

Impacts of climate change in taxonomic, phylogenetic and functional diversity in snakes in largest dry forest ecoregion, the Gran Chaco

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Abstract

The impacts of anthropogenic activities have significantly contributed to recent and future climate changes worldwide. The future effects of climate change on biodiversity have been intensively studied globally over the past two decades. Currently, dry ecoregions are among the most threatened ecosystems in the world. In South America, three such seasonal dry ecoregions stand out: the Cerrado, Caatinga, and the Gran Chaco. Among these, the Chaco has experienced high deforestation rates and landscape degradation over the last decade, making it a top priority for conservation efforts. In this study, we employed ecological niche modeling to estimate the present and future distribution of snakes in the Chaco region. Our goal was to assess how snake diversity will change with projected climate changes across this geographic area. Our findings suggest that snake assemblages in the Chaco will undergo significant changes under future climatic conditions, with a clear trend toward biotic homogenization of the ecoregion and a decrease in species richness. These negative changes will likely extend to the protected areas within the Chaco, resulting in biotic homogenization and a loss of species richness.