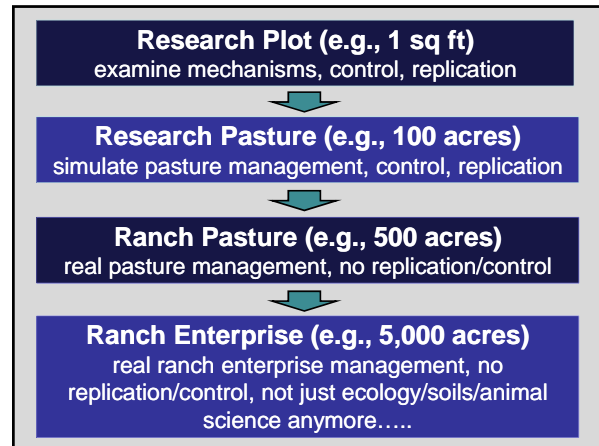





Bridging the Gap between the Research Plot and the Ranch
 Ken Tate – UC Davis

<http://rangelandwatersheds.ucdavis.edu>

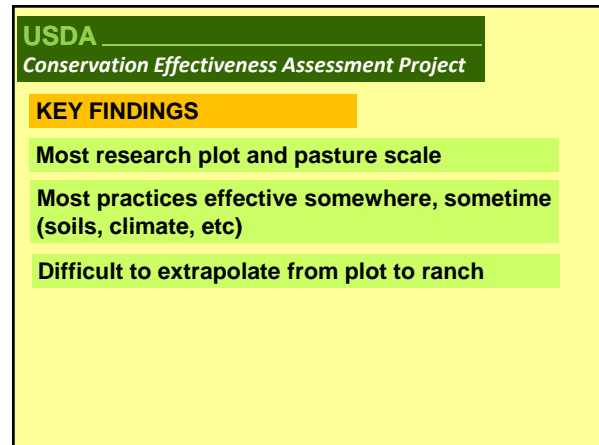



USDA
 Conservation Effectiveness Assessment Project

40 scientists, 3 years to examine literature supporting the conservation effectiveness of range management practices implemented on-ranch

Prescribed grazing, fire, planting, brush management, etc.

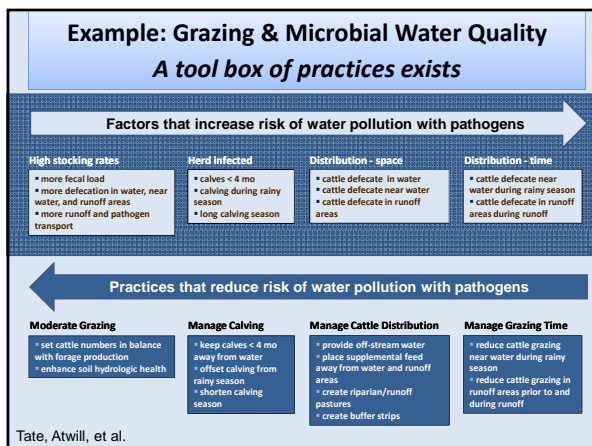
CHAPTER 1
 An Evidence-Based Assessment of Prescribed Grazing Practices



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 Conservation Effectiveness Assessment Project

KEY FINDINGS

- Most research plot and pasture scale
- Most practices effective somewhere, sometime (soils, climate, etc)
- Difficult to extrapolate from plot to ranch



Example: Grazing & Microbial Water Quality
 A toolbox of practices exists

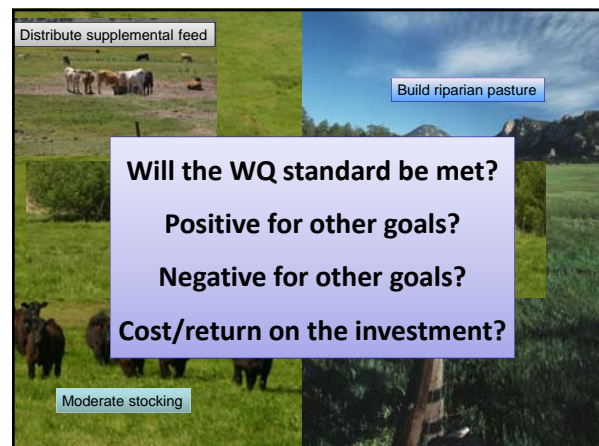
Factors that increase risk of water pollution with pathogens

- High stocking rates**
 - more fecal load
 - more defecation in water, near water, and runoff areas
 - more runoff and pathogen transport
- Herd infected**
 - calves < 4 mo
 - calving during rainy season
 - long calving season
- Distribution - space**
 - cattle defecate in water
 - cattle defecate near water
 - cattle defecate in runoff areas
- Distribution - time**
 - cattle defecate near water during rainy season
 - cattle defecate in runoff areas during runoff

Practices that reduce risk of water pollution with pathogens

- Moderate Grazing**
 - set cattle numbers in balance with forage production
 - enhance soil hydrologic health
- Manage Calving**
 - keep calves < 4 mo away from water
 - offset calving from rainy season
 - shorten calving season
- Manage Cattle Distribution**
 - provide off-stream water
 - place supplemental feed away from water and runoff areas
 - create riparian/runoff pastures
 - create buffer strips
- Manage Grazing Time**
 - reduce cattle grazing near water during rainy season
 - reduce cattle grazing in runoff areas prior to and during runoff

Tate, Atwill, et al.



