



# Trait-based approach to seagrass ecosystems TRAITGRASS



Co-organizers: Gabriele Procaccini and Rui Santos

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**The rationale of the workshop was to understand how seagrass functional traits scale upwards to crucial ecosystem functions and response to climate changes**

## Why Trait-based Science?

**Trait-based approaches (TBA) are rapidly becoming the basis of much ecology, physiology, comparative evolutionary studies, and global change biology.**

Patterns in organismal and species functional traits are increasingly being used to understand evolutionary dynamics, mechanisms of community assembly, ecosystem functioning and global change biology.

## Why Trait-based Ecology?

TBA can capture variations in organismal 'performance' and are more quantitative than traditional metrics, offering more insight and predictive power.

TBA better link evolutionary questions (bridges phenotype and genotype), biodiversity and ecosystem functions, and represent a basis to scale from organisms to ecosystems and evolutionary dynamics.

The workshop brought together experts and key players from different disciplines in marine seagrass research as well as researchers involved in the trait-based approach in terrestrial plants. This workshop emerged as the natural next step of a previous COST action (ES0906 Seagrass productivity: from genes to ecosystem management <sup>\*1,2,3</sup>).

## OBJECTIVES

TRAITGRASS aimed to provide a state of art of the potential key traits for understanding the complexity, structure and dynamics of seagrass ecosystems, pinpointing future directions for this novel and integrative seagrass research field.

## SPECIFIC AIMS

- Identifying of gaps, needs and methods to develop and implement TBA to seagrass ecosystems
- Building of a research core group to adopt and apply these mechanistic approaches to seagrasses. Enforcing and enhancing collaborations among seagrass researchers and fostering collaborations with researchers already working on TBA in other plant systems
- Discussing and defining a research agenda for submission of a proposal for the H2020 call: "Societal challenge 5: Climate action, environment, resource efficiency and raw materials" (SC5) topic SC5-6-2014: Biodiversity and ecosystem services: drivers of change and causalities"
- Discussing and preparing a conceptual review paper on trait-based seagrass ecology.

## MAIN OUTCOMES

- Proposal for Innovative Training Networks (ITN) Call H2020-MSCA-ITN-2019: **SEAggrass Based SOLutions for Global Challenges "SEASOL"**. SEASOL aims to develop a battery of **innovative nature-based seagrass solutions** (green infrastructure) to help limiting global warming and mitigate green house gas emissions by capturing CO<sub>2</sub> from the atmosphere, reducing eutrophication and preventing coastal erosion
- Review paper: "Trait-based approach in seagrasses. Perspective and possibilities" (*in preparation*). Authors: workshop participants.

## List of participants

**Gabriele Procaccini, Lázaro Marín-Guirao** - Stazione Zoologica Anton Dohrn, Italy; **Rui Santos, Joao Silva** - CCMAR, Faro, Portugal; **Thorsten Reusch** - GEOMAR, Kiel, Germany; **Teresa Alcoverro** - CSIC - Blanes, Spain; **Nuria Marbà** - Univ. Illes Balears, Spain; **Marianne Holmer, Harald Sheetal** - University of Southern Denmark, Odense, Denmark; **Christopher Bostrom, Lukas Meysick** - Åbo Akademi University, Turku, Finland; **Mats Björk, Johan S. Eklof** - University of Stockholm, Sweden; **Eric Garnier** - CEFÉ, Montpellier, France; **Johannes H.C. Cornelissen** - Vrije Univ Amsterdam, Amsterdam, The Netherlands; **Mirta Teichberg, Agustín Moreira Saporiti** - Leibniz Marine Center, Bremen, Germany; **Ana Sousa** - University of Aveiro, Portugal; **Irene Olivè** - University of Glasgow, UK; **Attendees: Miriam Ruocco, Hung Nguyenmanh, Jessica Pazzaglia, Emanuela Dattolo** - Stazione Zoologica Anton Dohrn, Italy; **Laura Pereda Briones** - Univ. Illes Balears, Spain.



(\*)<sup>1</sup> Mazzuca et al., 2013; <sup>2</sup> Procaccini et al., 2017; <sup>3</sup> Santos et al., *in prep.*