



Conference Abstract

# An account of epiphytic diatoms in mediterranean wetlands: comparing morphological and molecular assessments

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## Abstract

Benthic diatoms are well known bioindicators of water quality, used in many aquatic ecosystems. Since diatom-based monitoring of water quality is required by European legislation, the search for methods that facilitate this task has become more relevant. The aim of this study was to test the reliability of DNA metabarcoding combined with high-throughput sequencing (HTS) techniques in the bioassessment of 22 Mediterranean shallow ponds in Spain. For each pond, Trophic Diatom Index (TDI) was calculated from inventories obtained by using light microscopy, and then molecular (HTS) methods. Ponds were subsequently classified into five water quality classes. Our results showed a good correspondence between both methods, especially after applying a correction factor depending on the biovolume of the cells. This correspondence led to the assignment to the same quality class in 59% of the ponds. The determination and quantification of valves or DNA sequences was one of the main pitfalls, mainly those related to the variability in the relative abundances of some species. Accordingly, ponds with similar relative abundances for the dominant species were assigned to the same quality class. Moreover, other difficulties leading the discrepancies were the misidentification of some species due to the presence of semi-cryptic taxa, the incompleteness of the reference database and the bioinformatic protocol. Therefore, the validation of DNA-based methods for the

identification of freshwater diatoms represents an important goal, as an alternative to traditional ones in Mediterranean shallow ponds.

## **Keywords**

Benthic diatoms, DNA barcoding, Ecological assessment, Shallow ponds

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