

# ASU scientists uncover new fossils — and a new species of ancient human ancestor

**The fossils found in northeastern Ethiopia date between 2.6M to 2.8M years ago, shed new light on human evolution**

By Nicole Pomerantz, ASU News  
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A team of international scientists has discovered new fossils at a field site in Africa that indicate [Australopithecus](#) and the oldest specimens of [Homo](#) coexisted at the same place in Africa at the same time — between 2.6 million and 2.8 million years ago. The paleoanthropologists discovered a new species of *Australopithecus* that has never been found anywhere.

The [Ledi-Geraru Research Project](#) is led by scientists at Arizona State University, and the site has previously revealed the oldest member of the genus *Homo* and the earliest Oldowan stone tools on the planet.

The research team concluded that the Ledi-Geraru *Australopithecus* teeth are a new species, rather than belonging to *Australopithecus afarensis* ([the famous “Lucy”](#)), confirming that there is still no evidence of Lucy’s kind younger than 2.95 million years ago.

“This new research shows that the image many of us have in our minds of an ape to a Neanderthal to a modern human is not correct — evolution doesn’t work like that,” ASU paleoecologist [Kaye Reed](#) said. “Here we have two hominin species that are together. And human evolution is not linear — it’s a bushy tree; there are life forms that go extinct.”

Reed is a research scientist at the Institute of Human Origins and President’s Professor Emeritus at the School of Human Evolution and Social Change at ASU. She has been co-director of the Ledi-Geraru Research Project since 2002.

## Ledi-Geraru

What fossils did they find to help them tell this story? Teeth; 13 of them to be exact.

This field site has been famous before. In 2013, a team led by Reed discovered [the jaw](#) of the earliest Homo specimen ever found at 2.8 million years old. This new paper details new teeth found at the site that belong to both the genus Homo and a new species of the genus Australopithecus.

“The new finds of Homo teeth from 2.6- to 2.8-million-year-old sediments — reported in this paper — confirms the antiquity of our lineage,” said [Brian Villmoare](#), lead author and ASU alumnus.

“We know what the teeth and mandible of the earliest Homo look like, but that’s it. This emphasizes the critical importance of finding additional fossils to understand the differences between Australopithecus and Homo, and potentially how they were able to overlap in the fossil record at the same location.”

The team cannot name the species yet based on the teeth alone; more fossils are needed before that can happen.

## How old are the fossils?

How do scientists know these fossil teeth are millions of years old?

Volcanoes.

The Afar region is still an active rifting environment. There were a lot of volcanoes and tectonic activity, and when these volcanoes erupted ash, the ash contained crystals called feldspars that allow the scientists to date them, explained [Christopher Campisano](#), a geologist at ASU.

“We can date the eruptions that were happening on the landscape when they’re deposited,” said Campisano, a research scientist at the Institute of Human Origins and associate professor at the School of Human Evolution and Social Change.

“And we know that these fossils are interbed between those eruptions, so we can date units above and below the fossils. We are dating the volcanic ash of the eruptions that were happening while they were on the landscape.”

Finding fossils and dating the landscape not only helps scientists understand the species — it helps them re-create the environment millions of years ago. The modern faulted badlands of Ledi-Geraru, where the fossils were found, are a stark contrast to the landscape these hominins traversed 2.6 million to 2.8 million years ago. Back then, rivers migrated across a vegetated landscape into shallow lakes that expanded and contracted over time.

[Ramon Arrowsmith](#), a geologist at ASU, has been working with the Ledi-Geraru Research Project since 2002. He explained the area has an interpretable geologic record with good age control for the geologic time range of 2.3 million to 2.95 million years ago.

“It is a critical time period for human evolution, as this new paper shows,” said Arrowsmith, professor at the School of Earth and Space Exploration. “The geology gives us the age and characteristics of the sedimentary deposits containing the fossils. It is essential for age control.”

## What's next?

Reed said the team is examining tooth enamel now to find out what they can about what these species were eating. There are still remaining questions the team will continue to work on.

Were the early Homo and this unidentified species of Australopithecus eating the same things? Were they fighting for or sharing resources? Did they pass each other daily? Who were the ancestors of these species?

No one knows — yet.

