

# Texas and Arizona Ecological Forecasting Utilizing NASA Earth observations to monitor and manage ocelot habitat loss

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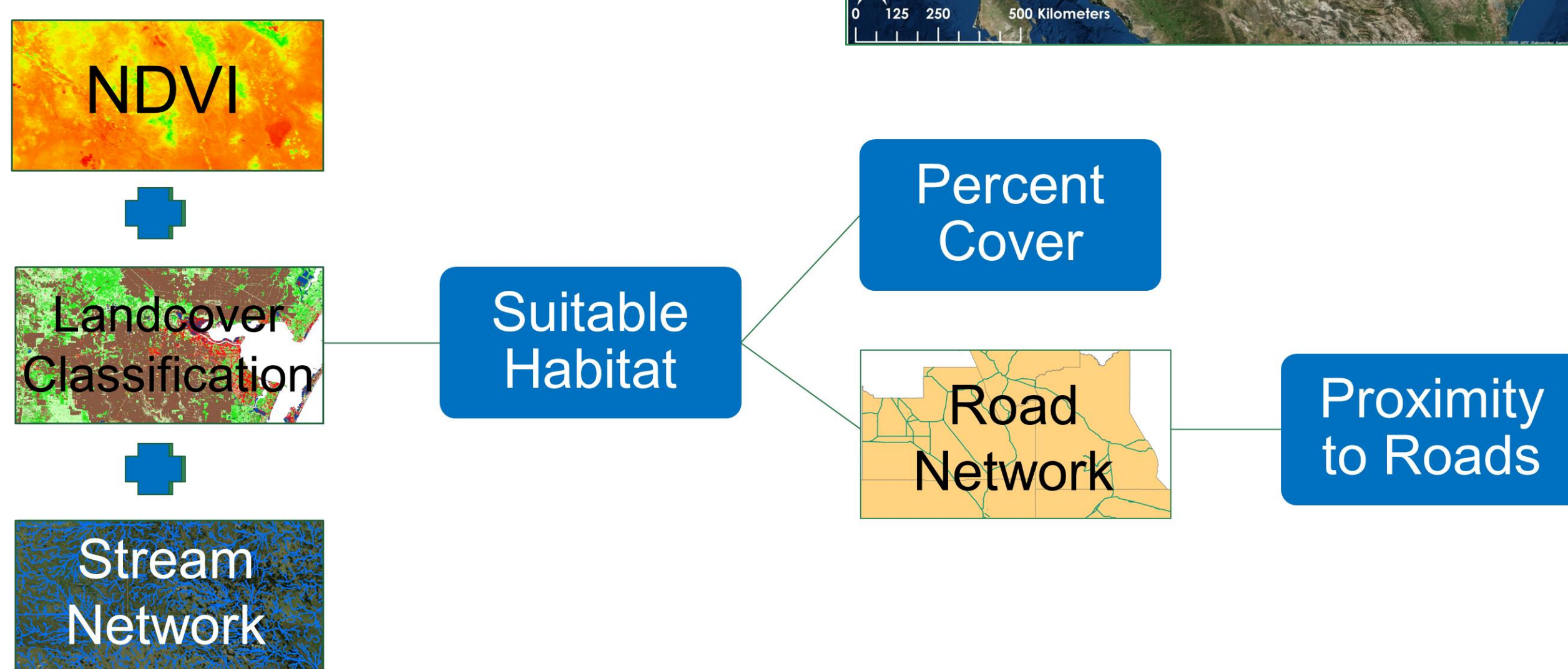
## Abstract

