**Development of macroinvertebrate based multimetric index for ecological health monitoring in Lake Hawassa, Ethiopia**

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*Little information is available on the use and applicability of biotic indices in aquatic resource conservation and management in Eastern Africa, especially in lentic ecosystems. The aim of this study was to develop a macroinvertebrate multimetric index (MMIH) to assess the ecological condition of Lake Hawassa. Sampling sites were clustered based on percentage disturbance score (PDS) and categorized into minimally (three sites), moderately (three sites) and highly disturbed (three sites). Physicochemical and invertebrate sampling was done at these clustered sites along the lakeshore area from February to November 2015 and 2016. Out of a total of 35 macroinvertebrate candidate metrics, ten core metrics were selected based on redundancy analysis, metrics response to environmental parameters, percent discriminatory efficiency (%DE) and box and whisker plots, and incorporated in the development of MMIH. The developed MMIH index performed well and showed a clear demarcation between the reference and non-reference sites and between the three-disturbance levels. The validation of the MMIH index performed well in discriminating the independent data sets of Lake Hawassa and L. Ziway. Besides, it also showed a strong but inverse relation with PDS (R2 = 0.91, P = 0.0003). Hence, in a lentic ecosystem, this index should be considered as a starting point in terms of Lake bio-assessment in Ethiopia, but additional data in all ecoregions of the country are necessary to determine the long-term reliability and usefulness of the MMIH.*

Keywords: Bio-assessment, Discriminatory efficiency, Disturbance level, Lentic ecosystem, Potential metrics, Validation