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DISSERTATION TITLE:	*Anxious copepods in the Anthropocene: interactive effects of biotic stressors on contaminant responses*

Organisms living in coastal areas are influenced by various natural conditions and stressors. Lode's work shows the importance of considering interactive effects of biotic stressors in ecotoxicology. Risk of predation is a daily challenge for marine copepods, and the fear of being eaten by a predator is shown to increase the toxicity of copper, a common environmental pollutant in Norwegian coastal waters. The importance of recognizing the biology in ecotoxicology is highlighted throughout Lode's work. The toxicity of copper is further shown to depend on copepod density and kinship, and predation risk exposure is shown to increase individual behavioral differences. Such behavioral differences could in turn affect population responses to pollutant exposure.

Simultaneous exposure to natural stressors and environmental pollutants can cause anything from reduced to increased effects. It is important that such interactive effects are considered in future environmental monitoring and management. There is however a lack of studies from marine systems on how biotic stressors can affect environmental pollutant toxicity. Lode and colleagues have shown that predation risk can double the toxicity of copper on delayed copepod development to adulthood. This is an important finding, and the first study in the world to experimentally investigate how predation risk can affect the toxicity of an environmental pollutant in a marine system.

Lode and colleagues further investigated potential mechanisms of altered copper toxicity in copepods simultaneously exposed to natural stressors. No effect was found of copper exposure on genotoxicity. Predation risk was found to increase copepod respiration, depending on species, whereas copper increased respiration, depending on copepod density. When combined, predation risk and copper surprisingly caused a reduction in respiration rates. Lode describes this finding as unexpected, and highlights the need for more research on how biotic stressors interact with environmental pollutant toxicity.

Copepods are amongst the most numerous organisms on the planet and constitute an important link between algae and fish in marine food webs. Predation risk is thus an important structuring factor for copepod populations. However, coastal areas are often affected also by environmental pollution. Copper for example is a common environmental pollutant in Norwegian coastal areas, mainly due to its extensive use as an antifouling biocide in aquaculture. The study system used throughout Lode's work, consisting of copepods, predation risk and copper, is thus highly relevant for Norwegian coastal waters.