

# Unveiling the hidden impact: Wildlife roadkill assessment in the Paraguayan Chaco

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## Abstract

The incidence of wildlife roadkill significantly threatens the persistence of wildlife populations and disrupts the ecological functionality of ecosystems. This study investigates the impact of roadkills on wildlife in the Paraguayan Chaco, focusing on a 250-km segment of Route 9 'Dr. Carlos Antonio López' between Villa Hayes and Pozo Colorado. We conducted a road survey for 15 months and recorded 2338 carcasses, identifying 87 species, with mammals (41.3%), reptiles (32.3%) and birds (19.8%) being the most observed groups. The species most frequently killed included *Cerdocyon thous*, *Caracara plancus*, *Thamnodynastes hypoconia* and *Procyon cancrivorus*. We also recorded species with conservation concern. Additionally, we estimated mortality rates by accounting for sampling errors such as carcass removal and searcher efficiency, revealing annual roadkill rates of 5183 mammals, 19 402 birds and 5020 reptiles on the 250 km per year. Spatial analysis using Ripley's K statistic and HotSpot Identification highlighted significant variation in roadkill distribution across different taxonomic groups and seasons, with 51 km of road identified as hotspots when analysing all groups together. Notably, there was minimal overlap in hotspot locations between seasons and taxonomic groups, emphasizing the need for targeted mitigation strategies. Our findings challenge previous macroecological assessments suggesting low roadkill rates in Paraguay, underscoring the importance of local studies in accurately assessing ecological impacts. This study provides critical baseline data for conservation efforts and calls for further research to develop and implement effective roadkill mitigation strategies in Latin America, especially in Chaco region.