EVALUATION OF HUMAN PRESSURE ON THE ICHTHYOFAUNA OF CATALONIAN COASTAL WATERS

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Abstract

In the past decades the Catalonian coastal zone has been subjected to intense human pressure due to high concentration of activities and settlements. Although some of the impacts are evident, others are not, or have not been studied in detail. In this study, we consider the environmental quality of coastal waters through the ichthyofauna diversity and distribution. We attempt to assess the potential influence of such activities on the ichthyofauna. This is done by selecting a number of indicators of pressure and relating them with biodiversity. Special interest has been given to rare and special concern species. Finally, we identify some areas of importance for conservation of the icthyofauna, and make recommendations on the evaluation of environmental impact on this group.

Keywords: coast, ichthyofauna, pressure, indicator, GIS

Introduction

Along its 848 km the Catalonian Coast house 490 out of the 655 fish species of the Mediterranean [1]. In Catalonia, the ichthyofauna is the best know marine group. Several of those species are rare and deserve special conservation attention. The majority of these species have been extensibly studied by taxonomists, ecologists and fisheries biologist in separate efforts. Moreover, the Catalonian coast also houses the two most important pressures on the Spanish littoral system, the tourist industry, the urbanization, and their associated impacts [2]. In order to alleviate the pressure on coastal environments and on their biodiversity, the European Community has recently recommended a new strategic and harmonized framework for regional and local implementation (COM/00/547). This new instrument recommends to study in an integral manner all the driving forces that generate pressure on the coastal system. In this study, we propose a methodology to identify the relationship between the forces of pressure that drive species diversity and distribution. Some of the impacts are evident and have been studied in larger detail as fisheries and some kinds of pollution but, in this case, we analyze the effect of inland-coastline generated pressures on this group.

Methodology

The approach involves the definition of threat categories based on diversity and distribution criteria, and the identification of component sources of pressure that can be mapped. These "stressors" include simple population and infrastructure features such as cities, ports, and discharge pipelines as well as more complex modelled layers of riverine inputs. Coast stressors have been previously identified by the Catalonian Port Plan [3]. Once these components have been selected, model rules are developed for translating them into measures of threat. The model produces map-based indicators of human pressure along the coast using a Geographic Information System (GIS) data model and application [4]. The index is designed to highlight areas where, either high diversity or high pressure occur. Other indexes will be developed using the database in order to attempt to assess the potential influence of such activities on the ichthyofauna. The combined index provides a regionally consistent indicator of human pressure on this group that could serve as a proxy guide to fish conditions across the Catalonian coast. We hope this will constitute a new form to observe and understand the effect of human activities on the coastal zone.

References

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