INTRODUCTION
Stable hydrogen isotope ratios in bone collagen have been proposed as a trophic indicator, with stepwise enrichment of 10-30‰ between herbivores, omnivores, and carnivores. However, collagen δD also reflects seasonally variable local precipitation and humidity, so that δD variation over 50‰ has been reported within species and individuals. The susceptibility of H in collagen to diagenesis is also unknown. Here, bone collagen δD was measured across time and species in herbivores (n=10) from the tropical savannah grassland of Amboseli National Park, Kenya. Samples were recovered from faunal remains at multi-year intervals for the Amboseli taphonomy project3 that has monitored changes in bone distribution, structure, and chemistry over decades.

RESEARCH QUESTIONS
• Do δD values in bone collagen change over time?
• What is the variation in δD of herbivores from the same environment?

RESULTS AND DISCUSSION
δD values in bone collagen remained stable over 20-years of exposure and degradation in the tropical savannah grassland environment. Diagenetic alteration of collagen H isotope ratios is undetectable or nonexistent. Variation amongst herbivores ranges 70‰ (from -80 to -5‰), which greatly exceeds the trophic enrichment of 10-30‰ reported in other environments. Moreover, δD values show no correlation with nitrogen isotope ratios, an independent indicator of trophic level. These results show that variation in δD is environmentally specific and trophic inferences cannot be applied uniformly across environments.

METHODS
The remains of 10 herbivores of 8 species were analyzed at multi-year intervals shown above. Bones were demineralized in 0.5 M EDTA and washed in distilled H2O. The samples were freeze dried, weighed into silver boats, and analyzed by continuous flow isotope ratio mass spectrometry with a Thermo Temperature Conversion Elemental Analyzer (TC/EA) coupled to a Thermo Delta Plus XP mass spectrometer. Raw δD values were calibrated to standard NBS 22. Analytical error is ±3‰.

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