

TO WHAT EXTENT DO NATURAL AND ANTHROPOGENIC FACTORS DETERMINE THE DISTRIBUTION OF BATS IN AN ATLANTIC FOREST IN SERRA DA MANTIQUEIRA, SOUTHEASTERN BRAZIL?

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Bats are the second speciose group of mammals in the Neotropics and are responsible for different ecosystem services, from seed dispersal to pollination, and the control of insect populations. Despite their ecological relevance, several knowledge gaps still exist for this megadiverse group, like which natural factors drive species distribution. Moreover, the effect of rapid changes in human activity during the Anthropocene on the distributions of these species remains unclear. Thus, our goal was to determine to what extent natural (e.g., topography) and/or anthropogenic factors (e.g., population density) may explain the distribution of bats in one of the largest mountain ranges in South America: the Serra da Mantiqueira, one of the largest remaining of highland Atlantic Forest in southeastern Brazil. We compiled data from 110 bat inventories carried out there along 20 years (1998-2018). Later, based on the presence/absence of the 56 bats species and 46 explanatory variables, we used Favorability Function as a modeling algorithm to predict species richness and distribution. Models were obtained for 38 (86.6% of our compiled species pool) species based on 10 best variables, being the three most important the spatial component (84.2%, and contributed positively), pasture (34.2%, and contributed negatively) and presence and extension of roads (31.6%, and contributed positively), respectively. As Serra da Mantiqueira contains some of the largest remnants of the Brazilian Atlantic Forest, we also analyzed the distribution of bats across the existing protected areas and priority areas for nature conservation. We found that only 38% of the area with 10 or more species have more than 70% of their surface protected, while others 62% are either not protected or have < 10% protected. Despite the large protected areas network along the Serra da Mantiqueira, bats are mainly affected by the proportion of pasture in the landscape, mainly located in the lower areas (< 1,000 m a.s.l.). However, 21.9% of the areas with greater favorability are still lacking protection. Ecological corridors, coupled with ecological restoration throughout the region, are extremely necessary.