
Evidences of global warming on island coastal biota: lessons from the Azores

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Abstract

Global warming is having a profound effect on every world ecosystem. The intertidal and shallow subtidal habitats of small oceanic islands are particularly vulnerable, given their restricted area, smaller population size, isolation and exposure to climatic elements and human activities. In the present work we review the main results of our work on the coastal ecology of the Azorean communities. Characterization studies were coupled with experimental work to shed light on the challenges facing the conservation of the coastal biota and to point out strategies to deal with it. Rising seawater temperature and changes in oceanic current patterns are known to be responsible for the arrival of new species and the disappearance of others. Recently introduced or already established non-native species in the Azores (like algae from the genus *Caulerpa* and *Asparagopsis*) have potential or ascertained impact on the native coastal communities. Moreover, changes to the relative abundance of species have also been observed: the increased abundance of herbivorous fishes, for instance, is having an effect on keystone algae species, which is compounded by unsustainable algae exploitation practices. Finally, sea level rise and the increasing frequency and magnitude of extreme events is leading to the artificialization of significant areas of coastline, with the construction of an increasing number of breakwaters, jetties and other human-made structures. In the Azores this has caused habitat loss and fragmentation, resulting in decreased abundance and diversity of intertidal biota, with the consequent decline of ecosystem services. The research reviewed in this presentation has had some impact on local regulations, e.g. on setting up marine reserves or fisheries management plans. This highlights the importance of maintaining local scientific expertise in support of the decision-making process in small oceanic islands to face the scale and speed of the predicted changes in the oceans.

Keywords: global warming, coastal urbanization, overexploitation, keystone species, community structure

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