

Intriguing discovery of ancient tools, butchery, and hominin teeth in Kenya

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20 February 2023

Stone tools, 2.6 million to 3 million years old, discovered recently in Kenya, along with teeth belonging to the hominin *Paranthropus* and signs of the butchering of an ancient hippopotamus, pose important questions for evolutionary science.

The tools, consisting of hammerstones and sharp stone flakes, may be the oldest Oldowan tools discovered so far, pushing back the known use of Oldowan tools by at least 600,000 years. These were simple tools that were made by one or a few flakes chipped off with another stone. Oldowan tools were named after the Olduvai Gorge where they were first discovered by the famed paleoanthropologist Louis Leakey in the 1930s. Most finds date to the late Palaeolithic period about 2.6 million years ago up until at least 1.7 million years ago.

The current discovery was made on the Homa Peninsula on the western shores of Lake Victoria in Kenya. A local man, Peter Onyango, who was working with the fossil hunters, suggested that they investigate fossils and stone tools eroding out of a valley on the shores of the lake. This new site was named Nyayanga after the nearby beach, situated on a donkey track leading to the lake.

The first discoveries were made in 2015, including 330 artefacts and 1,776 animal bone fragments from several species typical of open savannah and open woodland environments. Forty-two Oldowan tools were discovered in total.

Analysis of the tools shows signs they were used to pound plant material such as tubers and seeds.

“Early hominins would have been limited by what they could tear with their hands and teeth. ... Stone tools “allowed them to work food outside of their mouths,” Thomas Plummer, a paleoanthropologist at Queens College, City University of New York, in Flushing, Queens, told *Nature*.

Along with the tools, a hippopotamus skeleton and two teeth, an intact molar and a partial tooth, were found. The

teeth have been classified as belonging to the *Paranthropus* genus. Scientists also found samples of the extinct megafauna such as *Eurygnathohippus*, a horse species, *Pelorvis*, the giant buffalo, and *Megantereon*, the sabre-toothed cat.

“When we found the molar, it got really, really exciting,” Emma Finestone of the Cleveland Museum of Natural History told *Science*.

The genus is made up of three species that lived in Africa from 2.7 million to 1 million years ago. They are usually referred to as robustines. The first species, *P. robustus*, was found in South Africa in 1938. They are not thought to be a direct ancestor of modern humans.

They were distinguished by their robust heads with extremely large jaws and molar teeth. *Paranthropus*’ skull had a crest along the midline of its skull similar to gorillas. They walked on two feet and were about 130cm tall. They coexisted with *Australopithecus africanus*, *Homo habilis* and *H. erectus*.

The discovery of Oldowan tools with *Paranthropus* raises the question as to whether they were the species that used the tools. The researchers have not attributed the tools to the *Paranthropus*, as Oldowan tools are usually associated with *H. habilis*.

“I have been skeptical of *Paranthropus* using stone tools. ... But maybe we do have multiple hominins using the Oldowan,” Finestone says.

“I personally do not believe that *Paranthropus* made Oldowan tools ... the hominin’s anatomy suggests that it was well adapted to eating coarse foods and might not have needed to master tool use,” Mohamed Sahnouni, a palaeolithic archaeologist at the National Research Centre on Human Evolution in Burgos, Spain, said to *Nature*.

Along with the Oldowan tools, the researchers found ancient hippopotamuses and antelopes that showed signs of being butchered. The bones had signs of being

cut and scraped with stone tools. This is a considerable period before humans mastered the use of fire, indicating the meat was eaten raw.

“It predates the use of fire by two million years ... Our best guess is they were probably pounding it into a sort of hippo mash, to be able to eat it,” palaeontologist Julien Louys, an associate at Griffith University, told *The Age*.

The assumption that Oldowan tools are the work of the *Homo* species came under close scrutiny with the discovery in 2011 in northern Kenya of 3.3-million-year-old primitive flakes. This is well before true humans appeared and they may have been manufactured by a species such as *Australopithecus afarensis*.

Sonia Harmand, an archaeologist at Stony Brook University in New York, said, “The artifacts were clearly knapped and not the result of accidental fracture of rock.”

Knapping is the technology used by primitive humans using a rock to flake off pieces of another rock in order to shape it into tools such as axes and sharp blades.

Harmond and her team discovered numerous tools, consisting of nearly 20 well-preserved flakes, cores, and anvils at the site Lomekwi 3, just west of Lake Turkana in Kenya, about 1,000 kilometers from Olduvai Gorge. The tools have been classified as Lomekwian technology to distinguish them from the more sophisticated Oldowan tools.

The finds are “very exciting,” says an anthropologist at George Washington University in Washington D.C. Alison Brooks told *Science*, “They could not have been created by natural forces ... [and] the dating evidence is fairly solid.” She agrees that the tools are too early to have been made by *Homo*, suggesting that “technology played a major role in the emergence of our genus.”

A paleoanthropologist at Spain’s National Research Center for Human Evolution, Sileshi Semaw, explained the importance of the new discovery: “We know very little about the beginnings of stone tools and the emergence of early *Homo*.” The scientist added, this is “why the Nyayanga discovery is important.”

Marx’s co-thinker Friedrich Engels, in his pamphlet “*The Part played by Labour in the Transition from Ape to Man*,” written in 1876, explained the significance of the invention of tools for human evolution.

Labour begins with the making of tools. And what are the most ancient tools that we find—the most ancient judging by the heirlooms of prehistoric man that have been discovered, and by

the mode of life of the earliest historical peoples and of the rawest of contemporary savages? They are hunting and fishing implements, the former at the same time serving as weapons. But hunting and fishing presuppose the transition from an exclusively vegetable diet to the concomitant use of meat, and this is another important step in the process of transition from ape to man. A *meat diet* contained in an almost ready state the most essential ingredients required by the organism for its metabolism. By shortening the time required for digestion, it also shortened the other vegetative bodily processes that correspond to those of plant life, and thus gained further time, material and desire for the active manifestation of animal life proper. And the farther man in the making moved from the vegetable kingdom the higher he rose above the animal.

In a comment published in *The Conversation* on February 10, Louys and Plummer wrote, “There’s no evidence *Paranthropus* was actively hunting megafauna. But it would have been competing with sabre-toothed cats, hyenas and crocodiles for access to carcasses, at the very least.

“The Nyayanga deposits provide a glimpse into an ancestral world that’s possibly radically different from any we had pictured. In doing so, they’ve raised even more questions about hominin evolution.”



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