## Study on benthic diatom assemblages in intermittent rivers in Southern Bulgaria and their application for assessment of ecological status.

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## Summary

The study presents the first investigation of the benthic diatom flora in intermittent rivers in Southern Bulgaria, national type R14 (*Sub-Mediterranean small and medium-sized rivers*) from four basins in the Aegean catchment province (Ecoregion 7, Eastern Balkans) during two hydrological periods (spring and summer). These rivers have strong seasonal fluctuations in water levels and runoff, including dry and/or pool stages alternating with longer periods of surface flow. Their intermittent nature is due to the strong influence of the transitional Mediterranean (sub-Mediterranean) climate, the amount of precipitation, the natural drainage of the terrain and the insufficient levels of underground water reserves.

Based on preliminary field surveys and analysis, 49 representative monitoring sites were selected, which to a great extent cover the natural geographical distribution and heterogeneity of the investigated river type; the variability of environmental factors and degree of anthropogenic pressures. Epilithic diatom samples (89) from 37 rivers were analyzed following European standard protocols. Taxonomic composition, relative abundance, seasonal dynamics, biological traits and ecological spectra of the phytobenthic communities were determined, analyzed and compared between the studied river basins and hydrological periods. Taxa richness, Shannon's diversity and Pielou's evenness indices were calculated and compared between the two sampling seasons. The typology, methodology for collecting diatom samples, reference conditions and classification system for assessing ecological status based on the BQE "phytobenthos" were developed, updated and intercalibrated, currently accepted in the national and European legislation. The ecological status, based on the metric IPS and EQR, was assessed for the first time, using the new type-specific system for Bulgarian sub-Mediterranean intermittent rivers, presented in the study.

The results show that the diatom communities differ significantly during the hydrological periods and are composed of indicator species characterizing and differentiating the individual classes of ecological status. The type-specific, close to reference conditions and class boundaries of IPS and EQR, correspond to the ones in the Mediterranean GIG (river types R-M1 R-M2) and reflect to the great extent the natural changes in the environmental conditions, as well as the combination of different types of pressures - hydrochemical, hydromorphological and land use.