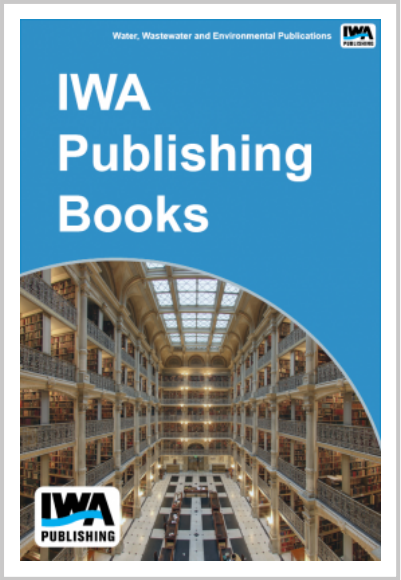
Bioassessment: A Tool for Managing Aquatic Life Uses for Urban Streams (Research Digest)



This WERF sponsored research addresses the utility of bioassessment for managing aquatic life uses in urban and/or urbanizing catchments. Heavily urbanized catchments present a problem for facilities and water quality managers struggling to balance the socio-economic needs of urban areas with aquatic life use standards. Most standards do not recognize the limitations on achievable biological condition in urban areas. This research specifically defines a process for developing alternative biological benchmarks for aquatic life use in urban catchments.

This research was conducted across three distinct climatic regions and describes a threestep process: 1) developing a primary urbanization gradient, 2) assembling an appropriate urban biological index, and 3) defining a biological potential that describes the highest biological condition currently achieved along the urban gradient. The primary urban gradient is developed using simple landscape and socio-economic measures of urbanization. Alternative urban gradients, comparable to the primary gradient, are presented that can be used as data availability and resources require. The primary biological indicator is developed using a subset of commonly collected biological metrics. Lastly, biological potential is defined using quantile regression to characterize the upper boundary on biological condition observed along the primary urban gradient. This approach establishes empirically defined and realistic aquatic life use benchmarks for urbanized catchments, and describes a process by which the aquatic life use status of waterbodies in urbanized catchments can be placed in a realistic context. Guidance on implementation is provided for WERF subscribers for their particular urban areas.

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