

GEOSPATIAL MODELING OF FACTORS PREDICTING BEARDED CAPUCHIN TOOL USE IN BOA VISTA AND ACROSS THE CERRADO OF BRAZIL

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Researchers at the University of Georgia (UGA) and the University of São Paulo (USP), Brazil are modeling biological and physical factors related to wild bearded capuchin monkeys' (*Cebus libidinosus*) use of anvils and stone hammers to crack open palm nuts and other tough foods in the dry and open Cerrado and Caatinga woodland habitats of northeastern Brazil. An image and geographic information system (GIS) geodatabase was constructed to model environmental factors predicting anvil sites within the Boa Vista study site in Piauí, Brazil. Four factors, normalized difference vegetation index (NDVI), vegetation type, distance to slopes > 20% and ≤ 40% and distance to slopes > 40% and ≤ 60% were found to be most highly correlated with anvil sites through the use of multiple logistic regression models. Using reserved anvil locations to test the models, approximately 90 percent of the predicted site and non-site locations were accurate. Researchers also visited sites in Goiás and Piauí, Brazil in 2009 to further assess the accuracy of model predicted anvil sites and approximately ten new anvil sites (anvils, hammer stones and cracked nuts) were found. The geospatial model is currently being expanded to predict capuchin tool use within the broader Cerrado landscape beyond the Boa Vista study area. Techniques include the use of medium-resolution satellite images (e.g., Landsat, ASTER and MODIS) and the recently released 30-m ASTER Global Digital Elevation Model (GDEM) to refine stream slopes and improve habitat suitability for the presence of ground palms, anvils and hammer stones.

Keywords: modeling, geospatial analysis, tool use, bearded capuchin monkeys