The carbon isotope ratios of organic matter in fish fossils from diatomites and other lake beds in the HSPDP drill core from Tugen Hills, Kenya (2.58-3.3 Mya) reflect the fishes’ food resources and can be used to infer the habitats of fish. This information offers insight into how fish communities responded to lake level pulses during the Plio-Pleistocene in East Africa. The record is compared to both a Lake Malawi drill core (145 kya - present) and modern Lake Turkana samples to offer context. Both the Lake Malawi drill core fossils (-7.2‰ to -27.5‰ VPDB) and modern Lake Turkana samples (-16‰ to -24.6‰) have δ¹³C values indicating near-shore habitats as well as deep-water pelagic species. The δ¹³C values for the Tugen Hills core range from -20‰ to -27‰. There are no δ¹³C values greater than -19‰, which would suggest near-shore benthic habitats. The lack of shallow, benthic lacustrine fish communities may indicate that the rate of change from low-lake stands to deeper lake phases was very rapid and shallow species were unable to establish communities at the core site. The range of δ¹³C values implies a reliance on similar food sources within the fish communities that made them extremely vulnerable to environmental changes, such as algal blooms. This may be the reason we do not see any fish fossils in diatomite layers. Furthermore, the consistently low δ¹³C values of the Tugen Hills drill core suggest there were deep lake systems available as a food source even in the most arid phases of East African climate. These results strongly suggest that lake level responses to climate variability in the East African Rift were very abrupt during the Plio-Pleistocene transition.

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