

A framework for interpreting sediment quality triad data

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ABSTRACT

There are numerous approaches for integrating multiple lines of evidence (MLOE) data in a sediment quality triad assessment, but most rely at least partially on best professional judgment (BPJ), which can be problematic in application to large data sets or in a regulatory setting where the assessment protocol needs to be transparent and consistently reproducible. This study presents an approach for standardizing triad-based assessments and evaluating the extent to which it captures and reproduces the assessments of experts employing BPJ on the same data. The framework is based on integrating answers to two questions: 1) Is there biological degradation at the site, and 2) Is chemical exposure at the site high enough to potentially result in a biological response? The efficacy of the framework was assessed by applying it to data from 25 sites and comparing the site classifications to those of six experts who were provided the same data. The framework produced an answer that better matched the median classification of the experts than did five of the six experts. Moreover, the bias in response was less than that obtained from some of the experts, and the errors were relatively evenly divided between sites classified as more impacted or less impacted than the median expert classification. The framework was also applied and found to distinguish well sites from known degraded and reference areas within California. While the framework suggested here is not the only one possible and should be supplemented with BPJ when additional data beyond that included in the framework are available, the framework provides a validated means for using a triad based approach in large-scale assessments, such as those for Clean Water Act (CWA) 305b programs or regulatory decisions, where transparency in the decision process is critical.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2008AnnualReport/AR08_175_185.pdf