

Abstract

The introduction of invasive Nile tilapia (*Oreochromis niloticus*), and the rapacious predator Nile perch (*Lates niloticus*), into Lake Victoria resulted in a decline in population sizes, genetic diversity and even extirpation of native species which were previously the mainstay of local fisheries. However, remnant populations of native fish species, including tilapia, still persist in satellite lakes around Lake Victoria where they may coexist with *O. niloticus*. In this study we assessed population genetic structure, diversity, and integrity of the native critically endangered Singidia tilapia (*O. esculentus*) in its refugial populations in the Yala swamp, Kenya, and contrasted this diversity with populations of the invasive tilapia *O. niloticus* in satellite lakes (Kanyaboli, Namboyo and Sare) and Lake Victoria. Based on mtDNA control region sequences and eight nuclear microsatellite loci, we did not detect any mtDNA introgression between the native and the invasive species in Lakes Kanyaboli and Namboyo, but did find low levels of nuclear admixture, primarily from *O. niloticus* to *O. esculentus*. Some genetic signal of *O. esculentus* in *O. niloticus* was found in Lake Sare, where *O. esculentus* is not found, suggesting it has recently been extirpated by the *O. niloticus* invasion. In both species, populations in the satellite lakes are significantly genetically isolated from each other, with private mtDNA haplotypes and microsatellite alleles. For *O. niloticus*, genetic diversity in satellite lakes was similar to that found in Lake Victoria. Our data imply a low frequency of immigration exchange between the two populations of *O. esculentus* and we suggest that the populations of this endangered species and important fisheries resource should be conserved separately in Lakes Kanyaboli and Namboyo and with high priority.