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Effective visualizations of complex bioassessment indices based on predictive models

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Abstract

Effective visualizations can make complicated assessment indices accessible to general audiences. For example, indices based on predictive models are increasingly common in bioassessment applications because of their ability to set different site-specific benchmarks based on environmentally similar reference sites. However, the complexity of these indices may limit their adoption by audiences that lack training in statistics or stream ecology. The complex mathematics of an assessment tool need not prevent the use of effective tools in watershed management because effective data visualization can make an index more easily interpreted. We present a few visualization methods that transform the outputs of indices based on predictive models (both an O/E and multimetric index) into more easily understood graphics. These visualizations address common questions from data users, such as: Which reference sites are most relevant to my sites? How do expectations at my sites differ? And how close are my sites to meeting their biological expectations? Although our examples are specific for an index developed for California, we think these types of visualizations are broadly applicable to many types of indices.