

Examining the interactive effects of increased salinity and heatwave on freshwater zooplankton communities and the influence of timing

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Elevated salinity and heatwave events are disturbing freshwater lakes. The combination of increased salt concentration and acute thermal stress, either occurring simultaneously or sequentially, has not been thoroughly studied in freshwater systems, particularly at community-level. It has limited our ability to predict and mitigate outcomes of future disturbances. To help fill this gap, we conducted a mesocosm experiment to investigate the interactive effects of increased salinity and acute thermal stress on freshwater zooplankton communities, structure and function in simultaneous and sequential scenarios. Results showed that when the two stressors were applied individually, both caused impacts to zooplankton communities. They mainly negatively affected copepod nauplii and cladoceran. We also found salt by heat antagonistic effects on total zooplankton abundance and biomass in simultaneous and sequential scenarios. Our findings indicated that considering the possibility of interaction even if stressors were decoupled in time could be important to predict community-wide responses to future changes.