

Paleogeographic Context



CHIP ELLIS | Gazette

Marshall University paleontologist Robin O'Keefe describes his work on a National Geographic-sponsored search for prehistoric sea reptiles in Wyoming.

Long walk, big discovery

Clay series hears tale of Marshall scientist's fossil find

By Rick Steelhammer
Staff writer

When laymen imagine a paleontologist searching for the fossilized remains of prehistoric animals, they are likely to envision a scientist "digging a hole in the ground and having a whole skeleton pop out," said Dr. Robin O'Keefe, a biology professor at Marshall University.

In fact, finding the remains of prehistoric creatures isn't easy, and finding them intact is very rare, according to O'Keefe, who spoke Wednesday as part of a luncheon series at the Clay Center.

O'Keefe has traveled from the British Isles to the Bighorn Basin to study plesiosaurs — four-flipped, sea-dwelling reptiles that lived 200 million years ago.

As part of a recent National Geographic-sponsored research project in Wyoming's Sundance Formation — a layer of sandstone and shale that dates back to the Jurassic era — O'Keefe uncovered the remains of a previously unknown type of plesiosaur, the *Tatenectes laramiensis*.

Before finding the conglomerated mass of fossilized bones that turned out to be about two-thirds of a *Tatenectes laramiensis* remains, O'Keefe estimates he

"In the Jurassic period, the Rocky Mountains hadn't fully formed, allowing a huge inland sea to form."

DR. ROBIN O'KEEFE
Paleontologist

walked over more than half of the North Sundance Formation, found in an expanse of rock outcroppings and rangeland just west of Wyoming's Bighorn Mountains.

Walking up and down the eroded cliffs, he said, "was like being on a paleo-Stairmaster."

All that walking had more than aerobic benefits.

Although parts of the *Tatenectes laramiensis*' neck and tail were missing, enough bones were found to simulate a fully reconstructed body, giving scientists a good look at the previously unknown species of plesiosaur.

But what was a sea-dwelling reptile doing in Wyoming?

"In the Jurassic period, the Rocky Mountains hadn't fully formed, allowing a huge inland sea to form," he said. The body of water was once connected to the Pacific Ocean, but as the Rockies gradually grew, the Sundance Sea was formed.

To adapt to the shallow na-

ture of the sea, *Tatenectes laramiensis* gradually developed a wider, less rounded shape than other plesiosaurs.

"Its body was designed to keep level in shallow water," O'Keefe said.

The remains of large, complex prehistoric animals like the one discovered by O'Keefe won't be found in West Virginia because most of the state is underlain by carboniferous rock — mainly coal — that predates plesiosaurs and dinosaurs.

O'Keefe's appearance at the Clay Center coincides with the museum's big-screen presentation of National Geographic's "Sea Monsters: A Prehistoric Adventure."

National Geographic "Stones, Bones 'n' Things" blogger Chris Sloan credits O'Keefe with being one of the first paleontologists to work with the magazine in developing digital models of prehistoric marine reptiles.

The models O'Keefe helped create, Sloan wrote, have appeared "in the National Geographic Society's full suite of media offerings, which includes print, television, the Web, books, and now, seven years after the original concept was initiated, an IMAX film."

Reach Rick Steelhammer at
rsteelhammer@wvgazette.com or

304-348-5169.