

ANTHROPOGENIC DISTURBANCE AS AN IMPORTANT FEATURE FOR GIANT ANTEATERS

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RESUMO

Agricultural and urban expansion converts large native areas into crops, pasture and cities, leaving only remnants in different preservation conditions. Habitat-specialist species may suffer local population declines and local extinctions. The giant anteater (*Myrmecophaga tridactyla*, hereafter anteater) is vulnerable at global- and regional-scale, including within São Paulo State, Brazil. It is a myrmecophagous specialist with low basal metabolic rate; therefore, it depends on areas with favorable environmental conditions and resources for thermoregulation. Moreover, it is vulnerable to hunters, vehicle collisions and dog attacks. Considering this, we aim to: i) understand how environmental characteristics influence landscape use by anteaters; ii) evaluate the spatial overlap between anteaters and dogs; and iii) evaluate the anteater activity pattern, considering environmental temperature, proximity to areas of high human density, and the presence of dogs. For these purposes, we used 58 sites with camera-traps and temperature data-loggers installed in Furnas do Bom Jesus State Park (São Paulo, Brazil) and its surroundings. The records comprised detection/nondetection data of anteaters and dogs. Covariates related to vegetation and anthropogenic use (i.e. forest; savanna; pasture; coffee plantation; buildings; water bodies; protected area; urban area; unpaved and paved roads; slope and dogs) were evaluated in single-species/single-season occupancy models with heterogeneous detection probability (Royle-Nichols occupancy models) corrected for small samples using Unmarked and AICcmodavg packages from RStudio®. For spatial overlap between anteaters and dogs landscape use we used the prediction of landscape use based on the model average for each species and employed the kernel density tool in ArcGIS®. To evaluate activity pattern, we used von Mises kernel density estimation for circular data and to evaluate the overlap in anteater and dog activity patterns, we used the density overlap coefficient, both using Overlap package from RStudio®. We found a high use by anteater's near/inside the protected area ($\Delta\text{AICcWt}=0.68$; $\beta=-0.43\pm 0.16$), savanna ($\Delta\text{AICcWt}=0.27$; $\beta=0.15\pm 0.07$), unpaved roads ($\Delta\text{AICcWt}=0.36$; $\beta=0.54\pm 0.22$) and frequency of dogs ($\Delta\text{AICcWt}=0.48$; $\beta=0.17\pm 0.08$). Landscape use by dogs was influenced positively by urban area ($\Delta\text{AICcWt}=1$; $\beta=-0.94\pm 0.21$) and prey ($\Delta\text{AICcWt}=0.31$; $\beta=0.14\pm 0.11$). The landscape-use predictions for both species presented evidence of high spatial overlap when plotted in a map, supported by the influence of dogs' frequency in anteaters' models. Anteaters had crepuscular- nocturnal activity, considering data from both seasons, and was most active in mild

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temperatures, (18°C to 28°C). During the cold season, the species was predominantly nocturnal when near buildings and unpaved roads (anthropogenic areas), while it had crepuscular activity far from them. Anteaters also showed a high segregation degree in activity with dogs ($\Delta=0.49$, $IC=+0.58-0.37$), whose activity was predominantly diurnal. Our findings support the importance of protected areas for anteaters' conservation, particularly those with savanna habitats. We also highlight the importance of these findings in urban expansion projects situated close to protected area. Management plan for the area should also consider the high density of free-ranging dogs, which occur throughout the protected area. The anteaters seem to change their behavior near anthropized environments even if the temperature is not favorable to activity, which may be evidence of human pressure on the population.

PALAVRAS-CHAVE: Alien species, Cerrado, Environmental temperature, Protected area.