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Investigation of the suitability of Remane’s “species minimum” concept in a Mediterranean transitional waters ecosystem

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Abstract

**Background.** Remane’s Artenminimum (“species minimum”) concept was developed for the Baltic Sea, the world’s largest semi-enclosed brackish water body with a unique permanent salinity gradient. It argues that taxonomic diversity of macrobenthic organisms is lowest within the horohalinicum, which occurs at salinity 5 to 8, because the number of brackish specialists does not compensate for the decline in marine and freshwater diversity. The aim of the present study was to investigate the sediment bacterial diversity of a transect river-lagoon-open sea, i.e. from freshwater to marine, occurring at Amvrakikos Gulf (Ionian Sea, Western Greece) and to test whether it follows the Remane’s concept, both in terms of species composition but also of functionality.

**Methods.** DNA was extracted from sediment samples collected *in situ* from four stations along the aforementioned transect and sequenced for the 16S rRNA gene. In addition, sediment samples were collected for the assessment of benthic macroorganismic diversity. Moreover, several environmental parameters were measured and their correlation with the diversity patterns was explored.

**Discussion.** The results of the study shed light on the microbial biodiversity of transitional water ecosystems and reveal the effect of salinity on species diversity, both on microorganisms and on macrobenthic organisms.