



A FUTURE FOR FLORIDA'S BIG CATS:

IDENTIFYING SUITABLE HABITAT FOR FLORIDA PANTHER RANGE EXPANSION



Genetic Isolation

Florida panthers (*Puma concolor coryi*) are one of the most endangered animals in North America. Once found throughout the Southeast U.S., they are now exclusively in southern Florida—occupying ~5% of their historic range. Prior to protections under the Endangered Species Act in 1973, Florida panthers nearly went extinct.

The population has since grown from 36 to 170 individuals. In addition to threats from habitat loss, persecution, and death on Florida's highways, panthers have also suffered considerable genetic diversity loss and inbreeding depression. Animal populations are more vulnerable to declines following stochastic events, such as flooding, when they lack genetic diversity.

In 1995, conservationists introduced a closely related subspecies, the Texas cougar (*P. c. stanleyana*) to interbreed with Florida's population and improve genetic diversity. Despite this success, Florida panthers are still vulnerable to habitat loss, collisions, and genetic isolation. Without mitigating these threats, their recovery is unlikely (Thatcher, et al., 2009). The goal of this project was to identify suitable habitat for Florida panthers (*Puma concolor coryi*) in Florida.

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Data Sources: ESRI, Florida Fish and Wildlife Florida Conservation Lands, Conservation Commission, The Nature Conservancy, United States Census Bureau

Literature references in addendum.

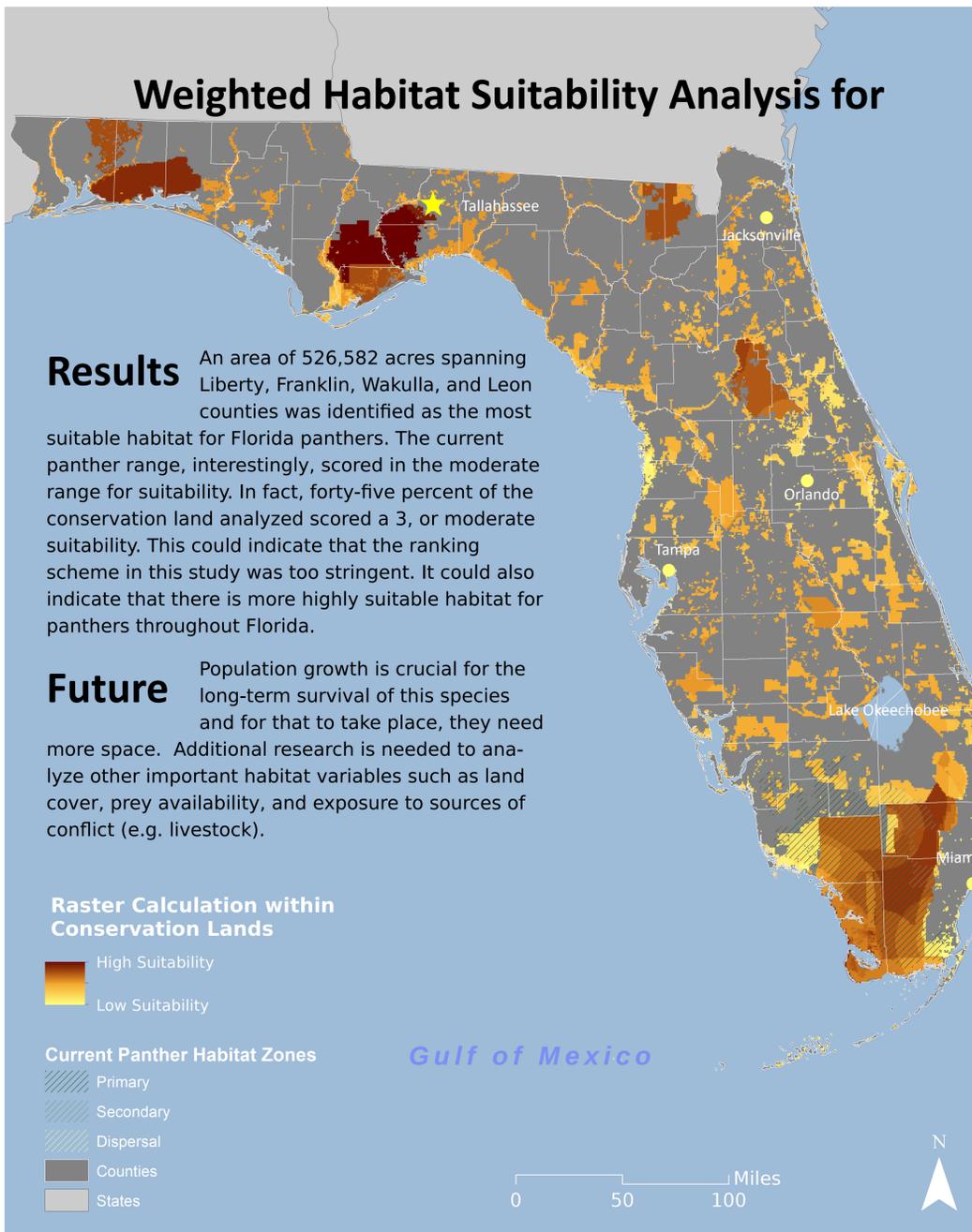
Projection: NAD 1983 Florida GDL Albers

Variables	% Weight for	Low Suitability	2	3	4	High Suitability
Rank		1	2	3	4	5
Habitat Patch (acres)	30%	0-100,000	100,000-200,000	200,000-300,000	300,000-500,000	+500,000
Distance to wildlife crossing (miles)	20%	+80	40-80	20-40	10-20	0-10
Road Density	20%	High		Moderate		Low
Human Pop. Density (Per census tract)	15%	+7,000	3,500-7,000	2,000-3,500	500-2,000	0-500
Flood Zone (elevation in meters)	15%	1	2	3	4	+4

