An Introduction to California Rapid Assessment Method for Wetlands (CRAM)

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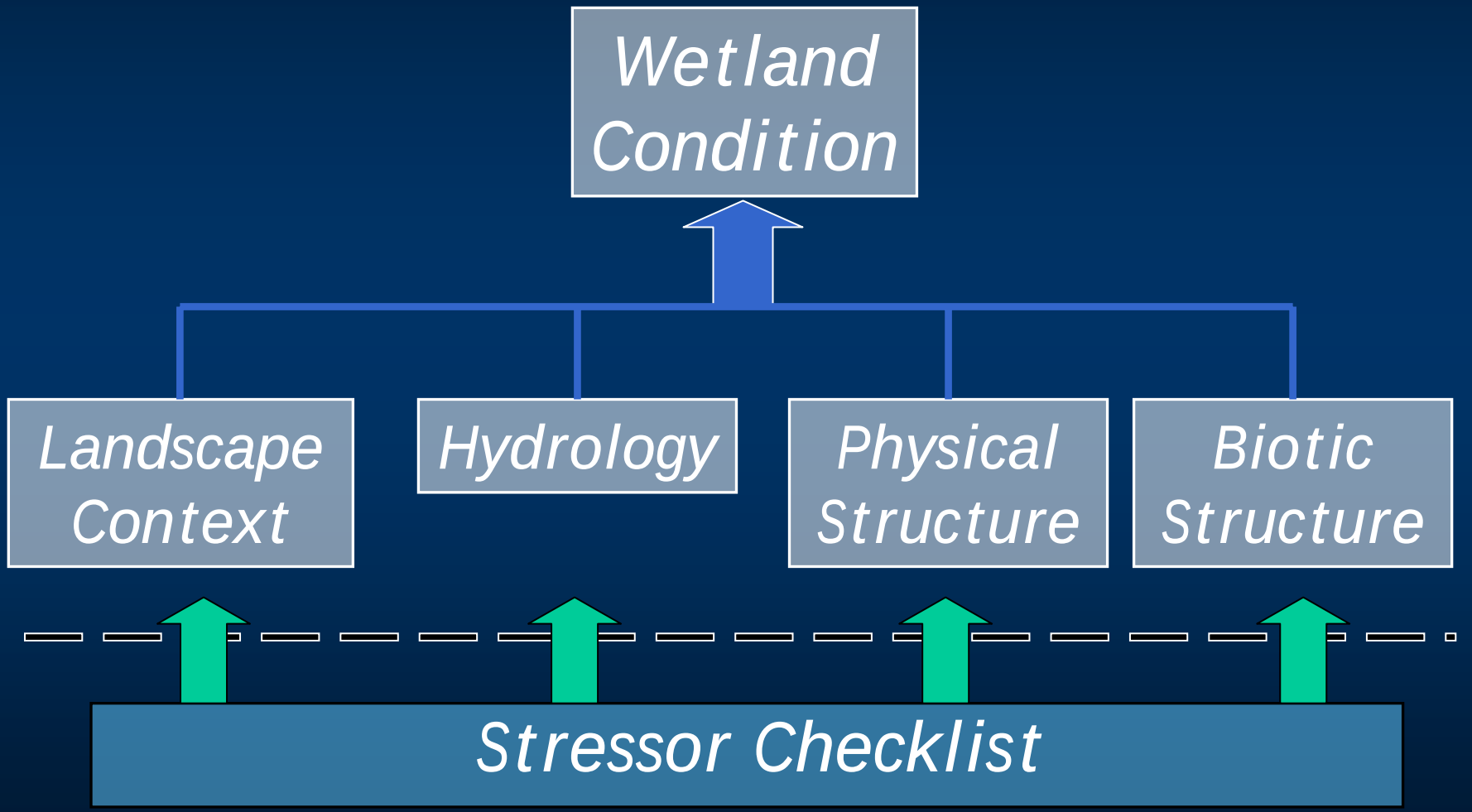
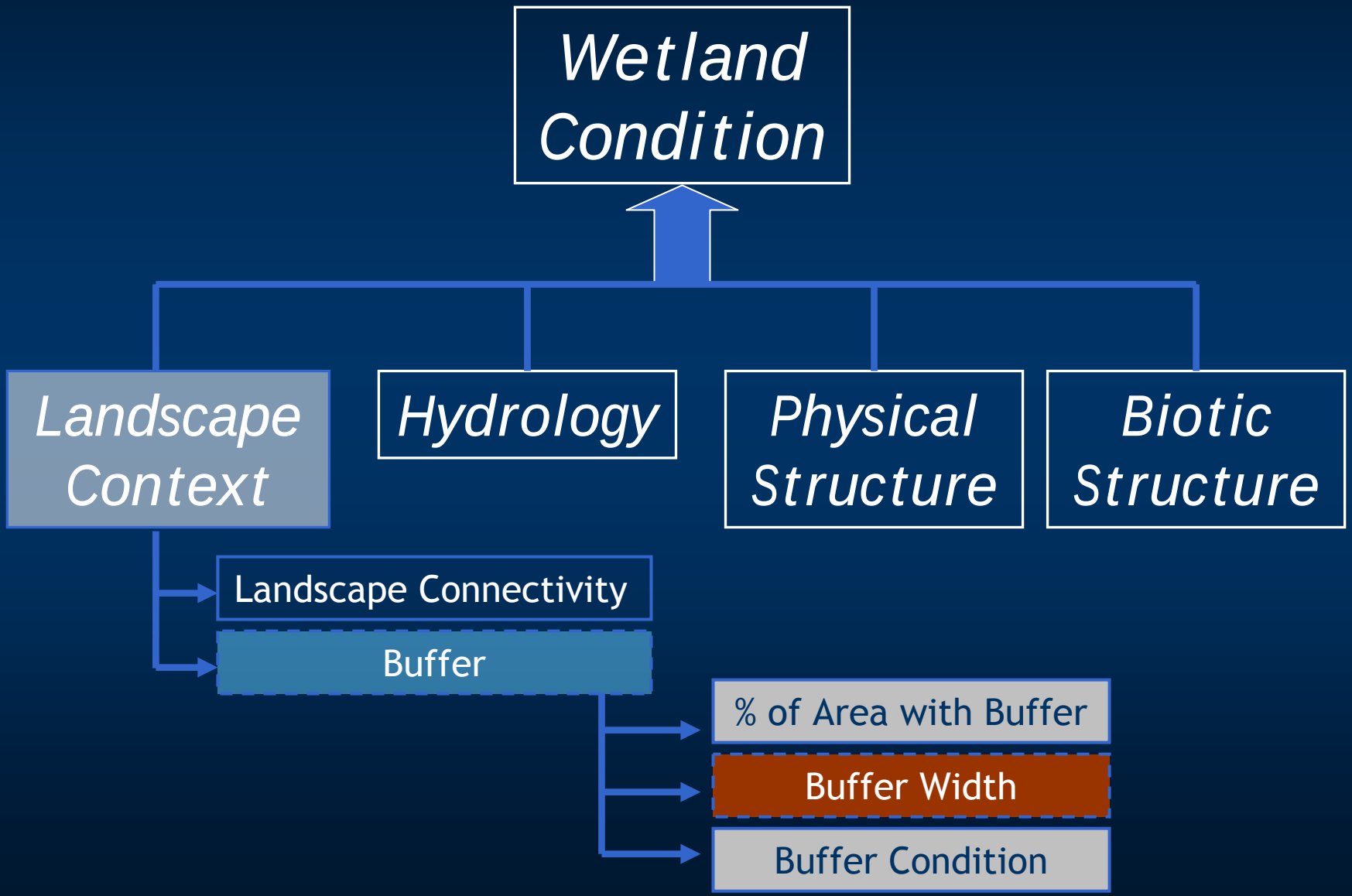
What is CRAM?

