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Publication Date

2001-09-24

MODEL FOR ESTIMATING WILDLIFE MORTALITY ON ROADS AND ITS IMPLICATION FOR MITIGATION AND MANAGEMENT

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Abstract

Project funding: National Park Service/Saguaro National Park

Total funds: \$50,000

Project Period: 1994-2001

In an attempt to understand the effects that roads were having on wildlife in Saguaro National Park, weekly wildlife mortality surveys were conducted from 1994-1999. From our survey data and additional data collected on scavenging rates, observer error and episodic weather events, we developed a model to estimate the average annual number of animals killed on roads in and adjacent to the Park. This model accounts for variables (i.e., observer error, scavenging, episodic events, and taxonomic differences in activity periods) that we knew existed and affected the accuracy of our weekly survey data. Developing the model required us to identify all relevant parameters to consider/measure when designing road mortality studies; thus, it has implications for future studies. Our model is very conservative in that it underestimates all variables and it does not account for animals that are hit and killed off the road. Based on our model, we estimate that about 22,000 animals are killed on the 50 miles of roads that lie in or adjacent to both districts of Saguaro National Park, including about 6,000 toads, 7,000 lizards, 1,400 snakes, 1,400 birds and 6,000 mammals. The implications of these numbers to local wildlife populations varies, but seem to be impacting some species (i.e., the Colorado River toad) at a population level. Along with spatial analysis of the data, these figures enabled us to identify locations and types of mitigation that might be most useful to wildlife in the Park.