Cleveland Museum of Natural History Research Helps Reveal How Eastern Africa's Earliest Herders Really Ate

A new study shows Eastern Africa's earliest livestock herders continued fishing, hunting, and gathering for centuries after livestock were first brought to the region.

CLEVELAND, OH—May 19, 2026—A new collaborative study involving the University of British Columbia, the Cleveland Museum of Natural History, Stony Brook University, and other institutions is challenging long-held assumptions about one of the most important transitions in human history: the shift toward food production. The paper, "Isotopic evidence for dietary variability among eastern Africa's first pastoralists," includes research by the Museum's Curator of Human Evolution, Dr. Elizabeth Sawchuk, whose ongoing fieldwork in Kenya's Turkana Basin helped provide the missing piece in understanding how eastern Africa's earliest herders actually lived and ate.

Published in the journal *Proceedings of the National Academy of Sciences (PNAS)*, the study finds that eastern Africa's earliest herders did not quickly become reliant on cattle, sheep, and goats after domesticated animals arrived in the region about 5,000 years ago. Instead, the first herders who lived around Lake Turkana, in what is now northern Kenya, continued eating a varied diet that included fish, wild animals, and gathered foods alongside livestock.

"This research shows that producing food from domesticated animals and plants—one of the most important innovations in human history—did not necessarily revolutionize people's diets and economy right away," said Dr. Sawchuk, second author and lead bioarchaeologist on the study. "Instead, ancient humans incorporated food production into a broader adaptive strategy tailored to their environment, culture, and health."

For most of our time on the planet, *Homo sapiens* has had to adapt to constantly changing environments. Understanding how our ancestors coped can shed light on how we can adapt to

climate stress today. It also reminds us that human diets are not and were never one-size-fits-all.

To determine how much human diets changed across the transition from hunting and gathering to food production, the team analyzed chemical clues hidden in ancient human teeth and bones. These clues come from stable isotopes—natural markers that reflect what a person ate while their tissues were forming. In simple terms, teeth and bones keep a long-term record of diet, like a fossilized food diary.

“The isotopic evidence was a breakthrough because it showed us what people were actually eating based on their carbon and nitrogen signatures,” explained lead author Dr. Kendra Chritz, a geochemist and Assistant Professor at the University of British Columbia. “By comparing these signatures across hunter-gatherers, early herders, and later Pastoral Neolithic and Iron Age peoples, we were able to trace exactly how diets changed as livestock spread.”

The study is the largest isotopic analysis of ancient human diet in eastern Africa to date, examining remains from 110 individuals who lived between about 9,500 and 200 years ago in Kenya and Tanzania. Twenty-six of those individuals came from archaeological sites in Kenya’s Turkana Basin where Dr. Sawchuk has excavated through her ongoing Museum-supported research. Those ancient Turkana individuals represented a key missing piece in the scientific record—the earliest herders in eastern Africa, who lived around 5,000 years ago.

“Archaeologists have been studying how diets changed with food production for decades, but previous work in eastern Africa was only able to compare ancient hunter-gatherers with Pastoral Neolithic herders who lived about 3,000 years ago,” says Sawchuk. “What we really needed were the people who first adopted this strategy 2,000 years earlier.” Sawchuk began excavating the cemeteries left by these early herders in 2012, when she joined the Later Prehistory of West Turkana project as a Ph.D. student. She now directs the team’s bioarchaeological research—and the study’s biggest surprise came from these early herders. Their tooth records showed huge variation from person to person. Some ate foods linked to grass-eating animals, such as cattle. Others relied much more on fish or wild animals. Many did both.

“This level of diversity looks a lot like what we see among hunter-gatherers,” said Dr. Chritz.

The arrival of herding around Lake Turkana coincided with major environmental change. Paleoenvironmental data show the lake rapidly shrank at the end of the African Humid Period 5,000 years ago, but grasslands had not yet expanded in ways that would have made herding easier. In that unstable setting, relying entirely on livestock may have been risky.

The study also adds to a growing body of archaeological evidence showing that the spread of herding in eastern Africa was not a simple story of replacement or rapid transformation. Instead, it likely involved complex cultural interactions among local fisher-foragers and migrant herders moving out of the drying Sahara. Around Lake Turkana, those social changes are also reflected in large, megalithic cemeteries that point to expanding networks of contact, identity, and ritual.

It was not until 2,000 years later, after herders moved into eastern Africa's South-Central Rift Valley, monsoon rains became more predictable, and grasslands expanded, that people begin to rely more heavily on livestock products. In other words, the path toward food production in eastern Africa was a long and winding one, deeply shaped by local environments.

"This research matters because millions of people in eastern Africa today are still herders, including our community partners around Lake Turkana," Sawchuk adds. "As contemporary climate change threatens this way of life, we can look to the past to understand how pastoralism first developed in this part of the world, and what makes it so flexible and resilient."

For Museum audiences, the study highlights how research in human evolution continues to reshape what we know about the past. By contributing crucial evidence from some of eastern Africa's earliest herders, Sawchuk's research helped make it possible to test an assumption that had shaped archaeological thinking for decades.
That flexibility and resiliency is central to the study's broader message. For most of human history, people lived in environments that changed quickly. Understanding how ancient communities adapted to climate stress, new technologies, and shifting social relationships can offer a deeper view of human survival and ingenuity.

The paper, "Isotopic evidence for dietary variability among eastern Africa's first pastoralists," was led by Dr. Kendra Chritz, Assistant Professor at the University of British Columbia's Department of Earth, Ocean and Atmospheric Sciences, with 17 other authors from institutions including the Cleveland Museum of Natural History, National Museums of Kenya, Stony Brook University, University of Florida and others.

About the Cleveland Museum of Natural History
The Cleveland Museum of Natural History illuminates the world around us and inspires visitors to engage with the natural forces that shape their lives. Since its founding in 1920, the Museum has pioneered scientific research to advance knowledge across diverse fields of study and used its outstanding collections, which encompass millions of artifacts and specimens, to deepen the public's

understanding of the dynamic connections between humans and nature. Through its Natural Areas Program, the Museum stewards more than 12,500 acres of protected ecosystems across northern Ohio. A community gathering place, educational center, and research institution, the Museum is a vital resource that serves Cleveland and the nation. For more information, visit CMNH.org.

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