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An index to integrate stress due to anthropogenic pressures along the shoreline and case study of a tourist destination in Brazil.

Themes: Biodiversity in a Changing Ocean + Integrative Frameworks to link environmental and biological drivers of biodiversity + The Human element

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In order to compare stress on marine coastal ecosystems at different sites and over time we developed an Environmental Pressure Index (EPI). The index was composed of twenty-four parameters which could be observed and quantified at each site or from maps. The parameters metrics were taken in water, on shore or from the catchment and were grouped into eight ecosystem degrading stressors: Urban development, shoreline development, presence of sewage outfalls, presence of human debris, constructions on the shore, nautical gas stations, fishing pressure, recreational activities and nautical and shipping activities. The parameters were standardized to a maximum and had different weighting established from the literature, giving an EPI which varies from 0 to 1. We applied the Index to the tropical rocky shores and marginal reef ecosystem of the Armação dos Búzios, a tourist destination situated on a peninsula in Southeastern Brazil. The region has experienced rapid urbanization since the 1950s. Data were obtained for 11 sites and the Index was calculated for 2000/2001 and compared to data generated in 2016/2017. In 2000/2001 EPI varied from 0.01-0.47 and in 2016/2017 from 0.04-0.55 and although some sites worsened others improved and no significant difference in EPI was found over time for the region.

Key-words: Brazil, Environmental Pressure Index, stressors, rocky reefs.

Short description:

An index developed to integrate anthropogenic stressors of the coastline using multiple variables.