

SR 200 WILDLIFE IMPACT STUDY

PROBLEM STATEMENT

Ross Prairie is a 6,500 hectare (16,000 acre) reserve in Marion County that serves as an important habitat node in the Marjorie Harris Carr Cross-Florida Greenway. This diverse ecosystem is a mosaic of many habitat types, including bottomland hardwood swamps, pine flatwoods, wet prairies, and longleaf pine-wiregrass sandhills. Resident wildlife include many rare and listed species, such as the eastern indigo snake, the gopher tortoise, the Florida scrub jay, the Florida mouse, and the Florida gopher frog. SR 200 is a major two-lane state highway that bisects the reserve. Average annual daily traffic level is about 11,000 vehicles. However, rapid growth and development in Marion County have necessitated widening the road to four lanes.

OBJECTIVES

The main objective of this project was to determine current and potential impacts of SR 200 on wildlife resources in the Ross Prairie conservation area. The investigative methods included road-kill and track surveys, mark-recapture and telemetry studies, and GIS analysis.

FINDINGS AND CONCLUSIONS

Each of the aforementioned methods was used to evaluate road impacts on different taxa. This multi-species approach was used to determine the effects of the road on the presence and movement behavior for suites of wildlife (e.g., primarily carnivores, selected herptiles, and small mammals).

Successful and unsuccessful wildlife crossing locations were determined by performing road-kill and track surveys. The project area was surveyed three to five times per week between May 2002 and December 2004. Firebreaks adjacent and parallel to the highway were monitored for animal tracks from September 2002 to April 2004 by dragging a 1 m wide chain-link harrow behind an ATV. Track paths were checked 1-2 times weekly for carnivore, ungulate, snake, and turtle tracks. The mark-recapture study was conducted along the road right-of-way (ROW) to determine species presence, habitat use, and movement behavior of small mammals, and various herptiles. ROW trapping was conducted five days per week from May 2002 to December 2004. The radio-telemetry work targeted wide ranging species (bobcat, coyote, and eastern indigo snake) and key indicator species (gray fox, gopher tortoise, and eastern diamondback rattlesnake).

GIS data layers were used in conjunction with the results of the telemetry, track, mark-recapture, and road-kill studies to conduct analyses to predict movement patterns and behavior of individual species (and collective groups of taxa) in response to the expansion of SR 200.

The results of the road-kill surveys included 759 individual animals from 57 identifiable species, the majority of which were anurans (i.e., frogs and toads), followed by meso-mammals (i.e., with a body mass between 5.5 lbs. – 55 lbs). Critical locations of significant numbers or rare species of road-kills by taxa were identified. A total of 537 sets of whitetail deer, 481 sets of carnivore, and 474 sets of snake tracks were recorded. Track site hotspots were identified for snakes, white-tail deer, and carnivores. In most instances, these correspond to the same locations identified as road-kill hotspots.

A total of 1,777 herptiles were captured in right-of-way drift fence traps. Southern leopard frogs and Florida gopher frogs were most abundant. The two sandhill crossings and the wetland basin were important from a population density standpoint as well as for attempted crossings. Individuals of several species of snakes, frogs, and lizards were recorded crossing the road in the two sandhill crossing sections, and moving to/from the Ross Prairie wetland basin. Of 342 small mammals captured, one cotton mouse was recorded crossing the road. In addition, only six were found as road-kills. Apparently, the road is a significant barrier to small mammal movement.

Fifty gopher tortoises were captured and marked. The average home range of the 18 gopher tortoises monitored in burrow colonies adjacent to the road was 3.14 hectares (i.e., 7.75 acres). Only three attempted crossings of SR 200 were recorded: two were successful and one resulted in death. Tortoises used habitat as close as 10 to 20 meters (i.e., 32.8 to 65.6 feet) from the pavement. For gopher tortoises, the road is a semi-permeable barrier. Successful crossings are possible; however, tortoises' poor mobility increases their risk of collisions with vehicles.

Researchers captured 24 eastern indigo snakes from the entire study area, observed 2 others, and encountered 5 road-kills. The home range of the 13 eastern indigo snakes monitored averaged 10.3 hectares (25.45 acres). Considerable overlap of habitat use occurred, except between large adult males. The areas of highest density of eastern indigo snakes coincided with gopher tortoise colonies and sandhill communities. The individuals tracked seemed to use the road as a home range boundary. Of course, because of road-kills, there is confirmed evidence that road crossings occur.

Only 5 bobcats, 2 coyotes, and 1 gray fox were captured and used in the carnivore telemetry study. However, observations, track, and scat evidence suggest that a significantly higher number of these animals are present in the Ross Prairie area. Known human-related mortality for those captured was high (50%). Average home range size was 13.67 km² for bobcats. Based on telemetry and observational data, the size and configuration of the core area (a significant amount of edge habitat and high road density), and the level and sources of mortality, researchers determined that the Ross Prairie core area can only sustain a small number of bobcats, perhaps 8 to 10. Most radio-collared felids avoided SR 200 or used it as a home range boundary, while the radio-collared canids commonly crossed major roads.

BENEFITS

This study has provided information that will prove useful for determining the appropriate mitigation efforts that can be included in the SR 200 road-widening project. The data and recommendations provided in the research will allow for informed decision-making with regard to barriers and other countermeasures that can be employed to improve habitat connectivity and eliminate road mortality.

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