

## JESSICA PAZZAGLIA

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### ***Biosketch***

Graduated in Ecology of Global Changes in 2018 with an experimental thesis in Marine Macroinvertebrate Ecology at the National Institute of Oceanography and Experimental Geophysics (OGS) in Trieste (Italy) entitled "Structural and functional characterization of macrofaunal communities influenced by sewage discharge : a case of study in the Gulf of Trieste (Northern Adriatic Sea) ". Currently PhD student (XXXIV cycle) with MD/3 topic "Resilience of marine phanerogams systems to climate change" co-financed by the University of Trieste and the Anton Dohrn Zoological Station whose supervisors are respectively Prof. Antonio Terlizzi and Dr. Gabriele Procaccini, while the Co-supervisor is Dr. Lazaro Marín-Guirao. Her research activity is aimed at studying the resilience of marine phanerogams to global changes, with particular attention to the study of pre-adapted populations to different environmental conditions and responses to multiple stresses. She was the winner of a HORIZON2020 grant funded by Assemble Plus which will allow her to carry out experiments under controlled conditions at Centro de Ciências do Mar do Algarve (Portugal).

### ***Research***

Her PhD research activity focuses on the eco-physiological and molecular effects induced by multiple environmental stresses in marine phanerogams systems, mainly *Posidonia oceanica* ((L.) Delile, 1813). The increased presence of extreme events such as heat waves, nutrient enrichment and subsequent acidification of the seas has triggered a rapid decline in seagrass systems, important primary producers capable of forming vast meadows covering the seabed. The response of these systems, considered "ecosystem engineers" offers numerous ecosystem services. The future environmental changes can influence the degree of adaptation to local conditions which in turn is the result of a process of acclimatization and subsequent selection of certain phenotypes. In order to analyze the role that these processes can play on future responses to environmental changes, *P. oceanica* plants sampled in two environments with different environmental conditions (oligotrophic vs eutrophic) were exposed to an increase in temperatures and nutrients in a multifactorial experiment ( 4 treatments, Control, Temperature; Nutrients; Temperature + Nutrients) at the Zoological Station of Naples. The different photosynthetic, morphological and physiological parameters analyzed and compared between treatments and populations, showed an antagonistic effect of the combination to exposure to high temperatures and nutrients and a differential response based on the environment of origin. The results allowed the elaboration of a published paper . To support the previous results, gene expression (Tag-seq) and DNA methylation profiles will be analyzed. A careful bibliographic analysis focused on the potential role of plasticity in marine plants in future environmental changes has led to the publication of a review. In addition to being interested in the responses of adult individuals to environmental stresses, her research activity also involves the study of shoots exposed to stressful conditions through the common practice of hardening or priming known in agriculture. In this case, in collaboration with Centro Oceanográfico de Murcia (Spain) and Centro de Ciências do Mar do Algarve (Portugal), gave the opportunity to carry out experiments on *P. oceanica* shoots in order to analyze the memory effect induced by previous stress. (temperature and acidification) through transcriptomic and epigenetic analysis.

### **Publicazioni**

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