PLAISCOOL Project

IMPACTS OF PLASTIC WASTE EXPORT ON CORALS HEALTH IN THE GULF OF LION

Among the anthropogenic activities that significantly affect marine ecosystems, the release of wastes is a key challenge for the preservation of the biodiversity and the associated resources. Plastics are the most abundant wastes both in surface and deep waters. Their impact on fauna is multiple, including ingestion, alteration of physiological functions and transport of invasive species. Reef ecosystems are particularly sensitive to plastic wastes exposure. Engineer species like corals form reefs, which host a rich biodiversity, including patrimonial and commercial species. The adaptive capabilities of corals to the plastic 'threat' must be estimated to define the appropriate conservation actions. The Mediterranean Sea is one of the areas in the world subjected to the highest anthropogenic pressure. Recent observations in this area have shown abundant plastic debris on reef---building cold---water corals. Contrary to their tropical equivalent, cold---water corals lack photosynthetic symbionts and thus constitute an easier biological model to determine the role of macro-- and micro-plastics on the alteration of the health status of the host. Two typical species of cold--water coral communities have been chosen for this project: *Lophelia pertusa* and *Madrepora oculata*. The first part of the project aims at assessing the holobiont (bacterial---host couple) health through a joint study of the growth processes (from polyp to colony scale), the energetic reserve assimilation, the stress level of the host, and the associated bacterial communities (microbiome). The second part will focus on plastic to corals transfers and in particular the quantification of plastic debris ingested by corals and the evaluation of the coral contamination by the plastic associated bacterial communities.

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