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An experimental salt reduction in a lake with long-term hypersaline conditions does not increase zooplankton diversity but affects the grazing of *Artemia persimilis* on algae

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Abstract:

Lakes from semiarid areas are generally temporary and saline, depending on the precipitation cycles. The negative effect of salinity on zooplankton richness when a lake dries up is well known, but much less is known about the outcome when a lake reduces its salinity because of rainfall events. Parque Luro Reserve is located in Argentina's semiarid area, and it has a hypersaline shallow lake with extreme variations of depth and salinity. The objective of this research was to analyze the changes in zooplankton diversity when the lake's salinity decreased. We also analyzed the hatching conditions of *Artemia persimilis* Piccinelli and Prosdocimi, 1968 and the grazing effect of this species on the algal community. We incubated lake sediments in microcosms with lake water for 45 days at salinities between 25 and 300 g L^{-1}. The only species that hatched at salinities less than or equal to 100 g L^{-1} was *A. persimilis*. Hatching at higher salt concentrations, as observed in the field, would only occur if occasional rainfall produced a vertical stratification of salinity. The density and biomass of *Artemia* (dominated by post-naupliar stages) peaked at 50 g L^{-1}. At salinities less than or equal to 100 g L^{-1}, phytoplankton was not abundant, while periphyton was very abundant. The inverse relationship between *A. persimilis* and phytoplankton biomasses allowed us to corroborate a strong grazing effect of *Artemia*. The absence of other zooplankton species could be due to egg bank deterioration caused by the persistence of long-term hypersaline