Biogeography and diversity patterns of the endemic fauna in Afro-Arabian region

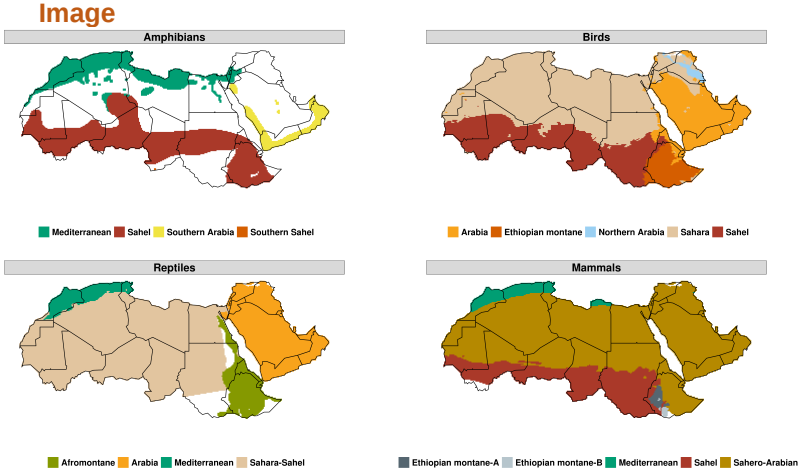
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Abstract

Understanding the diversity patterns and identifying the environmental factors that shape it is essential for ecology and conservation. The afro-Arabian region harbours about one-quarter of the terrestrial vertebrate fauna, many of which are endemic and uniquely adapted to extreme environmental conditions. Yet, this region has been neglected and received less scientific attention, particularly in conservation agenda. We attempted to fill the gaps in knowledge about diversity patterns and bioregion affinities, the biogeographical regionalization, that are essential for prioritizing the conservation effort in the Afro-Arabian region. We retrieved data of the endemic tetrapod classes from IUCN and BirdLife, and identified the endemic richness hotspots and identified the bioregions and their relationship with the environmental factors. Our result showed a broad correlation among the richness hotspots for the endemic tetrapod classes. The main richness hotspots were found in North west of northern Africa along the Mediterranean coast and around the East African rift. We propose classifying the Afro-Arabian region into four discrete bioregions for endemic amphibian and also for endemic reptiles, and five discrete bioregions for endemic mammals and birds. The bioregions identified in this study were shaped by the environmental conditions and the historical geographical processes. The position of the Afro-Arabian region between two continents makes this region as a transitional zone with high level of endemism and species turnover. Our analysis provides a benchmark for assessing the effectiveness of the protected areas network and for the future assessment for biodiversity management.

Image



main bioregions within Afro-Arabian based on the cluster analysis for the endemic tetrapod classes, Amphibians, Reptiles, Birds, and Mammals.

Biography

Alaaeldin Soultan is a PhD candidate in the biology department at Konstanz University and the Max-Planck institute for Ornithology. This study forms part of his dissertation research focusing on the applications of ecological modelling approaches to link the ecological traits of the species with the changes in the environmental conditions. Email: asoultan@orn.mpg.de

Notes/Comments: