Using Multiple-Covariate Distance Sampling to estimate Djaffa Mountains Guereza (Colobus guereza gallarum) density and abundance across forest fragments in Ahmar Mountains, Ethiopia

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Abstract

A baseline for primate conservation is information on population density. Such evidence, however, is still scarce for tropical forest monkeys, who are under threat from habitat loss due to deforestation, land conversion for agriculture, climate change, illicit hunting, habitat fragmentations, logging, and other disturbances. Detailed studies on population size and ecology of Djaffa Mountains guerezas (C. g. gallarum) in their potential range have not been carried out. This study aims to estimate the density and total population abundance of Djaffa Mountains guereza across the forest fragments in the Ahmar Mountains, Eastern Ethiopia. We conducted line-transect surveys across the selected forests to provide reliable population size using multiple-covariate distance sampling. Between December 2020 and September 2021, we sampled 22 transects, covering a total distance of 93.7 km. Throughout the surveys, we observed 79 Djaffa Mountains guereza groups. There was a considerable difference in encounter rates of a taxon between the forests surveyed. The overall C. g. gallarum density was 16.5 groups/km2 (95%CI = 10.2–24.5) and 83.1 individual density/km2 (95%CI = 50.7–121.1), with an estimated total abundance of 15205 (95%CI = 9288–22163) individuals throughout the studied forests. Our results showed that the population density of a taxon in the Ahmar Mountains is lower than a sister group, C. g. guereza studied in other localities of Ethiopia. We propose that in the research region, analyzing conservation issues, replenishing forest sections, and monitoring C. g. gallarum populations should be a priority.

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