Fossils of 30-foot prehistoric marine lizard unearthed in Texas

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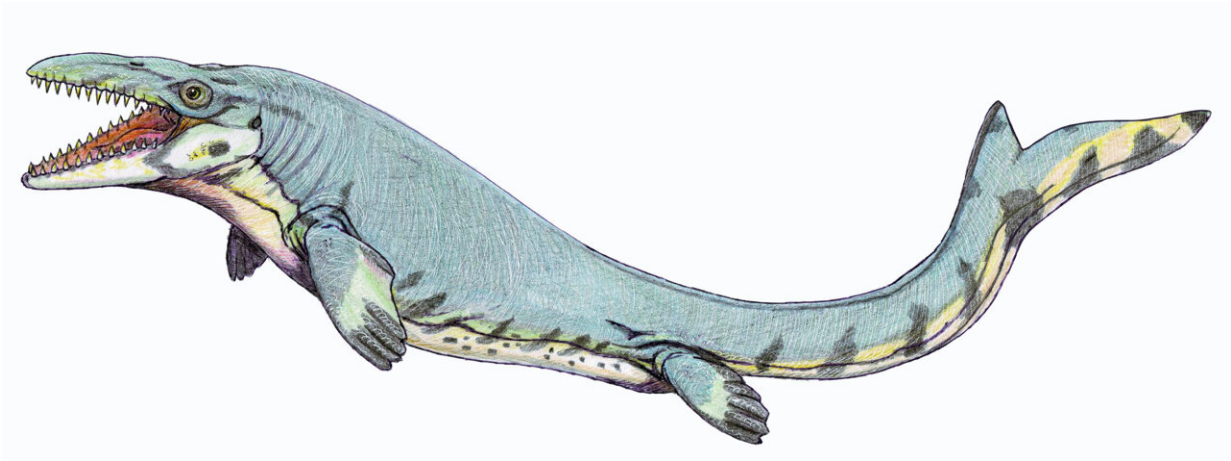

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One sweltering afternoon this spring, Stephen Kruse trekked along a dry creek bed with a backpack full of fossils.

An amateur enthusiast, Kruse has been interested in dinosaurs and prehistoric creatures since he hunted for rocks with his brother as a kid. That afternoon, he was hiking by himself near the North Sulphur River, about 80 miles northeast of Dallas. It's an area he'd combed several times.

He was getting tired. As the day got longer, Kruse searched for a way

back to his white Chevy Suburban. He decided to look for a shortcut a quarter mile farther out. "Best decision I ever made," he said.

Just 100 yards down the rocky stream bed, he saw it: a 5- to 6-inch black vertebra, a piece of a prehistoric creature's spine.

Kruse followed the path upstream, searching for the rest of the creature. "When I turned this corner," Kruse recalled, "he was just sitting there, coming right out of the wall."

Kruse had found fossilized bones belonging to a mosasaur, a 30-foot marine lizard that ruled the seas around 80 million years ago.

Recently, paleontologists from the Perot Museum of Nature and Science dug the fossils out of the creek bed's soft, claylike rock. They excavated parts of the mosasaur's skull, lower jawbones and several vertebrae from its spine.

This is important work for the scientists: Even though mosasaurs aren't around today, learning more about the past can give us a window into the present. Finding out what these creatures were eating and how they interacted with their environment can help paleontologists refine their picture of what life used to be like millions of years ago.

"You get this nice history of why things are the way they are here, by building that history back to your time," said Dori Contreras, a curator of paleobotany at the Perot Museum.

A fossil-rich river

In the 1920s, farmers had a problem with the North Sulphur River. The river's bends and curves were causing farmlands to flood when it rained. So, the river was channelized, or straightened out, to help the water drain

more quickly.

Channelizing the North Sulphur River did more than drain the swamp. It affected how water eroded the edges of the river bank. To this day, rainwater quickly breaks down the soft rock, revealing pieces of the past.

"It's perfect for fossil hunters, because when it rains, this thing will flood, rip all this stuff out," Kruse said. "And because it's cut at a grade, the very next day, the water's gone, and you can just come out here and hike."

Kruse said he finds fossils often in the creeks near the river valley. Many have been from mosasaurs.

That's not surprising to Ron Tykoski, the Perot Museum's director of paleontology and curator of vertebrate paleontology.

