

6th ESP Europe Conference 2026

18–22 May 2026

Prague, Czechia

Advancing Ecosystem
Services Knowledge
for Achieving
a People and Nature
Positive Europe

#esp26europe

BOOK OF ABSTRACTS

This Book of Abstracts provides a comprehensive overview of the session content and is structured into three main sections:

- I. **Session Description** – an introduction to each session, including its objectives and expected outputs
- II. **Session Program** – a detailed schedule for each session, including speakers and timing
- III. **List of Abstracts** – a complete compilation of all accepted abstracts

I. SESSION DESCRIPTION

ID: B1a

Coastal and Marine Ecosystem Accounting: gaps, challenges, and future perspectives

7. Applying Ecosystem Accounting to *Posidonia oceanica* Meadows: Assessing Ecosystem Condition and Carbon Sequestration Along the Italian Coast

First author: Umberto Grande

Other author(s): Elvira Buonocore, Michele Scardi, Pier Paolo Franzese

Affiliation: 1 International PhD Programme / UNESCO Chair "Environment, Resources and Sustainable Development", Department of Science and Technology, Parthenope University of Naples, Centro Direzionale Isola C4, 80143, Naples, Italy.

Contact: umbertogrande@gmail.com

Posidonia oceanica meadows are among the most valuable coastal ecosystems in the Mediterranean Sea, delivering key regulating ecosystem services, including carbon sequestration that is crucial for climate change mitigation. Despite their high ecological and socio-economic relevance, this habitat remains poorly integrated into national accounting systems. In this context, this study applies the System of Environmental-Economic Accounting-Ecosystem Accounting (SEEA-EA) framework to establish a spatially explicit national baseline of ecosystem extent, condition, and carbon sequestration service for *Posidonia oceanica* meadows along the Italian coast, which hosts one of the most extensive and representative distributions of this habitat in the Mediterranean. Spatial information on meadow extent and rhizome primary production, derived from previously developed machine-learning models, is used as baseline input data. Building on these spatial predictions, an integrated ecosystem accounting model is developed to quantify both ecosystem condition and ecosystem service supply. Ecosystem condition is assessed through a composite indicator that combines biotic variables, including shoot density and rhizome production, with pressure-related proxies such as proximity to ports and river mouths. Carbon sequestration is quantified in biophysical terms using rhizome production as a proxy for long-term carbon accumulation and subsequently expressed in monetary terms. Three complementary economic valuation approaches are applied to capture different policy-relevant perspectives: (i) Social Cost of Carbon, reflecting avoided climate damages; (ii) carbon credit values, representing potential market-based mitigation mechanisms; and (iii) replacement cost, estimating the costs required to offset lost sequestration capacity through restoration or reforestation. Our findings provide a robust reference for future monitoring, temporal comparisons, and the assessment of changes in *Posidonia oceanica* condition and ecosystem service provision. Beyond demonstrating the ecological and socio-economic value of *Posidonia oceanica* meadows, this study could support marine spatial planning, conservation strategies, and climate-related policy reporting.

Keywords: Ecosystem Accounting, Ecosystem services, SEEA-EA, *Posidonia oceanica*, Climate mitigation