

Determination of Water Quality and Diversity of Macroinvertebrates: A Case Study in Asi River Basin

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Aim of the study: The Asi River Basin is a transboundary basin with a total area of about 24660 km² of which 69 percent is located in the Syrian Arab Republic, 23 percent in Turkey and 8 percent in Lebanon. This study was carried out that determined and compared ecological situation of Asi River Basin by evaluated of water quality based on benthic macroinvertebrates according to both of Regulation on Management of Surface Water Quality and Water Framework Directive.

Material and Methods: Benthic macroinvertebrates samples were collected at 10 stations in Asi River Basin in 2016 by using bottom kick net method. Samples were sieving and fixed in 70% alcohol *in situ*. Some parameters (temperature, pH, dissolved oxygen, biological oxygen demand, ammonium nitrogen, nitrate nitrogen and total phosphorus) which are listed in Regulation on Management of Surface Water Quality were measured. Temperature, pH and dissolved oxygen were measured *in situ* by Hach Lange (HQ40D). At the same time, water samples were taken and transported to laboratory with cold chain for analysed biological oxygen demand, ammonium nitrogen, nitrate nitrogen, total phosphorus, fecal coliform and total coliform by using standard methods (ASTM, 1985; APHA, 1992). Macroinvertebrates samples were identified at level of family on stereomicroscope in laboratory. BMWP and ASPT indices were calculated for determined ecological status of basin. And also Margalef and Simpson values, dominance and frequency of macrozoobenthic families were calculated.

Results: In basin, totally 934 individuals belong to 22 taxa were identified. Karaafrin Stream had the most taxonomical diversity with 13 taxa and followed by Bozafrin Stream, Afrin Stream and Asi River with 11, 10 and 9 taxa, respectively. And Karasu Stream was determined as the lowest taxonomically diverse with 1 taxa. Values of Margalef and Simpson Indices were between 3.06-0 and 0.85-0, respectively. According to BMWP and ASPT indices values, Asi River Basin was classified as heavily polluted. Generally, Oligochaeta (24% of dominance) and Chironomidae (50% of dominance) individuals were composed of zoobenthic community. These taxa are found in polysaprobic and alpha-mesosaprobic stream region. Also, coliform bacteria even fecal-origin were determined at all stations in Asi River Basin.

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