Factors Influencing the Frequency and Composition of Mammalian Carnivore Road Mortality

*Forrest Cortes*

Road mortality has been implicated as the most important transportation-related influence on wildlife populations (Gribo et al. 2012; Bateman and Fleming 2012). Some studies point to road mortality as a critical factor leading to localized extinction events of species such as the Eurasian badger (Lankester et al., 1991). As human expansion into rural areas continues and transportation networks grow, these effects will become more pronounced.

However, despite the strong evidence linking roadways to negative impacts on wildlife, knowledge about the distribution and composition of road mortality incidents is incomplete for many regions and landscapes. While studies have been conducted internationally and in some parts of the United States, there have been no studies that analyze the factors that influence road mortality in the pine-dominated landscapes of the Southeastern United States. Therefore the purpose of this study is to determine the species composition and distribution of mammalian carnivore road mortality in East-Central Alabama and to correlate mortality data with other data variables including speed limit, traffic volume, and distance to nearest vegetation.

In this study, we investigated the variables that contribute to the mortality of carnivores on the road. We drove predetermined routes along 2-lane and 4-lane roadways and counted roadkill carcasses within the shoulders of the road. Carcasses were identified to species, and geographic coordinates of carcass locations were loaded into GIS software for analysis.

Virginia opossum (*Didelphis virginiana*) and raccoon (*Procyon lotor*) carcasses made up approximately 80% of roadkill incidents on our sampled routes. Other recorded species included the nine-banded armadillo (*Dasypus novemcinctus*), gray fox (*Urocyon cinereoargenteus*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), and bobcat (*Lynx rufus*). Additionally, our results suggest that road kill sites were significantly closer to vegetation than randomly generated points. Specifically, our results indicate that with each 10-meter increase in distance toward vegetation, a site was 1.24 times as likely to be a road kill site; however, this research is still in progress. With data collection complete, we are in the process of analyzing the correlation of road mortality to speed limit, and traffic volume.

Results of this study may be used to better plan roadway expansions to mitigate wildlife-vehicle collisions. Utilization of results from the current study and those of other road mortality studies, may help planners to develop better ways to protect drivers, reduce costly vehicle damage, and minimize harm to proximate wildlife populations when expanding and creating roadways.

**Statement of Research Advisor:**

Forrest’s project required him to drive roads to collect new data on the locations of road-killed mortality, extract data on the characteristics of road-kill and random sites using Google Earth, and collect existing data on road characteristics of sites from government agencies. The results of his study can be used to make recommendations for minimizing road-kill of carnivores here in Alabama, and potentially elsewhere.

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