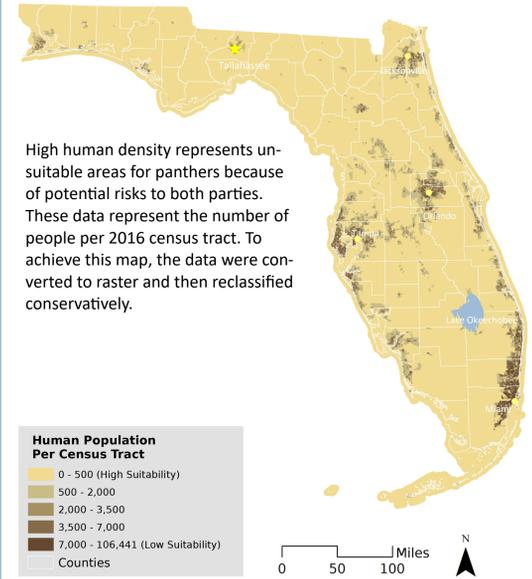
Figure 1. Variables of panther habitat were scored 1-5 where 1 was the least suitable and 5 was the most suitable.

Finding Habitat

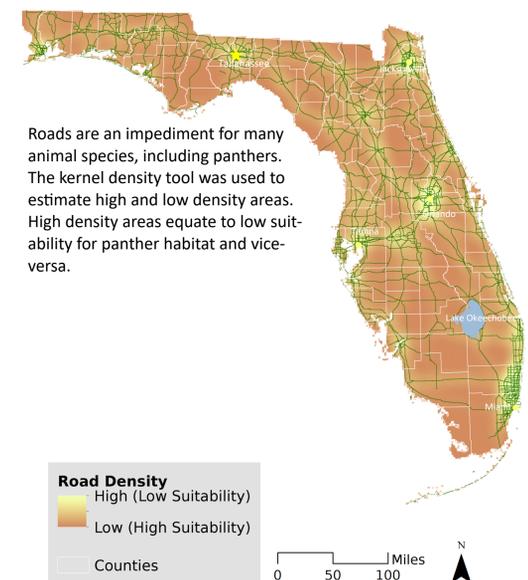
Current panther range is restricted to southern Florida. This analysis sought to identify suitable habitat for the northern expansion of Florida panthers. Five natural and anthropogenic factors were identified (Fig. 1) as critical for habitat selection based on recent research (Frakes et al. 2015). A weighted raster calculator was then used to identify suitable habitat within conservation land areas. The following ArcMap tools Euclidean Distance, Kernel Density, extract by mask, buffer, merge, dissolve, and finally, reclassify were also used in this process.



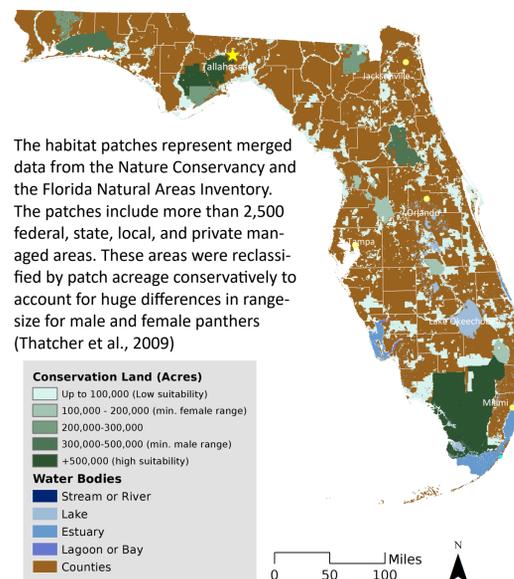
Population Density



Road Density



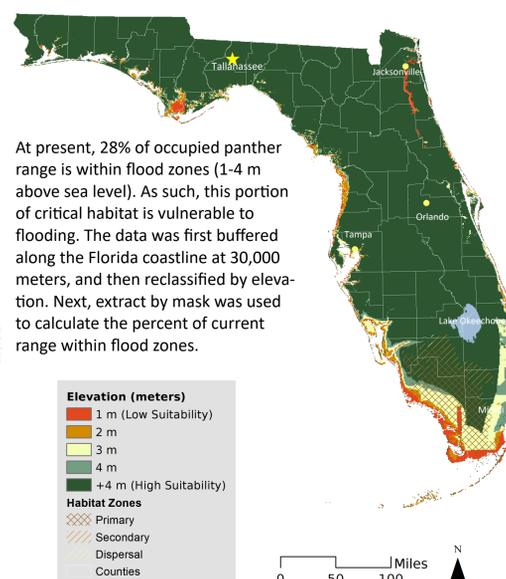
Conservation Land



Distance from Wildlife Crossings



Flood Zones



Current Range

