

Oldest hominins of Olduvai Gorge persisted across changing environments

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Olduvai (now Oldupai) Gorge, known as the Cradle of Humankind, is a UNESCO World Heritage site in Tanzania. New interdisciplinary field work has led to the discovery of the oldest archaeological site in Oldupai Gorge, which shows that early human used a wide diversity of habitats amidst environmental changes across a 200,000 year-long period. Credit: Michael Petraglia

Olduvai (now Oldupai) Gorge, known as the Cradle of Humankind, is a UNESCO World Heritage site in Tanzania, made famous by Louis and Mary Leakey. New interdisciplinary field work has led to the discovery of the oldest archaeological site in Oldupai Gorge as reported in *Nature Communications*, which shows that early human used a wide diversity of habitats amidst environmental changes across a 200,000 year-long period.

Located in the heart of eastern Africa, the Rift System is a prime region for human origins research, boasting extraordinary records of extinct human species and environmental records spanning several million years. For more than a century, archaeologists and human palaeontologists have been exploring the East African Rift outcrops and unearthing [hominin fossils](#) in surveys and excavations. However, understanding of the environmental contexts in which these hominins lived has remained elusive due to a dearth of ecological studies in direct association with the cultural remains.

In the new study, published in *Nature Communications*, researchers from the Max Planck Institute for the Science of Human History teamed up with lead partners from the University of Calgary, Canada, and the University of Dar es Salaam, Tanzania, to excavate the site of 'Ewass Oldupa' (meaning on 'the way to the Gorge' in the local Maa language, as the site straddles the path that links the canyon's rim with its bottom). The excavations uncovered the oldest Oldowan stone tools ever found at Oldupai Gorge, dating to ~2 million years ago. Excavations in long sequences of stratified sediments and dated volcanic horizons indicated [hominin](#) presence at Ewass Oldupai from 2.0 to 1.8 million years ago.



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Fossils of mammals (wild cattle and pigs, hippos, panthers, lions, hyena, primates), reptiles and birds, together with a range of multidisciplinary scientific studies, revealed habitat changes over 200,000 years in riverine and lake systems, including fern meadows, woodland mosaics, naturally burned landscapes, lakeside palm groves and dry steppe habitats. The uncovered evidence shows periodic but recurrent land use across a subset of environments, punctuated with times when there is an absence of

hominin activity.

Dr. Pastory Bushozi of Dar es Salaam University, Tanzania, notes, "the occupation of varied and unstable environments, including after volcanic activity, is one of the earliest examples of adaptation to major ecological transformations."

Hominin occupation of fluctuating and disturbed environments is unique for this early time period and shows complex behavioral adaptations among early human groups. In the face of changing habitats, [early humans](#) did not substantially alter their toolkits, but instead their technology remained stable over time. Indicative of their versatility, typical Oldowan stone tools, consisting of pebble and cobble cores and sharp-edged flakes and polyhedral cobbles, continued to be used even as habitats changed. The implication is that by 2 million years ago, early humans had the behavioral capacity to continually and consistently exploit a multitude of habitats, using reliable stone toolkits, to likely process plants and butcher animals over the long term.



Excavation at Ewass Oldupa uncovered the oldest Oldowan stone tools ever found at Oldupai Gorge, dating to ~2 million years ago and fossils of mammals, reptiles and birds. Credit: Michael Petralia

Though no hominin fossils have yet been recovered from Ewass Oldupa, hominin fossils of *Homo habilis* were found just 350 meters away, in deposits dating to 1.82 million years ago. While it is difficult to know if *Homo habilis* was present at Ewass Oldupa, Professor Julio Mercader of the University of Calgary asserts that "these early humans were surely ranging widely over the landscape and along shores of the ancient lake." Mercader further notes that this does not discount the possibility that other hominin species, such as the australopithecines, were also using and making stone tools at Ewass Oldupa, as we know that the genus *Paranthropus* was present in Oldupai Gorge at this time.

More information: Julio Mercader et al. Earliest Olduvai hominins exploited unstable environments ~ 2 million years ago, *Nature Communications* (2021). [DOI: 10.1038/s41467-020-20176-2](https://doi.org/10.1038/s41467-020-20176-2)

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