

HIDDEN GENETIC DIVERSITY IN DIATOMS FROM TROPICAL LAKE SEDIMENTS IN KENYA

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This study provides insights into the morphological and genetic diversity in diatoms occurring in surface and core sediments from tropical lakes in Kenya. We developed a genetic survey technique specific for diatoms utilizing a short region (76 bp) of the ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene as genetic barcode. Our analyses (i) validated the use of rbcL as a barcoding marker for diatoms, applied to sediment samples, (ii) showed a significant correlation between the results obtained by morphological and molecular data, (iii) indicated temporal variation in diatom assemblages (on the inter- and intra-specific level) in a short sediment core from Lake Naivasha and (iv) showed spatial genetic variation in ecologically different habitats.

(iii) Diatom assemblages from a short core from Lake Naivasha show a drastic shift over the last 200 years, as littoral species (e.g. *Navicula*) are replaced by more planktonic ones (e.g. *Aulacoseira*). Within that same period, we detected periodic changes in the respective frequencies of distinct haplotype groups of *Navicula*, which coincide with wet and dry periods of Lake Naivasha between 1820 and 1938 AD.

(iv) Diatom sequences from surface sediments indicated distinct *Navicula* haplotypes occurring in either saline-alkaline or freshwater lakes assuming genetic diversity behind similar morphotypes.

Our genetic analyses on recent and historical lake sediments revealed inter- and intra-specific variation in diatoms, which is partially hidden behind single morphotypes. The occurrence of particular genetic lineages is probably correlated to environmental factors.