

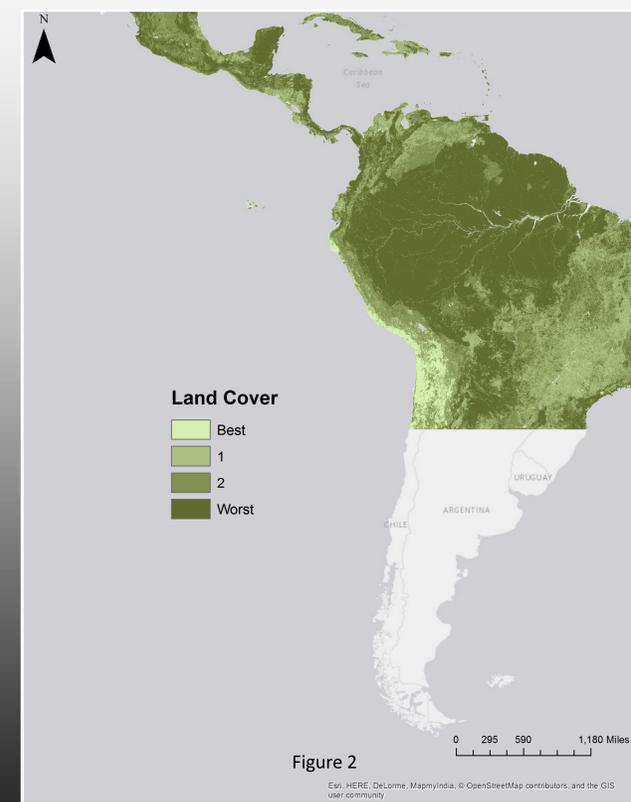
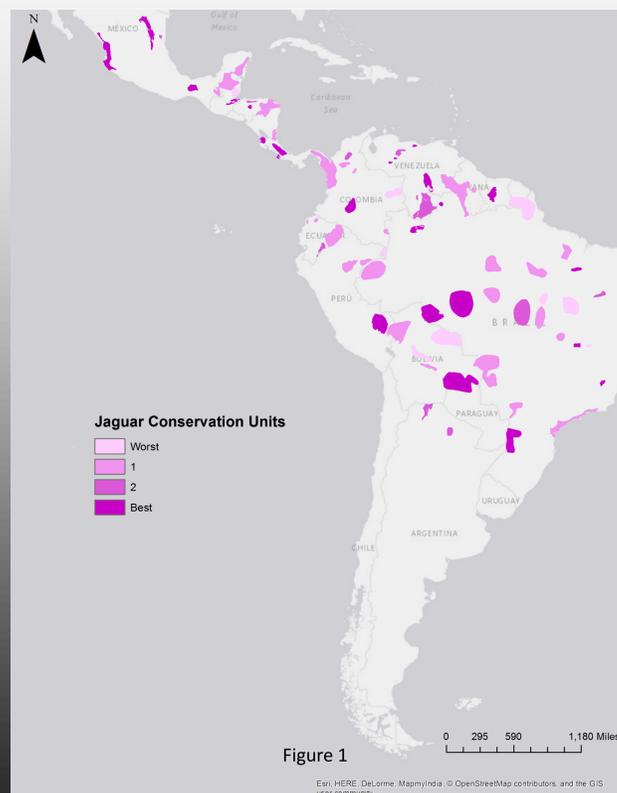
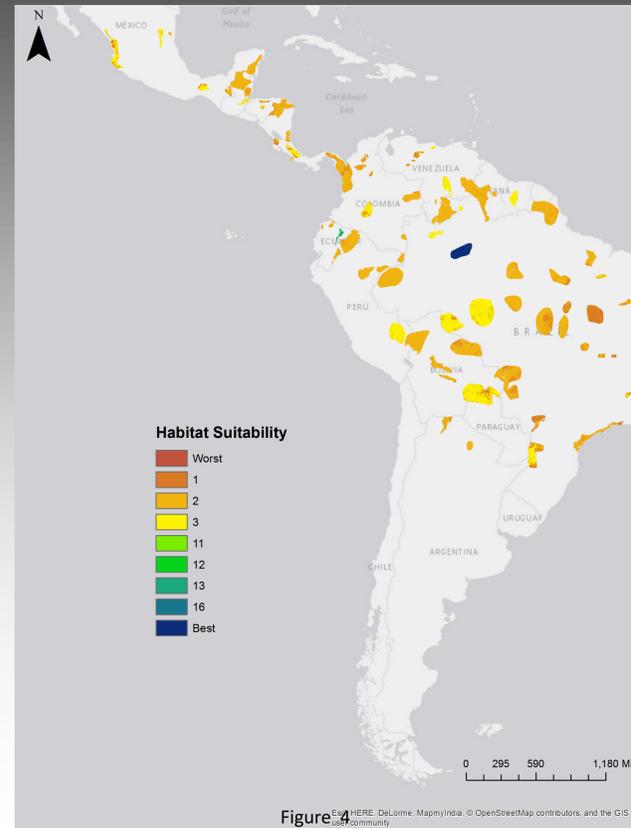
Habitat Suitability for Jaguars in Central America

