

Compiling and Analyzing Management Case Studies (a project under development)

Project leaders: Valerie Eviner, Andrew Latimer
David Lewis, Toby O'Geen, Mel George, Kevin Rice, Ken Tate, Truman Young

Project collaborators: Pelayo Alvarez, Sheila Barry, Theresa Becchetti, Renata Brillinger, Josh Davy, Morgan Doran, John Gustafson, John Harper, Roger Ingram, Doug Johnson, Carissa Koopman, Royce Larsen, Stephanie Larson, David Lile, Glenn Nader, Elisa Noble, Deborah Rogers, Chris Rose, Tracy Schohr, Jessica Wright, Anne Yost **and looking for more!**



2 main challenges:
1. Context-specific results
2. Balancing multiple goals

Conservation Benefits of Rangeland Practices
Assessment, Recommendations, and Knowledge Gaps

USDA NRCS
National Resource Conservation Service

DAVID D. BRISKE, EDITOR

Goals:

- Assess and quantify effects of management on environmental quality
- Build solid scientific foundation to improve natural resource assessment, planning and implementation

http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045792.pdf

Conservation Benefits of Rangeland Practices
Assessment, Recommendations, and Knowledge Gaps

USDA NRCS
National Resource Conservation Service

DAVID D. BRISKE, EDITOR

Some conclusions:

- Limited conclusions on many practices due to lack of monitoring data—especially at scales most relevant to management (e.g. pasture/watershed scale in 5-10 year time periods)
- Limited utility of generalized management recommendations (must be site-specific)

http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045792.pdf

Conservation Benefits of Rangeland Practices
Assessment, Recommendations, and Knowledge Gaps

USDA NRCS
National Resource Conservation Service

DAVID D. BRISKE, EDITOR

Need for:

- Standardized data collection
- Long-term data across local to regional scales
- Improved collaboration between scientists and managers
 - Include broader range of managers, with diverse goals

http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045792.pdf

RANGELAND MANAGEMENT SERIES Publication 0112

California Guidelines for Residual Dry Matter (RDM) Management on Coastal and Foothill Annual Rangelands

Table 1. Minimum residual dry matter (RDM) guidelines for dry annual grassland.

Percent woody cover	Percent slope			
	0-10%	10-20% (lb RDM per acre)	20-40% (lb RDM per acre)	>40%
0-25	300	400	500	600
25-50	300	400	500	600
50-75	NA	NA	NA	NA
75-100	NA	NA	NA	NA

RANGELAND MANAGEMENT SERIES Publication 0112

California Guidelines for Residual Dry Matter (RDM) Management on Coastal and Foothill Annual Rangelands

Table 1. Minimum residual dry matter (RDM) guidelines for dry annual grassland.

Percent woody cover	Percent slope			
	0-10%	10-20% (lb RDM per acre)	20-40% (lb RDM per acre)	>40%
0-25	300	400	500	600
25-50	300	400	500	600
50-75	NA	NA	NA	NA
75-100	NA	NA	NA	NA

Table 2. Minimum residual dry matter (RDM) guidelines for annual grassland/hardwood range.

Percent woody cover	Percent slope			
	0-10%	10-20% (lb RDM per acre)	20-40% (lb RDM per acre)	>40%
0-25	500	600	700	800
25-50	400	500	600	700
50-75	200	300	400	500
75-100	100	200	250	300

Table 3. Minimum residual dry matter (RDM) guidelines for the coastal prairie.

Percent woody cover	Percent slope			
	0-10%	10-20% (lb RDM per acre)	20-40% (lb RDM per acre)	>40%
0-25	1,200	1,500	1,800	2,100
25-50	800	1,000	1,200	1,400
50-75	400	500	600	700
75-100	200	250	300	350

RANGELAND MANAGEMENT SERIES Publication 0112

Annual Range Forage Production

Table 1. Annual range forage production guidelines.

