



Background

- The Macroinvertebrate Index of Biotic Condition is associated with the overall biological condition of streams.¹
- Macroinvertebrate organisms are key indicators of overall stream ecosystem health, and:¹
 - Are easy to measure due to their abundance and widespread distribution;
 - Form the basis of the food chain for vertebrates; and
 - Respond to anthropogenic stressors in predictable ways.
- Thresholds for biotic conditions are developed from index scores at least-disturbed reference sites.¹ The US Environmental Protection Agency (EPA) describes stream biotic condition as:
 - Good: Scores equal well or better than 75% of least-disturbed reference sites.
 - Fair: Scores between the 5th and 75th percentiles of least-disturbed reference sites.
 - Poor: Scores worse than 95% of least-disturbed reference sites.
- Lower values suggest higher vulnerability relative to other watersheds.

THIS INDICATOR MEASURES THE SUM (RANGING FROM 0-100) OF SCORES FOR SIX METRICS THAT CHARACTERIZE MACROINVERTEBRATE ASSEMBLAGES, INCLUDING: TAXONOMIC RICHNESS, TAXONOMIC COMPOSITION, TAXONOMIC DIVERSITY, FEEDING GROUPS, HABITS, AND POLLUTION TOLERANCE.

Data Sources

Data Source	Description	Spatial Resolution	Temporal Resolution
EPA - Wadeable Streams Assessment (stream water benthic macroinvertebrate metrics)	Index value for each small stream sampled, based on counts of benthic macroinvertebrate organisms at various stages of their life cycles	Small streams as points	2004-2005; data collected every 5 years, beginning 2004-2005

This Indicator Was Used to Assess the Vulnerability of Two of USACE's Eight Business Lines

Business Line	Importance Weight (Varies from 1 to 2 for USACE)
Ecosystem Restoration	2
Regulatory	1.8

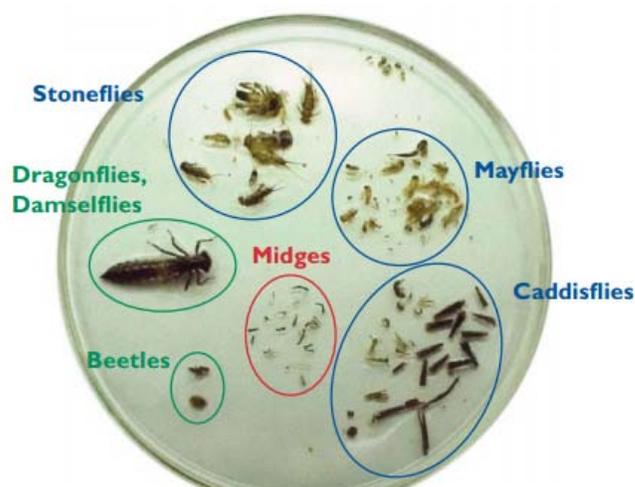
Calculation

- For each 4-digit hydrologic unit code (HUC-4) watershed, identify the value of the macroinvertebrate index for all small stream sites within that HUC-4 watershed.
- Average the values of the macroinvertebrate index for all stream sites within a HUC-4 watershed. This is the macroinvertebrate index value assigned to HUC-4 watersheds with at least one stream site sampled.
- HUC-4 watersheds with no sampled stream sites are assigned the median of macroinvertebrate index scores for all other HUC-4 watersheds with at least one sampled stream site.

¹ United States Environmental Protection Agency. 2006. Wadeable Streams Assessment. Washington DC: Office of Research and Development.

MACROINVERTEBRATE INDEX

Examples of macroinvertebrates that are assessed as a measure of a stream's ecological condition.



Courtesy of Maine Department of Environmental Protection