

Stockton Professors' Work in Discover Magazine's Top 100 Science Stories of 2015

Margaret E. Lewis and Matthew Bonnan Honored for Paleontology Research

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Galloway, NJ – Two Stockton University faculty members were named to Discover Magazine's Top 100 Science Stories of 2015 this week. The [January/February 2016 issue of Discover](#) highlights the year's best in science in every field, including space exploration, medicine, technology, paleontology and the environment.

Paleontology research done by Margaret E. Lewis, professor of Biology, and Matthew Bonnan, associate professor of Biology, both of Stockton University, were ranked #28 and #61 respectively on the Top 100 list.

Lewis served as co-author on papers describing the oldest fossil representative of our genus, Homo, and its environmental and geological context, which pushed back the age of humankind by 400,000 years to 2.8 million years ago.

She has been working as a carnivore expert with a team from Arizona State University on a variety of sites since 1997. The team discovered the jaw fossil in Ledi-Gararu, Ehtiopia. The fossil is one of the few hominin fossils, a group including human and chimpanzee fossils, dating between 2.5 million and 3 million years ago.

Lewis's role in the research in Ethiopia was to identify, describe and analyze the fossilized postcranial remains of the carnivorous mammals found at Ledi Geraru.

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“The material at the sites, along with material from other sites in Ethiopia, Kenya, Tanzania and South Africa, has been critical in helping me understand the changing ecological structure surrounding our evolving ancestors and cousins and changes in dietary behavior over the last seven million years,” Lewis said.

In 2008, a new species of extinct carnivore, *Kanuites lewisae*, was named for Lewis to honor her contributions to the study of African predators.

Bonnan was recognized by Discover Magazine for a paper he co-authored which describes the discovery of a dinosaur, new to science, named *Pulanesaura eocollum*.

Bonnan was a member of the team excavating the dinosaur from Spion Kop farm in South Africa, under a grant sponsored by National Geographic. It took nearly two years to unearth the 195-200 million-year-old remains.

“The name means ‘rain bringer’ in Sesotho, which is fitting since we always seemed to get rained on during the excavation of this dinosaur,” Bonnan said.

Pulanesaura eocollum is one of the earliest members of the long-necked sauropod lineage of dinosaurs. Sauropods, a group of four-legged herbivorous dinosaurs, are famously represented by *Brontosaurus*. *Pulanesaura* is the first with anatomy showing it walked on all four legs.

Early sauropods like *Pulanesaura* are rare in the fossil record, with only a handful of good sauropod specimens known from the Early Jurassic, a time period between 200 and 180 million years ago.

The fossils show that the specialized teeth, vertebrae and forelimb of *Pulanesaura* indicate that the new species would have spent all of its time on all fours, browsing lower vegetation. “A significant part of the story with *Pulanesaura* and other early sauropods was a change in how the forelimb functioned,” Bonnan explained.

“It changed from a grasping appendage to a support column.” Much more common at that time in South Africa were bipedal or semi-bipedal sauropodomorph dinosaurs, such as *Massospondylus* and *Antetonitrus*.

“Work on living reptiles is helping us understand the basic pattern of movement available to the early ancestors of dinosaurs, which can give us future insight into how this pattern was modified,” he said.

At Stockton, Bonnan and his students are using state-of-the-art technology to analyze the movement of modern reptiles to better understand dinosaur locomotion and how sauropods evolved from bipedal herbivores eating with their hands and necks to giant quadrupeds that relied solely on long necks to feed.

Stockton is unusual for a university of its size in the number of paleontologists teaching and conducting research. In addition to Lewis and Bonnan, Michael Lague and Roger Wood, Professor Emeritus, serve as faculty paleontologists.

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Lague, who is also Lewis's husband, is an expert in primate postcrania and the evolution of body size. His primary research is on the evolution of the monkey, ape and human elbow joint. Wood, although retired, is a world-renowned expert on turtle evolution and conservation.

More on Bonnan's discovery of *Pulanesaura eocollum* can be found [here](#), as well as on his blog, [The Evolving Paleontologist](#).

More on Lewis's research can be found [here](#).

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