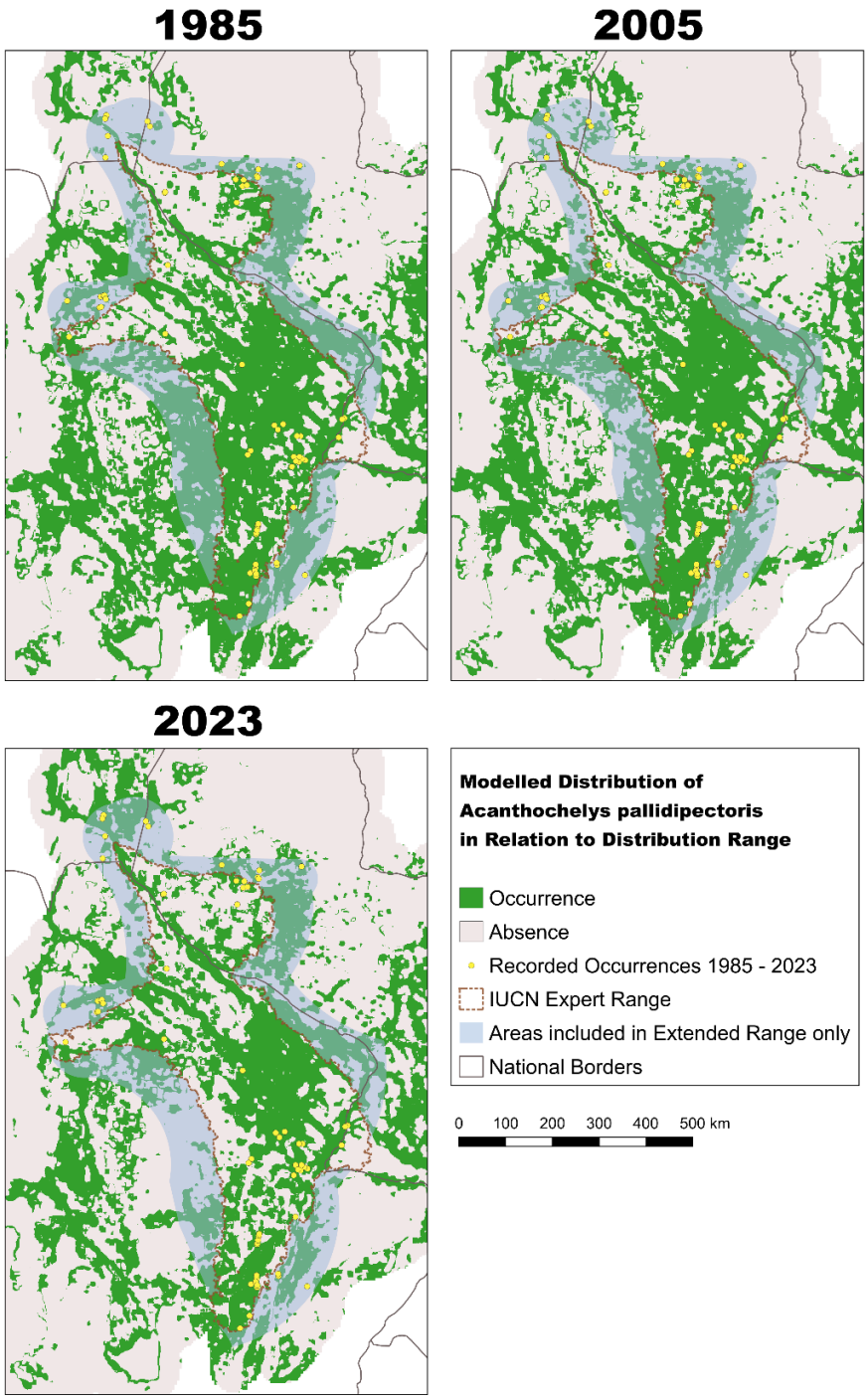
Analysing changes in the distribution of the Chaco side-necked turtle between 1985 and 2023

Zoe Grytzka, Bachelor Thesis

Abstract

Land use changes significantly threaten turtle species all over the world. The Chaco side-necked turtle is a freshwater species endemic to the Chaco, affected by agricultural expansion in this region. This study performed time-calibrated Species Distribution Modelling to identify key habitat factors, changes in its distribution over time and the level of protection of the species. Areas close to water were found to be more suitable for the species. Other key habitat factors included specific ranges of annual mean temperature and precipitation during the warmest quarter, indicating a potentially low tolerance to future climate extremes. The occurrence of the species was negatively associated with rising proportions of cropland and wetlands, while it appeared largely unaffected by varying forest edges. The species´ distribution range was found to be broader than assumed in previous research. However, suitable habitat declined by 10.3 – 13.6% between 1985 and 2023. Habitat loss accelerated between 2005 and 2023 (8.2 – 9.7%), suggesting that intensified land use changes have had a significant impact on the species´ distribution. The protection of the species was found to be insufficient, as only a small proportion of suitable habitat was covered by protected areas in 2023 (~8%). This study offers a first temporal analysis of the distribution of the Chaco side-necked turtle, yet additional investigation regarding its habitat preferences is crucial for effective conservation. Furthermore, studies on the seasonal and reproductive behaviour are needed to better understand the potential impacts of climate change. Perceptions of distribution characteristics and range of the Chaco side-necked turtle have been found to easily change with the availability of occurrence records, which is why a more systematic monitoring approach is recommended.


1985
2005
2023
Modelled Distribution of
Acanthochelys pallidipectoris
in Relation to Distribution Range
Occurrence
Absence
Recorded Occurrences 1985 - 2023
IUCN Expert Range
Areas included in Extended Range only
National Borders
0 100 200 300 400 500 km