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BIOLOGICAL ASSESSMENT OF WATER QUALITY IN A MOSAIC OF RIVERINE, ESTUARINE AND COASTAL ECOSYSTEMS

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Abstract

This study performed a biological assessment of water quality in three adjacent riverine, estuarine and coastal ecosystems on northwestern coasts of the Persian Gulf where the region is populated by various oil-based developments and industrial activities. Sampling was carried out at 19 representative stations in August and January of 2016, 2017 and 2018. Macrobenthos species were identified, counted and applied for the calculation of Biological Monitoring Working Party (BMWP), Average Score Per Taxon (ASPT) and Shannon-Wiener Diversity Indices. In total, 24797 individuals were counted and allocated to 9 classes and 67 orders. 87% of the species belonged to three classes of Bivalvia (46% of the species), *Polychaeta* and *Gastropoda*. At the order level, *Serpulidae* (*Hydroides sp.*) from *Polychaeta* and *Tellinidae* from Bivalvia had the highest abundance. The Shannon-Wiener values ranged from 0.00 to 3.13 with only two coastal stations classified as heavily polluted. According to Biological Monitoring Index the majority of the stations fell into moderate to heavy pollution classes for ASPT and heavily polluted for BMWP, especially those located near the point of municipal and industrial wastewater discharge into riverine and estuarine ecosystems. Moreover, the heavy maritime traffic and the specific natural characteristics of the region at some estuarine stations. Shallow depth, limited water flow in parts of the estuary, salt entering from around the estuary due to tides, the presence of mangrove tree roots that slow down the movement of water and increase the accumulation of pollutants in this section, also identified as the root cause of high pollution levels in the region.

Keywords: ASPT, BMWP, macrobenthos, Persian Gulf, Shannon-Wiener diversity

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