

Biological Monitoring as an Assessment Tool

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As the primary government agency responsible for monitoring the quality of our state's waters, it is of crucial importance that the Minnesota Pollution Control Agency (MPCA) uses the most effective tools available for assessment.

Most of the water quality standards that have been established to protect the aquatic life in Minnesota's rivers, streams, and lakes are chemical criteria. Rather than direct measurements of aquatic life health, these chemical criteria serve as surrogate measures intended to maintain a condition conducive to the healthy propagation of fish, invertebrates, wildlife, swimming, and drinking. And since the early 1980's, an approach known as biological monitoring has been used throughout the United States and abroad to make direct measurements of the aquatic life health in both rivers and wetlands.



Biological monitoring tracks the health of biological systems in the water body. Measuring and evaluating the condition of biological systems and the consequences of human activities for those systems, is central to biological monitoring. This monitoring method aims to distinguish between naturally occurring variation and changes caused by human activities. The MPCA currently conducts biological monitoring to assess the health of riverine and wetland environments utilizing fish, macroinvertebrate and plant communities.

To assess biological condition of surface waters the MPCA utilizes a multimetric approach commonly known as the Index of Biological Integrity (IBI). This index is a scientifically validated tool that uses attributes of biological communities to assess aquatic health. A typical IBI is comprised of eight to twelve measurements (metrics) representing attributes of a biological assemblage related to biodiversity, community structure, feeding structure, reproductive function, tolerance to human disturbance, abundance, and condition.

To learn more about biological indicators and the IBI, visit the MPCA website: www.pca.state.mn.us/programs/indicators.