In the footsteps of Tyrannosaurus Rex

A high school science teacher was nursing a bad knee when he stepped into palaeontology history. **Adeel Hassan** has the story

Kent Hups, a teacher in Colorado, US, was volunteering on a fossil dig in the North Dakota badlands last year, while recovering from knee replacement surgery, and was walking gingerly on easier, flatter routes to avoid steep terrain. That was when he spotted a lumpy triangle of hardened sandstone that looked like giant toes. He thought it was a dinosaur track, and he was right.

What Hups had stumbled across in the Hell Creek Formation, a prehistoric layer of rocks spanning the Northern Great Plains, was not just a single fossilised footprint but a continuous 7-metre trail of four massive three-toed prints. It became the first confirmed walking trackway of a fully grown *Tyrannosaurus rex* ever discovered.

"It has been a little over 120 years that we've been collecting fossils and looking for trackways in the Hell Creek Formation, so this is very early in history," said Thomas Carr, a palaeontologist at Carthage College in Wisconsin, US, who was not involved in the discovery. "I expect that in another 120 years, we will find, hopefully, a few more trackways of the Hell Creek Tyrannosaurus."

The tracks themselves are nearly a metre long and half-a-metre wide, and show a 4-metre stride between steps. The trackway allows scientists to better envision the *T. rex*, an animal that could weigh up to 10 tonnes, when in motion.

The trackway was found in July 2025 on federal land administered by the US Forest Service near Marmarth, North Dakota, and the findings were published last month in the *Journal of Vertebrate Paleontology*.



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Researchers estimate that the footprints were made 66.5 million years ago near a riverbank.

When Hups took a photo of them, he sent the image via text message to the excavation team leader. But the leader Tyler Lyson, the senior curator of vertebrate palaeontology at the Denver Museum of Nature and Science, US, was not so sure.

Lyson, a co-author of the paper with Hups and others, leads excavations in his native North Dakota. His team identified the *T. rex* based on the footprints' exceptional size and the narrow shape of the toes, along with the abundance of *T. rex* fossils found in the surrounding area. "Prior to this discovery, there were only two *T. rex* footprints that had ever been found: one isolated footprint in Montana and one isolated footprint in New Mexico," Lyson said.

The trackway records two left and two right footprints. Based on the strides' length, researchers estimated that the animal was walking about 5.6 to 7.2 kmph, about the pace of a human's power walk.

"This has no bearing on how athletic tyrannosaurs might have been," said John Hutchinson, a professor of evolutionary biomechanics at the Royal Veterinary College in London, who was not involved in the study.

"It tells us that near the end of the age of dinosaurs, a *T. rex* took several very closely spaced, short steps, and thus was walking slowly."

Hutchinson said that it would be hard to generalise, or be more specific. He said that having the prints show how the *T. rex's* feet were positioned during slow walking in mud was an extraordinary find, given how scarce such evidence is.

Lyson's team used high-resolution 3D surface scanning to document each footprint and the full trackway. The digital models allow scientists to create physical 3D reproductions.

The team received permits to excavate three of the heavy sandstone prints, which weigh from 160 to 200 kilos. They will be rolled onto a net that will be airlifted by a helicopter, before being placed on a trailer that will carry the fossils to the Denver Museum of Nature and Science.

"We're hoping that the prints, after they're clean, will give us a better idea of what the actual foot of a *T. rex*, looks like. And I think that would be really, really incredible."

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