Weather pattern	Curve in Figure 2	Break of season date	Onset of winter growth		Onset of rapid spring growth		Peak standing crop Date DM (lb/acre)
			Date DM (lb/acre)	DM (lb/acre)	Date DM (lb/acre)	DM (lb/acre)	
Average fall, winter and spring	A	Oct 23	Nov 7	600*	Feb 1	700†	May 1 2000‡
Warm, wet fall, average winter and spring	B	Oct 1	Nov 7	1000	Feb 1	1100	May 1 3000
Cold, wet fall, average winter and spring	C	Oct 23	Oct 23	—	Feb 1	300	May 1 1000
Dry fall, average winter and spring	D	Nov 15	Nov 15	—	Feb 1	300	May 1 1000
Average fall, cold winter, average spring	E	Oct 23	Nov 7	600	Feb 1	300	May 1 1500
Average fall, mild, winter average spring	F	Oct 23	Nov 7	600	Feb 1	1000	May 1 3000
Average fall, short winter, early spring	G	Oct 23	Nov 7	600	Jan 15	700	May 1 3000
Average fall, long winter, late spring	H	Oct 23	Nov 7	600	Apr 1	700	May 1 1500

* Forage production from break of season to onset of winter growth (Oct. 23–Nov. 7 in this example).
 † Forage production from break of season to onset of rapid spring growth (Oct. 23–Feb. 1 in this example).
 ‡ Forage production from break of season to peak standing crop (Oct. 23–May 1 in this example).

Conservation Benefits of Rangeland Practices
 Assessment, Recommendations, and Knowledge Gaps

USDA NRCRS
 National Conservation Conservation Service

DAVID D. BRUKE, EDITOR

Need for:

- Standardized data collection
- Long-term data across local to regional scales
- Improved collaboration between scientists and managers
 - Include broader range of managers, with diverse goals

http://www.nrcrs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045792.pdf

A. Diverse stakeholder groups have identified a pressing need to develop site-specific management recommendations by learning from the successes and failures of previous management trials.

Collectively, they provide:

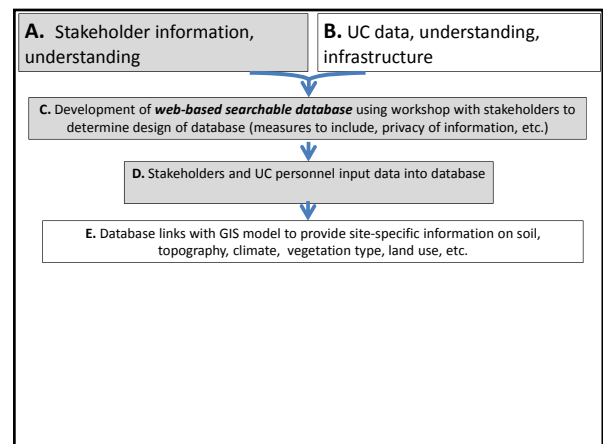
- Thousands of short-term to long-term management trials: (1) across environmental conditions and (2) with diverse sets of goals
- Long-term records of forage or livestock production encompassing variable weather conditions.
- Quantitative or qualitative assessment of goals such as invasive species, wildlife, etc.

