The final search was conducted in December 2022 on Web of Science (WoS) and PubMed. In total, 305 data points from 13 publications were included, revealing that DOM has the potential to alleviate the adverse effects of MNPs on Daphnia immobilization. Contrary to some hypotheses suggesting the primary role of ecocorona alone, our findings suggest that DOM in the media contributes additionally to the observed mitigation. Furthermore, the moderating effects of DOM varied based on the type of DOM utilized. Humic acid and lake water had the strongest mitigating effects, reducing the risk of immobilization by nearly 50%.

Based on our findings and literature on other stressors, we hypothesize that DOM mitigates MNP effects by either (1) reducing MNP bioavailability or (2) enhancing the daphnids' general resilience to stressors. Future studies comparing the impact of ecocorona formation during MNP incubation with adding the same type of DOM to the media during exposure will help to untangle the moderating effects of the ecocorona itself and free DOM in the media. In addition, studies comparing different DOM types or investigating interactions with additional stressors, and the more detailed characterization of MNP availability to *Daphnia* in the presence of DOM will improve our mechanistic understanding in the future.

3.22.P-Tu349 The Clone Wars: Daphnia magna Clones React Differently To Microplastics Exposure Under Food Limitation

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Ecotoxicological investigations of microplastic (MP) often report a wide variety of effects, even when relying on a model organism, like *Daphnia magna*, that reproduces via amictic parthenogenesis and should so enable researchers to exclude genetic variability. This could certainly be attributed in part to the diverse physicochemical properties of different MP, however MP ecotoxicological studies on *D. magna* often fail to consider clonal genetic variability, as well as other interacting stressors. In fact, in the environment, parameters like e.g. temperature, light, food availability are not constant. Food levels in particular are often far from those usually provided in laboratory investigations, hence we decided to perform this experiment in a food limiting set up for more environmental relevance (0.5 mg C L^{-1} every second day). The aim of this work is therefore to compare the sensitivity of two *D. magna* clonal strains (Aig and BL2.2) when exposed to MP under food limitation. For the MP exposure we chose to compare the potential effects induced by fragments of two biodegradable polymers (PLA and PBS) to those of a petroleum-based one (PET). Microcrystalline cellulose fragments were included as reference particles (all fragments < 20 µm). We carried out a 21-day chronic exposure experiment during which we recorded life history traits, growth and mortality. The two selected *D. magna* clones were found to have significantly different responses in all the selected sublethal parameters, even when statistically excluding intrinsic clonal differences by centering the obtained results to each separate clonal control, with Aig clone being more sensitive than BL2.2. Furthermore, when considering the effects of petroleum-based MP compared to those induced by biodegradable ones, the latter induced comparable or even higher negative effects. Therefore we conclude that clonal variability can significantly affect exposure studies and this should be considered in MP research. Moreover, despite evidence already exists that biodegradable polymers can have similarly negative effects as commodity plastics, further assessments are still needed to support these findings.

3.22.P-Tu351 Combined effects of global warming and microplastic on the population dynamics of a harpacticoid copepod

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Global warming and plastic pollution are two human-induced environmental stressors of concern due to their potential impact on ocean health. Microplastic is ubiquitously and persistently present in the marine environment, yet knowledge of its effects on populations, especially in a warmed marine environment, is limited. Here, our goal was to assess the potential theoretical population effects of microplastic and global warming. To do so, we followed a two-step approach: First, we exposed the harpacticoid copepod *Nitokra spinipes*, a benthic copepod, to Poly (lactic-co-glycolic acid) (PLGA) microbeads (5 µm), at control (22°C) and increased (25°C) water temperatures. The effects on *N. spinipes* individual were assessed by identifying shifts on filtration rate on microalgal prey, a proxy for energy assimilation. In the next step, the dynamics of a *N. spinipes* population was simulated for projected global warming conditions, and the effects of microplastics on the population density equilibrium were assessed. The empirical filtration rate data was incorporated in an individual-based model implementation of the dynamic energy budget theory (DEB-IBM model) to deduct potential theoretical population level effects (ongoing analysis). Our preliminary results suggest that PLGA microbeads at 0.1 % food content decreased the filtration rate of *N. spinipes* at increased water temperature (25°C) ($P < 0.05$, ANOVA). All *N. spinipes* at the increased water temperature (25°C) have a higher filtration rate compared to the control temperature (22°C). Our study demonstrates that the combined exposure of microplastic and elevated water temperature can induce less energy assimilation, in a high emissions scenario (RCP 8.5, IPCC) and inform the vulnerability of marine populations under current and future environmental conditions.