“Whenever you have an exciting discovery, if you're a paleontologist, you always know that you need more information,” Reed said. “You need more fossils. That's why it's an important field to train people in and for people to go out and find their own sites and find places that we haven't found fossils yet.

“More fossils will help us tell the story of what happened to our ancestors a long time ago — but because we're the survivors, we know that it happened to us.”

The paper, "[New discoveries of Australopithecus and Homo from Ledi-Geraru, Ethiopia](#),” was published in the journal Nature. The team of scientists and field team working on this project is widespread, and many work at Arizona State University or are alumni of ASU.

ASU alumni and current faculty authors include: University of Nevada, Las Vegas Associate Professor Brian Villmoare; University of Arkansas Associate Professor [Lucas Delezene](#); Virginia Commonwealth University Professor [Amy Rector](#); Penn State Associate Research Professor [Erin DiMaggio](#); ASU Research Professor [David Feary](#); ASU PhD candidate [Daniel Chupik](#); Louisiana State University Instructor [Dominique Garelo](#); Idaho College of Osteopathic Medicine Assistant Professor [Ellis M. Locke](#); Boston University Senior Lecturer [Joshua Robinson](#); West Virginia School of Osteopathic Medicine Assistant Professor [Irene Smail](#); and the late ASU Professor [William Kimbel](#).

Below, Reed and Campisano talk more about this project in an in-depth interview.

(Video: <https://www.youtube.com/watch?v=MfkbvTdB3w4>)

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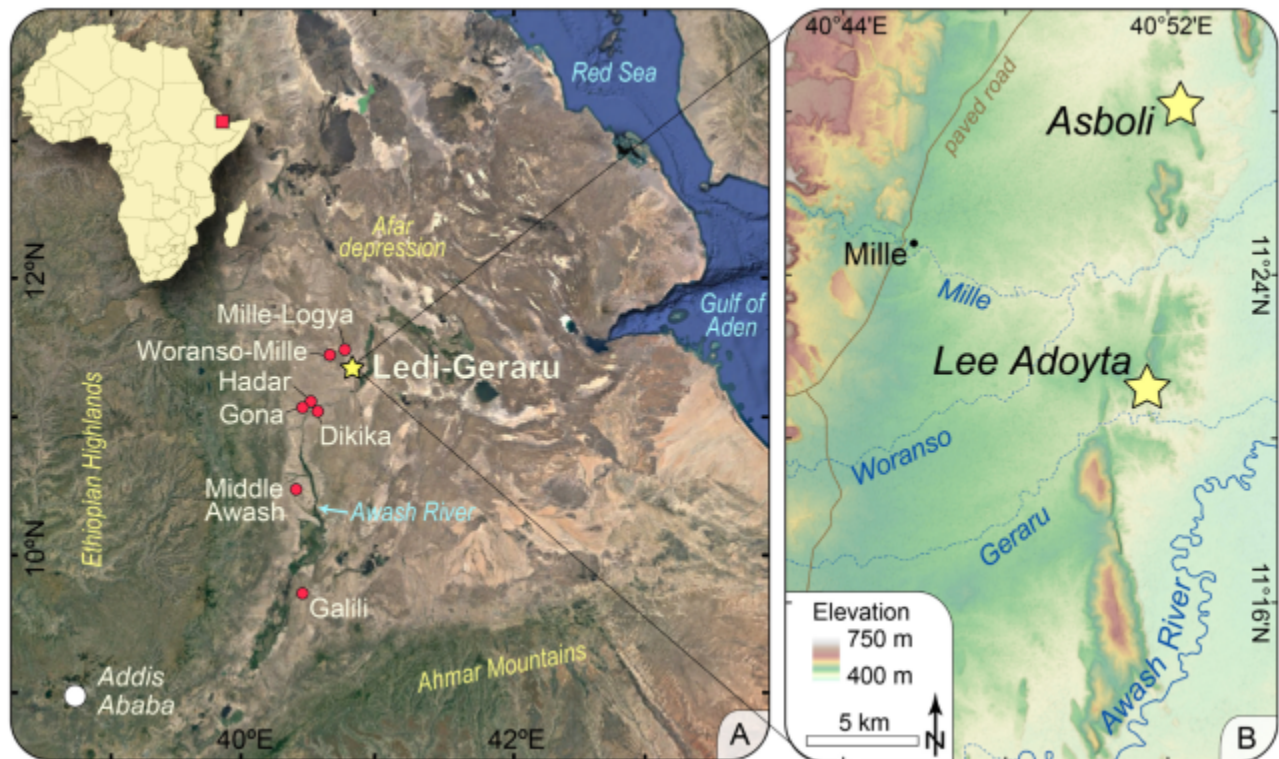
*This story originally appeared on [ASU News](#).*

