sediment-associated MPs with the MP mixture at environmental and high concentration, eight additional treatments with each of the single polymers at two different concentrations. Endpoints included survival, growth, and ingestion rate. We found no effects of survival, growth, or significant changes in community structure after five weeks of exposure, nor did we observe effects on survival, growth, and ingestion rate in the complementary experiment. These no-effect results are important to consider in the context of MP risk assessment in sediment.

2.11.P Filling Gaps for Micro- and Nanoplastic Effects and Risk in Multiple Stressed Aquatic Environments

2.11.P-Tu076 Impact of Microplastics on Mussels Under Extreme Climate Conditions

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Microplastics (MPs) is an emerging contaminant that can affect the marine environment from biota to ecosystems. Co-occurring environmental stressors need to be incorporated into the investigation of the toxicity of MPs, as plastics do not act as isolated stressors in aquatic systems. The present study aims to investigate the toxicity of MPs in combination with thermal stress, under the perspective of environmental relevance and a marine heatwave, in marine mussels, a commercially important organism and a marine pollution indicator species.. In particular, the effect of aged MPs on mussel haemocytes will be investigated after the exposure of mussels to a simulated marine heatwave. The MPs will be artificially aged by sonication and the weathering status of the MPs will be evaluated by the determination of the carbonyl index, an indicator of ageing that is based on the oxidation of polymers such as polyethylene or polypropylene. Mussels will be exposed to a simulated heatwave (i.e., increase of water temperature of 5 ºC) for a 3-day duration. Then the mussel haemocytes will be extracted and exposed in vitro to a set of MPs treatments and different concentrations from low to high levels including environmentally relevant concentrations. The aim of the exposure is to evaluate whether the heatwave increased the mussel sensitivity to MPs, and if MPs toxicity can be attributed to the aging of MPs (compared to pristine unaged particles). Cell toxicity will be evaluated by cell viability, phagocytosis ability, and evaluation of biomarkers through gene expression. The biomarker analyses will include investigation of the expression of genes involved in the oxidative stress, immune and heatshock response. In a warming climate, environmental stressors such as heatwaves will be increasing in frequency, extent, and magnitude creating the need to understand and predict biological responses to short-term extreme events. The present study will contribute to the evaluation of a realistic scenario of the interaction of MPs in the environment with other relevant stressors.

2.11.P-Tu078 Combined Effects of Global Warming and Plastic Leachates from Conventional and Bio-Based Polymers on a Harpacticoid Copepod

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Global warming and plastic pollution are two human-induced environmental stressors of rising concern due to their potential impact on ocean health. To tackle sustainability concerns on the production of conventional petroleum-based polymers, bio-based polymers, i.e., polymers originated from natural feedstocks, are seen as a potential alternative. However, just as conventional polymers, plastic items from bio-based polymers can leach additives and other associated substances into the (marine) environment. To date the ecotoxicological effects of leachates from bio-based polymers are still unclear, but previous reports have demonstrated that leachates from petroleum-based polymers can induce adverse effects in marine invertebrates. Also, in the environment, organisms are subjected to a myriad of environmental stressors, among which global warming, and the combination of stressors is often not considered in environmental risk assessments. To increase our understanding of the combined effects of plastic leachates from either bio-based or petroleum-based polymers and elevated temperature (global warming), in this work we used the case study of self-reinforced polylactic acid (SR-PLA) and self-reinforced polypropylene (SR-PP), at control (22°C) and elevated water temperatures (25°C). To do so, we exposed newly hatched larvae of a harpacticoid copepod *Nitokra spinipes* to plastic leachates (80 g/L) at each temperature. Our preliminary results indicate that after 6 days exposure, lower larval development ratio (%) was found in 60% v/v of SR-PP leachate ($P<0.05$, Dunnett's test) exposure than no leachate controls at 25 °C, but not in SR-PLA leachate exposure ($P = 0.51$, Dunnett's test). Larvae at elevated temperature (25°C) had a higher mortality compared to control temperature (22°C) ($P<0.05$, ANOVA). We anticipate that our results will contribute to assessing the impacts of bio-based polymers in multiple stressor environments and the use of more realistic scenarios in environmental risk assessment.

2.11.P-Tu079 Disclosing the Effects of Pristine and Weathered Micro- and Nanoplastics Combined with Environmental Contaminants on Fish Intestinal Cells (RTgutGC).

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Microplastic (MPs, 1 µm - 5 mm) and nanoplastics (NPs, <1 µm) are ubiquitous in the environment. Micro- and NPs in nature are exposed to weathering conditions, including photodegradation, that may modify surface charge and reactivity, and release plastic impurities such as trace metals, additives or solvents. Moreover, MPs/NPs ability to act as vectors of legacy pollutants and