

## A SMALL BALL SPINNING AROUND IN THE REMAINING FOREST: OCCUPANCY OF *TOLYPEUTES MATACUS* IN AGRICULTURAL LANDSCAPES

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### RESUMO

Land-use change is a major driver of biodiversity loss at global scale. In the Gran Chaco Americano, agricultural expansion is one of the biggest threats to its unique biodiversity, including several xenarthran species of conservation concern. However, for many of these species, the relationship between habitat use and distribution and the agricultural landscape, its composition and configuration, remains understudied. The southern three-banded armadillo (*Tolypeutes matacus*) is fairly abundant in North-central Argentina, mainly associated to the Chaco Region, yet its populations are heavily exploited and hunted as a food resource by the local communities. Likewise, habitat fragmentation resulting from deforestation increases hunter access to formerly remote areas, hence pushing the species to a steady decline. Here, we analyzed the effects of landscape composition and configuration on the occupancy of the southern three-banded armadillo in the Argentine semiarid Chaco. We assessed two specific questions: 1) what are the most important characteristics of the landscape determining the occupancy of this species; and 2) what is the most appropriate spatial scale to detect the relationship between the species occupancy and the surrounding landscape. We used camera-trap data collected at 124 sites between 2013 and 2017 (a total of 3442 camera-trap nights). We modelled the detection and occupancy probability of the species using predictor variables that described the sampling design and the conditions of the sites, as well as the landscape composition and configuration at different spatial scales. The southern three-banded armadillo occupancy is strongly related to the amount of forest at a large spatial scale, mostly present in sizable forest patches inside protected areas or private natural reserves. Surprisingly, variables measuring landscape structure at the local scale (minimum, mean and maximum recorded home range) had only little influence. Our results suggest that agricultural landscapes in the semiarid Chaco do not represent a suitable habitat for this species, even with local conditions of relatively high forest cover and quality matrix. Accordingly, large forest patches at the landscape scale represent a key element on the persistence and survival of the species. Previous studies have already emphasized the relentless pressure that hunting represents for the southern three-banded armadillo, whereas recent evidence demonstrates the synergistic negative effect of habitat destruction and hunting pressure for several chacoan species. We conclude that, in agricultural landscapes, where forest clearance and fragmentation have facilitated human access

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for decades, the persistence of the southern three-banded armadillo is seriously compromised. Contrarily, areas encompassing large patches of remaining forest, mainly public or private protected areas with some hunting control enforcement, constitute a safer ground for this species. The information derived from this study indicate the urgent need for the implementation of land-use planning and management strategies aimed to balance biodiversity conservation and agricultural expansion.

**PALAVRAS-CHAVE:** Biodiversity loss, Camera-trapping, Land-use change, Semiarid Chaco, Southern three-banded armadillo

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