

Mapping of *Posidonia oceanica* meadows in the Capo San Marco offshore (Sciacca, Sicily): evaluation of the lower limit using geophysical methods

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Posidonia oceanica, one of the most important and abundant endemic seagrass in the Mediterranean Sea, forms large meadows from the sea surface down to about 40 m, colonizing rocky and sandy substratum. Environmental factors (e.g. salinity, temperature, turbidity, chlorophyll A) influence the spatial configuration of *P. oceanica* meadows. In particular, the literature suggests that the increase in turbidity results in a decrease in lighting and, consequently, the rising of the lower limit of the seagrass meadow.

In this work, we map the *P. oceanica* meadows in the Capo San Marco offshore (Sciacca, Sicily), using geophysical data acquired by a Side Scan Sonar (SSS) and Multibeam sonar system from about 20 m to 45 m of water depth. Several video and photo images were acquired in selected locations to validate acoustic data. SSS images revealed the presence of acoustical facies related to rocky substratum colonized by the *P. oceanica* as patchy zones and dense, extensive meadows. An anomalous signal of the multibeam image overlaps to with the SSS acoustical pattern, revealing that the *P. oceanica* meadows extend up to about 35m of water depth. This value represents the lower limit of seagrass meadows in the Capo San Marco offshore and differs from the depth of 25 m documented in the literature (Andaloro et al., 2007; Perzia et al., 2011). Photo and video images, acquired up to about 33 m of water depth, showed *P. oceanica* meadows of turbid water and zones of widespread suspended sediments.

This research documents the deepening of the lower limit of the *P. oceanica* in the study area, which is a key factor in evaluating the extension/regression balancing of the meadows. Also, this work would imply a re-evaluation of the influence of the turbidity in the *P. oceanica* growth and could allow for a better estimate of the extent of meadow in turbid water.

Andaloro F. et al. (2007) - Messa a punto di un piano per la gestione integrata della zona costiera (ICZM) di Sciacca (AG).

Final Report ICRAM on Project, 1999, 249.

Perzia P. et al. (2011) - Indagine geomorfologica e bionomica dei fondali di Sciacca (AG). *Biogeographia*, 30, 317-325.