

ECOREGIONALISATION OF THE MEDITERRANEAN SEA

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Abstract

The discipline of biogeography aims to study the spatial distribution of species in relation with environmental and geographical gradient. Main accepted biogeographies of the ocean only focus on one or two trophic levels of marine ecosystems and thus can hardly be applied for an ecosystem-based management. In this study, we have attempted to identify the main multi trophic associations from phytoplankton to mammals for the Mediterranean Sea. Based on more than 1 millions observations covering 1230 species and on recent statistical approach, the ecoregions of the Mediterranean basin are identified. For each ecoregions the main species association and habitat type are identified and effect of human pressure (both climate change, fisheries and pollution) are discussed.

Keywords: Biodiversity, Biogeography, Coastal systems, Pelagic, North-Central Mediterranean

The discipline of biogeography aims to study the spatial distribution of species in relation with environmental and geographical gradient. Based on the last 20 years of research in this new multidisciplinary field of science, three partition of the global ocean are accepted by the scientific community at a global scale. These global geographical frameworks respectively delineate the main oceanographical, ecological and fisheries basin features. Nonetheless, this division are usually static and focussing on few components of marine ecosystems and thus cannot be applied at a regional scale for an optimal ecosystem resources management. The aim of the work in the MERMEX/PERSEUS projects is first to integrate all biological observations made in the Mediterranean basin and second to infer an ecoregionalisation of the basin based on multi-trophic spatial occurrences of the main species detected. To do so, all Mediterranean databases including open access, national or project cruises and international database have been gathered. Then, based on ecological niche model coupled phytosociological analysis, the spatial distribution and species association of the more dominant species were retrieved. Finally, a multi agglomerative procedure has been applied to detect the ecoregions of the Mediterranean basin and is related to the main biotopes retrieved previously (see other talk proposed during the symposium). The obtained ecoregions delineate the characteristic species assemblage at a multi-trophic level of the Mediterranean Sea and hence, approximate the main trophic web of this basin. These ecoregions are now used as a reference ecological state in the European project PERSEUS.

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