Renewed explorations of the Mid-Pleistocene site, Isimila, Tanzania

Sabrina C. CURRAN*, Paul E. PATTON*, Cassy MTELELA†

* a: Department of Sociology and Anthropology, Ohio University, b: Geology Department, University of Dar es Salaam

The Isimila fossil beds

Isimila, located in central Tanzania (Fig. 1), is well-known for its vast assemblage of Acheulean tools, where hand-axes exist in densities similar to Olorgesailie, Kenya. Most publications on Isimila occurred in the 1960s and 70s (see Fig. 2 for a historical summary) and although the site currently exists as a tourist destination, there have been few archaeological publications on the site in recent decades. Here we report on the findings from two brief field sessions in 2016. Our primary goals in these expeditions were:

1. Obtain permits to work at Isimila
2. Evaluate likelihood of finding additional fossil specimens, deposits, and chronometric dates
3. Assess taphonomic histories for new specimens
4. Establish potential for Isimila as a cultural heritage research center

FINDINGS

- Fossils are abundant in ex situ contexts and evident in in situ contexts (n > 780 specimens ranging from nearly complete to small fragments)
- In situ remains:
  - Include partial pelvis, vertebrae, and dental remains including a large tusk (all were 3D-digitized; see Figure 3 for an example)
  - Very well preserved with little bone surface modification
- Ex situ remains:
  - n ~ 760, mostly small fragments, some of which are identifiable
  - Weathering stages 0-4, limited carnivore damage, and exhibiting some polishing, suggesting that they may have been deposited in fluvial or lacustrine contexts
  - Preliminary taphonomic assessment of new fossils revealed two specimens with likely cut-marks. Despite the abundance of stone tools at the site, these are the first reported cut-marks on fossils from Isimila (Figure 4)
  - Most fossils were assigned to Hippopotamus, although specimens of turtle and crocodile (both previously unreported), Suidae (cf. Kolpochoerus), and Bovidae were recovered
  - The potential for finding further fossil material is high
- Isimila sedimentary succession is characterized by silicilastic conglomerate, sandstone and mudstone, and volcanic tuff beds deposited in alluvial to lacustrine environments (Figure 5)

METHODS

- Pedestrian survey of entire Isimila korongo system
- Locate and record fossiliferous locations
- Excavate in situ remains, collect ex situ remains
- Digitize fossils with identifiable features using an HDI 120 structured blue-light scanner (LMI Technologies)
- Examine all remains for bone surface modifications and other taphonomic signatures such as breakage patterns
- Preliminary sedimentologic analysis and stratigraphic profiling
- Collect samples for dating
- Establish future goals for Isimila through collaborative efforts with M. Ngoma (Isimila) and J. Temu (TZ Antiquities)

FUTURE GOALS

- Obtain radiometric dates
- Continue stratigraphic profiling; detailed stratigraphic measurements
- Systematic excavation in main fossiliferous bed
- Provenience specimens with Trimble total station
- Collection of bulk samples to screen for micro- and macrobotanicals
- Paleoenvironmental reconstructions using community analysis and ecomorphology (Bovidae)
- Detailed paleoenvironmental reconstruction through time
- Paleoclimate studies via detailed facies analysis petrology and clay (XRD) mineralogy
- Funding for infrastructure repairs (Fig. 6a)
- Better establishment of tourist pathways and signage (Fig. 6b)

ACKNOWLEDGMENTS

We thank the Tanzania Commission for Science and Technology, Elwasa Maro, Joseph Temu, and Mohammed Ngoma of the Department of Antiquities, and Nancy Stevens and Patrick O’Connor (Ohio University) for initiating this project. This research was funded by the Ohio University Research Council and Ohio University’s International Travel Fund.

We dedicate this poster to the memory of Joseph Temu.

REFERENCES