compensate."

This dinosaur is important, even though its genus line appears to be a dead-end, because it shows that the dinosaurs of the Jurassic period were far more diverse than scholars previously realized. Numbers of species and genera help fill in gaps and paint a more complete picture of what life was like 150 million years ago, he says.

As for the pelvic bone of the herbivorous dinosaur from Utah, lying bones tell no lies. Cifelli had previously found in Montana a little skull of a small ceratopsian related to Protoceratops in rock roughly the same age. That dinosaur was named Aquilops. Its discovery was not so unexpected because it fit in the early evolutionary scheme of ceratopsians, and was even the right age, Carpenter says.

"The Utah pelvic bone, however, is totally surprising because it shows the presence of an even more advanced ceratopsian, and so it was not what was expected," Carpenter says. "It is like finding a Boeing 747 in a Da Vinci drawing."

It means, that at least for now, Utah can claim more than 71 species of dinosaurs, of which 28 are unique to the Beehive state, the most famous of these being the Utahraptor. The truth these bones utter about time, history and diversity, combine to provide scientists greater clarity of what life was like on earth millions of years ago, including some of Utah's earliest residents, Carpenter says.

~ John DeVilbiss