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200 years of environmental impact on the temporal succession of *Brachionus* rotifer haplotypes from *sed*aDNA in two Kenyan crater lakes

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Sedimentary ancient DNA (*sed*aDNA) has been proven to be a useful tool for paleoenvironmental studies, but only a handful exist for tropical regions. We here present *sed*aDNA analyses dating back to 1800 AD on two sediment cores from two crater lakes from the Kenyan Rift Valley. These alkaline-saline lakes have experienced different climatic and anthropogenic influences. New data were retrieved from a sediment core from Lake Kageinya (formerly known as Lake Eight), located in the remote, non-influenced anthropogenically, hot and hyper-arid Suguta Valley. In this study we used *sed*aDNA to study the temporal succession of *Brachionus* spp. rotifer haplotypes. The results are compared to previously published data from Lake Sonachi, a well-studied lake in the humid and colder mountainous region of Kenya near Naivasha town, now supported by a ^{210}Pb age chronology. Both records expand well beyond the onset of substantial anthropogenic impact on the regions. The results revealed that climate is the main driver for haplotype changes in both lakes rather than an anthropogenic impact. During prolonged dry periods haplotype composition remained constant and at low diversity such as from 1910 to the late 1960s. Sudden changes and the emergence of new haplotypes are observed when climate became more humid, but also more variable (before 1910 and from 1960s onwards). Progressive changes in haplotype composition during such variable climates could reflect local adaptation and/or is the result of immigration of new haplotypes after the eradication of previous populations during extreme environmental conditions. These results imply that *sed*aDNA in tropical lake sediments, despite of adverse chemical conditions, is preserved at least back to 1800 AD and its analysis provides a good complementary paleoenvironmental proxy for paleo-limnological reconstructions.