Although ocelot (*Leopardus pardalis*) habitat is found throughout Central America, portions of South America, and the United States, the species is currently listed as endangered with less than 100 remaining in the United States. This cat requires a minimum home range of 6.5 square kilometers, which aids in deadly interactions with humans on roadways. Many conservation efforts have been attempted, from ocelot translocation to habitat restoration. In this project, a remote sensing approach was developed, using NASA Earth-observing sensors. Landsat 8 Operational Land Imager (OLI) and Landsat 5 Thematic Mapper (TM) imagery were used to create supervised land cover classifications for 1996, 2005, and 2014 during January through March to assess land use and cover over time. Surface reflectance imagery from Terra and Aqua Moderate Resolution Imaging Spectroradiometer (MODIS) were then used to derive Normalized Difference Vegetation Index (NDVI values) to verify the results from the land cover classification layer. The verified land cover classification was then used with *in situ* data in the Princeton Maximum Entropy model to identify suitable ocelot habitat. A proximity risk map to roads and urban areas was created using multiband buffer zones over this habitat. The products were delivered to the Pittsburgh Zoo & PPG Aquarium, Caesar Kleberg Wildlife Research Institute, Denver Zoo, Texas Department of Transportation, South Texas Refuge Complex, and Secretaria de Medio Ambiente y Recursos Naturales. The use of GIS and remote sensing will greatly aid the project partner's decision-making process in directing conservation efforts for this endangered species.

## Objectives

- Identify areas of potential ocelot habitat for conservation purposes
- Study impact of urban and agricultural growth on ocelot habitat
- Study impact of road development on ocelot populations by the Texas Department of Transportation

