Rocky shore benthic communities as indicators of global change in the context of European directives

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Context & Objectives
The implementation of European Directives in the last decade (WFD, MSFD, DHFF) shows a growing interest in assessing the environmental status of coastal areas through maintaining the ecosystem functionality and biodiversity conservation. Thus, investigations and monitoring programs on benthic communities were launched to increase knowledge on taxonomic composition and their spatial distribution. Only macroalgae are monitored under the WFD but it is also important to take into account fauna communities for the implementation of the MSFD. Basque coast presents remarkable rocky shore habitats and biogeographic specificities, both in intertidal and subtidal areas. These productive environments, covered by shallow seaweed beds, have a high functionality such as nursery and a protective function for many species during their life cycle. Monitoring program could be used to bring useful information to implement MSFD descriptors and for comprehension of evolutions occurring with global change but it will not be possible to follow all species and the most relevant should be selected.

To further improve the information needed, the species lists are presented with their sensitivity and ecological interest. Moreover, this analysis allows to identify, for future works, relevant biological models which have to be considered for evaluation of the specific impact of climate change in front of their distribution area: northern and southern limit.

Contribution of the MSFD for descriptors implementation

The necessity to archive benthic communities knowledge in the south of the Bay of Biscay (GES, 2011) is a key point to improve sampling protocol in coastal habitats since 2015.

Work in progress
Biodiversity Synthesis

- Data available: Absence of quantitative data
- No data in spatial distribution
- Taxonomic gaps for some species
- Changes occur during last decades
- Some species have disappeared

Information available

WFD & BIGORNO

- Synthesis of previous data on knowledge available for local and punctual studies
- WFD monitoring macroalgae indicators in intertidal and subtidal areas since 2008
- BIGORNO project information on biodiversity and spatial distribution mainly on fauna since 2015

Tools development
DESCARTES

- Considering variability in benthic communities
- Spatial heterogeneity
- Ecosystemic approach

Sampling strategy improvement to get pertinent metrics

Species selection criteria and example

Data needs for those species concern: occurrence, spatial distribution, demographic features and temporal evolution