

Black Bear Crossings

Identifying Suitable Locations for Black Bear Crossings in Florida

Introduction

Florida Black Bears (*Ursus americanus floridanus*) are the only species of bear found in the Sunshine State. They are the state's largest land mammal and a conservation success story. Today, there are over 4,000 Black Bears, but in the 1970's there were only several hundred (Florida Fish and Wildlife Conservation Commission). Even though Black Bear numbers have steadily increased, they still face issues due to habitat loss caused by increasing human population and the increasing Black Bear population. Much of the Black Bear's habitat is intersected with major highways and roads. This is problematic because cars hit Black Bears crossing busy roads, which can be fatal for both Bears and humans.



In Florida, collisions are responsible for 90% of the known Black Bear deaths. Florida has taken several precautions to decrease Black Bear collisions such as creating wildlife crossings, posting warning signs, providing information at rest stops and limiting road speed, but Black Bear collisions are increasing every year. One solution to reduce Black Bear collisions would be to build a new wildlife crossing for Black Bears. Currently, in Florida, there are only 4 official bear crossings and 71 other wildlife crossings. A new wildlife crossing would hopefully mitigate the number of Black Bears and humans impacted by collisions each year.

Data Sources

ESRI ArcMap 10, Florida Fish and Wildlife Conservation Commission Open Data (2015-2017), Florida Geographic Data Library (2011), Florida Department of Environment Protection Geospatial Open Data (2004-2016) and MyFlorida.com (1976-2016).

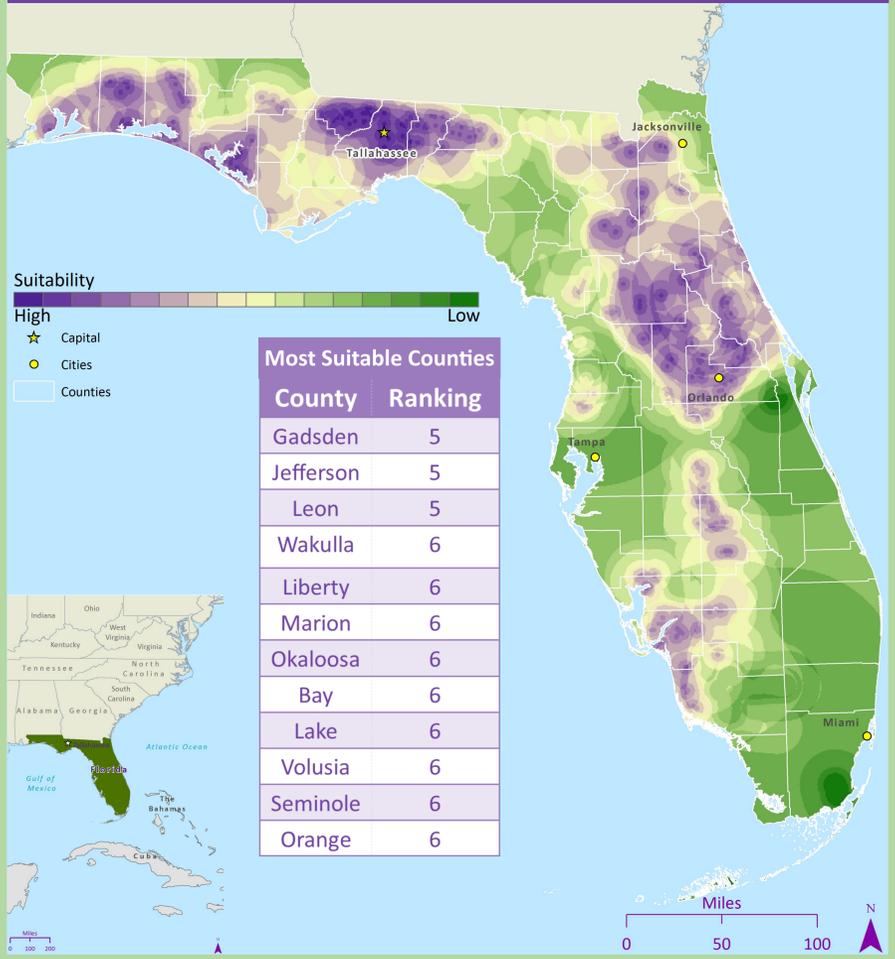
Acknowledgments

I would like to thank Carolyn Talmadge and Catherine Ressijac for all their knowledge, help and support throughout the semester and over the course of this project.

