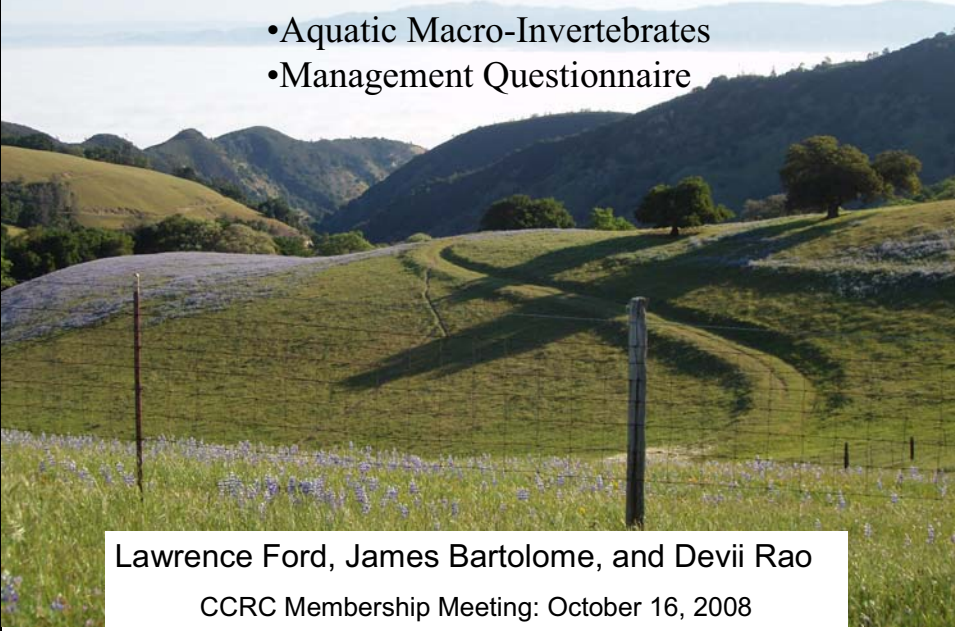


## 2009 CCRC Indicator Monitoring Results

- Soil Structure
- Aquatic Macro-Invertebrates
- Management Questionnaire



Lawrence Ford, James Bartolome, and Devii Rao

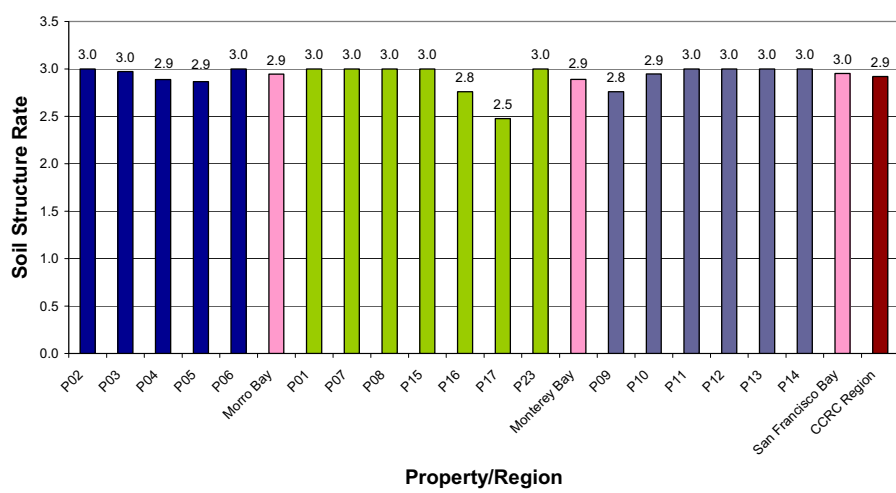
CCRC Membership Meeting: October 16, 2008

• In the spring of 2009 we monitored several variables associated with rangeland health at eighteen properties on the central coast, from San Luis Obispo County north to Alameda County. The variables were: soil structure, aquatic macroinvertebrates, vegetation abundance and percent cover, bare ground, and thatch. We also conducted interviews with land managers for our management questionnaire.

### Summary of Results:

- Substantial training is needed to properly measure soil structure.
- Aquatic macroinverts: need to be measured at the appropriate time; properties with scores of 2 or more might need attention to water quality; some training in aquatic macroinvert ID might be helpful.
- Clarifying and refining the management questionnaire might yield better results.

