

TRILOBITES

Footprints Suggest Different Human Relatives Lived Alongside One Another

A discovery in northern Kenya hints that two extinct species that were our ancient relatives shared the same habitat and possibly interacted.

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Published Nov. 28, 2024 Updated Dec. 2, 2024

A million and a half years ago, amid giant storks and the ancestors of antelopes, two extinct relatives of humans walked along the same muddy lakeshore in what is today northern Kenya, new research suggests.

An excavation team uncovered four sets of footprints preserved in the mud at the Turkana Basin, a site that has led to important breakthroughs in understanding human evolution. The discovery, announced on Thursday in a paper in the journal *Science*, is direct evidence that different kinds of human relatives, with distinct anatomies and gaits, inhabited the same place at the same time, the paper's authors say.

It also raises questions about the extent of the species' interactions with each other.

“They might have walked by one another,” said Kevin Hatala, an evolutionary anthropologist at Chatham University in Pittsburgh who led the study. “They might have looked up in the distance and seen another member of a closely related species, occupying the same landscape.”

Based on skeletal remains found in the region, Dr. Hatala’s team attributed the footprints to *Paranthropus boisei* and *Homo erectus*, two types of hominins, the group consisting of our human lineage and closely related species. *Paranthropus boisei* had smaller brains along with wide, flat faces and massive teeth and chewing muscles; *Homo erectus* more closely resembled modern human proportions and are thought to be our direct ancestors.

Scientists have long known that different types of hominins coexisted on Earth. *Homo sapiens*, who emerged only around 300,000 years ago, shared the planet with Neanderthals and Denisovans for thousands of years. Traces of their DNA are still present in us today.

But evidence of species overlap and how behavior differed from one species to another is mostly inferred from bones. Such fossils are often preserved in irregular ways, or found in sediments that accumulate over millennia. This can lead to a large margin of error in dating.

Footprints, on the other hand, fossilize in a much more straightforward manner, often within hours or days of their creation. They provide a clear snapshot of both a moment in time and a pattern of locomotion.



A footprint hypothesized to have been created by a *Homo erectus* individual. Kevin G. Hatala



Members of the research team along the perimeter of the excavated trackway surface. Louise N. Leakey

In 2021, Dr. Hatala was part of a team that reported footprints found in Tanzania were made by two distinct hominin species 3.6 million years ago. Now, he's found a similar occurrence in Kenya.

The researchers uncovered three single footprints that seemed to come from the same type of hominin, and one long, continuous trail of prints that came from another.

It wasn't immediately clear that the footprints were from distinct species. Because the fossil record is sparse, "you can't do the Cinderella thing of fitting the foot skeleton into the footprint," Dr. Hatala said.

Instead, the scientists relied on results from earlier experiments that used X-ray technology to understand how foot motion affects imprints left in the mud. Compared with the continuous trail of prints, the three isolated footprints all had

higher arches, indicating that they arose from a gait more similar to that of humans today.

They also found that the feet responsible for the trail of prints had a big toe with a position that changed from step to step. The toe was not as mobile as those on apes, but more varied than what is seen in modern humans.

“That, to me, is fascinating,” said William Harcourt-Smith, a paleoanthropologist at Lehman College and the American Museum of Natural History in New York, who wrote a perspective article that accompanied the study in *Science*. “Here we’ve got diversity in the way these creatures are moving around on the landscape, in each other’s backyards.”

Because they are more humanlike, the team believes that *Homo erectus* individuals created the three isolated prints, and that the continuous trail of prints, which have similarities to those left by earlier relatives of humans, came from *Paranthropus boisei*.

While Dr. Hatala and his colleagues have made that call, Dr. Harcourt-Smith said, “it’s hard to tell which species made which print.”

“I think more data are needed for that,” he said.

A re-analysis of footprints from a site nearby showed a similar overlap of the two hominins occurring more than 100,000 years later. This suggests that the two species possibly lived alongside each other for a long time, and that they weren’t in direct competition for resources.

“One wasn’t driving the other off their turf or something like that,” Dr. Hatala said. “Otherwise we wouldn’t see multiple instances of their overlap, or at least that would be much less likely.”

He finds it intriguing to ponder how they might have regarded each other: What would it be like to live in the same habitat as another humanlike species, one that shares some resemblance, but still looks so different?

The time we live in today, where *Homo sapiens* dominates the landscape, “is actually super rare,” Dr. Hatala said. “It’s only been this tiny, recent blip where we have had only one human species on the planet.”

Katrina Miller is a science reporter for The Times based in Chicago. She earned a Ph.D. in physics from the University of Chicago. [More about Katrina Miller](#)