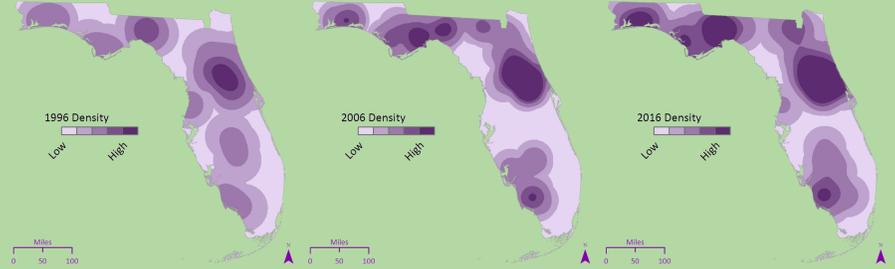
Projection

NAD_1983_2011_Florida_GDL_Albers

Unweighted Suitability Analysis for Black Bear Crossings



1996 Collision Density 2006 Collision Density 2016 Collision Density



Methods

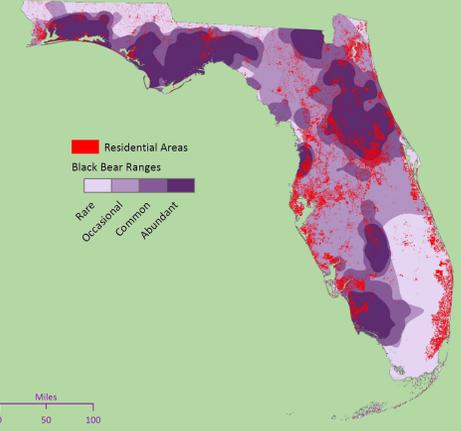
An unweighted suitability analysis was performed in order to determine the best location for a new Black Bear wildlife crossing in Florida. For this analysis, five main factors were examined: Black Bear range, Black Bear collision density, road density, current wildlife crossings locations and open space along major roads. The data was acquired from Florida Fish and Wildlife Conservation Commission Open Data, Florida Geographic Data Library, Florida Department of Environment Protection Geospatial Open Data, MyFlorida.com and EsriDataMaps10. A variety of tools (i.e., Kernel Density and Euclidean Distance) were used on each data set and each factor was converted into a raster and reclassified as 1 being the most suitable and 5 being the least suitable. Finally, a raster calculation was used to perform an unweighted suitability analysis to determine the best and worst locations for a new crossing.

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 MCM 591 GIS for Conservation Medicine, December 2017

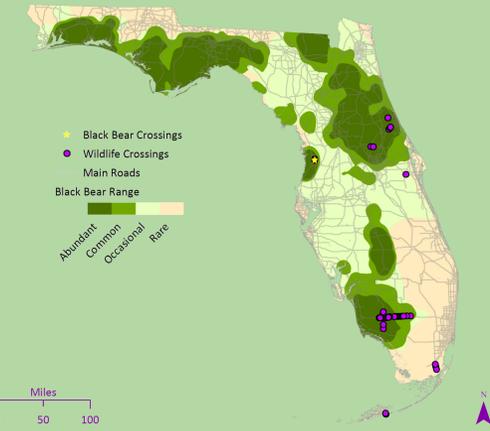
Results & Conclusions

The results indicate that there are 3 counties that are prime locations for a new wildlife crossing for Black Bears with a score of 5. The top three counties are Gadsden, Jefferson, and Leon. Wildlife agencies would be able to use this geospatial analysis to determine locations that would be most fit for a new wildlife crossing. This analysis is also helpful for public safety to reduce potentially fatal collisions. Collision density is one of the most important factors because this shows where Black Bears are most likely to cross the road and where collisions are actually occurring. Further research to make this analysis better could assess and take into account if human population density and noise levels were having an impact on where Black Bear collisions are happening. Creating more wildlife crossings is a must in order to protect Black Bears and humans from fatal car collisions. By creating more crossings it will hopefully reduce the number of fatalities that occur each year.

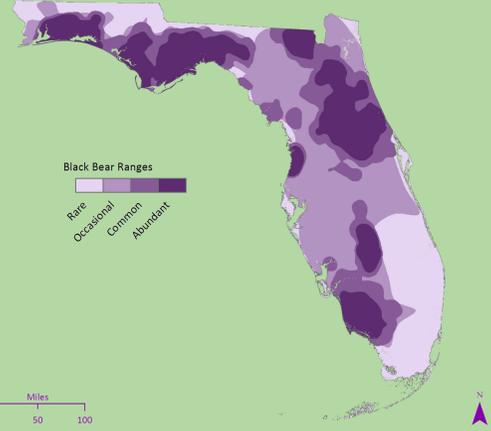
Residential Areas



Wildlife Crossings



Black Bear Range



Open Space for Wildlife Crossing



Density of Roads

