

# PROTECTING THE PROTECTED THROUGH ASSESSING DRIVER BEHAVIOUR IN KRUGER NATIONAL PARK, SOUTH AFRICA

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## ABSTRACT

Growing concern about the ecological effects of roads has led to the emergence of a new scientific discipline called road ecology. The goal of road ecology is to provide planners with scientific advice on how to minimise or mitigate negative environmental impacts of transportation. To date, South African road ecology studies have focused primarily on roadkill rates, with results highlighting the need not only for a greater understanding of the primary determinants of roadkill and its threat to biodiversity, but also the indirect effects of the country's roads on wildlife. Direct collision is the most evident impact due to its visual nature, but the disruption of ecological processes is equally important. Loss of habitat, habitat fragmentation, degradation of habitat, road and railway avoidance, increased human exploitation, reduced access to habitats, population fragmentation and disruption of processes which maintain regional populations are just some of the ways in which roads can affect biodiversity. Notwithstanding, collisions with large mammals are also a threat to human safety and represent an economic cost to society.

South Africa's protected areas are the prime custodians of biodiversity, for which tourism is an important revenue earner, currently accounting for 7.9% of GDP and supporting one in every 12 jobs in South Africa. With approximately 10 million visitors per year, wildlife is a key product of protected areas and highly sought after by visitors. However, with large numbers of visitors, Wildlife-Vehicle Collisions (WVCs) commonly occur. Tourism is expected to grow significantly in South Africa by 2020, leading to more vehicles within protected areas and the potential for more WVCs. In 2014, the Endangered Wildlife Trust initiated a six-year project in response to social media discussions which highlighted public concern for WVCs inside protected areas.

Six protected areas in South Africa were identified for the project, reflecting different biomes, road types and visitor volumes, to examine the impacts of roads and driver behaviour on wildlife mortality in protected areas. Research has already been undertaken in Pilanesberg and Addo National Parks, with current research ongoing in Dinokeng Game Reserve and Kruger National Park.

Innovative strategies are required to minimise the ecological impact of roads as well as improve people's livelihoods. We investigated factors affecting the likelihood of WVCs within Kruger National Park, and assessed the comparative effectiveness of wildlife-warning signage (WWS) for altering driver behaviour. We laid a dummy snake on straight

paved roads and recorded 10 driver-related variables for 100 vehicles that passed, or collided with the dummy snake. Further to this, we then investigated the effectiveness of signage in modifying driver behaviour by erecting six variations of WWS, depicting either a snake, kudu, cheetah and a speed camera. We positioned the dummy snake 100 m after the signage and recorded our 10 variables (n = 400 vehicles).

We discuss our findings from Kruger National Park and compare this to research already undertaken in Pilanesberg National Park. In the latter park, 61% of drivers who passed a WWS changed their behaviour when they saw the dummy snake, compared to 37% with no sign present. Further, this behaviour change significantly reduced collisions, with 98% of drivers positively altering their behaviour and generally abiding by the recommended speed limit (40 km/h). By comparison, drivers in Kruger National Park often exceeded park speed limits when no WWS was present but did modify their behaviour with the presence of a WWS. The collective findings of the project will contribute towards a traffic management plan for protected areas.