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Benthic macroinvertebrates as the bioindicators of freshwater pollution in river Dorr

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The present study was conducted in river Dorr, district Abbottabad to assess responses of bioindicators towards untreated waste water from Abbottabad city. The sites A and B were studied from January to June 2017. Site A was selected 2km upstream of point source of pollution while site B was selected 2km downstream. Seven bioindicator taxa of macrobenthos were selected viz., Ephemeroptera, Plecoptera, Trichoptera, Coleoptera, Odonata, Diptera and Mollusca. The collection of invertebrates was performed using D-frame kicknet and handpicking. 2205 organisms were collected from site A, belonging to nineteen families. The Ephemeroptera was most diversified and represented by seven families, while Family Rhyacophilidae, Order Trichoptera, was dominant in terms of richness (37.1% individuals). Coleoptera and Odonata, were represented by 0.09% and 1.08% individuals respectively. At site B, a total of 1714 individuals were sampled belonging to eight families. Diptera, the pollution tolerant group, showed dominance in terms of diversity and richness with Family Chironomidae being represented by 67.6% individuals. Coleoptera and Odonata were not encountered at site B at all, while highly pollution sensitive taxon, Plecoptera, was totally absent at both sites. To evaluate degree of pollution, total eleven biological indices were applied including FBI, EPT/C, EPT index, ETO index, %Diptera, %DF, Simpson's diversity index, SIGNAL, CLI, BMWP and ASPT. The overall result of indices regarded site A having excellent aquatic conditions while site B was found to be highly polluted. Functional feeding groups were identified and seven functional feeding group indices were worked out to determine ecological status of the river. The scrappers showed much abundance (55.05%) at site A while gatherer-collectors were dominant (72.8%) at site B downstream. The dominance of certain groups, low richness of predators and absence of shredders revealed ecological disturbances at both sites. The present study revealed that the site A had very good water quality while site B was found to be severely polluted and deteriorated. It is recommended that detailed taxonomic work regarding identification of benthic macroinvertebrates up to species level be carried out and the development of a national scoring system is the dire need for reference and enhanced biomonitoring.

Biography

Tehmina Qadeer has done her bachelor's (hons) in Environmental Sciences and has worked on Ecological management of polluted soil. Currently, she is doing her MS in Environmental Sciences, in CIIT, Abbottabad. Her research work is focused on Ecological restoration of affected areas near industries.

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