

Habitat Suitability, Genetic Diversity and Population Structure of Two Sympatric Fruit Bat Species Reveal the Need of an Urgent Conservation Action

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Abstract : The Livingstone's flying fox (*Pteropus livingstonii*) and the Comorian fruit bat (*P.seyhellensis comorensis*) are two endemic fruit bat species among the mostly threatened animals of the Comoros archipelagos. Despite their role as important ecosystem service providers like all flying fox species as pollinators and seed dispersers, little is known about their ecologies, population genetics and structures making difficult the development of evidence-based conservation strategies. In this study, we assess spatial distribution and ecological niche of both species using Species Distribution Modeling (SDM) based on the recent Ensemble of Small Models (ESMs) approach using presence-only data. Population structure and genetic diversity of the two species were assessed using both mitochondrial and microsatellite markers based on non-invasive genetic samples. Our ESMs highlight a clear niche partitioning of the two sympatric species. Livingstone's flying fox has a very limited distribution, restricted on steep slope of natural forests at high elevation. On the contrary, the Comorian fruit bat has a relatively large geographic range spread over low elevations in farmlands and villages. Our genetic analysis shows a low genetic diversity for both fruit bats species. They also show that the Livingstone's flying fox population of the two islands were genetically isolated while no evidence of genetic differentiation was detected for the Comorian fruit bats between islands. Our results support the idea that natural habitat loss, especially the natural forest loss and fragmentation are the important factors impacting the distribution of the Livingstone's flying fox by limiting its foraging area and reducing its potential roosting sites. On the contrary, the Comorian fruit bats seem to be favored by human activities probably because its diets are less specialized. By this study, we concluded that the Livingstone's flying fox species and its habitat are of high priority in term of conservation at the Comoros archipelagos scale.

Keywords : Comoros islands, ecological niche, habitat loss, population genetics, fruit bats, conservation biology

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