The Effects of Major Waterfalls on the Assemblage Structure of African Freshwater Fish Species

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Habitat connectivity is a key factor in determining species distributions. Hydrological features such as waterfalls, cascades, and high gradient reaches often act as natural biogeographic barriers to the movement of biota, actively decreasing connectivity. These barriers impose evolutionary consequences on local fish species. Historically stable fish species may become geographically isolated as waterfalls form over millions of years. This isolation may cause divergence, creating two new independent species. This isolation may also cause local fish species to go extinct, through habitat reductions and consequent inbreeding. Several regions of Africa show statistically significant associations between the natural fragmentation of river systems and species trends. In Western, Eastern, and South Central Africa, associations show that natural riverine fragmentation may have imposed speciation on local fish species. In North Eastern Africa, associations show fragmentation may have imposed extinctions among local fish species. Southern, North Central, and Northern Africa did not show associations between biogeographic barriers and species trends.