## Methodology



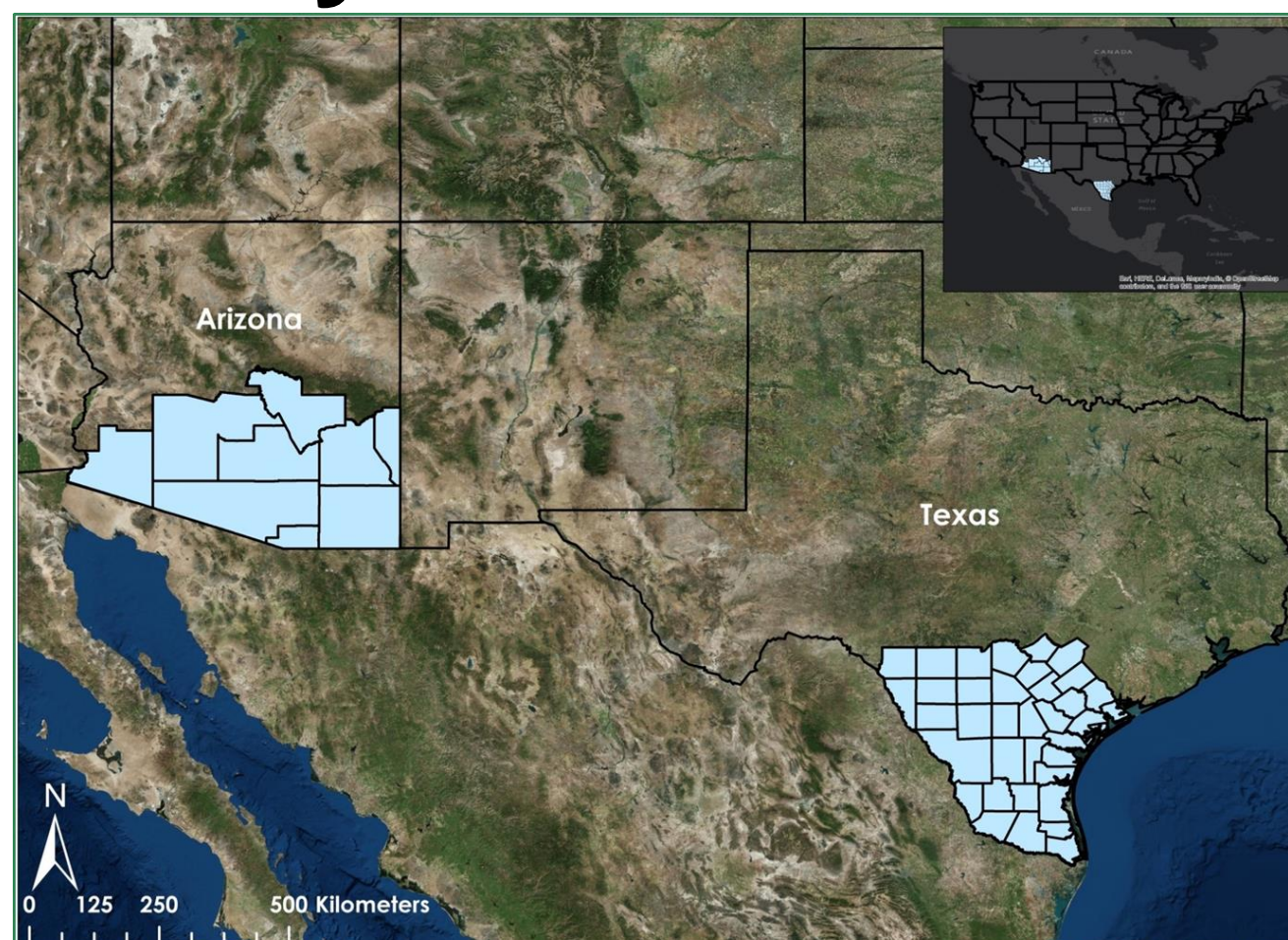
## Conclusions

- Percent cover of ocelot habitat has decreased since 1996
- Nearly 3,000km in Texas and 11,000km in Arizona of roads intersect with current and potential ocelot habitat
- The potential habitat in Arizona is overestimated and requires in situ data to increase accuracy

## Acknowledgements

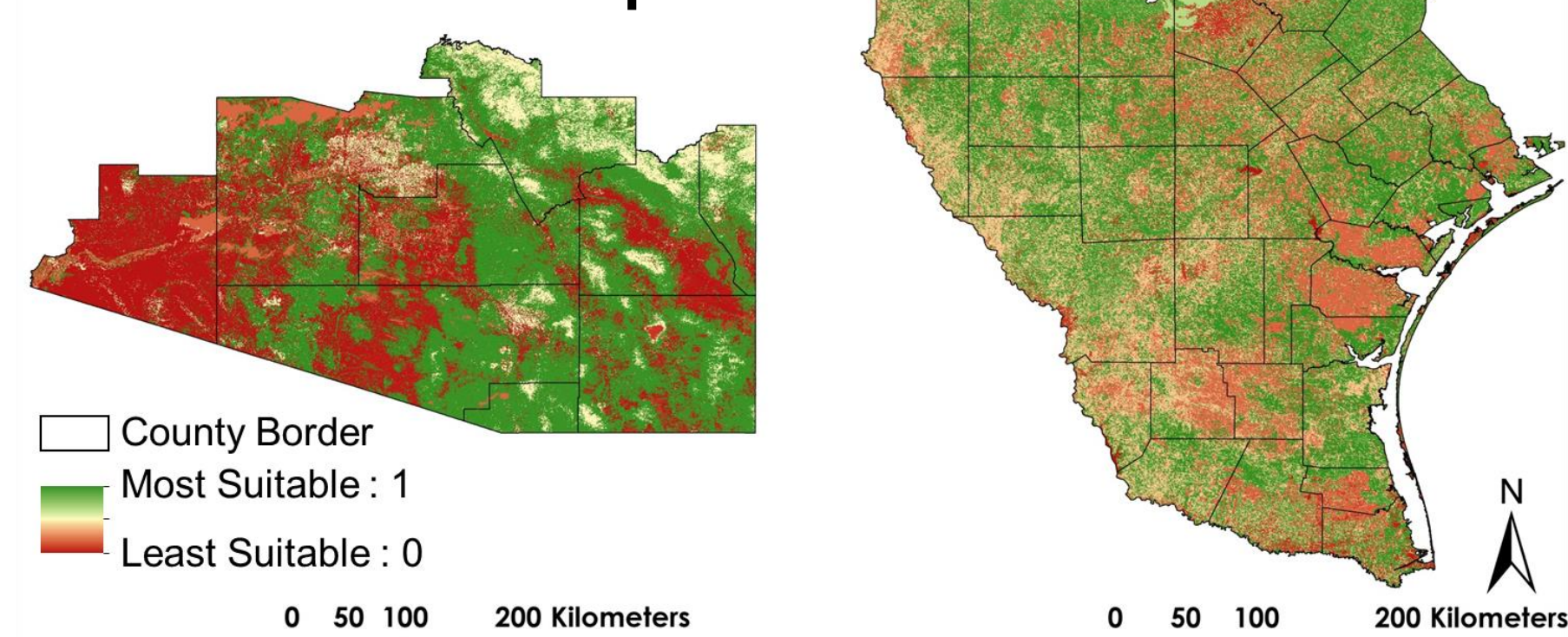
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## Study Area

