



Article by Molly McClellenn
Photos by Reece Booth



Marshall Paleontologist Discovers **New Species**


Robin O'Keefe, Ph.D., paleontologist and associate professor in the department of Biological Sciences at Marshall University, recently discovered the skeleton of a new species of marine animal. He said he hopes the discovery will encourage people to preserve the natural world and its history.

When Dr. Robin O'Keefe was deciding what he wanted to study for his doctorate, he spread out a collection of science magazines in front of him.

"I realized that the articles I read first were always about paleontology," said O'Keefe, now an associate professor in the department of Biological Sciences at Marshall University, "so I decided to study that."

That decision led to his receiving a Ph.D. in Evolutionary Biology from the University of Chicago and would eventually lead to his discovery of the skeleton of a new species of marine animal. That discovery would earn him an invitation by the National Science Foundation of China to present his findings to the International Symposium on Triassic and later Marine Vertebrate Faunas at Peking University in August 2010.

O'Keefe said the work that led to this prestigious invitation began in 2004, when he sought and received a grant from the National Geographic Society to search the Sundance Formation in Wyoming for fossils of a species of a plesiosaur that scientists knew existed, but about which very little was known. Plesiosaurs are marine reptiles from the Jurassic Period. They had long necks and flippers, similar to popular images of the Loch Ness Monster.



Dr. Robin O'Keefe, associate professor in the department of Biological Sciences at Marshall University, recently discovered the skeleton of a new species of marine animal.



O'Keefe holds some of the vertebrae that were pieced together by scientists at the Smithsonian Institution. Once the bone fragments were glued back together, O'Keefe was able to get an idea of what the animal actually looked like.

It may seem surprising that scientists would search Wyoming for fossils of marine creatures; however, what is now the Great Plains was once covered by an ocean. When the ocean receded, the bones of marine animals were left hidden in the rock formations. The first step to finding these fossils involves the unglamorous work of spending days walking, visually searching for signs of skeletons.

When O'Keefe found the skeleton of a 185-million-year-old plesiosaur, which would be named *Tatenectes laramiensis*, he had to seek the permission of the federal government before he could excavate it because it was found on federal land.

"The skeleton isn't mine and it isn't Marshall's," O'Keefe said. "It started out belonging to the American people, and it still does."

The excavated skeleton was sent to the Smithsonian Institution, where scientists there began the painstaking work of chipping away the rock and putting the bones back together. O'Keefe said that once that job is completed, "you can start to think about what the animal looked like and what story the bones tell."

O'Keefe worked with his students to excavate the skeleton and publish his findings.

"It's exciting because my graduate students are listed as the first authors [on the published report] and are responsible for the work. They wrote it," O'Keefe said. "I think that involvement is important to the mission of Marshall University."

According to Dr. Charles Somerville, dean of Marshall University's College of Science, the invitation

to lecture in China reinforced O'Keefe's reputation as one of the world's leading experts in plesiosaurs.

"When the international community takes an interest in what you are doing and invites you to that kind of high-profile international symposium, that really indicates the stature of your work," Somerville said.

Somerville said O'Keefe is one member of a team of highly respected paleontologists employed by Marshall's department of Biological Sciences. While the invitation to the China symposium is certainly an impressive honor, it is not O'Keefe's

first. He has served as an adviser for a National Geographic program about sea monsters, has done a BBC radio program, has filmed a show for the Discovery Channel and has lectured throughout the United States.

Somerville said that although O'Keefe's students often do not realize how well known and well respected their professor is throughout the world, they certainly appreciate the care and enthusiasm he brings into the classroom.

"Part of what makes Robin special is he is really dedicated to outreach and teaching," Somerville said. "He really cares about the university's teaching mission. He's so interested in what he is doing and so motivated to communicate that clearly that he takes the time to teach well. That attention to teaching grows out of his research."

O'Keefe said teaching offers a balance to his research.

"A lot of times, research is such a protracted process. You find a fossil in 2006 and you're not publishing it until 2010, so you have this delayed gratification.



The plesiosaur skeleton, which O'Keefe unearthed in Wyoming, is estimated to be around 185 million years old.

You don't get that immediate 'pop' - that return - very often or very quickly," O'Keefe said. "But when I lecture, I get that pop right away. I walk away and feel fulfilled because I've seen the students get psyched about learning."

Courtney Richards is a Marshall graduate student from Seattle who chose to study at Marshall because of O'Keefe's reputation as a paleontologist. She has done fieldwork with O'Keefe and said many of his graduate and undergraduate students say he is their favorite professor.

"You can tell he really cares about the students," she said. "I've heard about professors at some research universities who don't really care about the teaching part of their job because they are more interested in their research. But Dr. O'Keefe is really into the teaching part and enjoys it. That comes across in his classes."

O'Keefe said he appreciates the honor of being invited to speak at the symposium, and he is happy his work is bringing recognition to Marshall University. He said he hopes his research will make people become more concerned about the natural world.

"It's easy to forget that the natural world is something fragile that we could lose and something we have to cherish," he said. "Dinosaur work gets people's imaginations going about what it looked like here before there were people on the earth. That gets people engaged with the natural world and thinking about how valuable it is. It's not something we want to just crumple up and throw away." □

Molly McClennen is a freelance writer living in Huntington.



O'Keefe's discovery of the plesiosaur skeleton led to international recognition. The tools displayed next to the bones help protect the fragile skeleton during excavation.



PHOTO COURTESY OF ROBIN O'KEEFE

O'Keefe and his team of graduate students discovered the plesiosaur bones during an extensive search across the plains of Wyoming. From Left: Waymon Holloway, Courtney Richards, Ben Wilhelm, Robin O'Keefe.