

Degraded marine ecosystems in European **Seas and restoration** options:

First results from the EU MERCES Proje

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THE PROJECT

Funded under H2020, MERCES is the first European project that focuses entirely on the $% \left({{{\rm{E}}_{{\rm{E}}}} \right)$ restoration of marine ecosystems by focusing on various types of degraded habitats, and the biodiversity, functions, goods and services they provide. The project involves 28 actors from the academic, research and business sector of 16 countries scientists from a wide range of disciplines such as marine ecology, ecosystem restoration, spatial planning, maritime law and environmental policies and governance, social sciences, dissemination of information and communication. The project is built around specific case actions in 3 different habitat types around Europe and 4 generic workpackages studying, ecosystem services, legal governance and policy, socio-economic impacts and transfer of knowledge to industry



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EUROPEAN MAPPING STATUS

The first Work Package (WP) focuses on the review and synthesis of information on the existence of available maps, the inventory of key and degraded marine ecosystems in the European seas, their level of degradation, the main anthropogenic pressures and the possibilities for restoration. Catalogues were constructed from semi-structured literature reviews.



European regional-scale availability of habitat maps and category of different habitats (Baltic – Baltic Sea, NEA -North East Atlantic, MED – Mediterranean Sea, Black – Black Sea, Other – non-European regional sea or global



ap)



EMODnet broad-scale seabed habitat map for Europe Global map of cumulative human impact across 20 ocean (EUSeaMap, <u>www.emodnet.eu/seabed-habitats</u>) ecosystem types (Halpern et al. 2008. *Science*). according to the EUNIS habitat classification.

EU HABITAT MAPPING GAPS AND RECOMMENDATIONS

- More efforts required in production of high resolution and fine scale habitat maps;
- More ground-truthing of habitat maps, especially in cases of habitat modelling/interpolation;
- Filling of thematic gaps concerning specific habitats (e.g. deep-sea habitats and unmapped threatened/protected habitats);
- Filling geographical gaps regarding specific regions (sub-regions), supporting regional and national mapping initiatives;
- Filling temporal gaps through the digitization of old/historical maps;
- Increasing access to grey literature (e.g. online repositories);
- Promoting the publication of georeferenced data and GIS shapefiles (e.g. as supplementary files in papers or in online repositories).

Definitions

Activity: basic human activities to satisfy the needs of societal drivers; e.g. aquaculture or tourism see Scharin et al. 2016 Ecological Economics

Pressure: the mechanism through which an activity has an actual or potential effect on any part of the ecosystem, e.g., for agriculture, one pressure would be influx of nutrients – see Smith *et al.* 2016 Frontiers in Marine Science

ASSESSMENT OF ACTIVITIES





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Density of AIS signals from all vessels in the Mediterranean Sea. From Piante & Ody 2015, Medtrends, WWF-France.







Agriculture 5

Trawling intensity assessed from VMS and logbook data of bottom trawl fleets in European waters. From Eigaard et al. 2016, ICES Journal of Marine Science.

ASSESSMENT OF PRESSURES

Nitrogen and phosphorus enrichment Introduction of other substances Input of organic matter Abrasion Introd. of non-synthetic compounds Introd. of non-indigenous species Litter Selective extraction of species Changes in siltation and light regime Substratum loss Introduction of synthetic compounds Smothering Change in wave exposure duction of radionuclides Salinity regime change Introduction of microbial pathogens Thermal regime change Noise Water flow rate changes Mapped pressures in the MERCES Activities and Pressures Catalogue, ranked in order of number of entries; Extraction of non-living resources Emergence regime change Major pressures linked to maritime Electromagnetic changes mobilities are highlighted in orange. Pressures in grey may still involve use Barrier to species more of vessels for some stage of Aesthetic pollution 2 operations. pH changes





EU ACTIVITY/PRESSURE MAP LIMITATIONS

Limitations

- Maps are mainly in image format (limited use), with static data (single snapshots in time)
- Most are low resolution, broad scale information.
- There are high levels of modelled/interpolated data.
- Uneven geographic representation across Europe.
- Information is not always directly available to the users.

Recommendations

- More studies should include georeferenced datasets and mapping.
- There should be an increased use of maps in assessments.
- Filling geographical and temporal gaps.
- High levels of standardization should be used for better compatibility between studies/uses.

www.merces-project.eu



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