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Per il Presidente del Comitato Organizzatore

Dr. Andrea Bergamasco

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Rotifer biodiversity in the Eastern Alps: influence of environment and dispersal

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Abstract:

We investigated rotifer composition in relation to environmental variables and between-lake distance, proxies for niche properties and dispersal, respectively. For this purpose, a total of 218 lakes from different altitudinal belts (lowland, montane, subalpine, and alpine) in Trentino - South Tyrol (Italy) were sampled. In multivariate and indicator species analyses, planktonic genera such as *Asplanchna* and *Filinia* were typical for low-altitude (i.e. lowland and montane) lakes. Depth and alkalinity, linked to habitat complexity, were the specific environmental features that determined species composition in these lakes. High-altitude (i.e. subalpine and alpine) lakes were characterised by rotifer communities composed of benthic-littoral taxa (e.g. *Lecane mira*, Bdelloidea) and generalist species adaptable to restricted environmental conditions such as shallower depth and lower temperatures. Habitat generalists such as *Polyarthra* gr. *vulgaris-dolichoptera* were found in lakes of all altitudinal belts and had a poor discriminative value. Rare species were also frequent across altitudinal belts, underlining that every habitat was unique. In different Mantel tests, rotifer dispersal was mainly determined by aerial rather than by terrestrial vectors as indicated by different metrics of geographical distance. Furthermore, species composition was similar in high-altitude lakes characterised by a similar restricted environment, while in low-altitude lakes multiple species assemblages were found. This study provided comprehensive information about specific rotifer assemblages and driving forces in lakes of different altitudinal belts. Rotifer assemblages were mainly niche-based in low-altitude lakes, while mainly dispersal-based in high-altitude lakes. This information is fundamental for detecting changes in ecosystem integrity and for responsible ecosystem management.