He says 80 million years ago, pretty much all of central Texas was underwater. The shallow, warm seawater and abundance of food in the area created the perfect habitat for creatures like mosasaurs.

Great white sharks of prehistoric times

Tykoski said mosasaurs were like the great white sharks or killer whales of prehistoric times. As top marine predators, they ate turtles, sharks and even each other.

"Imagine a 30-foot swimming pointy-nosed Komodo dragon with flippers and a forked tail," he said.

The mosasaur fossils Kruse found were jutting out of the rocky creek bed. Once Kruse realized the bones could be more than a couple of vertebrae, he ran uphill and called Mike Polcyn, whom Kruse knew was

a paleontologist and mosasaur expert at Southern Methodist University.

Polcyn helped Kruse contact Tykoski at the Perot Museum. Tykoski and his team got permission from the Upper Trinity Regional Water District to retrieve the fossils.

Tykoski checked out the area in June to get an idea of how many fossils were there and how easy they'd be to remove. He realized the soft rock would be fairly easy to peel away with picks and shovels, revealing the fossils beneath.

Fossil extraction 101

The excavation began mid-July at a dry creek bed lined with claylike brown and gray rock.

Each day, Tykoski, along with paleontologists from the Perot, arrived early to beat the heat. They were joined by a small entourage, including a photographer from the museum, a videographer and Kruse.

Removing remnants of a 30-foot lizard from a creek bed is no easy task. To get the fossils out, Tykoski and his team had to dig into the rock using picks and shovels.

They shot glue made of plastic and acetone into the bone cracks to keep the fossils from breaking apart. They also used finer tools like probes and paintbrushes to carefully pry out pieces of gray rock once they got closer to the exposed fossils.

To distinguish rock from bone, Tykoski and his team tapped a rocky area lightly with a metal probe. If it was soft rock, it peeled away from the creek bed with a small amount of force, soundless. If it was bone, it made a sharp, metallic clink against the probe.

Once the fossils were mostly exposed, the team dug down and under them, making something of a mushroom shape, said Mariah Slovacek, the Paleo Lab collections manager at the Perot who was onsite.

When they had their mushroom, the team made casts called "field jackets" over the fossils to hold everything in place, similar to setting a broken arm or leg. Each field jacket was made of burlap dipped in plaster. Once the plaster hardened, the team could flip it over and carry the fossils in sections up the creek bed.

The entire process took about six days. Tykoski said digs like this happen sporadically. Sometimes, he'll get a bunch of calls about fossils exposed after spring rains. Other times, he goes years without finding anything worth exploring.

Contreras said she loved every part of the fieldwork. "It's like a puzzle: The whole time you're working, you never know where it's going to lead," she said. "And so, as you dig further back, you discover more, you find more."

Rithvik Shroff, 17, is a high school summer intern who was invited to the dig. He said maintaining stamina and staying cool was difficult, but seeing the fossils come out of the ground made it worth it.

"I mean, you see them in the museum, but then actually coming out here and seeing how they dig it up… What it's like?" Shroff said. "It's really cool."

The present, sitting on the past

Tykoski and his team removed several mosasaur bones from the creek bed last week. But they're not done excavating this lizard.

On their initial investigation, Tykoski and his team noticed more marine lizard bones protruding into the creek bed. But they couldn't get to them without trampling the jawbones they'd already found.

Tykoski said the team plans to return in the fall with better equipment and a refreshed game plan to pull back the creek bed and reveal the rest of the mosasaur.

Once they've got all the fossils, they can compare them to other mosasaur skeletons to see how the creatures evolved over time, or study this mosasaur's teeth to determine what it was eating amid a prehistoric landscape of creatures.

This isn't the first—or second—mosasaur that Perot paleontologists have uncovered in the Dallas area. It's a prime example of the vivid remnants of our prehistoric pasts lying underneath us.

"We have a wonderful, rich natural history story, right in the palm of our hands," Tykoski said.

In the meantime, the fossils are at the Perot Museum's collection facility, snug in their field jackets. Tykoski said he won't be able to see them again until he and the team remove the remaining rock from the fossils and begin their study.

"You get to peek at the Christmas presents," said Tykoski, "and then you have to put them away again."

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