

## Mammalian Fauna and its paleoenvironments of the Late Miocene Samburu Hills and Nakali, Rift Valley, Kenya

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Rich and various mammalian fossils including hominoids were found from the Late Miocene Namurungule (Samburu Hills) and Nakali Formation. The ages of Namurungule Formation have been dated as 9.6 Ma. and the Nakali Formation have been dated as 9.8 to 9.9 Ma. Only three early Late Miocene hominoids sites are known in East Africa: Samburu Hills, Nakali, and Chorora (10 to 11 Ma). The mammalian assemblage from the Namurungule Formation bears a close resemblance to that from the Nakali Formation. We analyzed mesowear of *Hipparion* and bovids teeth from both formations to evaluate their diets and compare paleoenvironments at these sites. Furthermore, we described rodents from the Nakali Formation.

Data from mesowear analysis indicate that *Hipparion* and bovids from the Nakali Formation were mixed-feeder whereas *Hipparion* and bovids from the Namurungule Formation were grazer and mixed-feeder, respectively. Comparison of the rodents from the Nakali Formation with phylogenetically close or morphologically resembling extant rodents suggested that habitat of fossil rodents was woodland and waterland under seasonal climate in highland.

These contrasting paleoenvironments may reflect an altitudinal difference (highland Nakali vs. lowland Namurungule), not necessarily an environmental change through a narrow age gap in the early Late Miocene between these sites. This interpretation is supported from the evaporite of the Aka Aiteputh Formation (15 Ma) overlain by the Namurungule Formation. Arid climate probably continued through the Middle Miocene to the Late Miocene in the Samburu Hills. Our paleoenvironmental reconstruction delivers an explanation for the richness and the paucity of primate fauna in Nakali and Namurungule, respectively.

The following conclusions are reached: The paleoenvironment of the Nakali Formation may have been a woodland under seasonal climate while that of the Namurungule Formation may have been an openland under arid climate. This environmental difference between the Nakali and Namurungule Formations is also supported by stable isotope analysis, pollen analysis, and sedimentological analysis.

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