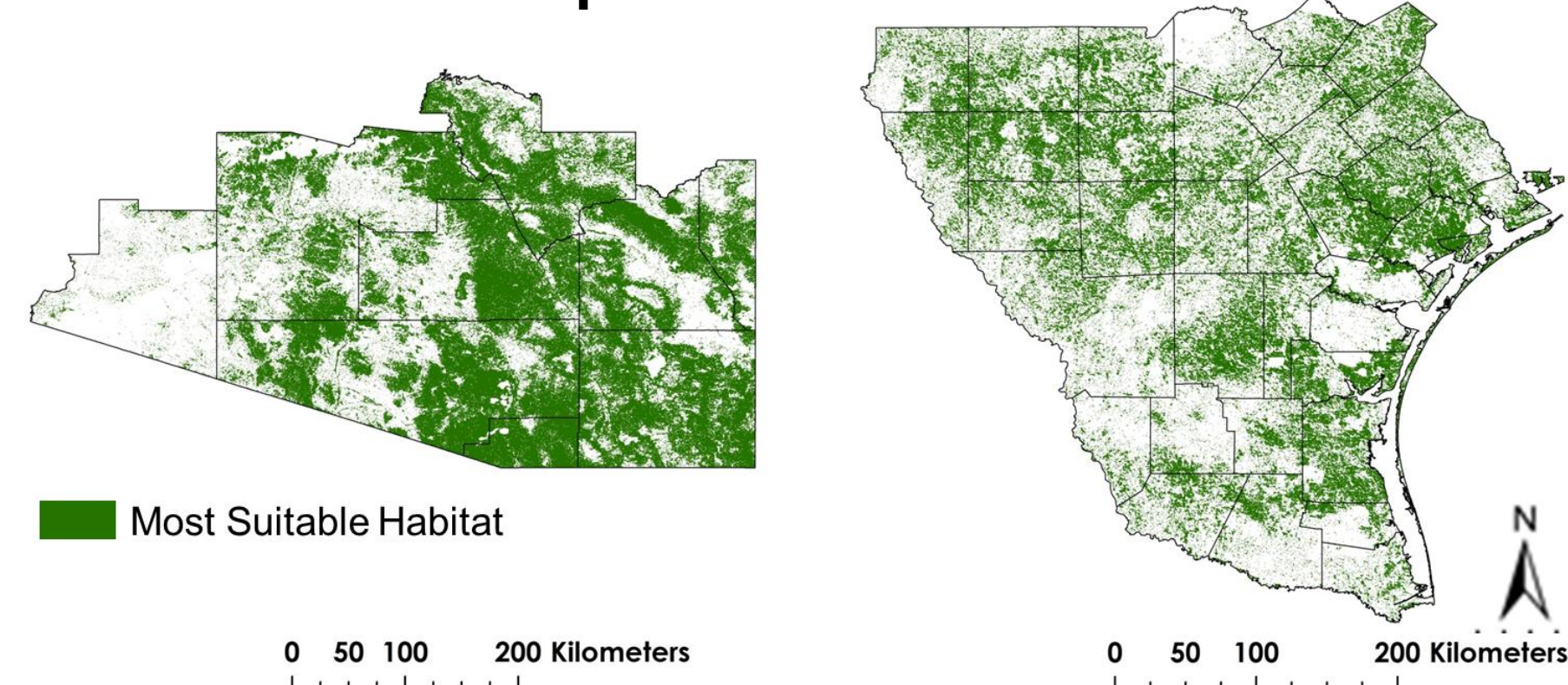


## Results

### Suitable Habitat Map



### Percent Cover Map



	2014 Suitable Habitat Area (km <sup>2</sup> )	Total Area in Study Area (km <sup>2</sup> )	Percent Cover
Texas	38772.6	107226.8	36.16%
Arizona	63952.1	128651.2	49.71%

### Proximity Risk Map

