SURVEY OF HABITATS AND SPECIES OF SHALLOW ROCKY BOTTOMS IN THE CAPO CARBONARA MARINE PROTECTED AREA (SARDINIA, ITALY)

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Summary: Shallow rocky coasts are home to habitats and species worthy of protection for the particular importance they have for the Mediterranean biodiversity in accordance with the Barcelona Convention. Moreover, the quantification of distribution of shallow benthic communities dominated by macroalgae and the application of proper ecological indicators, provide useful information on the ecological status of coastal waters under the Water Framework Directive (WFD, 2000/60/EC).

A quantitative assessment of benthic communities of the mesolitoral and the infralittoral fringe was carried out in the Capo Carbonara Marine Protected Area (thereafter CCMPA) during the summer 2011. CCMPA was recently included in the SPAMI list and overlaps with a proposed marine Site of Community Importance (SCI - ITB 040020) under the Habitat Directive (92/43/EC). Hence, the survey was aimed to identify habitats and species of conservation interest according to the SPA/BIO and Natura 2000 protocols. Moreover the ecological status of coastal waters was assessed according to CARLIT methodology. The rocky coast was investigated favouring non-destructive methods: the presence and the abundance (in terms of linear development along the coast) of dominant benthic communities, were visually estimated; the geomorphological features of each coastal stretch were also recorded. The monitoring has covered more than 30 km of coastline equal to 66% of the coastal development of the CCMPA and 81% of the rocky coast.

Ten dominant communities were detected. Cystoseira populations colonize over the 80% of investigated coasts. Cystoseira amentacea var. stricta prevails in the form of patches and more or less continuous belts (69%); Cystoseira crinita and Cystoseira brachycarpa occur as a dominant community on the 7 and 1 % of the coast, respectively. Cystoseira compressa, which has lower ecological requirements, has spread throughout the CCMPA but is dominant in 5% of the investigated rocky coast. Populations of the sessile gastropod Dendropoma petraeum are widespread throughout the CCMPA with discontinuous distribution; it is dominant in 13% of the investigated coast. Noteworthy is also the presence of some shallow reefs of Posidonia oceanica, mostly for their sensitivity to human disturbance and ecological value, than for the length of the coast concerned (1%).

Because of the prevalence of communities with a high level of sensitivity to anthropogenic disturbance, the application of the methodology CARLIT revealed a high ecological status of CCMPA coastal waters (EQR = 0.9), according to the classification provided by the WFD.

The findings of this study have led to identify habitats and species of conservation interest, but also relevant for scientific, aesthetic and educational aspects. Moreover, they shed a new light on their distribution, abundance and conservation status and also permitted to identify conditions of particular value as well as areas more sensitive to human disturbance. These results are functional both to the application of management measures for conservation purposes, and to the identification and enhancement of natural values for educational and recreational purposes.

Keywords: monitoring – water quality – marine protected area – CARLIT – Capo Carbonara