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Spatial patterns of road kills: a case  
study in Southern Portugal

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# Spatial patterns of road kills: a case study in Southern Portugal

## Abstract

Roads promote high levels of animal-vehicle collisions and have one of the most visible man-made impacts on wildlife. In Portugal, SW Europe, very few ecological studies have focused on the impacts from roads on vertebrates. Knowledge of the main factors driving the emergence of hotspots of vertebrate mortality is still scarce. A segment of a main road 26-km long was sampled by car at an average speed of 20 km/h every two weeks for two years (54 surveys) between 1995 and 1997, collecting all road-killed specimens found. We defined road sections with high collision rates, or vertebrate-mortality hotspots (VMH), by detecting clusters of animal collision locations. The analysis was conducted by comparing the spatial pattern of road kills with that expected in a random situation. In such a condition, the likelihood of collisions for each road section would show a Poisson distribution. Differences of explanatory variables between hotspots and low-mortality sections were evaluated with the Mann-Whitney U-test. Also, a direct-gradient analysis (Canonical Correspondence Analysis (CCA)) was executed with the mortality rates of the 24 most-killed species and the explanatory variables considered. A total of 2421 vertebrate road-killed specimens were collected, which corresponded to nearly 46 specimens per 0.5 km per year. Eighty non-domestic species were recorded. Several sections were defined as VMH, both for all observations and for each vertebrate class. Results suggested that some road sections should receive particular mitigation actions given that mortality hotspots may arise, particularly sections where montado is the dominant habitat and where stream and other water courses run nearby and parallel to the road.

Ascensão F and Mira A. 2006. Spatial patterns of road kills: a case study in Southern Portugal. IN: Proceedings of the 2005 International Conference on Ecology and Transportation, Eds. Irwin CL, Garrett P, McDermott KP. Center for Transportation and the Environment, North Carolina State University, Raleigh, NC: pp. 641-646.