



ASSESSMENT OF CONSERVATION STATUS OF POSIDONIA OCEANICA MEADOWS IN FUTURE MARINE PROTECTED AREA KATICH (MONTENEGRO)

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Introduction

Posidonia oceanica is endemic Mediterranean seagrass with extensive and productive meadows. These meadows play a number of key functions for Mediterranean littoral ecosystems: they are sites of intense organic and inorganic carbon fluxes, they form complex ecosystems and support high level of biodiversity and trophic interactions, represent areas of refuge and nursery for fish and invertebrates also of commercial importance, reduce sedimentation and stabilize the seabed and reduce coastal erosion (Boudouresque et al., 2006). Hence, P. oceanica meadows are protected by the Habitat Directive 92/43/EU and are included in the reference list of priority habitats of the SPA/BIO Protocol of Barcelona Convention (Relini & Giaccone, 2009),

In the framework of the project **"Economic benefits of sustainable development and potential blue carbon value of Katic MPA"** a number of activities are being carried out in order to:

- implement environmental monitoring
- protect P. oceanica meadows
- build awareness among public and decision makers
- identify management measures



Katich is a MPA in creation, a Partially Emerald Site and an IBA Wetland (future Natura 2000 area)

Materials and methods

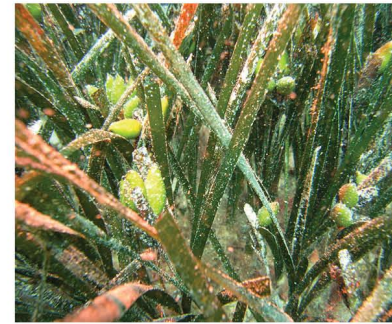
Actions done

- Sampling of water column
- Measurement of environment data
- Installation of grid of measuring points
- Collection of P. oceanica shoots
- Measurement of leaf biometric variables
- Positioning of "pilot" ecological moorings
- Experimental transplantation of P. oceanica
- Filming all the actions



Actions to be carried out

- Assessment of meadow shoot density and classification according to density and depth (Pergent et al. 1995; Buia et al., 2004)
- Assessment of % cover of live P. oceanica, dead mat and substrates (Bianchi et al. 2004; Montefalcone et al. 2007)
- Assessment of Conservation Index (Moreno et al. 2001; Montefalcone et al. 2006)
- Laboratory analysis
- Comparison of various field data
- Development of Blue carbon study
- Making educational film about the Project



project co-financed by:



Summary

Posidonia oceanica monitoring is a fundamental tool for measuring the status and trends of meadows and environmental conditions and it is crucial to detect early decline trends. Posidonia oceanica meadows in future Katich Marine Protected Area have been investigated in order to assess their conservation status and a monitoring plan has been designed to identify changes in seagrass meadows over time.

The first survey was carried out in the summer/autumn 2012 following standardized protocols based on informative and replicable actions which are, at the same time, achievable in a short time period and can be adopted with limited funding resources. This survey represents the baseline for periodical annual sampling to get reliable information and to ensure that habitat changes are monitored and managed appropriately. It is an important step in reaching a standardized approach for Posidonia oceanica ecosystems monitoring at a Mediterranean level.

Results should be critical to suggest decision makers with management tools for reducing human pressures on the meadows and promoting a sustainable approach to human activities in the future Katich MPA.



Conclusions

Findings of this project will allow to:

- transfer know-how on scientific methods for P. oceanica monitoring
- provide basic information on P. oceanica conservation status in future Katich MPA
- collect necessary data for charting and zoning in future MPA
- create a net of operators, scientists, managers of different Mediterranean countries all involved in studies, monitoring and protection of P. oceanica meadows

Relevant literature

■ Bianchi et al., 2004. Hard bottoms. *Biol. Mar. Medit.* 11 (suppl. 1): 185-215; ■ Boudouresque et al., 2006. *Préservation et conservation des herbiers à Posidonia oceanica*. RAMOGE pub., 1-202; ■ Buia et al., 2004. Seagrass systems. *Biol. Mar. Medit.* 11 (suppl. 1), 133-183; ■ Montefalcone et al., 2006. Anchoring damage on Posidonia oceanica meadow cover: a case study in Prelo Cove (Ligurian Sea, NW Mediterranean). *Chem. Ecol.* 22(1): 207-217; ■ Montefalcone et al., 2007. Urban seagrass: status of Posidonia oceanica facing the Genoa city waterfront (Italy) and implications for management. *Mar. Pollut. Bull.* 54: 206-213; ■ Moreno et al., 2001. Assessment of the conservation status of seagrass (Posidonia oceanica) meadows: implications for monitoring strategy and the decision-making process. *Biol. Conserv.* 102: 325-332; ■ Pergent et al., 1995. Utilisation de l'herbier à Posidonia oceanica comme indicateur biologique de la qualité de l'environnement littoral en Méditerranée: état des connaissances. *Mésogée*, 54: 3-27. Relini & Giaccone, 2009. Priority habitats according to the SPA