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Title Abstract:
USE OF METAGENETIC ANALYSIS TO MONITOR MESOZOOPLANKTON BIODIVERSITY: THE ADRIATIC SEA AS A CASE STUDY

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Abstract:
The complexity of the taxonomical study of zooplankton sees the implementation of advanced molecular techniques as a highly valuable support for traditional taxonomy. Some large scale investigations on marine biodiversity have been recently carried out thanks to the improvements of mass parallel sequencing platforms coupled to the continuous feeding of barcode reference databases. This study is part of the monitoring programme within the *Ritmare* project and represents the first mesozooplankton survey carried out at basin scale in the Adriatic combining molecular with taxonomy approaches. We provide a comprehensive biodiversity survey from 45 sampling stations distributed in the Adriatic Sea between 42º and 46º of latitude. All samples were collected during the period August-September 2014, using WP2 net vertical tows. We applied metagenetic analysis using the PGM Ion Torrent technology and targeting highly variable fragments of the mtDNA cytochrome oxidase subunit I (COI) and the nuclear SSU 18S rRNA (18S) genes . We obtained high quality reads that clustered into more than 1000 operational taxonomic units distributed in about 25 phyla. Together with the taxonomic analysis, this study contributed to the detection of rare as well as alien species, proving a great potential for metagenetic approach. Biggest challenges were the lack of zooplakton reference sequences in databases.

Keywords: metabarcoding, Mediterranean Sea, zooplankton.

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