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Rapid Derivation of Evidence for Causal Assessment

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Abstract

Causal assessment is a recommended follow-on effort when biological monitoring results indicate that stream condition is degraded. However, these assessments can be resource and time intensive. We demonstrate how groups of comparator sites identified based on expected biological similarity can be used to quickly derive evidence for causal assessments. Sets of comparator sites were created for 15 demonstration sites in poor condition from Southern California. We evaluated two common types of evidence for four example stressors – total nitrogen, ammonia, specific conductivity, and bifenthrin – as candidate causes of the poor biotic condition at each site. Elevated conductivity was the most frequently supported cause among the demonstration sites, although ammonia, total nitrogen and bifenthrin were also indicated at some sites. Evidence also suggested that each of these stressors was an unlikely contributor at least one site. Our approach could be adapted for any bioassessment program with a large amount of sample data and an associated predictive index of biotic condition, and lays the groundwork for developing more rapid causal assessment methods.