

Impacts of Zayandehroud Dam on the Macro-benthic Invertebrate and Water Quality of Zayandehroud River using BMWP and ASPT Biological Indices

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Abstract

Dams provide benefits for human societies, but now they are considered as one of the most important factors influencing habitat degradation and changing the hydrological water flow. In order to study the ecological effects of Zayandehroud Dam on the benthic communities and water quality of Zayandehroud river, six sampling stations were selected on the river substrate using biological indicators such as BMWP (Biological Monitoring Working Party) and ASPT (Average Score Per Taxa). Then, a quantitative survey of the macro-benthic invertebrates fauna was conducted with 3 replications at each station, from July to June 2014 with a 45-day interval period. The identified macro-benthic invertebrates belonged to 31 families, 16 orders and 7 classes. The results of BMWP index showed significant differences among sampling stations ($p < 0.001$), and significant difference between seasons in all stations except Overgan station ($p < 0.05$). ASPT index also revealed significant differences among the stations ($p < 0.01$). In addition, the results of Shannon diversity index indicated that Zayanderoud Dam construction, has changed diversity and composition of downstream benthic communities due to alterations in the depth and speed of the water flow, as well as substrate structure.

Keywords: Zayandehroud Dam, Biological indicators, BMWP, ASPT, Shannon diversity index.

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