

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

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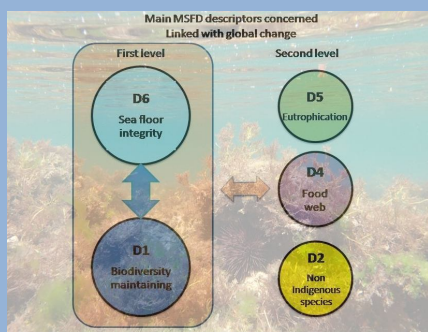
Context & Objectives

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

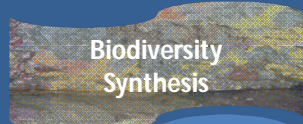


Necessity to archive benthic communities knowledge in the south of the Bay of Biscay (GES, 2011)

Methods and data are needed

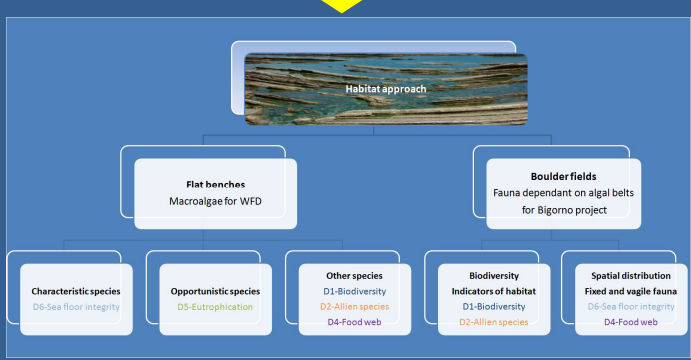


Work in progress



Data available
 Absence of quantitative data
 No data in spatial distribution
 Taxonomic gaps for some groups

► Changes occurs during last decades
 ► Some species have disappeared = Modification in ecosystem

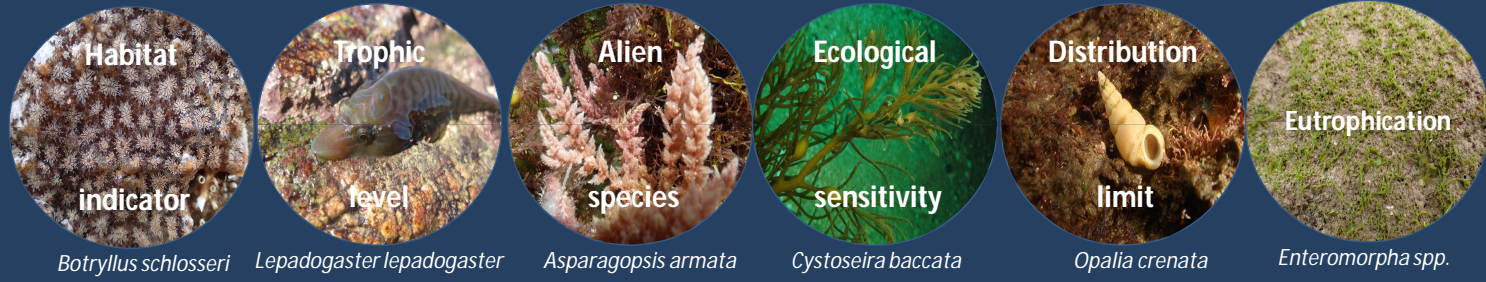


Considering
 Variability in benthic communities
 Spatial heterogeneity
 Ecosystemic approach

Sampling strategy improvement to get pertinent metrics
 Optimize the quality of information and the cost of implementation

Species selection criteria and exemple

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



More informations available in:

Ar Gall, E., Le Duff, M., Sauriau, P.G., de Casamajor, M.N., Gevaert, F., Poisson, E., Hacquebart, P., Joncourt, Y., Barillé, A.L., Buchet, R., 2016. Implementation of a new index to assess intertidal seaweed communities as bioindicators for the European Water Framework Directive. *Ecol. Indic.* 60, 162-173.
 Casamajor (de) M.N., Lalanne, Y., 2016. Biogeographical interest of the Rocky Basque coast. *Bull. Soc. Zool. Fr.* 141(1):3-13.
 Huguenin L., Lalanne, Y., Bru N., Lissardy M., d'Amico F., Casamajor de M.N., 2017. Diversity and spatial distribution of benthic communities on intertidal boulder fields : a case study in the south of the Bay of Biscay. *Submitted to Journal of Sea Research*
 Huguenin L., Lalanne, Y., Bru N., Lissardy M., d'Amico F., Casamajor de M.N., 2017. Fauna and macroalgae indicator species of intertidal boulder fields: a south of the Bay of Biscay case study *Submitted to Journal of Sea Research*
 Le Gal A., Derrien-Courtel S., 2015. Quality Index of Subtidal Macroalgae (QISubMac): A suitable tool for ecological quality status assessment under the scope of the European Water Framework Directive. *Mar Pollut Bull.* : 101(1):334-48.