Universität Basel

Publication

Impact of species delimitation and sampling on niche models and phylogeographical inference: a case study of the East African reed frog Hyperolius substriatus, Ahl 1931

Ecological niche models (ENMs) have been used in a wide range of ecological and evolutionary studies. In biogeographic studies these models have, among other things, helped in the discovery of new allopatric populations, and even new species. However, small sample sizes and questionable taxonomic delimitation can challenge models, often decreasing their accuracy. Herein we examine the sensitivity of ENMs to the addition of new, geographically isolated populations, and the impact of applying different taxonomic delimitations. The East African reed frog Hyperolius substriatus Ahl, 1931 was selected as a case study because it has been the subject of previous ENM predictions. Our results suggest that addition of new data and reanalysis of species lineages of H. substriatus improved our understanding of the evolutionary history of this group of frogs. ENMs provided robust predictions, even when some populations were deliberately excluded from the models. Splitting the lineages based on genetic relationships and analysing the ENMs separately provided insights about the biogeographical processes that led to the current distribution of H. substriatus.