

# The risk of being hungry: influence of prey availability in verges on predator roadkills.

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**Abstract:** Road verges may provide important refuges for small fauna, particularly when roads cross intensive agricultural or grazed landscapes. In these circumstances, the increasing use of verges by important prey species may attract predators to road surroundings increasing the likelihood of their roadkill. The main goal of this study is to evaluate the importance of prey abundance (rabbits and small mammals) in verges on predator road fatalities. We analyzed this effect on different kinds of predators including snakes, owls and mammal carnivores. The study took place on a 10km stretch of a main National Road (EN4) in southern Portugal. Small mammal abundance was evaluated as the number of animals caught at 200 Sherman live traps, located at 50 m interval along the road. Rabbit counts were assessed in ten morning car cruises, moving at a constant speed of about 20km/h. Landscape and road characteristics were also considered in the analysis. Relationships between predator mortality and explanatory variables (prey abundance, landscape and road features) were evaluated by means of Generalized Linear Models (GLM) and multivariate Redundancy Analysis (RDA). Explained variance of each group of explanatory variables was accounted through a Variance Partitioning procedure. Our results show that prey abundance on verges enhances the likelihood of predator mortality, even though landscape attributes explain the main variation in predator road-kills. Among preys, Wood Mouse and Rabbits were the species that most contributed to this outcome. In contrast, road features were the group of variables with lower power in explaining predator fatalities. Therefore, actions aiming to mitigate predator roadkills must consider the management of vegetation on verges in order to diminish prey abundance in these areas, thus reducing predator attractiveness. On the other hand, such treatments may jeopardize one of the most important refuges for small fauna when roads cross intensively grazed and agricultural areas.