

Prehistoric sea lizard pulled from skeletons in closet

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Takuya Konishi (inset) helped unearth a new genus of mosasaur from fossils found in an old drawer

Dramatic breakthroughs in paleontology don't always come from the field where researchers unearth fossils. That's a theory University of Alberta professor Michael Caldwell says he has always believed, and it was proven true with breakthrough research on a fossil from a 80-million-year-old marine lizard.

A fossil from a mosasaur lizard had been sitting in a drawer since the 1970s when a U of A graduate student, supervised by Caldwell, began

taking a closer look at the creature's skull. The investigation took Caldwell and Takuya Konishi five years of painstaking work, before they could claim a brand new genus of mosasaur.

Caldwell says he's not surprised by their conclusion. "Thousands of fossils from these sea-going [lizards](#) have been found and lumped together as various species of the same animal," said Caldwell. "But Takuya had five years for a thorough doctoral examination of the fossils and with that amount of time it makes sense a whole new genus of the creature would turn up."

Konishi noticed an almost invisible but unique feature on the fossilized skull of one lizard.

"I noticed two ridges on the top of the skull that indicate this fossil was geologically younger than others," said Konishi. "That means this specimen was a more evolved mosasaur and I think the ridges indicate the animal's breathing holes were set further back on the skull than earlier species."

Konishi says the breathing holes of less-evolved mosasaurs were on the front of its snout so this swimming lizard would have to raise its head fully out of the water to breathe. The breathing holes of mosasaurs that came along several million years later were further back on the snout, nearer to the eyes, so it could still breathe while floating along with the top of its head, just breaking the surface of the water.

Konishi says this feature of evolution may have given the animal an advantage in hunting, by being able to better hide itself before striking out at prey.

Konishi will continue to look at the fossils and data already in [paleontology](#) collections to see if he can find even more signs of mosasaur evolution. "We found much more diversity in these ancient

animals than expected and it's possible we'll add another genus of mosasaurs to the paleontological record," said Konishi.

Since starting this research project Konishi has attained his PhD in paleontology and now works at the Royal Tyrrell Museum in Drumheller. Caldwell has moved forward as well, to become both a professor and chair of biological sciences at the U of A.

Caldwell says the years Konishi spent developing the findings were well worth it. "Takuya produced a giant manuscript for his doctoral thesis and it's a landmark piece of descriptive and systematic paleontology research."

Konishi and Caldwell's research was published July 12 in the *Journal of Vertebrate Paleontology*.

Provided by University of Alberta

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