Tanzania River Scoring System (TARISS): a macroinvertebrate-based biotic index for rapid bioassessment of rivers

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The biological assessment of rivers using aquatic macroinvertebrates is an internationally recognised approach for the determination of riverine ecological conditions. In this study a Tanzanian macroinvertebrate-based biotic method, Tanzania River Scoring System (TARISS), was developed in 2012, based on the South African Scoring System (SASS). Macroinvertebrate samples were collected from 101 sites, including both reference and test sites, in the Pangani, Rufiji and Wami–Ruvu basins in the Pangani highlands and central eastern Africa ecoregions. TARISS modification involved adjustments of the list of taxa and the assigning of sensitivity weightings to three new families. Six SASS taxa were excluded and three new taxa were included, resulting in a total of 96 TARISS taxa. Assigned sensitivity weightings of the new taxa were: 10 for Dicercomyzidae, 9 for Ephemerythidae and 4 for Neritidae. Through validation, TARISS proved to be reliable in distinguishing reference from test sites, based on macroinvertebrate assemblages and TARISS metrics. The degree of reliability in distinguishing reference from test sites was higher when river types were used. TARISS scores and average score per taxon (ASPT) showed stronger correlations with the disturbance gradient, and were more reliable in distinguishing between reference and test sites than the number of taxa.

Keywords: disturbance gradient, macroinvertebrate taxa, method, reference, sensitivity weightings, test, validation