response was observed for leachate exposure. ETS activity in control groups was temperature-sensitive, increasing significantly at 30°C; however, pollutant exposure did not significantly alter ETS activity at either temperature.
These findings show the complex interplay between temperature and pollutant toxicity, with elevated temperatures intensifying the adverse effects of Cu and BPA on marine organisms. The results highlight the vulnerability of marine and aquatic ecosystems to compounded stressors, suggesting that rising global temperatures and pollution may synergistically threaten biodiversity and ecosystem stability.

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3.17.P-Th253 Toxicological Evaluation of Plastic and Antifouling Paint Leachates on Two Life Stages of an Estuarine Copepod: *Nitokra spinipes*, in the Context of Global Change

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Plastic production soared to 400 million tons with a substantial proportion finding its way from inland areas to riverine and coastal environments. Within aquatic environments, plastics and biocide boat coatings undergo physical and chemical degradation, leaching chemicals from the polymer's matrix. These leachates have been found to have deleterious effects on aquatic organisms, such as copepods, crustaceans or fish. Furthermore, global change is currently increasing the frequency and magnitude of environmental stressors (i.e., increased temperatures), inducing negative effects in organisms. To the best of our knowledge, the combined effects of plastic-associated chemicals and global change remain largely unexplored. So, this study aims to evaluate the effects of leachates from plastic debris and boat coatings on *Nitokra spinipes*, a harpacticoid copepod key-species to estuarine food webs, in the context of global change. First, the most common observed plastics in an estuarine environment was established by sampling plastic items from the water column of the Iser estuary in Nieuwpoort, Belgium, via a manta net coupled to an aquatic drone; and from the banks using three quadrats of 50 x 50 cm randomly deployed along the tide line. After identifying polyethylene (PE) and polypropylene (PP) as the most abundant polymers as well as coating particles, leachates were produced using pristine PP and a Hemper's boat coating (7 days, at room temperature, in the dark). The toxicity of the leachates was then assessed by exposing *N. spinipes* adults and nauplii at 22°C and 25 °C (+3 °C, RCP 8.5 scenario, IPCC 2021). A significant toxicity was observed from the coating's leachates on nauplii development and mortality, whereas none was observed for the PP-leachates. Our results on adults showed a synergistic negative effect of the coating s leachates when combined to higher temperature (after 72 h, EC50 at 22°C = 44.7 ± 16.88% and EC50 at 25°C = 6.52 ± 10.73%). To conclude, coating's leachates exhibited significant toxicity in both life stages affecting greatly the adults when combined with elevated temperature. Our findings suggest that the predicted increase in temperature will aggravate the leachates toxicity on copepods and could lead to a cascading effect on the food web. Our results contribute to the risk assessment of plastic and coatings related litter in regional estuaries and help filling the knowledge gap on combined stressors effects on organisms.

3.17.P-Th254 Combined Effects of Plastic Pollution and Global Change on a Benthic Primary Consumer, *Nitokra spinipes*

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In estuarine waters, organisms are subject to multiple stressors in the environment, including anthropogenic pollutants such as plastic, and fluctuating physical-chemical parameters due to tidal and freshwater inputs. However, due to global change, physical-chemical parameters are predicted to be shifted towards new extremes in estuaries. For example, recurring extreme salt intrusion events will increase due to a higher frequency in heatwaves and draughts, more acidic water events will happen. Alongside these stressors, estuaries are considered reservoirs of plastic pollution, but the assessment of the combined effects of these parameters on primary benthic consumers, along generations, is lacking. Therefore, we aim to assess the combined effects of multiple stressors (pH, salinity, plastic particle forms) on a benthic estuarine primary consumer, *Nitokra spinipes*, across multiple generations. Using both

experimental results and coastal ecosystem knowledge, we aim to model the coastal ecosystem responses, already impacted by multiple stressors (e.g. fishery activities, pollutants, global change), to a shift in a benthic primary consumer group. We expect that sublethal effects will be observed when one of the physical stressors approaches the species tolerance limit, and that particle ingestion will potentiate these effects along generations. Expected effects can be the reduction of number of offspring to decrease or impaired growth and development, due to energy reallocation (food dilution) and population decline over multiple generations. Within the ecosystem, if the primary consumers are impacted, a cascade effect could be predicted with a shift in the access to food items on high food web levels, potentially leading to negative impacts on economic activities leaning on fisheries.

3.17.P-Th255 Small Microplastics and Microlitter Components (<100 µm) in the Invasive Blue Crab *Callinectes sapidus* from a Mediterranean Lagoon

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Small microplastics (SMPs <100 ?m) can be ingested by organisms at the lower layers of the trophic web, leading to bioaccumulation and biomagnification in the higher trophic levels, with potential health risks associated with seafood consumption and the seafood industry. Additionally, the presence of MLCs (micro-litter components such as plastic additives, artificial fibers, and other micro-components), can further increase the potential threat to organisms, including humans. Invasive species, like the fast-growing blue crabs (*Callinectes sapidus*), originally from the western Atlantic coasts and now found in coastal environments like lagoons, may be particularly prone to ingest SMPs and MLCs, due to their predatory feeding habits and benthic lifestyle in transitional environments. Blue crabs (*Callinectes sapidus*) were collected from various sites in the Venice Lagoon in August 2024 as part of the PNRR spoke 1 Biodiversity project. The samples were dissected in a Clean Room (ISO7) and subjected to pseudodigestion process involving optimized mild pre-treatment, purification, and filtration procedures based on a previously established method A rigorous Quality Assurance and Quality Control (QA/QC)) protocol was followed throughout. Filters were analyzed using Micro-FTIR, enabling both quantification and identification of SMPs and MLCs. The specific methodologies employed for these samples proved crucial for targeting these emerging pollutants and providing reliable, replicable data. These preliminary findings will contribute to the limited knowledge of SMPs and MLCs ingestions by invasive species and shed light on potential health risks associated with their consumption, with implication for seafood and production.

3.17.P-Th256 Microplastic and Phthalate-Screening in Wild *Mytilus galloprovincialis*

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Additives associated with microplastics pose a double threat to the environment and aquatic organisms' health. Many of these compounds, such as phthalates, are classified among the most hazardous contaminants. These additives can be readily released into the environment, due to their lack of covalent bonds with synthetic polymers, potentially causing toxic effects, including immunotoxicity, neurotoxicity, and oxidative stress in exposed organisms. *Mytilus galloprovincialis* emerges from research as a potential bioindicator of microplastic pollution, playing a key role in monitoring the health of the marine ecosystem and the implications for human health. In this context, this study aims to detect microplastics and phthalates in the soft tissues of wild *Mytilus galloprovincialis*, evaluating a potential correlation between contaminants and the use of bivalve species to monitor microplastic and additive pollution. Several analytical methods were applied. On the one hand, the pre-treatment method was based on pseudo-digestion at temperatures below 40°C thus avoiding polymer degradation, which could lead to an underestimation of particle abundance. This methodological approach enabled the characterisation of microplastics with a high yield by micro-Fourier Transform Infrared Spectroscopy. On the other hand, the screening of phthalates was performed by Liquid Chromatography/High-Resolution Mass Spectrometry. Polyamide was the most widely detected polymer with a prevalence of ellipsoidal shape and an average length of 50.95 ?m and width of 22.01 ?m. The phthalate analysis detected Diisobutyl phthalate (DIBP) in all samples. The applied methodology allowed the identification and quantification of microplastics and phthalates in mussel tissues, providing indication on their possible sources and environmental fate, and