# California Rapid Assessment Method for Wetlands:

Why are we doing this? What is it? How is it being developed? What are its possible applications? Who can use it, and when will it be available?

## Why are we doing this?

Large amounts of public funds and human resources are being invested in the protection, restoration, creation, and enhancement of wetlands in California. A program is needed to assess the status and trends of the wetland ecosystems, measure the progress and effects of wetland projects, assess the efficacy of management actions, and otherwise account for the public investment in wetlands.

The information needs of wetlands managers cannot be met at this time because the ambient conditions of wetlands are not being monitored, various wetland projects are monitored in disparate ways, there is little assurance of data quality, and monitoring results are not readily available. Simply stated, there is no accounting of the environmental costs and benefits of most wetland management actions. Rapid wetland assessment, with ongoing calibration through intensive monitoring at selected sites, can provide much of the information that is needed by wetland managers.

In 2001, the National Research Council (NRC) reported on the status of wetland mitigation and monitoring in the report "Compensating for Wetland Losses under the Clean Water Act" (National Academy of Sciences, 2001). The NRC report calls for replacing the current procedures of assessing wetlands with "science-based, rapid assessment procedures." More recently, a National Wetland Mitigation Action Plan and a related US Army Corps of Engineers Regulatory Guidance Letter (02-02) have been issued which called for improvements in wetland monitoring, project tracking, and follow-through in evaluating compensatory mitigation. At the state level, the Regional Water Quality Control Boards in San Francisco and Los Angeles have initiated project oversight efforts to improve wetland mitigation. The development of a robust rapid assessment tool can help in all of these endeavors.

## What is it?

The technical framework for the CA Rapid Assessment Method consists of three levels, and stems from EPA's approach, which is being applied in other states across the nation. Each level supports the other, as briefly described below.

***Landscape Assessment (Level 1)*** uses remote sensing data and field surveys to inventory the wetlands of a region. A new statewide inventory is being produced by the USFWS through the California State Resources Agency.

***Rapid Assessment (Level 2)*** uses field diagnostics and existing data to assess conditions at wetland sites. States developing or implementing Level 2 include Ohio, Pennsylvania, Delaware, Massachusetts, Washington, and California. ***In California, the Level 2 work is called CRAM (the California Rapid Assessment Method).***

***Intensive Site Assessment (Level 3)*** provides the field data necessary to validate the CRAM, characterizes reference condition, and tests hypotheses about the causes of wetland conditions as observed through Levels 1 and 2.

Rapid methods of evaluating wetlands in use in Ohio and other states focus on assessing wetland condition in the context of human disturbances (or stressors) and valued ecosystem functions. Our effort centers around the following *two key objectives* for the development of the California Rapid Assessment Method:

- Produce a rapid, cost-effective, science-based, repeatable method to evaluate wetland projects and sites relative to ambient conditions, reference conditions, and performance standards;
- Enable wetland managers to report on the overall distribution, abundance, and condition of wetlands within watersheds, regions, or across the state, based on routine summaries of assessment scores;
- Help wetland managers identify corrective measures to improve the conditions of wetlands.

## Applications of CRAM

CRAM was developed primarily as a rapid assessment tool to provide information about the condition of a wetland and the stressors that affect that wetland. CRAM is mainly intended for cost-effective ambient monitoring and assessment that can be performed on different scales, ranging from an individual wetland, to a watershed, or a larger region. Over time, wetland managers and scientists can develop a picture of reference condition for a particular wetland class or create a landscape-level profile of the condition of different wetlands within a region of interest. This information can then be used in planning wetland protection and restoration activities.

Additional applications could include: (1) *preliminary* assessments to determine the need for more traditional intensive analysis or monitoring, (2) providing *supplemental* information during the evaluation of wetland condition to aid in regulatory review under Section 401 and 404 of the Clean Water Act, the Coastal Zone Management Act, Section 1600 of the Fish and Game code, or local government wetland regulations, and (3) *assisting* in the monitoring and assessment of restoration or mitigation projects by providing a rapid means of checking progress along a particular restoration trajectory. CRAM is *not* intended to replace any existing tools or approaches to monitoring or assessement, and will be used at the discretion of each individual agency to complement preferred approaches. Typically, wetland impact analysis and compensatory mitigation planning and monitoring for larger wetland areas that exhibit more complex physical and biological functions will require more information than CRAM will be able to provide.

## How is it being developed?

The CRAM project is currently focused on wetlands of coastal watersheds. A Core Team of state and federal agency representatives and scientists provides overall direction and coordination for Principle Investigators (PIs) from the South Coast, Central Coast, and North Coast/Bay Area. The (PIs) lead the technical development of the CRAM, and are assisted by Regional Teams of local agency representatives and wetland experts who provide regional scientific and management perspectives plus outreach to local agencies that will help implement the CRAM.

A major aspect of CRAM development is the selection and field testing of visible indicators of conditions that can be used to diagnose the level of beneficial uses or desired functions of a wetland, and to help identify corrective measures for impaired wet lands. After the complete set of indicators was chosen, CRAM development will involve 2 basic analytical steps for each major class of wetland:

(1) *semi-quantitative verification* of the metrics based on best professional judgment of their suitability to describe wetland conditions in each region;
(2) *quantitative calibration* using existing data to test for correlation between the metrics and levels of the highest priority functions in each region; and
(3) *validation* based on comparisons between CRAM results and intensive site studies (level 3) at randomly chosen sites along well-documented stressor gradients.

These steps have been completed for the estuarine and riverine CRAM classes. Calibration of the remaining classes is being planned.

CRAM is based on readily visible conditions that indicate functional levels of support for high-priority beneficial uses and ecological services. In general, CRAM was developed with the basic premise that a wetland is in good condition when the structure and function of that wetland are unimpaired by stresses induced by human activity, and the wetland's native biological diversity and supporting processes are likely to persist.

Funding from the US EPA supported steps 1-2. Implementation is being funded through separate grant monies.

## How can CRAM be used, who can use it, and when will it be available?

CRAM can be used to quickly assess the condition of any wetland relative to its performance standards (for mitigation and restoration projects) or relative to regional reference conditions for wetlands of a similar kind and setting. Over time, as the number of assessments increases, the ability of managers to distinguish between ambient variability and either impairment or improvement will also increase.

Potential users of the CRAM (or of the information generated by its use) include field staff and managers from local, state, and federal agencies, counties and flood control districts.

Others who might be interested in using CRAM include researchers and staff from science-based non-governmental organizations, and environmental and advocacy groups, such as: Bay Keepers, Central Valley Joint Venture, Delta Keeper, The Bay Institute, Heal the Bay, Isaac Walton League, National Audubon, National Heritage Institute, Riparian Habitat Joint Venture, San Francisco Bay Joint Venture, Save the Bay, and Trout Unlimited. Consulting firms, educators, academic researchers, and reporters for written and broadcast media, along with the general public, will also find results from the CRAM to be useful to their interests in wetland science and management.

Electronic versions of the CRAM users manual and electronic data entry tools can be downloaded at www.CRAMwetlands.org.

## For more information, contact:


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