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RECOMMENDATION

Dental microwear texture analysis of suid teeth from the Shungura Formation of the Omo Valley, Ethiopia

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A recommendation of

Louail M, Souron A, Merceron G, and Boisserie JR (2024). New insights on feeding habits of *Kolpochoerus* from the Shungura Formation (Lower Omo Valley, Ethiopia) using dental microwear texture analysis. *PaleorXiv* dbgtp, ver. 3, peer-reviewed by PCI Paleo. DOI: 10.31233/osf.io/dbgtp

Suidae are well-represented in Plio-Pleistocene African hominin sites and are particularly important for biochronological assessments. Their ubiquity in hominin sites combined with multiple appearances of what appears to be graminivorous adaptations in the lineage (Harris and White, 1979) suggest that they have the potential to contribute to our understanding of Plio-Pleistocene paleoenvironments. While they have been generally understudied in this respect, there has been recent focus on their diets to understand the paleoenvironments of early hominin habitats. Of particular interest is *Kolpochoerus*, one of the most abundant suid genera in the Plio-Pleistocene with a wide geographic distribution and diverse dental morphologies (Harris and White, 1979).

In this study, Louail et al. (2024) present the results of the first dental microwear texture analysis (DMTA) conducted on suids from the Shungura Formation of the Omo Valley, an important Plio-Pleistocene hominin site that records an almost continuous sedimentary record from ca. 3.75 Ma to 1.0 Ma (Heinzelin, 1983; McDougall et al., 2012; Kidane et al., 2014). Dental microwear is one of the main proxies in understanding diet in fossil mammals, particularly herbivores, and DMTA has been shown to be effective in differentiating inter- and intra-species dietary differences (e.g., Scott et al., 2006, 2012; Merceron et al., 2010). However, only a few studies have applied this method to extinct suids (Souron et al., 2015; Ungar et al., 2020), making this study especially pertinent for those interested in suid dietary evolution or hominin paleoecology.

In addition to examining DMT variations of *Kolpochoerus* specimens from Omo, Louail et al. (2024) also expanded the modern comparative data set to include larger samples of African suids with different diets from herbivores to omnivores to better interpret the fossil data. They found that DMTA distinguishes between extant suid taxa, reflecting differences in diet, indicating that DMT can be used to examine the diets of fossil suids. The results suggest that *Kolpochoerus* at Omo had a substantially different diet from

any extant suid taxon and that although its anistropy values increased through time, they remain well below those observed in modern *Phacochoerus* that specializes in fibrous, abrasive plants. Based on these results, in combination with comparative and experimental DMT, enamel carbon isotopic, and morphological data, Louail et al. (2024) propose that Omo *Kolpochoerus* preferred short, soft and low abrasive herbaceous plants (e.g., fresh grass shoots), probably in more mesic habitats. Louail et al. (2024) note that with the wide temporal and geographic distribution of *Kolpochoerus*, different species and populations may have had different feeding habits as they exploited different local habitats. However, it is noteworthy that similar inferences were made at other hominin sites based on other types of dietary data (e.g., Harris and Cerling, 2002; Rannikko et al., 2017, 2020; Yang et al., 2022). If this is an indication of their habitat preferences, the wide-ranging distribution of *Kolpochoerus* may suggest that mesic habitats with short, soft herbaceous plants were present in various proportions at most Plio-Pleistocene hominin sites.

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Appendix

Reviews by Kari Prassack and Daniela E Winkler, DOI: 10.24072/pci.paleo.100255.