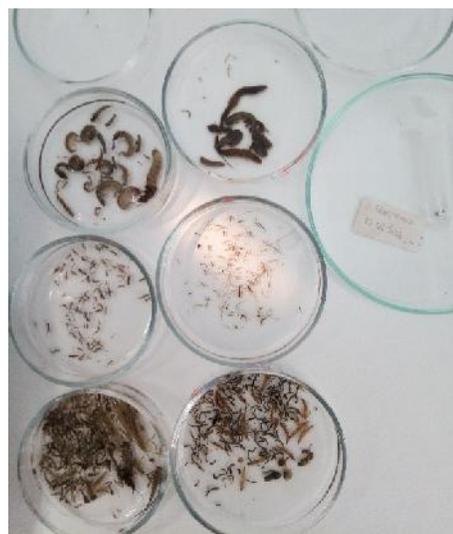




BIOLOGICAL RESEARCH REPORT

Ecological assessment of Prespa Lake and its watershed

Ecological status is an assessment of the quality of the structure and functioning of surface water ecosystems (Directive 2000/60/EC; EEA, 2018). According to Annex V of the WFD benthic macroinvertebrate fauna is defined as an obligatory biological quality element (BQE) in water quality assessment and in determining the ecological status of water bodies (EEA, 2018). The importance of the long-term continuous monitoring was recognized by PONT as well. Following these steps, within the past two years was established deepen collaboration between PONT and the Resen Municipality. Moreover, PONT supports Resen Municipality's Environmental Department, strengthening the institutional capacities of the Monitoring station in Stenje by co-financing the operational cost related to the biological assessment of the water quality of the Prespa Lake and its watershed. Following the recommendation of EEA (2018), the biological monitoring was established and have been assessed based on one of the 5th biological key elements - benthic macroinvertebrates, implementing the EU Water Framework Directive - WFD (Directive 2000/60/EC) recommended biological indices.



Illitrated macroinvertebrates samples from the grab sample in situ. Sites: A - profile 5m-Konjsko; B - profile 10m-Oteshevo; C, D - profile 5 -Asamati illitrated sample with macrophytes.

Processed river sample from Brajchinska Reka.

Within the implementation of the WFD requirements based on BQE benthic macroinvertebrates, the two types of waterbodies were assessed within Prespa Lake and its watershed:



I. Assessment of Prespa Lake – During 2021 the general assessment of the lithoral zone of the Prespa Lake (based on ASPT-lithoral index) was assessed with *moderate* (Class III) status along its shore, spreading from Pretor to Stenje settlements. The following year few more localities were included aiming in assessment of the whole lake shoreline (from Dupeni beach to the v. Konjsko distributed localities), in order to track the condition of the points where the rivers inflow into the lake. Thus, the general water quality was assessed from *moderate* (Class III) to *bad* (Class V). This situation was expected as the consequences of the withdrawal of the water level comparing the two study years. The moderate status during 2022 was observed within the lakes' shoreline - relation from Asamati towards Sirhan and Oteshevo sampled localities. Concerning the samples from the profundal zone, the collected specimens belonged to the groups of Oligochaeta and Chironomidae, thus pointing out on the higher level of eutrophication of the lake ecosystem.

II. Assessment of Prespa Lake river watershed – The monitoring was conducted on the three rivers (Brajchinska, Kranjska and Golema Reka) that inflow into the Prespa Lake. During the study period was observed that the rivers inflows resulted with the lowest water quality (Fig.1).

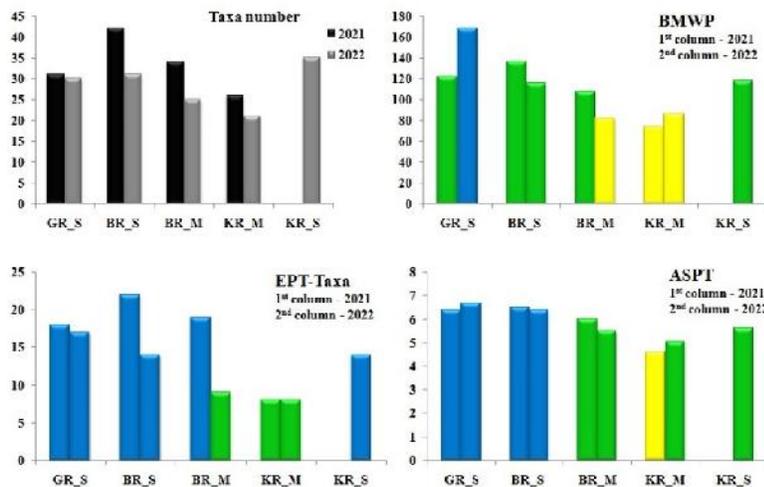


Figure 1. Taxa number and indices values per studied sites of the macroinvertebrate communities for the study period 2021/22.

Legend: GR – Golema Reka; BR – Brajchinska Reka; KR – Kranjska Reka; S-spring part; M-mouth part of the studeied rivers.

Columns: Blue-Excellent; Green-Good; Yellow-Moderate ecological status. **Note:** Due to the high pollution observed in situ, the mouth part of Golema Reka was not evaluated (For more details see in Rimcheska, 2022*).

Analyzing the macroinvertebrate species diversity, the highest taxa richness was observed on the sampling site BR_S (2021) and the lowest on downstream site of Kranjska Reka (2022) (Fig.1).

The gained results of selected biotic indices (BMWP, ASPT and EPT) assessed the water quality of the studied sites from high (I class) to moderate (III class). Compared to the specific situation of each site, the results can be considered to reflect adequately to the level of anthropogenic impact (eg. as result of wastewater pollution, small hydropower stations or agriculture effluents). This results with higher domination of more tolerant macroinvertebrate that take over in benthic composition, especially evident at the mouth part of the rivers assessed in this study.



Comparing the lakes and rivers sampled sites results for the water quality assessment, can be generalized that:

- Although as highly polluted water observed *in situ* at Golema Reka monitored site, at the closest monitored site within the lake (sampled site Asamati) *moderate* status of the lake was observed;
- The use of biological indices (BMWP, ASPT, EPT-taxa) for the river assessment are appropriate tool for detecting the disturbances of the macroinvertebrate's communities;
- The higher level of anthropogenic impact leads to higher degradation processes within the macroinvertebrate's communities, especially evident at the downstream parts of the studied rivers and the Prespa Lake;

This summary represents the first ecological assessment report based on the biological research within the Monitoring Station in Stenje. Hopefully in future the cooperation with PONT will continue and besides based on BQE benthic macroinvertebrates, this practice will be expanded implementing and other biological key elements for the ecological assessment of Prespa Lake and its watershed.

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