



Gorgan University of Agricultural  
Sciences and Natural Resources

*Journal of Utilization and Cultivation of Aquatics*

Vol. 10(3), 2021

<http://japu.gau.ac.ir>

DOI: 10.22069/japu.2021.19310.1596

## **Health assessment of Zarrin Gol River, Kaboudwal and Shirabad Streams in Golestan province using biological indices**

**M. Molaie<sup>1</sup>, R. Patimar<sup>\*2</sup>, M. Gholizadeh<sup>3</sup>, H. Mostafavi<sup>4</sup> and H. Jafaryan<sup>2</sup>**

<sup>1</sup>Ph.D. Student, Dept. of Fisheries, University of Gonbade Kavoos, Golestan Province, Iran,

<sup>2</sup>Associate Prof., Dept. of Fisheries, University of Gonbade Kavoos, Golestan Province, Iran,

<sup>3</sup>Assistant Prof., Dept. of Fisheries, University of Gonbade Kavoos, Golestan Province, Iran,

<sup>4</sup>Assistant Prof., Dept. of Bio-Diversity and Ecosystem Management, Environmental Sciences Research Institute, Shahid Beheshti University, Tehran, Iran

Received: 07.13.2021; Accepted: 08.28.2021

### **Abstract**

Human activities degraded river ecosystems and disturbed the effectiveness and sustainable river services (including drinking water, water treatment, energy, organic matter uptake, food cycle, recreation and habitat for plants and animals). To deal with the destructive effects of human activities, assessing and determining the health of the river is one of the basic criteria considered by water management organizations. The health assessment of Kaboudal and Shirabad and Zarrin Gol streams conducted based on biological indicators of benthic invertebrate population in Golestan province. Based on the existing barriers and the possibility of access to the river, 5 stations in Kaboudwal, 3 stations in Shirabad and 10 stations in Zarrin Gol stream were determined. Macroinvertebrates collected using a surber sampler in a seasonal period over one year. Afterward, alpha, beta and multivariate biodiversity indices of water qualitative health assessment were studied. The results showed that the effluent of fish farms had a significant effect on river water quality so that the frequency of pollution-sensitive families in the stations after fish farms decreased and increased the frequency of resistant families. The streams of Golestan province generally experience moderate ecological conditions and move towards poor conditions, which with the increasing trend of destruction of ecosystems along the creek and the impact of agricultural and aquacultural activities, it seems that we will have these conditions in the future.

**Keywords:** Biological indicator, Health assessment, Kaboudwal Stream, Shirabad stream, Zarrin Gol stream

---

\*Corresponding author: rpatimar@yahoo.com