



Conference Abstract

Gap analysis for DNA barcodes of aquatic macroinvertebrate species in the Southeast of Italy

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Abstract

DNA metabarcoding for the identification of species and ecosystem biomonitoring is a promising innovative approach. The applicability of this tool is at first dependent on the coverage of the DNA sequence reference libraries. We performed a gap analysis of available DNA barcodes in the international databases using the aquatic macroinvertebrate species checklist of the Apulia region in southeast Italy. Our analyses show that 42% of the 1546 examined species do not have representative DNA barcodes in the reference libraries, indicating the importance of working toward their completeness and addressing this effort toward specific taxonomic groups in particular at local/regional level. The DNA-barcode coverage also varies among different taxonomic groups and aquatic ecosystem types in which a large number of species are rare. We also analyzed the DNA barcode reference libraries for the primer set used to barcode species. Only for 52% of the examined barcoded species were the primers reported, indicating the importance of uploading this information in the databases for a more extensive use of the DNA metabarcoding. We also highlighted the opportunity to develop combinations of primers useful at the regional level. We tested the application of the DNA barcoding single species to a lagoon ecosystem (the lagoon named “Aquatina di Frigole” in the Apulia region) which

are richer in humic substances than other aquatic environments and in which DNA metabarcoding remains under explored.

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