

# Dakotaraptor ruled Hell Creek Formation as lethal predator

November 6 2015, byDirk Lammers

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In this Oct. 29, 2015 photo provided by Robert DePalma, DePalma, curator of vertebrate paleontology at the Palm Beach Museum of Natural History, examines the fierce foot claw of a newly discovered species of raptor called Dakotaraptor in West Palm Beach, Fla. The fossils were unearthed from the Hell Creek Formation in northwestern South Dakota. (Kylie Ruble/Robert DePalma via AP)

Tyrannosaurus rex may have been known as the big guy around the Hell

Creek Formation 66 million years ago, but a newly discovered species of raptor would have roamed the region as one of its most lethal predators.

Dakotaraptor stood 6 feet tall at the hips yet moved like a springy, agile sprinter, reaching 30 to 40 mph rivaling today's ostrich. But potential prey caught admiring the 17-foot-long creature's grace stood little chance, as the strong-muscled winged Dromaeosaur boasted a vicious 9½-inch-long killing claw that could make mincemeat out of any herbivore caught in its path, said Robert DePalma, curator of [vertebrate paleontology](#) at the Palm Beach Museum of Natural History.

"It had one of the strongest killing strokes in that slashing claw of any raptor known," DePalma said.

DePalma and his research team including University of Kansas paleontologists announced the new species in a study published Oct. 30 by the University of Kansas Paleontological Institute. Dakotaraptor helps fill a gap in body size distribution between the small bird-like Maniraptora creatures and the giant T. rex found in Hell Creek, which spans parts of northwestern South Dakota, southwestern North Dakota, eastern Montana and eastern Wyoming.

The newly discovered species roamed the earth alongside T. rex, the three-horned Triceratops and the duck-billed Edmontosaurus.

"Dakotaraptor coexisted with all of our favorites from our childhoods," DePalma said. "We had no idea that such a cool and lethal creature existed right alongside them. And it was in the ground the whole time. It's amazing."

Thomas Holtz Jr., a senior vertebrate paleontology lecturer at the University of Maryland, said most of the raptor bones and teeth found in Hell Creek have been from small-form creatures.



In this Oct. 29, 2015 photo provided by Robert DePalma, DePalma, curator of vertebrate paleontology at the Palm Beach Museum of Natural History, examines the tail vertebrae of a newly discovered species of raptor called Dakotaraptor in West Palm Beach, Fla. The fossils were unearthed from the Hell Creek Formation in northwestern South Dakota. (Kylie Ruble/Robert DePalma via AP)

"That is what is important about this find," Holtz said. "In fact, it was rather bigger than most of us expected, almost the size of the largest known Dromaeosaurid, the much earlier Utahraptor."

Dakotaraptor stands about as tall as Utahraptor, a species discovered in the 1990s in east-central Utah, but the raptors have completely different builds. The stockier Utahraptor, which lived about 60 million years earlier than Dakotaraptor, was an ambush predator with thicker bones

and leg proportions that limited its speed, making it the "beefly bulldog of raptors," DePalma said.

Dakotaraptor did not fly, which makes the presence of quill knobs on its arms so interesting to DePalma and other dinosaur experts. The bumps serve as reinforcement points for long wing feathers, marking the first concrete evidence that large raptors had wings.

"It really would have made this like a turkey from hell," he said.

The feathers were clearly not just for show, and they could have been used by the dinosaur to intimidate other predators, shield its young or as a tactical method to corral prey. They might also indicate that the species evolved from a lineage that once could fly or was evolving toward flight, DePalma said.

Dakotaraptor's leg bones, wing portions, tail vertebrae, teeth and wishbone were unearthed in 2005 from a remote area of badlands in South Dakota's Harding County.



This undated image provided by Robert DePalma, shows a sketch drawn by DePalma, curator of vertebrate paleontology at the Palm Beach Museum of Natural History, which depicts the newly-discovered species of raptor called Dakotaraptor. The fossils were unearthed from the Hell Creek Formation in northwestern South Dakota. DePalma and his research team including University of Kansas paleontologists announced the new species in a study published Oct. 30, 2015, by the University of Kansas Paleontological Institute. (Robert DePalma via AP)

To find so many fossils from a single creature is extraordinary in the Hell Creek, said Peter Larson, a Black Hills-based dinosaur expert who co-authored the paper.

Hell Creek's sediment gathered slowly over time, so most dinosaurs were eaten or carried away by other creatures before they could be buried. Many of Hell Creek's finds consist of small individual fossils or a bone

bed featuring loads of random, hard-to-match fossils, he said.

"Hell Creek is very hard to give up its secrets," said Larson, president of the Black Hills Institute of Geological Research. "We very seldom find articulated or even associated remains."



In this Oct. 29, 2015 photo provided by Robert DePalma, DePalma, curator of vertebrate paleontology at the Palm Beach Museum of Natural History, displays a pedal claw from a newly discovered species of raptor called *Dakotaraptor* in West Palm Beach, Florida. The fossils were unearthed from the Hell Creek Formation in northwestern South Dakota. (Robert DePalma via AP)

It's even more difficult to find raptor remains, DePalma said, as the bird-like species' lightweight, hollow and thin-walled bones tend to break

before their preservation.

"People actually have been finding them for years without realizing it," he said.



In this Oct. 29, 2015 photo provided by Robert DePalma, DePalma, curator of vertebrate paleontology at the Palm Beach Museum of Natural History, examines the claw of a newly discovered species of raptor called *Dakotaraptor* in West Palm Beach, Fla. The fossils were discovered in the Hell Creek Formation in northwestern South Dakota. (Robert DePalma via AP)



In this Oct. 29, 2015 photo provided by Robert DePalma, DePalma, curator of vertebrate paleontology at the Palm Beach Museum of Natural History, examines ulna quill knobs that held large feathers on a newly discovered species of raptor called *Dakotaraptor* in West Palm Beach, Fla. The fossils were unearthed from the Hell Creek Formation in northwestern South Dakota. (Kylie Ruble/Robert DePalma via AP)





In this Oct. 29, 2015 photo provided by Robert DePalma, DePalma, curator of vertebrate paleontology at the Palm Beach Museum of Natural History, holds a bone from a newly discovered species of raptor called Dakotaraptor in West Palm Beach, Fla. The fossils were unearthed from the Hell Creek Formation in northwestern South Dakota. (Kylie Ruble/Robert DePalma via AP)

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Citation: Dakotaraptor ruled Hell Creek Formation as lethal predator (2015, November 6)

retrieved 23 April 2024 from

<https://phys.org/news/2015-11-dakotaraptor-hell-creek-formation-lethal.html>

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