- Rapid method used to assess condition based on readily observable field indicators
- Less than 4 hrs field time, team of 2-3
- Required expertise comparable to jurisdictional delineation
- Validated with intensive measures of wetland condition

CRAM Assessment Framework



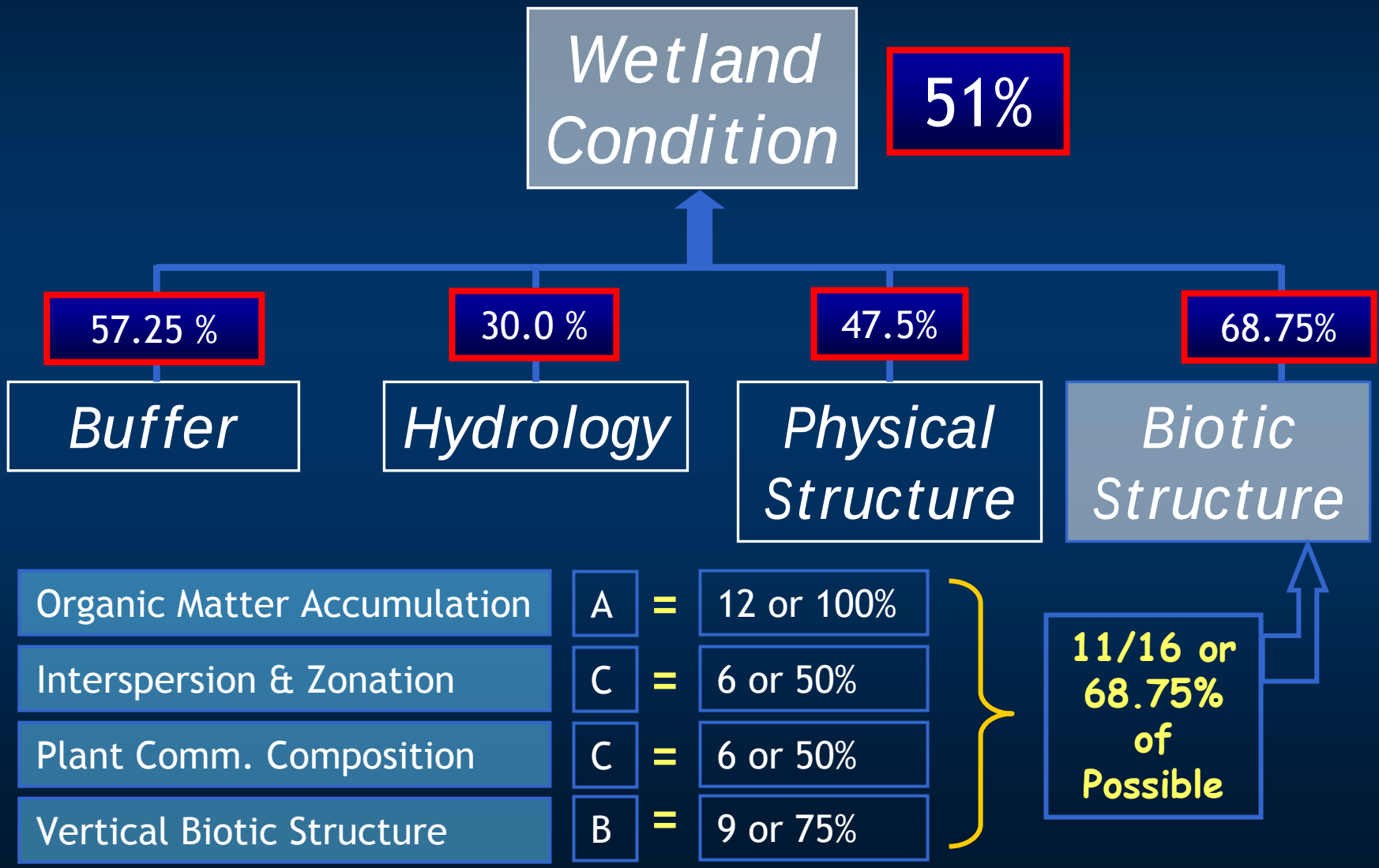
CRAM Attributes & Metrics



Mutually Exclusive Alternative States Representing the Full Range of Possible Condition for *Buffer Width*

Alphabetic Score	Numeric Score	Alternative State
A	12	Average buffer width > 250m
B	9	Average buffer width is 151 - 250m
C	6	Average buffer width is 76 - 150m
D	3	Average buffer width is ≤ 75m

Overall Score Equals Average Attribute Scores



CRAM Features a Standard Set of Attributes and Metrics for 8 Wetland Classes

- Lakes
- Estuaries
- Lagoons
- Rivers, Creeks, Riparian Areas
- Depressional Wetlands
- Vernal Pools
- Playas
- Slope, Seeps & Springs

Reference Concepts

Metrics are scored relative to the best achievable condition, which is standardized throughout the state for each wetland class.

We are building a network of reference sites for each possible alternative state of condition, including worst to best achievable, for each wetland class.

Status of CRAM Development

- Manual — Complete for all classes
- Verification — Complete for all classes
- Validation — Complete for
  - Riverine/Riparian
  - Estuarine

  In progress for other classes
- Peer Review — Ongoing
  - Rapid Assessment in California (Sutula et al. 2006)
  - Manuscript on CRAM validation in preparation
  - Formal peer review by State this fall

Validation: Repeatability Among Teams At Metric Level

Precision Test	Precision Targeted	Precision Achieved	
		Estuarine	Riverine
Between Teams	+/- 20%	10%	12%

Significant Correlations Riverine CRAM and Level 3 Data

CRAM Score	Level 3 Data	r^2	p-value
Landscape	Diversity of non-riparian bird species	+.39	.01
Hydrology	Total bird species diversity	+.32	.04
Physical	CDFG Benthic IBI	+.35	.01
Biotic	Benthic IBI	+.40	.003
Overall	Benthic IBI	+.62	.001

Overview of CRAM Uses

- Ambient monitoring (statewide, regional, watershed assessment)
- Compliance monitoring
- Wetland program evaluation
- Cumulative impacts

CRAM Resources

- CRAM Users Manual Version 4.5
- CRAM Information Technology (eCRAM)
  - Field CRAM with tablet or laptop
  - Aerial imagery, CRAM software
  - Statewide database
- Training Materials
  - CRAM dictionary on web site
  - Condensed field manuals
- URL: cramwetlands.org