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USING GENETICS TO STUDY ROAD IMPACTS ON BEARS IN FLORIDA

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Abstract

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Total Budget: \$407,000

Project Period: April 2001 – April 2004

The Florida Fish and Wildlife Conservation Commission (FWC) has documented an increase in the number of transportation-related bear deaths (roadkill) since the late 1970's. In addition to impacts on bear populations, vehicle collisions with bears often are traumatic for the people involved and may cause significant collateral damage and personal injury. For these reasons, and because of the lack of definitive information on the subject, the FWC partnered with the Florida Department of Transportation to design a project that would quantify the impacts of roadkill on bear populations in Florida. Our study design incorporates two main features: population size enumeration and range delineation for bears in six core areas across Florida. As genetic analyses have improved and laboratory costs decreased, DNA techniques have been used for a wide variety of studies on bears. Our methodology involves sampling bears via hairs left on barbed wire strands surrounding bait sites (hair snare) randomly placed in a systematic grid across each study area. We will then derive population abundance estimates by using individual identification from the DNA analysis within a mark-recapture framework. We will determine both core and peripheral bear range across Florida. Core bear range is defined as that which contains breeding females and peripheral range as that which contains bear signs but no evidence of breeding females. Using an estimate of minimum patch size needed for bears, we sectioned the entire state into 10,000-acre blocks to determine whether bears are present or absent in each block. We polled local residents and area biologists to help ascertain areas occupied by bears. We will extrapolate densities derived from the mark-recapture abundance estimates to the entire area of core bear range within each of the six areas. The final product will be a detailed range map and corresponding population estimate for each of the core populations. We will calculate the impacts of roads within each core population and across the state by determining the proportion of roadkill in relation to abundance estimates derived from the DNA analysis. The numbers generated from this analysis will be compared to literature and published data on sustainable mortality rates for black bears. We will document and examine the relationship between roadkill, road density, traffic volume, and estimated abundance for trends in these parameters. We will identify areas of significant impact and, if necessary, make recommendations on how to improve the relationship between roads and black bears in these areas. Lastly, we will examine the updated bear range maps for signs of fragmentation and isolation related to roads.

Biographical Sketch: Thomas Eason is a wildlife biologist who has spent most of his career studying the American black bear. Thomas has completed his B.S. (at Virginia Tech) and M.S. (at the University of Tennessee) in wildlife science and his Ph.D. (at the University of Tennessee) in ecology. Thomas has conducted fieldwork throughout the Southeast including study sites in: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Tennessee, and Virginia, and has handled several hundred bears during this work. Thomas was the bear management section leader for four years and is now chief of the Wildlife Diversity and Conservation Bureau for the Florida Fish and Wildlife Conservation Commission.

Stephanie earned a B.S. in wildlife science (at Virginia Tech) and M.S. in environmental science and forest biology (at SUNY College of Environmental Science and Forestry). She is currently pursuing a Ph.D. in Geography through Florida State University. Stephanie has spent over 12 years working on American black bear research and management programs. She has worked with both captive and free-ranging bears in Virginia, New York, Washington and Florida. She has been working as the assistant bear management section leader for the past two years. Currently, she manages a statewide bear population study, and is collaborating on numerous projects including privatizing nuisance bear response and establishing local working groups.

Web Site

<http://wildflorida.org>