Distribute supplemental feed

Build riparian pasture

Moderate stocking

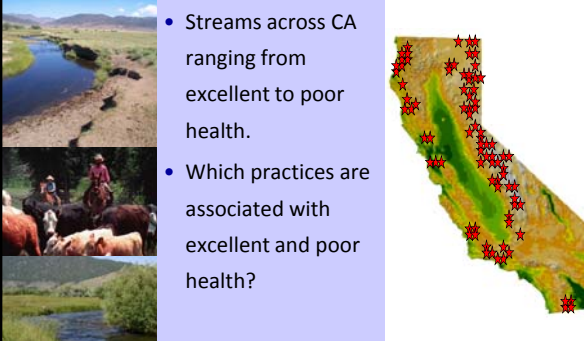
Will the WQ standard be met?

Positive for other goals?

Negative for other goals?

Cost/return on the investment?

Example: Learning at the management scale
Survey of 130 Grazed Riparian Areas



- Streams across CA ranging from excellent to poor health.
- Which practices are associated with excellent and poor health?

Practices and Riparian Health

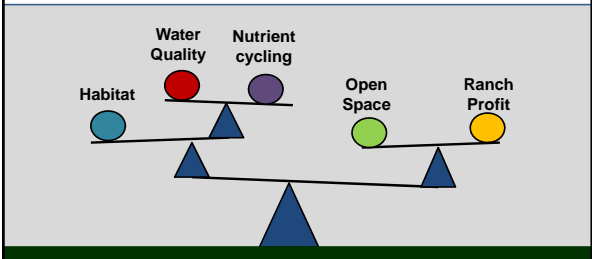
- Off-stream attractants such as water tanks and supplement – days/yr (+).
- Herding to control utilization and time spent in riparian area – days/yr (+).
- Rest period duration – days/yr (+).
- Cattle density (cows/ac) during grazing bouts (-).
- Frequency of grazing bouts per year (-).

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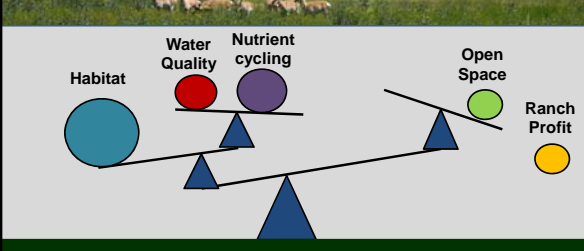
KEY FINDINGS

- Most research plot/pasture scale
- Most practices effective somewhere, sometime (soils, climate, etc)
- Difficult to extrapolate from plot to ranch
- Focus on one, maybe two ecosystem services**

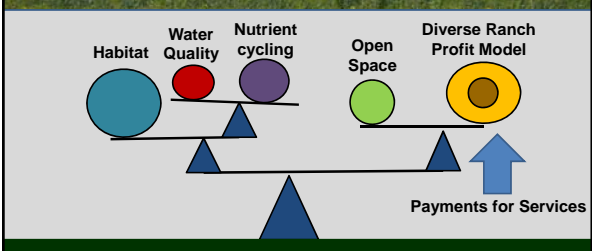
Balancing Act – Management can enhance (synergy) or diminish (tradeoff) multiple services.



Treatment/management may benefit one service to the detriment of others.



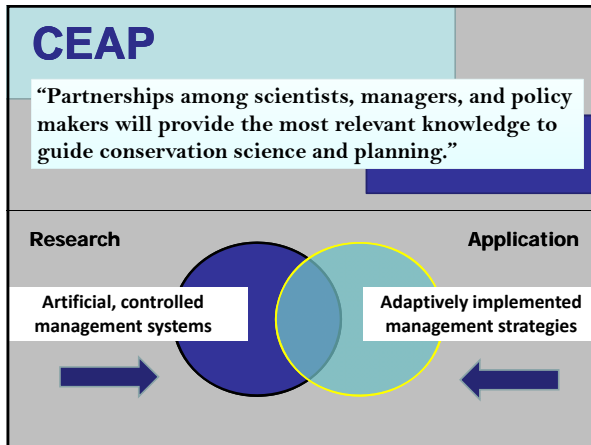
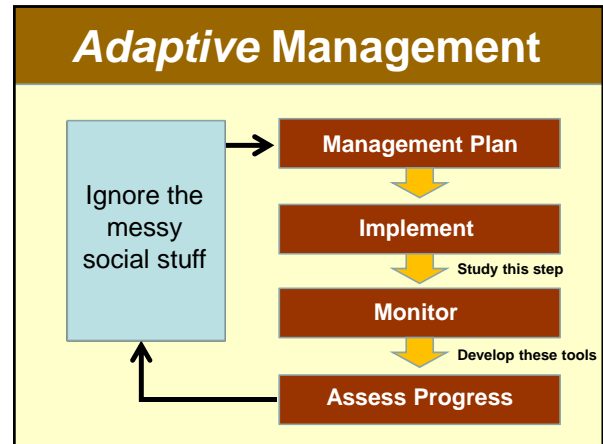
Economics – Market Funded Services?



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KEY FINDINGS

- Most research plot/pasture scale
- Most practices effective somewhere, sometime (soils, climate, etc)
- Difficult to extrapolate from plot to ranch
- Focus on one, maybe two ecosystem services
- Managers adaptively manage, treatments fixed**



- Participatory Research
- All Scales
- Multiple Services
- Interdisciplinary
- Manager Knowledge

Some Current Projects

- Mail survey of CA & WY ranchers.
- Manager defined adaptive treatments at our research stations.
- Ranch enterprise research linking social, economic, ecological factors.
- Case study analysis.

California Rangeland Watershed Laboratory

<http://rangelandwatersheds.ucdavis.edu>

Google “rangeland watersheds”