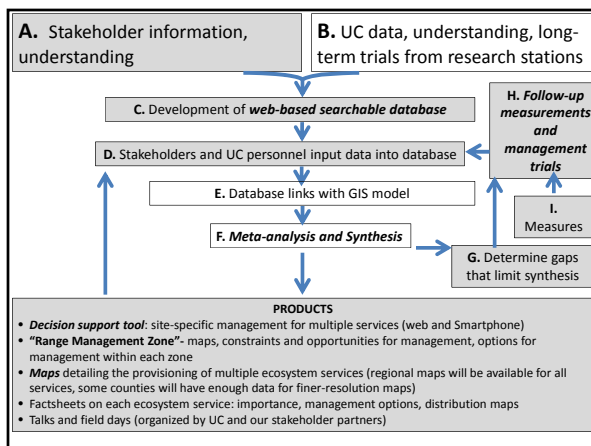
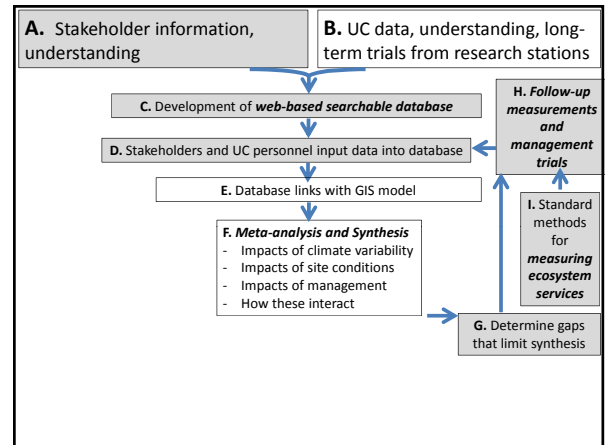
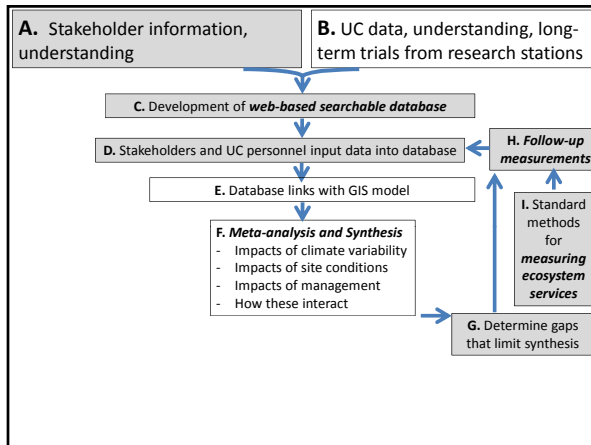
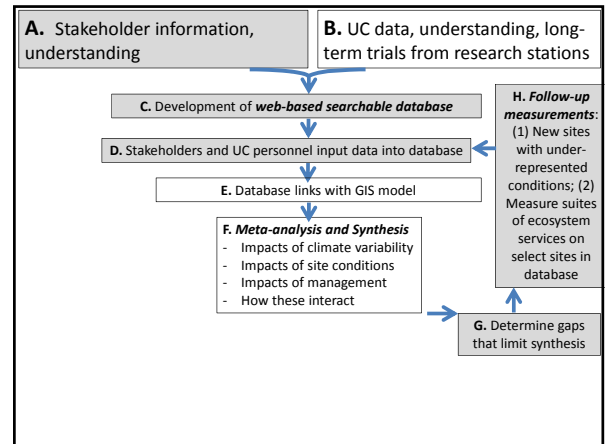
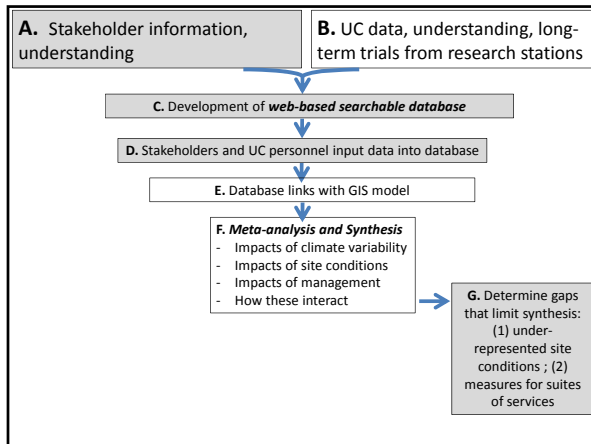
B. UC professors, Cooperative Extension, and Farm Advisors have identified the need to understand and predict how multiple ecosystem services are controlled over space and time, and how to translate this into site-specific management recommendations.

Collectively, they provide:

- Observational and experimental research on multiple ecosystem services across decades, and across the diverse environmental conditions.
- A long history of collaborating with diverse managers
- Skills in database development, GIS, statistics.

Focal Services: Forage production and quality, livestock production, noxious weed control, erosion control, wildlife habitat
 Additional (as data is available): water supply and quality, soil carbon sequestration, native plant restoration potential, soil fertility, soil water holding capacity





- ### Examples of questions that can be addressed:
- How do I reliably manage for a suite of goals on my site? (and is it even possible?)
 - How does this vary with annual weather?
 - How do we manage for ability of services to recover after a disruption (e.g. drought, erosion event)?
 - How do we manage to minimize this disruption?
 - Where are services provided? Where are specific services "bundled" vs. where are there tradeoffs between them?
 - Where can they effectively be managed?
 - How will effective management practices vary by site/year?
 - What is the short-term to long-term balance of the costs, risks and other benefits?

Looking for feedback and collaborators

- What questions do you want answered? (are we focused on the right services/questions?)
- Are you interested in participating? What would help you to participate?
- What are your concerns (e.g., data privacy)?
- Others?

Valerie Eviner, UCD Plant Sciences

veviner@ucdavis.edu

530-752-8538