Roadkilling wildlife in southern Spanish oak woodlands

Juan D. Delgado, Natalia Arroyo, Jorge Durán, Alexandra Rodríguez, Antonio Rosal, Valle Palenzuela, Jesús R. Sánchez

Roads are likely to produce heavier impacts where wildlife populations are dense, have susceptible or vulnerable species, vehicle traffic is more intense and speed is higher. Animal mortality also depends on seasonality, landscape configuration and road permeability among other factors. We assessed the role of motorized traffic on roadkill rates of wildlife on asphalt roads dividing southern Spanish rangelands ("dehesas"), oak woodland pastures where livestock growing is combined with agroforestry and hunting. Four road segments of the Sierra Morena range (Huelva and Seville provinces) were surveyed two times (autumn-winter 2009-2010 and spring-summer 2010). Total road length (53 km) was walked along both roadsides (overall length walked = 106 km) on each field season by 1-4 trained observers at ~1 km/h. Asphalt right-of-way and road verges and ditches were exhaustively inspected for all dead vertebrates, which were georreferenced and identified to the lowest taxonomic level possible. All real and putative wildlife passages (mainly drainages and cattle tunnels) were spatially referenced to contrast roadkill data with potential road permeability. Nearly 400 casualties classified into 66 species were recorded, including 5 amphibians (1 newt, 2 frogs and 2 toads), 7 reptiles (2 lizards, 1 blind snake, 3 snakes and 1 turtle), 37 birds and 18 mammals. Composition and percentage casualties per species differed greatly between seasons and roads. Proximity to villages, traffic density and traits of species (i.e. habitat selectivity) were partially responsible of the roadkill rates in the road sink, as well as animal community structure of the habitat sources.