Adaptive capacity of reef-associated fishes to Climate Change

Marina Abas[1] and Héctor Reyes-Bonilla[1,2]

[1] Marine and Coastal Sciences Department, Universidad Autónoma de Baja California Sur, La Paz, Baja California Sur, Mexico.
[2] Marine Biology Department,Universidad Autónoma de Baja California Sur, La Paz, Baja California Sur, Mexico

Corresponding author:
Marina Abas[1]
Email address: marinabas1@gmail.com

PeerJ Preprints | https://doi.org/10.7287/peerj.preprints.26787v1 | CC BY 4.0 Open Access | rec: 29 Mar 2018, publ: 29 Mar 2018

Abstract

Climate change is affecting the structure and function of marine communities in the eastern Pacific, and to anticipate possible consequences of these modifications, a better understanding of the natural adaptation potential of the species is needed. This study aimed to build a metric of adaptive capacity of reef fishes, and evaluate it using data from fish assemblages from 12 rocky and coral reefs of the western Mexico. The index was developed using six life history traits from 719 fish-species distributed along the tropical Eastern Pacific. Our results indicated low adaptive capacity for big sized carnivore fish such as the tunas, totoaba and most groupers (Mycteroperca spp.); conversely, high values were attributed to species with fast life strategies such as anchovies, gobies, and blennies. The application of the index to census data showed that the adaptive potential of fish assemblages had an inverse latitudinal trend (higher in the southern reefs), resulting from the abundance of large-sized carnivores in the central and northern Gulf of California, and of small herbivores in the tropical region. As the index allows to estimate reef-fish species and communities´ adaptive capacity in a straightforward and simple way, it may be a useful tool for marine conservation.

PeerJ Preprints | https://doi.org/10.7287/peerj.preprints.26787v1 | CC BY 4.0 Open Access | rec: 29 Mar 2018, publ: 29 Mar 2018