**Prehistoric beaver fossil discovered by paleontologists in John Day Fossil Beds**



Researchers say the extinct Microtheriomys brevirhinus beaver is much smaller than the modern-day Castor beaver -- more like the size of a tree squirrel. *(Courtesy of Dr. Joshua Samuels)*

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on May 26, 2015 at 9:12 PM, updated May 27, 2015 at 1:59 PM

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It seems Beaver Nation has a whole new meaning in Oregon.

Paleontologists working in the [John Day Fossil Beds National Monument](http://www.nps.gov/joda/index.htm) have reported discovering a prehistoric beaver species that could be a distant ancestor of the mammal we know today.

It's also the first known find of this species in North America.

Dr. Joshua Samuels, museum curator and chief paleontologist at the monument, said the species, named *Microtheriomys brevirhinus*, was discovered in 2012 and is believed to be between 28 million and 30 million years old, or from the Oligocene Period.

It's not the only discovery, either.

Samuels and Dr. William Korth, of the Carnegie Museum of Natural History and Rochester Institute of Vertebrate Paleontology, have announced nine other newly discovered and previously undocumented rodent fossils. Some were collected from the John Day Fossil Beds National Monument, but most came from the Bureau of Land Management public lands in Oregon.

What makes the beaver stand out, Samuels said, is that it does not seem related to the previously discovered burrowing beaver, whose fossils date to that same period in Oregon. Essentially, the burrowing beavers dug with their teeth and claws and lived like prairie dogs.

Instead, the newly discovered fossil is similar to the prehistoric aquatic beaver species found in Asia and Europe.

This beaver "might actually be the only thing with living descendants today," Samuels said.

Still, he said it can't be confirmed that the species was aquatic until its limbs are found. For now, paleontologists have a skull, lower jaw and teeth.

What researchers do know is that the extinct beaver is about 10 times smaller than today's beavers, or about the size of a tree squirrel. It's even smaller than the similar species in Europe and Asia. Samuels said it has smaller, rounder teeth, meaning it didn't chop down trees or eat bark – it likely ate soft leaves.

Part of what excites Samuels about the discovery of similar species in North America, Asia and Europe is that he believes it provides further evidence of prehistoric animals crossing the Bering Land Bridge, which in the ice ages connected present-day Siberia to Alaska.

"It can tell us today about where beavers came from," he said. "There's always more to learn, and new discoveries are just waiting to be made."

[Dr. Samantha Hopkins](http://geology.uoregon.edu/profile/shopkins/), an associate professor of geology at the University of Oregon, said part of the reason this fossil is so useful is because it's well preserved; most other fossils found have been as small as a couple teeth or a jawbone.

Hopkins, who has worked with Samuels at the John Day monument but was not a part of this research, called this discovery exciting.

"At this point in time, this is actually what this thing looked like," she said. "And now the interesting thing is going to be to add the information about those characteristics into our understanding of beaver evolution."

Other discovered species include a dwarf tree squirrel called *Miosciurus covensis* and a primitive pocket mouse, *Bursagnathus aterosseus*.

Samuels said both the squirrel and mouse were similar to their present-day relatives.

The pocket mouse, for example, "is really a 23-million-year-old species that looks just like the one today."

Studying smaller species can be interesting because they breed more often, meaning they evolve faster, he said. That gives scientists a better idea of how quickly the climate changed during their time.

Yet some, like the mouse and squirrel discovered, are able to remain much the same.

"Both of these are more than 20 million years old, but their anatomy looks almost identical to living species," he said. "These animals have been treated as a living fossil."

The tree squirrel is an interesting example, Samuels said, because it simply followed the forests instead of adapting to its surroundings.

Finding the fossils of small species is much more difficult because they're fragile and quickly destroyed by erosion, he said. But they're also unable to travel great distances like larger animals can.

"That's part of why we focus on these smaller things, because they can be informative," Samuels said. "They have to adapt or they become extinct."

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