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LATE HOLOCENE RECORDS OF INVERTEBRATE DIVERSITY AND TURNOVER FROM LAKE TANGANYIKA, EAST AFRICA, AND THEIR CONSERVATION IMPLICATIONS

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Lake Tanganyika is a global hotspot of freshwater biodiversity, with ~2000 described species and high levels of endemism, and is located in a region with rapid human population growth. Nearshore benthic communities are the most diverse and the most susceptible to anthropogenic habitat alteration. Ostracods serve as conservative paleoecological indicators of change in benthic communities, because they have a higher response threshold to sediment inundation than fish and molluscs. Ostracods are preserved in sediment cores in sufficient abundance to allow high-resolution reconstruction of biodiversity turnover through the recent period of intensive land-use change in the lake's watersheds.

Using detrended correspondence analyses (DCA) of $^{14C-}$ and ^{210}Pb-dated fossil ostracod assemblages, we compared recent diversity trends in numerous sediment cores collected offshore from watersheds experiencing various degrees of deforestation. Offshore from deforested watersheds, sediment accumulation rates increased by a factor of two- to ten-fold over the last c. 150 years with rate increases triggered by high rainfall (El Niño) events. Cores near highly disturbed, large watersheds showed paleoecological trends toward decreasing species diversity and increasing dominance relative to historical conditions at the same sites. Intermediate disturbance conditions are often correlated with slightly higher ostracod diversity in living assemblages than at undisturbed sites. In cores from moderately disturbed areas, DCA revealed progressive change in ostracod assemblages through time, although overall species richness and levels of dominance did not change (often the identity of dominants did). In cores from undisturbed areas, no major transitions in the ostracod fauna occurred.

Paleoecological records of microinvertebrate diversity at sites around Lake Tanganyika suggest that localized recent transitions in species composition of benthic communities can be ascribed to anthropogenic alteration of the lake habitat.