California Rapid Assessment Method for Wetlands

Interpreting CRAM Scores



Index Score Represents Overall Wetland Condition

- The CRAM Index Score combines indicators of all Attributes to represent overall condition, which is related to functional capacity or wetland "health."
- CRAM Index Scores are analogous to:
 - Apgar Scores (newborn infant health)
 - Dow Jones Industrial Average (DOW)
 - Gross National Product (GNP)
 - Grade Point Average (GPA)

Index Scores Alone Can Be Misleading

- Identical Index or Overall Scores can be derived from different arrays of Attribute Scores
 - Must refer to Attribute Scores (and sometimes to Metric Scores) to interpret Index Scores

Landscape - Buffer	Hydrology	Physical Structure	Biotic Structure	Index Score
50	65	42	68	56
64	48	37	76	56

Index	Landscape/ Buffer	Hydrology	Physical Structure	Biotic Structure
70	58	58	66	89



Index	Landscape/ Buffer	Hydrology	Physical Structure	Biotic Structure
72	83	100	50	53



Attribute Scores Relate to Expected Beneficial Uses

- Each Attribute score represents a suite of expected functions; the score indicates the relative level of those functions provided by the wetland:
 - e.g., the Landscape and Buffer Attribute represents ecological connectivity at landscape scale, ability of the buffer to mediate external stressors, etc.
 - e.g., the Hydrology Attribute represents the achievement of (or departure from) natural hydrological pattern, recharge potential, peak stage reduction, water quality maintenance, etc.
 - e.g., the Biotic Structure Attribute represents habitat diversity, biological integrity, food web support, etc.

Scores and Stressors Identify Causes of Condition Reduction

 As CRAM scores decrease, the wetland's associated capacity to provide benefits is also expected to decrease.



Scores and Stressors Identify Causes of Condition Reduction

- Attribute and Metric scores help to indicate stressors that are adversely affecting wetland condition and hence assumed function.
 - Stressor Checklist plus Metric scores help identify possible causes for low Attribute scores and related effects on wetland function.
- Information beyond the CRAM assessment is required to validate relationships among scores and functions or stressors.

Score can be Affected by Wetland Size and Complexity

- Studies indicate that the diversity within and levels of services provided by a wetland increase with its structural complexity and size.
- For each wetland class, CRAM tends to allocate higher scores to larger, more complex wetlands.
- CRAM reduces size bias concerns by establishing AA size guidelines for each wetland class.

Scores Indicate Differences in Wetland Condition (with Training)

- Among-team comparisons during development of the Riverine and Estuarine modules indicated that:
 - Index scores that differ between wetlands by 6 points or more indicate a real difference in wetland condition.
 - Attribute scores that differ between wetlands by 10 points (depending on attribute) indicate a real difference in wetland condition at the attribute level.
- Achieving this precision level requires adequate practitioner training to assure consistent metric interpretation.

CRAM Scores Emphasize Watershed-Level Decision-Making

- CRAM assessments are well-suited for characterizing patterns among aquatic resources in a landscape or watershed context.
- CRAM assessments also enhance watershed characterization, impact assessment, mitigation planning, and monitoring.
- CRAM information can enhance any context in which knowing the condition of the aquatic resource is important for decision-making.

Thank You