## Main image



From left: Arizona State University Professor Ramon Arrowsmith, President's Professor Emeritus Kaye Reed and Associate Professor Christopher Campisano discussing the *Homo* teeth that were found in the Asboli, an area at the Ledi-Geraru site. Photo by Eric Scott

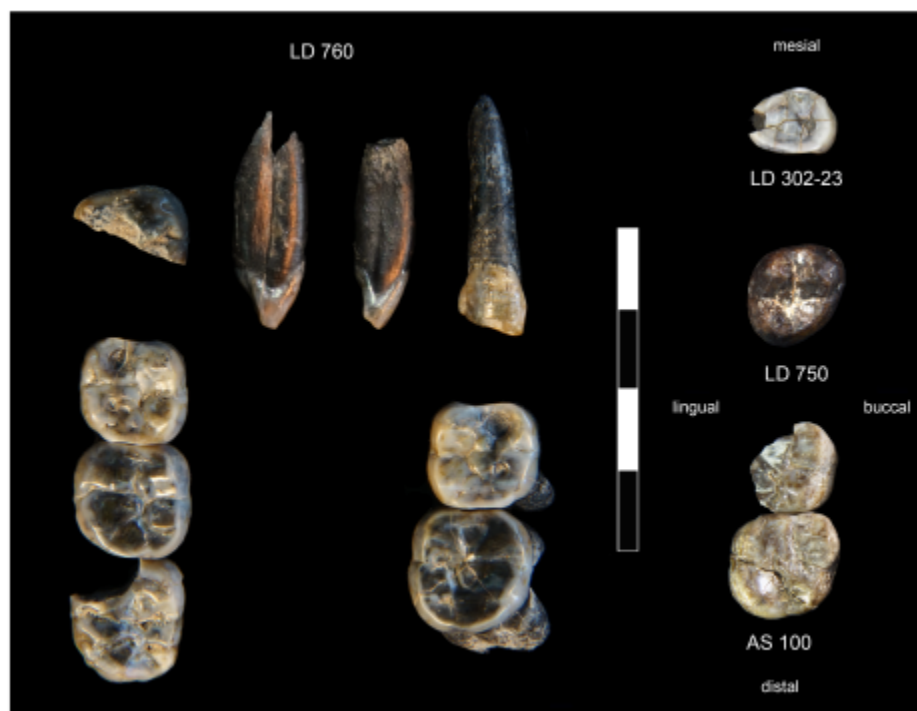
## Gallery



Maps showing (left) the location of the Ledi-Geraru site within the Horn of Africa on the left, and the location of the Australopithecus and Homo teeth on the right.



Ledi-Geraru research team, 2025.



The 13 fossil teeth collected in the Ledi-Geraru Research Area from 2015-2018. The collections at LD 750 and LD 760 localities represent a newly discovered species of *Australopithecus*. LD 302 and AS 100 represent early *Homo* already known from the LD 350 mandible discovered in 2013.



The 2.6-million-year-old *Australopithecus* teeth found in the Turtle Flat area.



ASU Professor Ramon Arrowsmith and Penn State Associate Research Professor Erin DiMaggio. Arrowsmith is guiding a drone used to map the geology. Drones can collect surface geology data much more quickly than can be done by people walking the surface.



Reed (right) and Virginia Commonwealth University Professor Amy Rector at Turtle Flat area.  
“After we found the first teeth, we flagged every piece of fossil on the landscape so that we could see their distribution on the ground. It was lovely to see them!” Rector said.



University of Arkansas Associate Professor Lucas Delezene compares one of the incisors the team discovered to an *Australopithecus* maxilla (upper jaw) from Hadar at the National Museum of Ethiopia.



Reed makes preliminary taxonomic assessments of nonhuman fossils discovered that day.



Arrowsmith (left) and ASU Associate Professor Christopher Campisano examine the geology near the Asboli Homo teeth site.