Abstract

Lake Kanyaboli, an isolated satellite lake of Lake Victoria, has been suggested as a potential refugium for haplochromine cichlids that have gone extinct in the main basin of Lake Victoria. Mitochondrial DNA (mtDNA) molecular markers, as well as feeding ecology studies, were employed in this study to re-evaluate the evolutionary and ecological significance of six common Lake Kanyaboli haplochromines. The mtDNA marker revealed high genetic variability within four of the six haplochromine cichlids. Five haplotypes were discerned in *Astatoreochromis alluaudi* (n = 27), seven in *Lipochromis maxillaris* (n = 29), five in *Astatotilapia nubila* (n = 12) and 11 in the endangered *Xystichromis phytophagus* (n = 205). A haplotype genealogy suggests that Lake Kanyaboli harbours mtDNA haplotypes that could have been lost or not sampled in Lake Victoria, or could have arisen *in situ*. *Lipochromis maxillaris* appears to have undergone a recent demographic expansion. The pairwise F_{ST}s indicated that only the comparison between *X. phytophagus* and *A. nubila* led to a non-significant F_{ST} value. All other comparisons were significant at the 0.01 level, indicating the genetic distinctiveness of the haplochromines in the satellite lake. This could suggest that the lake harbours 'pure' relict populations of the haplochromines and therefore that Lake Kanyaboli can be considered a 'genetic reservoir'. Gut content analysis of the six haplochromine species revealed that eight different food items were consumed. No single species fed exclusively on a single food item, but certain food items contributed higher proportions of the fish diet for each fish species. Resource partitioning therefore could be discerned within this haplochromine community. Thus, Lake Kanyaboli and similar satellite lakes provide an opportunity for conservation of both genetic and trophic diversity threatened by introduction of exotics in the Lake Victoria basin. Lake Kanyaboli should be recognized and conserved as important evolutionary significant units for Lake Victoria region haplochromine species.