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Ethiopia's enigmatic bamboo-eating Bale monkey strives to persist in forest fragments

This study demonstrates that Ethiopia's unique bamboo-eating Bale monkeys are more ecologically flexible than previously believed. Bale monkeys are endemic to a small geographic range in the southern Ethiopian Highlands and are classified as endangered by IUCN. Their preference on a single species of bamboo (*Arundinaria alpina*), which accounts for 77% of their diet in intact forest, makes this primate unusual. Recently, however, it has been discovered that dozens of Bale monkey populations live in small isolated forest fragments where bamboo abundance is greatly reduced or nearly eradicated. It was therefore necessary to evaluate the impacts of anthropogenic habitat alteration on the ecology, behaviour and population genetics of Bale monkeys by comparing populations in continuous forest and forest fragments. This study found that in response to the reduced food availability and habitat quality in fragments, Bale monkeys modify their ecology and behaviour. In particular, they consume diverse food species (including shrubs, forbs, graminoids and cultivated foods) and spend one-third of their time on the ground, in contrast to their fully arboreal conspecifics in continuous forest. The study also shows major genetic differences (in mitochondrial DNA) between Bale monkeys in continuous forest and fragments. Bale monkeys in forest fragments are closely related to two sister species found in the same area, suggesting that inter species hybridization occurs. These findings suggest that Bale monkey populations in continuous forest and forest fragments should be subject to different management regimes. Although the ecological flexibility documented in this study may help survival, feeding on human crops and spending more time on the ground could give Bale monkeys in fragments enhanced risk of extinction. We recommend taking measures to prevent further deforestation in the Bale monkeys range in order to ensure the sustained survival of the species in southern Ethiopia.