California Rapid Assessment Method for Wetlands (CRAM) Project and Ambient Assessments



Project vs. Ambient Assessment

CRAM can be used:

 Probabilistically to identify the overall condition in a wetland class within a particular region – *ambient assessment*.

 To identify the range in condition within a wetland class (or multiple classes) within an area in which an action is proposed project assessment.

Key Definitions

Sample Universe:

A map of all the wetlands of one type within a given area

Sample Frame:

A map of all the candidate AAs within the sample universe

Ambient Assessment...

- A probabilistic survey conducted for wetlands in a specific wetland class.
- Requires a "complete" map of all wetlands in the subject class on a watershed or other geographic basis.
- Requires a sampling methodology that relates each sampled point to a wetland area for which the point represents the wetland condition (e.g., GRTS).

For Ambient Assessments of a Wetland Class:

- The Sample Universe is a map of all wetlands in the subject category in a watershed or other landscape.
- The Sample Frame is all candidate AAs within the universe from which the sample of AAs will be drawn.

Level 1 riverine wetland linework

Candidate AAs selected from GRTS

Summary of Ambient Assessment

- Ambient Universe all the wetlands in a watershed or other landscape to which the assessment results are expected to pertain.
- Ambient Sample Frame all the candidate AAs within an ambient universe.
- Ambient Sample Draw fixed sample size; the draw accounts for the different inclusion probabilities of the AAs, which depend on the sizes of their encompassing wetlands.

Project Assessment...

- A structured assessment of wetland condition used to support an application for an approval or permit, an environmental review, an alternatives analysis, a mitigation proposal, or any similar use or action.
- An assessment conducted for monitoring such projects or elements thereof.
- May be conducted by project applicants or by reviewing agencies.

For Project Assessments:

- The Sample Universe is all of the wetlands of one type within the project boundary.
- The Sample Frame is all candidate AAs within the universe from which the sample of AAs will be drawn.



Summary of Project Assessment

- Project Universe all wetlands in a given class in a project to which the assessment results are expected to pertain.
- Project Sample Frame all the candidate AAs within the project universe.
- Project Sample Draw requires that all AAs have the same inclusion probability; sample size is not fixed, but depends on the variability in wetland condition throughout the project.

Practical Considerations for Project Assessment

- Sufficient sampling is required to cover the range of variability within the project (i.e., this may differ depending on whether a site is homogeneous or not).
- The required number and placement of AAs can be determined by probabilistic methods (random sampling; stratification for complex sites, etc.), by Best Professional Judgement, or by negotiation.
- The level of effort should be commensurate with impacts that may be associated with the project.

Project example: stratifying a large wetland area

- Develop a Sample Frame for the target wetland including all possible AAs (here, a grid of 1 ha circles). Reject candidate AAs that fall mostly outside the target wetland.
- Re-shape AAs that are partially outside the wetland (within acceptable size range) so that it fits entirely within the wetland.
- If appropriate, stratify the wetland into separate groups (here, interior and edge), and assess separately.
- Randomly select and sample 3 AAs from each group. Average the two most similar AA scores; if the 3rd AA score differs by more than 10 points from the average score of the first two AAs, select and sample a 4th AA. Continue until latest AA score is within 10 points of the average of all the previous AA scores.





Project-Related Uses of CRAM

- Sampling the full range of wetland condition at an impact site, which can assist with impact identification, avoidance, and minimization.
- Identifying mitigation requirements.
- Identifying reference conditions and reference sites for the project and mitigation sites.
- Characterizing existing condition in aquatic resources proposed for enhancement or rehabilitation.
- Assessing performance of compensatory mitigation projects.

Inappropriate Project Uses or Applications of CRAM

- Jurisdictional Determinations
- Focused species or threatened or endangered species monitoring
- Evaluation of compliance with water quality objectives
- Modifying the methodology
- Multiplying, or weighting, scores
- Summarizing CRAM scores

CRAM Technical Bulletin

- Appropriate & Inappropriate Uses of CRAM
- Specific Guidance for Assessment of Projects
 - Defining a Project Area and Appropriate Assessment Area
 - Use of CRAM to Detect Changes in Wetland Condition Over Time
 - Example Scenarios for CRAM Assessment of Projects
- Submission of CRAM Scores
- Interpretation of CRAM Scores



Regulatory Agency Update

USACE & RWQCB:

- Peer-reviewed
- Often requiring CRAM during the 404 permitting process, and as a compensatory monitoring tool (permit condition)
- Increasingly required in the 401 permitting process
- CDFW:
 - Has not begun utilizing for 1600 permits

