



Conference Abstract

First steps towards a barcoding database for the Iberian cladocerans

Charo López-Blanco[‡], Antonio García-Alix[‡], Yi Wang[§], Laura S. Epp[§]

[‡] University of Granada, Granada, Spain

[§] University of Konstanz, Konstanz, Germany

Corresponding author: Charo López-Blanco (charolopezb@ugr.es)

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Abstract

Due to similarities in morphological features together with strong dispersal abilities, it was thought that some groups of zooplankton (e.g. rotifers, copepods, and cladocerans) have cosmopolitan distributions. In the particular case of cladocerans, recent molecular studies using DNA barcode regions have indicated a different picture, including the existence of multiple regional endemic species and geographical phylogroups; even at very small geographical scales. This has demonstrated that cladocera species are less widely distributed than assumed. Morphological identifications of these animals require expertise and high taxonomic specialization. Even so, species identifications are hampered by the small size of the organisms (especially from the littoral zone) and by the sampling cost for obtaining rare species and both parthenogenetic and gamogenetic specimens. The use of molecular techniques can provide new tools to identify cryptic diversity, and by being added to taxonomical approaches, provide more precise data of biodiversity. However, the accuracy of species assignment in metabarcoding relies on the availability of a DNA reference library, which is challenging in areas with high endemism rates such as the Iberian Peninsula. A preliminary compilation of the available molecular data for the cytochrome (COI) in public repositories (Barcode of Life Data Systems and NCBI GenBank) shows that the available sequences only cover ~60% of the Iberian freshwater cladocerans. The family Daphniidae is very well represented, while the family Chydoridae, which contained most of the Iberian endemism, is underrepresented. We have identified the gaps, and are now focusing on collecting the target organisms to fill the missing taxa of

the Iberian library. A compendium of the sampling points, species recovered so far, pitfalls, and future strategy is presented here. The effective completion of a DNA database for cladocerans will have applications not only in biomonitoring programs but to develop DNA-based methods in paleolimnology.

Keywords

water fleas, DNA metabarcoding, taxonomic resolution, eDNA, sedaDNA

Presenting author

Charo López-Blanco

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Conflicts of interest

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