
Impacts of climate change on invasive plants in small islands: the case of Azores

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Abstract

Biological invasions are a recognized serious problem for small islands. The effect that climate change can have on these invasions is still uncertain. It is commonly believed that the predicted raise in temperature and altered precipitation will favor the establishment of invasive alien species (IAS). For the case of plants, many studies have ascertained how IAS will be distributed in the future. However, these distribution predictions change greatly from location to location, with different findings depending on the hemisphere. It is thus imperative to study how the established invasive species' distribution will change with the predicted climate change, especially for islands. Islands are hotspots of biodiversity and the spread of invasive species can become a serious problem for native ecosystems. This study aimed to ascertain how the predicted climate change will affect the potential distribution of some of the main invasive plant species present in the Azorean archipelago. For this we deliberately chose the "worst case scenario" RCP8.5 for the climatic data as a precaution strategy based on the historical and still actual trend on the greenhouse emissions. We then used the off-the-shelf BIOENSEMBLES software, to model the species distributions for two time periods, 1969-1990 and 2080-2099, and for the two main islands of the Azores, São Miguel and Terceira. We found that for most cases the potential distribution of the species decreases (21 of the 24 studied species). Only three species showed an increase of the potential distribution on both islands (*Acacia melanoxylon*, *Persicaria capitata*, *Ricinus communis*). These species are projected to increase their distribution towards inland on both islands, where most of the native natural vegetation is located. These species are very serious invasives, which are difficult to control, and can cause serious loss of natural biodiversity. Using the information from these projections can be very useful for decision makers when deciding the managing strategies towards invasive species in the future.

Keywords: invasive plants, climate change, species distribution models, conservation strategies, Azores

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