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## SYMBOLS TO REPRESENT MEDITERRANEAN SEABED TYPOLOGIES AND FOCAL BENTHIC SPECIES

## SIMBOLI PER RAPPRESENTARE LE TIPOLOGIE DI FONDALE E LE SPECIE BENTONICHE COSPICUE

**Abstract** - A set of effective symbols, suitable to represent 11 substrata typologies, 68 focal taxa and mucilage aggregates distribution, both on 2D/3D maps and along seabed profiles, was provided.

Key-words: methodology, map graphics, ocean floor, biocoenosis, Mediterranean Sea.

**Introduction** - Understanding diversity and ecological processes occurring in coastal marine habitats, as well conservation and management of marine biological resources and natural heritages, require proper representation of seabed typologies, biocoenosis, and benthic species distribution at a wide range of spatial scales. Most of the attention is generally paid on focal species, which include indicators, keystones, umbrellas, and flagships species (for definition see Zacharias and Roff, 2001). The distribution of these taxa can be obtained by scientific SCUBA divers along transects (Bianchi *et al.*, 2004) and reproduced as graphic profiles which describe, for examples, changes along gradients. Benthic cartography (including maps of the biocoenoses, emergencies, degradations and risks), requires standardised symbols (Meinesz *et al.*, 1983) and/or textual codes (Bianchi, 2007). The aim of the present study was to provide a set of effective symbols, suitable to represent Mediterranean substrata typologies and focal species distribution both on 2D/3D maps and along seabed profiles.

Materials and methods - Main substrata typologies and focal taxa list were obtained reviewing the literature on Mediterranean habitats classification (see RAC/SPA, 2006 and references therein), European Community directives and international conventions. Taxa list were reduced unifying species with similar shape, reproducible by the same symbol but different colours and/or size. For each selected typology and taxon the stylised shape was freehand drawn. All the freehand drawing were digitalised and converted in a custom font using dedicated software. The effectiveness of digitalised symbols was tested on thematic maps and transects profiles based on field data.

**Results** - 80 symbols, representing 11 bottom typologies, 68 taxa and mucilage aggregates, were drawn and stored in a custom font. These symbols were effectively used to represent focal species distribution within the "Secche di Tor Paterno" marine protected area.

**Conclusions** - Simple and easily distinguishable symbols are useful for both benthic cartography and graphic profile which could allow spatial and temporal analyses.

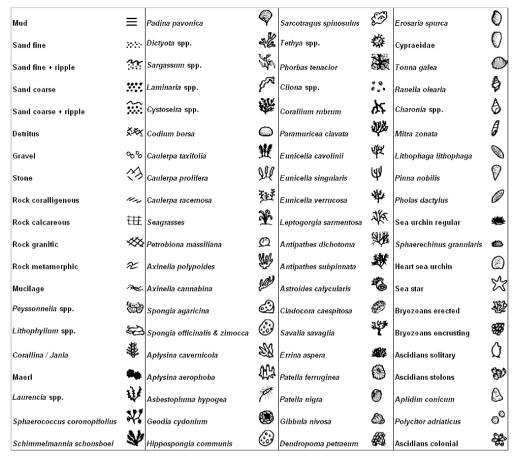


Fig. 1 - Proposed symbols for the most relevant seabed typologies and benthic taxa. Simboli proposti per le tipologie di fondale e per i taxa bentonici più rilevanti.

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