

NON-INVASIVE ASSESSMENT OF BLACK BEAR MOVEMENTS AND ABUNDANCE RELATIVE TO U.S. 98 WITHIN THE AUCILLA WILDLIFE MANAGEMENT AREA

PROBLEM STATEMENT

Vehicle-related deaths (roadkill) are the primary mortality factor that Florida Fish and Wildlife Conservation Commission (FWC) has documented for the Florida black bear (*Ursus americanus floridanus*) statewide since 1976. Between December 2001 and March 2002, six black bears were killed on a section of U.S. 98 within the Aucilla Wildlife Management Area (Aucilla WMA) in southeastern Jefferson County, Florida. Previous research identified the U.S. 98 study interval as a principal roadkill area (Simek et al. in press, Gilbert and Wooding 1996), using roadkill data from 1976 to 2004 and 1976 to 1995, respectively. Other studies, Smith et al. (1998) and Schaefer and Smith (2000), identified segments along the U.S. 98 study interval as high priority highway ecological zones. An accurate population estimate of black bears in the vicinity of the Aucilla WMA, together with the frequency and locations of black bear crossings along U.S. 98, is needed to assess the impact of this highway on the black bear population in the Aucilla area and to evaluate the future needs for improved habitat connectivity features.

OBJECTIVES

The objective of this study is to assess the movements (number and locations of black bear crossings) and abundance of black bears in the study area relative to U.S. 98 within the Aucilla WMA and adjacent lands in southeastern Jefferson County. The study is designed to (1) generate an estimate for the black bear population in the Aucilla area, (2) assess the effect of roadkill on the local black bear population, and (3) assess specific road crossing locations and rates correlated with various parameters.

FINDINGS AND CONCLUSIONS

Population estimate calculations failed to provide a reliable estimator as a result of a small generated sample size, low recapture rates, few new captures in certain sampling periods, and model closure violation. The number of black bears identified through genetic analysis (n=48) captured in both the population and crossing snares was used to derive an approximate density (0.097) for this study period (May 2003-May 2004). These results indicate a moderately high rate of genetic drift during a period of relative genetic isolation. The results from this study have demonstrated that habitat differences, intersecting roads, and seasons impact black bear crossing rates; however, none of the tested variables had an effect on black bear roadkill. There is an increased occurrence of black bear crossings at intersecting roads, but there is no correlation between black bear crossings and roadkill. There were a total of 28 roadkill black bears recorded between September 1983 and December 2004 within the effective sampling area. The sex ratio of roadkill bears was skewed towards females and the age ratio was skewed towards younger bears. The majority of documented roadkill within this

period occurred during the Fall. Two of these roadkill occurred during the present study period. It should be noted that collection and analysis limitations restricted the usefulness of the results.

To address elevated crossing and roadkill activity concurrently for all seasons, wildlife crossings should be considered on the study interval of U.S. 98. Florida Department of Transportation (FDOT) engineers will need to conduct on-site evaluations of these segments to determine whether to install underpasses or overpasses based on the existing environmental conditions. Location of the placement of the wildlife crossings is critical to the success of these crossings (Land and Lotz 1996, Walker and Baber 2003). These structures would facilitate the apparent black bear movement within the Aucilla area and toward coastal resources found in the St. Marks area and adjacent lands. Additionally, these conservation measures may significantly decrease bear mortality, increase driver safety, and benefit multiple species while ensuring connectivity to conservation lands for this expanding population of genetically distinct black bears.

Researchers provide a series of recommendations based on this research that should be useful for installing wildlife crossings. Future study of this issue should encompass a larger area and include habitat north and south of both U.S. 98 and U.S. 19 to document black bear movements in this localized corridor relative to these major roadways. If development and improved road networks are planned for the Aucilla area, precautions and mitigation measures for the black bear must be taken into account on all roads in the area (i.e., direct impacts, cumulative effects, and secondary effects).

BENEFITS

The findings and recommendations provided through this research can assist FDOT with the current replacement of the Aucilla River Bridge Project and future projected road manipulation projects. FDOT can use models such as Smith et al. (1998) to integrate road projects with state conservation lands and greenway projects, scenic byway developments, FWC species and habitat management goals, etc., as well as to minimize impacts on black bears and other wildlife species and determine projected mitigation requirements.

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