Introduction

The jaguar, *panthera onca*, is listed as Near Threatened on the IUCN list since 2008 and Endangered on the US Fish & Wildlife List of Endangered Species since 1972. While hard to research and track, the range of the jaguar spreads from the Amazon in South America to Mexico and southern regions of the United States. The main threat to the population is deforestation and human population spread (De Angelo et al 2013). This project determines the best habitat territory for jaguars, in Central America by creating a suitability map. Three main factors that contribute to the best habitat are analyzed separately and then combined for final preference. First, which of the areas defined as "Jaguar Conservation Units" (JCU) are the best. JCU are priority areas of jaguar conservation that include data of jaguar densities, prey, habitat and other important factors researched by conservation experts (Nijhawan 2012). Second, land cover, where are the best physical locations in Central America that contain the preferred habitat of the jaguar. Jaguars prefer large uninterrupted forests, with access to bodies of water and corridors for travelling long distances.

Methods

All three layers and data sets were projected to WGS 1984 web mercator auxiliary sphere. Each layer was then clipped to the focus area of Central America where jaguars are most common. The values of each dataset were then reclassified to values in a range from 0, the worst to 3, the best. The JCU factor values were classified by determining the areas that had priority for conservation. The best areas had the highest JCU rank, land area and protection status. The best land cover with values of 3 are the large forests, and bare or dry areas were given a 1 or 0. The population scan for this area was broken into 4 natural breaks, and also given values of 3-0, the areas with a large population were given 0s and the areas with small numbers were given 3s. A raster calculator was then used to create a suitability map of the reclassified 3 factors, and finally a weighted suitability grid was created with the factor score's given a weight. The weight was determined by the factors importance to the habitat suitability $Landcover(.60)+pop(.20)+jcu(.20)$.



Results

The four figures illustrated on this poster show the results of the suitability analysis. Figure 1 shows the final reclassified layer of the Jaguar Conservation Units. The darker pink areas are the best of the JCUs for further conservation consideration. Most of these areas are in the center of South America, located in the Amazon. Figure 2 also shows the best land for a jaguar habitat is in the center of South America and the worst are along the coasts. The population map, Figure 3 is the least significant of the results. Central America has a large population range within the various countries. The majority of the map is the darker blue, which would be areas least populated. A more narrow criteria may be necessary for future research. The final

Conclusion

This project determined which specific areas in Central America that are best for jaguars to live in and where we should concentrate our conservation and rehabilitation efforts. These areas could be researched further and we could determine the environmental and wildlife policies for the region and the country. This project also contribute to international conservation work. Central America has many different countries, each with their own interest and treatment of jaguars.

Michaela Snead
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Fa15-UEP-0232-01-Intro To Gis
Projection: WGS 1984 web mercator auxiliary sphere
Data:
Tufts GIS database for Central America basemap and population:
M:\World\Landsat\world05\LS05popgrid\lspop2005

Jaguar Conservation Units:
Marieb, Katherine. 2006. Jaguars in the New Millennium Data Set Update. WCS Working Paper. Wildlife Conservation Society, New York. 1-80.

Central America land cover:
Central American Commission on Environment and Development - CCAD, U.S. Agency for International Development - USAID, International Resources Group Ltd. - IRG, The Nature Conservancy - TNC, and Winrock International - WI. 1998. Central American Vegetation/Land Cover Classification and Conservation Status. Palisades, NY: NASA Socioeconomic Data and Applications Center