

GSA Connects 2022 meeting in Denver, Colorado

Paper No. 169-17

Presentation Time: 9:00 AM-1:00 PM

RECONSTRUCTION OF EARLY MIOCENE PALEOFLORA AND PALEOCLIMATE OF KORU REGION (NYANZA PROVINCE, WESTERN KENYA): IMPLICATIONS FOR EARLY HOMINOID EVOLUTION

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Early Miocene sites in eastern Africa document the radiation and evolution of the crown catarrhines (cercopithecoids and hominoids). The early Miocene fossils sites in the Koru region, which surround the extinct Tinderet Volcano, preserve some of the earliest records of catarrhines and thus represent ideal locations to provide a window into the paleoenvironmental contexts and climatic dynamics that influenced earliest hominoid radiation and evolution. Here, we report analyses of the paleoenvironmental context from the fossil site Koru 16. At Koru 16, about 8 meters of paleosols and intercalated ash deposits are exposed. Sedimentological and stratigraphic analysis suggests that the landscape was frequently disturbed by eruptions of the Tinderet Volcano, followed by intervals of stability when pedogenesis occurred. A fossil leaf site occurs ~2.5 m above the base of the section. We made a census collection of >600 fossil leaves from the site. The identified morphotypes are dominated by large, entire margined leaves, which are primarily elliptic, oblong, and obovate in shape. Several of the morphotypes have acuminate apices, which are interpreted to be drip tips. Based on the size and shape of the leaves and their other morphological features, they likely sample a very warm and wet forested environment. Other paleoenvironmental proxies from Koru 16 also support these interpretations. Abundant stump casts and root traces are preserved in a stratigraphic layer ~1 m above the fossil leaf site. Analyses of the size and density of the stump casts indicates a density similar to modern deciduous and seasonally dry tropical forest ecosystems. Additional evidence for seasonal precipitation is provided by the paleosols, which contain vertic features. The faunal assemblage from Koru 16 also suggests the presence of a closed ecosystem, and contains at least two large-bodied primates, including *Proconsul* and another unidentified large catarrhine. The fossil leaf data, coupled with other indicators of paleoclimate and paleoenvironment, indicate that the climate of the Koru 16 site was warm and seasonally wet and that the paleoenvironment was a closed, tropical seasonal forest environment. This in turn suggests that forested environments may have influenced the evolution of early catarrhines in the early Miocene.

Session No. 169--Booth# 97

[T108. Oceans and Climates through Earth History: From Proxy Reconstructions to Model Assessments \(Posters\)](#)

Tuesday, 11 October 2022: 9:00 AM-1:00 PM

Exhibit Hall F (Colorado Convention Center)

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Back to: [T108. Oceans and Climates through Earth History: From Proxy Reconstructions to Model Assessments \(Posters\)](#)

[<< Previous Abstract](#) | [Next Abstract >>](#)
