

## **Validation of a wetland rapid assessment method: Use of EPA's Level 1-2-3 Framework for method testing and refinement**

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### **ABSTRACT**

Wetland rapid assessment has become popular in a variety of applications. Because rapid assessments rely on observable field indicators as surrogates for direct measures of condition, they must be validated against independent data. Here we present a case study of the validation of the riverine and estuarine modules of the California Rapid Assessment Method (CRAM). We evaluated responsiveness of the method to “good” vs. “poor” wetland condition, ability to represent a range of conditions, internal redundancy, alternative combination rules for constituent metrics, and reproducibility of results. Because no independent, concurrently collected measure of condition directly reflecting the same elements comprising CRAM was available for validation, we demonstrate the use of existing monitoring and assessment data on avian diversity, benthic macroinvertebrate indices, and plant community composition. Results indicate that CRAM is an effective tool for assessing general riverine and estuarine wetland condition based on its correspondence with multiple independent assessments of condition. Reproducibility analysis revealed several problematic metrics where ambiguous language or metric construction led to high inter-team error rates. Addressing these issues improved overall average error to within 5%. This study demonstrates that, when validated, rapid assessment methods provide a meaningful and reliable tool for assessing wetland condition.

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