

## Indices of Biotic Integrity to Assess Wetland Health

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Working with researchers from MSU, Environment Canada, and Bird Studies Canada, we have developed invertebrate- and fish-based indices of biotic integrity (IBI) for coastal wetlands of all five great lakes. Development entailed collecting baseline data on water quality and adjacent land use, along with plant, invertebrate, and vertebrate communities from wetlands experiencing a continuum of disturbance. Biological attributes that showed an empirical and predictable change across a gradient of human disturbance were chosen and metrics were combined into multimetric IBIs. These rapid and inexpensive indicators of ecosystem health can be valuable to monitoring programs, governmental agencies during permitting processes, as well as to evaluate restoration and mitigation projects. When long-term studies are not feasible, IBIs can be used to integrate time and space. While pollutants can be flushed from a system rendering them non-detectable, the biota experienced the insult and will maintain a 'scar'. IBIs can use those 'scars' to determine ecosystem health.