Study of Physical and Chemical Parameters of fish farms effluent receiving waters in Bolaghlar area of nir city and calculating of Biological Index(BI)

Abstract

Background and Aim: It is of high importance to identify factors polluting surface waters and rivers and to develop an awareness of the changing trends of pollution to improve water quality. Thus, this study aimed to investigate the relationship between physicochemical parameters and biological indexes, to measure correlations between biological and qualitative indexes and to provide basic, underlying information to study and optimally manage water resources in Boulaghlar region located in Nir city.

Method: This study is a cross-sectional descriptive study which was conducted in surface waters receiving the effluent of fish farms from March to August 2018. Throughout the study period, water samples were collected 27 times in three levels to assess physicochemical parameters based on the NSFWQI and $IRWQI_{SC}$ indexes. Moreover, the samples of aquatic insects were collected 54 times in three seasons, and the collected samples were identified based on valid identification keys and the biological indexes were measured. The statistical analyses of the study were conducted by SPSS v.22 including Pearson correlation coefficient and regression analysis.

Results: The output stations of fish farms have the maximum amount of all parameters except dissolved oxygen and pH. According to the NSFWQI quality index, the selected stations were in good and average quality condition, while according to the IRWQISC index, the stations were classified in good quality condition, relatively bad and average. Finally, all stations were ranked C2S1 based on the Wilcox index. A total of 2,953 aquatic insects were collected, and the Hilsenhoff biological *Index in the studied stations ranged from 6.26 to 3.47.*

Conclusion: *The investigation of the relationship between physicochemical parameters and the* Hilsenhoff biological index *revealed that there were significant relationships between this index and pH parameters, temperature, dissolved oxygen, dissolved oxygen saturation percentage,electrical conductivity and total solids. Finally, no significant relationship was found between Hilsenhof* biological index *and NSFWQI and IRWQISC indexes*

Keywords: *Physiochemical indexes of water, biological index, aquatic insects*