

Not only Cladocera: what we can learn from RRE analysis in deep lake sediment cores

Since early palaeolimnological studies, Cladocera have been largely investigated in lakes of different typologies and from a large variety of sites. Analyses of their subfossil remains provide evidence for changes in trophodynamics, habitat and water level fluctuations and of impact of drivers such as climate change on lake ecosystem functioning. Rotifers are an important component of lacustrine food webs. They are responsible for the largest part of zooplankton diversity. Because of short developmental times and intrinsic rate of increase, they promptly respond to different impacts, such as changes in trophic, pollution and recovery as well as climate-driven changes. Rotifers have been overlooked in palaeolimnological studies because they do not leave subfossil remains. They do produce, however, resting eggs of a variety of morphotypes (MTs), which preserve well in sediments. We report here results of a study in which we applied RRE MTs (**R**otifer **R**esting **E**ggs **M**orpho**T**ypes) analyses to a sediment core of Lake Orta on which cladocera and diatoms were analysed along with lake chronic, heavy metal pollution and acidification as well as recovery. We found that RRE abundance increased during pollution. RRE MTs differed substantially before vs. during pollution and along with the different recovery phases. The restored RRE community differed substantially from the pre-pollution one. Unexpectedly, RREs persisted over the full pollution phase, when copper concentration in the water column was as high as 108 µg/L (in the late fifties) and when lake pH (value at the winter mixing) was of 3.8 (in the middle eighties). The presence of open egg cases also proves attempts of e.g. *Brachionus calyciflorus* to establish also during pollution phase. Extending RREMTs analyse to other deep subalpine lakes (i.e. Léman, Annecy and Bourget) encourage to further develop this approach to contribute to understanding impact of local vs. global drivers affecting lake ecosystem functioning.

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