

# *Zostera noltii* dynamics along a salinity gradient: Ria de Aveiro (Portugal)

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**Introduction:** Seagrass meadows have been shown to be one of the most productive ecosystems in the world [1]. As primary producers, they play important ecological functions that support services provided by coastal ecosystems. Moreover, they are structurally important, providing shade and habitat to numerous marine species, as well as providing nursery areas for economically important fish species [2]. Despite their crucial role in providing ecosystem functions and valuable ecosystem services [3], seagrass meadows are highly threatened and are declining worldwide [4, 5]. Consequently, a better understanding of these meadows and their maintenance and preservation is crucial.

According to the global trend, *Zostera noltii* meadows have been declining over the last decades at Ria de Aveiro (Portugal); subtidal populations are now extinct, and *Zostera* is restricted to intertidal areas [6]. The goal of this study was to assess the effect of salinity on the dynamics of *Z. noltii* meadows, namely on its structure (biomass) and functioning (carbon and nitrogen retention, photosynthetic performance, microbial community composition).

**Methods:** The Ria de Aveiro is a temperate shallow coastal lagoon (45 km length; 10 km wide) located along the Atlantic Ocean on the northwest coast of Portugal (40°38'N, 8°44'W). In this system, the Mira channel is a shallow long arm (20 km long) that receives freshwater inputs at its southern part but at the northern part (close to the ocean inlet) salinity is high reflecting values found in the ocean.

*Zostera noltii* was sampled at 10 points along Mira channel taking into account the prevailing salinity gradient. Seagrass was sampled for biomass quantification, carbon and nitrogen retention, photosynthetic performance evaluation; and rhizosediment was sampled for analysis of organic matter, total carbon, total nitrogen and microbial community characterization. Environmental parameters such as salinity, Eh, pH and temperature were measured *in situ*.



**Fig. 1:** Intertidal area at Ria de Aveiro (PT) and *Zostera noltii* meadow (photos by A.I.Sousa).

**Results:** *Z. noltii* biomass and nutrient content showed differences along the channel. There were also differences in photosynthetic performance of the seagrass.

**Discussion:** The obtained results will be discussed regarding the potential influence of the salinity gradient on the structure and functioning of *Zostera noltii* meadows.

**Acknowledgements:** This work was supported by the Portuguese Foundation for Science and Technology (FCT) through the research project LTER-RAVE (LTER/BIA-BEC/0063/2009), co-funded by MCES (PIDDAC); and by the Post-Doc grant SFRH/BPD/79537/2011 (A.I. Sousa). FCT funding through CESAM is also acknowledged.

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