

Nevada home to 246M-year-old fossil of pregnant ichthyosaur

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Autumn was closing in fast on northern Nevada when Martin Sander took one last look around the excavation site in the Augusta Mountains 150 miles (241 kilometers) east of Reno.

The longtime paleontologist from Germany had been working summers in Nevada for 20 years by that point and believed in the maxim that, "we find the spectacular things on the second to last day or last day."

It was Oct. 3, 2011, and Sander and his team were nearing the end of a two-week expedition in an area that's a hotspot for [ichthyosaur](#) fossils.

Just getting to the site requires hours of driving on dirt from Winnemucca or Lovelock and hours more hiking from base camp.

When the team packs up and leaves for the season they know it might be months, or even years, before they return.

Sander's decision to take another trip around the site proved fateful.

"The trick is you have to know what you are looking for," said Sander, who described that final stroll as "wandering around in the field."

At an outcropping around 6,000 feet (1,829 meters) in elevation he spotted what appeared to be fossilized remains of an ichthyosaur spine. Further, there was evidence the large, prehistoric, swimming reptile had been pregnant when it died.

"I found it and realized pretty quickly what I was looking at," Sander said.

The next day, with cold and snow closing in, the team packed up the exposed fossils for further research. They returned in 2014 and excavated the rest.

Last month, they published a paper on the findings.

The ichthyosaur was the second-oldest pregnant specimen ever found

and it was of a species that had never before been identified.

Even more remarkable, it was just one of two major ichthyosaur findings at the location in the Augusta Mountains.

"It is an incredible place and there is new stuff coming out all the time," Sander said. "Everything we touch, new stuff is coming out of it."

The other finding hasn't yet been published in an academic journal, but it involves an ichthyosaur fossil Sander refers to as "the giant skull."

While the paper detailing the specifics of the giant skull fossil aren't yet published, Sander says the findings are, well, big.

"It is the first big thing that lived on this earth," he said of the beast, which had a skull so big researchers had to borrow a beer truck to haul it away.

Although "the giant skull" may prove the more significant of the two recent discoveries, Sander says there's plenty to celebrate about the pregnant ichthyosaur dubbed "Martina," by the scientists.

For starters, at 246 million-years-old Martina is the second-oldest specimen of a pregnant ichthyosaur. The oldest is a 249-million-year-old specimen from China.

Martina is also a species of ichthyosaur, *Cymbospondylus duelferi*, that hasn't been found anywhere else, according to Sander's research.

Researchers know because literature reviews that were part of the scientific reporting showed Martina had characteristics not found in any other ichthyosaur fossils.

At about 12 feet (3.6 meters) long she was smaller than other ichthyosaurs, some of which are as large as 60 feet (18 meters) . Despite her smaller body, Martina's teeth were larger than expected for an ichthyosaur of similar size.

The teeth, about an inch in length, would have helped her tear up prey such as squid or fish that were in the sea that covered what is now Nevada.

"She was a pretty fierce lady," Sander said, comparing her to a much larger sample found in another Nevada range. "She is half the size but her teeth are nearly as big as the bigger one from the Humboldt Range."

Martina and "the giant skull" also add to the diversity of Nevada's ichthyosaur legacy. The specimens, both from the early triassic period, show how quickly life evolved following the Permian-Triassic extinction event.

The extinction event, which is thought to have wiped out as many as 96% of species, happened 252 million years ago.

That ichthyosaurs of immense size and diversity are found dating back to a few million years later suggests the animals evolved relatively quickly.

"The cool thing about it is ... they just diversified crazily fast," Sander said. "In Nevada you see this incredible explosion of ichthyosaurs."

One of the reptiles' adaptations, as Martina demonstrates, is they would have evolved from laying eggs to giving [live birth](#), which would have been an advantage in their move to the sea, Sander said.

He compared it to the advantage a whale or dolphin has over a sea turtle, the latter of which is exposed, along with offspring, to danger by having

to leave the water to lay eggs on shore.

"Most of the reptiles that returned to the sea, they all evolved this ability from egg laying to giving birth to live young," he said.

While both Martina and the giant skull are exciting to researchers like Sander, they've also captured the imagination of people like craft brewer Tom Young, who has emerged as a major paleontology booster in Nevada.

Young, a former geologist, is the founder of Great Basin Brewing in Reno, which produces Ichthyosaur, or Icky, IPA. It was his beer truck researchers used to haul the giant skull from the Augusta Mountains to the Los Angeles Museum of Natural History.

And it's Young whose made it his mission to popularize paleontology in Nevada.

"It is so important we preserve this and study these things to show where we are today and how we got here," Young said. "You marvel as a human and realize the importance of our being here now, but at the same time you are looking at us as part of this much larger, huge universe."

Young's enthusiasm carries over to financial support. He's contributed thousands of dollars, and plenty of beer, to research efforts. He's also hosted brewery fundraisers that attract hundreds of people who want to hear directly from the scientists.

"I'm ecstatic when people give a crap about science," Young said.

All three said they'd like to see the state develop a repository with the tools and talent to meet requirements for keeping ichthyosaur fossils recovered from public land.

Nevada's Berlin-Ichthyosaur State Park retains fossils that are on display as they were found. But many significant finds are trucked to Berkeley or Los Angeles where there are repositories that meet federal standards.

"It should give Nevada some great pride we have some the coolest and biggest and meanest things to evolve on Earth here in our backyard," Young said.

In recent years some of the most significant ichthyosaur findings have been outside Nevada, including an amphibious ichthyosaur from China that filled an evolutionary gap and a fossil in the United Kingdom from an ichthyosaur thought to be among the largest animals to ever live on the planet.

The paper on Martina and upcoming revelations about the giant skull will likely bring Nevada back into the spotlight.

Paula Noble, a professor of paleontology at University of Nevada, Reno, said that's good news if it inspires more interest in science, especially among young people.

"Paleo is a great hook," said Noble. "It is not just this stodgy thing we do in a lab."

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