Geophysical Research Abstracts
Vol. 21, EGU2019-14415-1, 2019
EGU General Assembly 2019

Analysis of the effects of climate change on the current and historical distribution area of MICROTUS CABRERAE (RODENTIA; CRICETIDAE) and related species

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The ongoing climate change has a profound effect on global biodiversity. It is known that some species, especially small mammals, were strongly affected by environmental changes taken place in the past. In this study we focused mainly on the Cabrera′s vole (Microtus cabrerae) since this species presents unique ecological and regressive populational trends. Also, Cabrera′s vole is a Mediterranean species endemic to the Iberian Peninsula, where lies the primary focus of our study. The ecological traits of the Cabrera′s vole and other species of micro-mammals that share a similar climatic niche were analysed in order to identify climatic factors that affected their distribution areas, as well as the anthropic factors that were playing a role in the past. To achieve that, the climatic development of the distribution area from the Last Interglacial Period to present was predicted and described. In addition, the influence of anthropic factors in the distribution area was studied by comparing the obtained climatic potential distribution areas with others derived from species occurrences in archaeological sites. This comparison allowed for discrimination between climatic and anthropic factors, as well as to assess how they individually affected the analysed species during different periods of time. Our results show that both, climatic and anthropic factors had a significative influence. However, anthropic factors predominantly explained population trends from the Holocene onwards. Furthermore, this study allows us to infer the probable effects of climate change on Mediterranean species and perform well-grounded conservation and reintroduction actions.