

MONITORING THE RESTORED *POSIDONIA OCEANICA* MEADOW AT S. MARINELLA (CENTRAL TYRRHENIAN SEA)

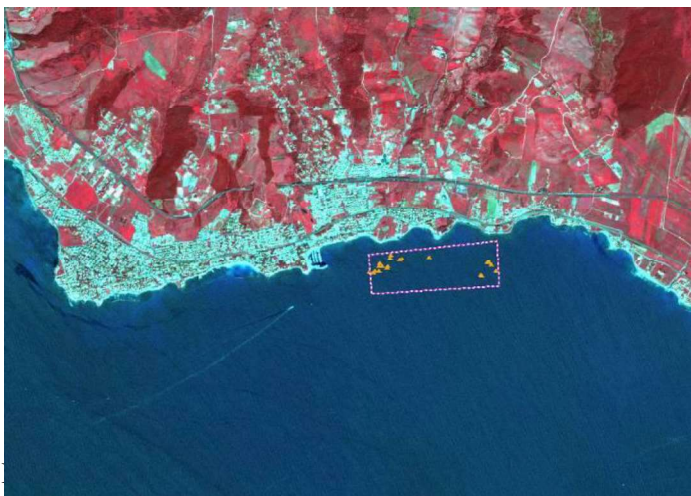
C. MICHELI¹, F. BORFECCHIA¹, A. BELMONTE¹, L. DE CECCO¹, S. MARTINI¹, G. CERIOLO², S. BOLLANOS³,
F. CARANNANTE⁴, L.M. VALIANTE⁵, E. FRESI⁶

¹Enea Agenzia Nazionale per le Nuove Tecnologie, l'Energia e lo Sviluppo Economico Sostenibile, Centro Ricerche Casaccia, Via Anguillarese 301/00123 S. Maria Di Galeria (Roma). carla.micheli@enea.it; ²Planetek-Italia; ³Planetek-Hellas, ⁴Università di Viterbo La Tuscia; ⁵Econ SrL Napoli, ⁶Università di Roma Tor Vergata.

Seagrass distribution and structure varies across spatial and temporal scales and among species. Along the 7.000 km of Italian coast the Mediterranean seagrasses (*Posidonia oceanica*, *Cymodocea nodosa*, *Zostera marina*, *Z. noltii*, *Ruppia cirrhosa* and *Halophila stipulacea*) represent the most important component for the primary production in the seas. Moreover in aquatic environment the seagrass ecosystem has capacity to guarantee different functions of habitats and therefore must be considered as an index of system resilience to possible pressures. However natural and anthropogenic impacts could produce important ecological insights requiring urgent research of ecosystem responses and recovery following major disturbances.

In this context, we started a multidisciplinary project to investigate patterns and process at large scale along the Tyrrhenian Sea that could reflect the ecological disturbances in the genetic diversity of *P. oceanica* meadows and therefore could indicate the time scale of resilience by management monitoring (Micheli *et al.*, 2005; 2011).

In this research we assessed the genetic structure of *P. oceanica* meadow at S. Marinella (Central Tyrrhenian Sea) by RAPD markers and simultaneously, the results were combined to mapping the patches in the population by remote sensing technique (Fig. 1). Changes in the ecological structure of the meadow were compared from 2005 to 2010.



Lepidochronological and phenological analyses of density (Giraud Index) and LAI (Leaf Area Index) were estimated at local scale in five years monitoring work in order to support the *P. oceanica* transplantation experiments. Since our approach is based on laboratory (genetic and physiology) and field evidence it could offer a contribution of mapping populations to stress and assess the degree to which such areas may act as recruitment to stress (e.g. response to climate change). These considerations are necessary to formulate a correct evaluation of the efficacy of ecosystem restoration project.

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