

THE IMPORTANCE OF LOCATION: EVALUATING MANTLED HOWLER MONKEY SPATIAL FORAGING DECISIONS FOR NEIGHBORHOOD EFFECTS

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Primates repeatedly exhibit non-random travel patterns, which are often examined in relation to the characteristics of specific fruiting trees. However, the likelihood of a primate traveling to a particular tree may not only depend on the characteristics of the tree itself, but also upon the characteristics of the surrounding trees or 'neighborhood.' This study uses spatially-explicit techniques to quantify the relative importance of individual tree and neighborhood characteristics on the travel patterns of four mantled howler monkey groups (*Alouatta palliata*) on Barro Colorado Island, Panama. Spatially-explicit discrete-choice models indicate that long-distance movements by howler groups were not significantly related to individual tree characteristics (e.g. large crops of fruit or leaf flush). Instead, howlers consistently traveled long distances to reach fruiting or flushing trees that were surrounded by other important resources, which when considered collectively represented a large percentage of the available fruit within a group's home range at that time. The size of the neighborhood impacting foraging decisions and the significance of the effect increased with group size. Comparisons of individual based movement models with observed movement patterns suggest that observed neighborhood effects were most consistent with targeted movement strategies such as resource maximization, and could not be explained by simple movement patterns such as random walks or travel along sensory gradients. Results stress the importance of utilizing spatially-explicit analyses, and indicate that incorporating neighborhood characteristics in primate space-use models may improve our understanding of both how primates make spatial foraging decisions and the scale at which they are made.

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