Assessing the presence of microplastics in fiddler crabs (Afruca tangeri) and sediments of the salt marshes of Cadiz Bay (Spain).

Tiana Renard*[1] and Viktor Baranov[2]

[1]Ludwig Maximilian University [Munich] = Ludwig Maximilians Universität München (LMU) – Professor-Huber-Platz 2, 80539 München, Allemagne, Germany
[2]Estación Biológica de Doñana (EBD) – Séville, Spain

Abstract

Nowadays, encountering plastic while wandering on the beach is almost inevitable. If some end their life as microplastics (MPs) in seas and oceans, another part stays in coastal environments.Their accumulation can impact the fauna that depends on these habitats to live, as well as the ecological functions they provide. This is particularly true for fiddler crabs. Fiddler crabs are known to be "eco-engineers". They help maintain healthy habitats through bioturbation activities, mainly by digging burrows in sediment, which play an important role in carbon and nutrient cycling. The reworking of sediments can also modify the distribution and transport of MPs, making them more available for the crabs themselves as they feed on these sediments. Crabs' burrowing activity can also enhance the resuspension of MPs in the water when the tide rises. Consequently, MPs can end up trapped in the gills of aquatic fauna, including crabs. In this regard, we want to assess the presence of MPs in the sediments and in the fiddler crabs (Afruca tangeri) of the Parque de los Toruños at the heart of the Parque Natural Bahia de Cadiz. Although a protected area, the proximity with urban infrastructures and tourism make it susceptible to MPs contamination. To do so, we sampled sediments in the salt marshes, outside and inside crab burrows, to assess the amount and type of MPs present. Crabs were also collected, and the gills and digestive tracts analyzed for MPs. This study is a starting point to better understand the impact of MPs on salt marshes ecosystems and dynamics. It will also help raise awareness and concerns about the plastic issue, which could even affect protected areas.

Keywords: Microplastics, Salt marshes, Fiddler crabs, Bioturbation, Sediments

*Speaker