PAST, PRESENT AND FUTURE CONTRIBUTIONS TO EXTINCTION OF EXCLUSIVE ENDEMICS AT MADEIRA ISLAND

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Resumo/Abstarct
Madeira is a mountainous island of volcanic origin located at the subtropical margin of the eastern North Atlantic. Impacts on flora and vegetation along centuries promoted important changes on the physiognomy, structure and composition of vegetation communities, and the contraction of the occupancy area for several endemic species, with deep effects on the size and number of populations, sometimes causing their extirpation. The summits of the island clearly exhibit such consequences, a fact associated to resources exploitation during centuries (grazing, charcoal production, timber exploitation, soil, litter and firewood collection), causing high levels of disturbance and fragmentation on natural habitats. Some of the exclusive endemics got restricted to few individuals, creating conditions favorable to extinction. Such circumstances were reinforced by recent wildfires, which promoted a drastic decrease on populations. Considering the expected impacts from climate change on mountain habitats, this work aims to assess if climate change will contribute to reinforce the prone-to-extinction level for some endemic species. The assessment is based on ecological niche-based modelling, and uses known occurrences collected on field before the wildfire of 2010 for two climatic scenarios (SRES A2 and B2) for the timeline 2070-2099. Predictions are based on ensemble forecasting procedures supported on different modelling techniques and calibration parameters in BIOMOD platform. Results clearly show the loss of suitable area for the endemic species on both climatic scenarios. Even considering that current suitable area is sub-evaluated, because of the biasing effect from human-induced disturbance, the scenario of extinction might be considered facing the level of disturbance of the habitats and the reduced size of populations, performing a potential situation of limited propagule sources, reducing the chances to create stable and robust populations, able to deal with environmental changes, climatic or from other sources.

Key words: disturbance, exclusive endemics, climate change, Madeira Island

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RESEARCH
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2010-2011: Flooding risk assessment at Madeira Island.
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