### Soil Structure -- Comparison of Infiltration CCRC Monitoring Testing, 2009



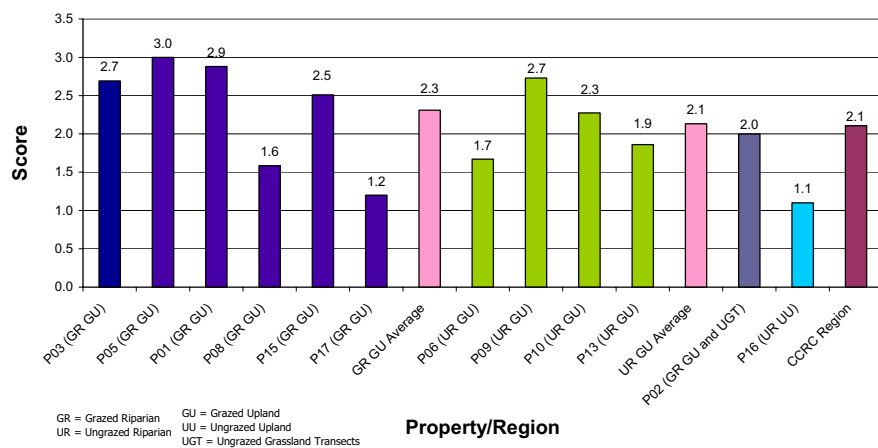
Note: This index represents the range from 0 (worst) to 3 (best).

• A soil structure score of less than 2 indicates that an improvement of soil structure would be valuable, although not all soils have the potential to be improved. None of the properties received a score of less than 2 in 2009.

• Only 2 out of 18 properties had the same score in 2009 as they did in previous sampling years. Scores for two properties were lower, and scores for 14 properties were higher in 2009. This variation might be due to different field workers between years. Field workers need substantial training to accurately and consistently measure this variable. This method of assessing soil structure is not appropriate for self-assessment by an untrained land manager.

• Three properties had substantial difference between years, each having a score of less than 2.0 prior to 2009 and a score of 3.0 in 2009.

### Aquatic-Macro Invertebrates Found- Comparison of Water Quality By Management CCRC Monitoring Testing, 2009



Note: This index represents the range from 1 (best) to 3 (worst).

• Properties with scores of 2 or more (with more pollution tolerant invertebrates) might benefit from management to improve water quality. • This graph shows that properties with grazed riparian transects and grazed uplands had slightly higher (worse) scores than those with ungrazed riparian SUs and grazed uplands. There was only one property with ungrazed riparian SUs and ungrazed uplands. This property had the best score.

• Between 2008 and 2009, scores at 4 properties declined and scores at 2 properties improved. The largest decline between 2008 and 2009 was a change in score from 1.0 to 2.9. The largest improvement at a ranch between 2008 and 2009 was a change in score from 2.8 to 1.9.

• This indicator might be more effective if sampled earlier in the year when water is present and flowing, and before the inverts emerge from their aquatic larval phases. Some field training on aquatic macro-invertebrate identification would be very useful for those who are not familiar with this taxa.

CCRC 2009 Monitoring of Indicators of Sustainable Rangeland Stewardship (03/10/09, updated DRR 4/3/2009)  
Management Questionnaire--Data Record for Each Sample Unit (to be filled in or answered by Livestock Operator)

Property Owner/Manager \_\_\_\_\_ Property Name \_\_\_\_\_  
Sample Unit # \_\_\_\_\_ Date \_\_\_\_\_ Recorder \_\_\_\_\_ Others Present \_\_\_\_\_

	Current Year	Previous Year	Typical Year	Historically
Grazing Season (months)				
Size of Management Unit/Field (acres)				
Livestock Kind & Class				
Grazing System (extensive, intensive, rotational, deferred)				
Utilization 1 (heavy, moderate, or light)				
Utilization 2 (previous October RDM)				

Please describe SIGNIFICANT HISTORICAL IMPACTS other than livestock grazing at this site:

- \_\_\_ Long Term Rest (no livestock grazing; which years?) \_\_\_\_\_
- \_\_\_ Wildfire or Prescribed Burn (what dates?) \_\_\_\_\_
- \_\_\_ Other Unusual Impacts (e.g. wild pig rooting, excavation, farming/cultivation, other major land uses; what dates?) \_\_\_\_\_
- \_\_\_ Improvements (e.g. fertilization, seeding, irrigation, erosion control features; what dates?) \_\_\_\_\_

• In 2009 we tested a management questionnaire for the first time. For each of our transects, we asked the land manager about grazing season, pasture size, livestock kind and class, grazing system, utilization, and RDM (Utilization 2) for the current year, previous year, a typical year, and historically. We also asked about significant historical impacts, such as long-term rest, fire, pig rooting, cultivation, and fertilization.

• We did get some useful results from the management questionnaire, but as we began analyzing the data, we realized that if we could clarify and refine the management questionnaire, we could get more relevant and better quality results.

• The two main things that I think could improve the management questionnaire are: 1) make sure all terms are clearly defined and 2) generate multiple choice questions that the manager can choose from.