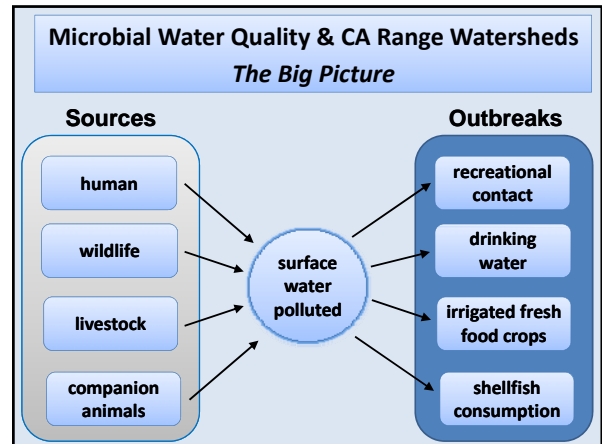


Ranching and Water Resources A Brief Research Update

Presented CCA Mid-Year Meeting
Santa Rosa, CA
June 22, 2011



Ken Tate, UC Davis
<http://rangelandwatersheds.ucdavis.edu>



15+ Years on Grazing & Microbial Water Quality A tool box of practices exists

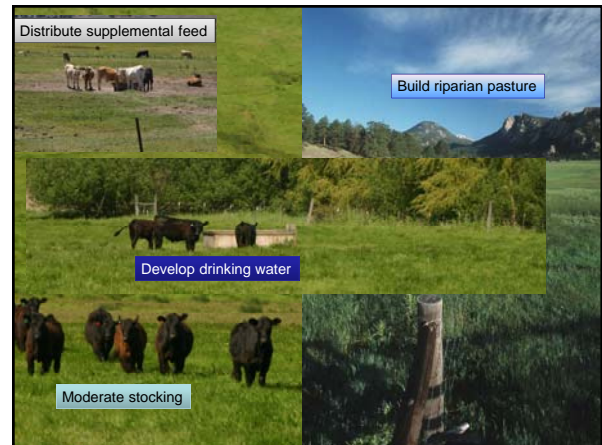
Factors that increase risk of water pollution with pathogens

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
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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
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Tate, Atwill, et al.



Riparian Friendly Grazing Survey of 130 Grazed Riparian Areas



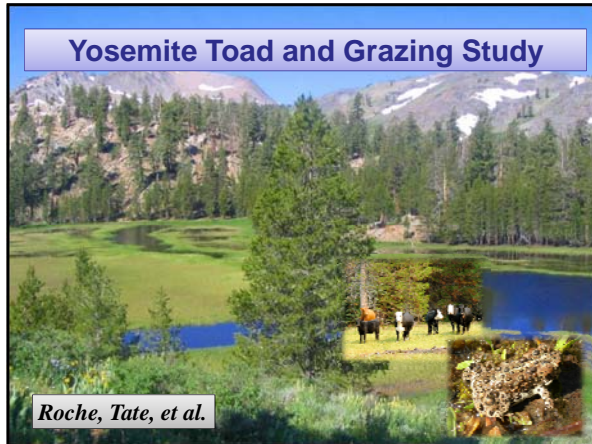
- Streams across CA ranging from excellent to poor health.
- Which practices are associated with excellent and poor health?



Becchetti, Tate, et al.


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 (-).



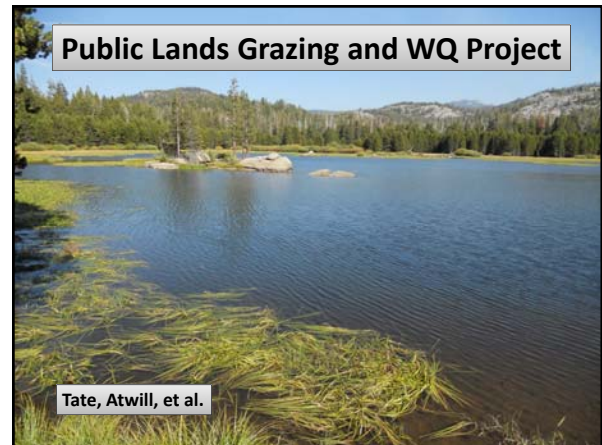
YOSEMITE TOAD

- ❖ CA DFG 'Species of Special Concern' and nominee for federal endangered species status
- ❖ Central/southern Sierra Nevada mountains (~6000 – 9000 ft)
- ❖ Mountain meadows
 - ❖ Breeding and rearing habitat
- ❖ Is grazing a problem??



OVERALL CONCLUSION...

- 1) Current USFS grazing management and toad conservation are compatible.
- 2) Toad conservation will require a more comprehensive approach than focusing on grazing alone.



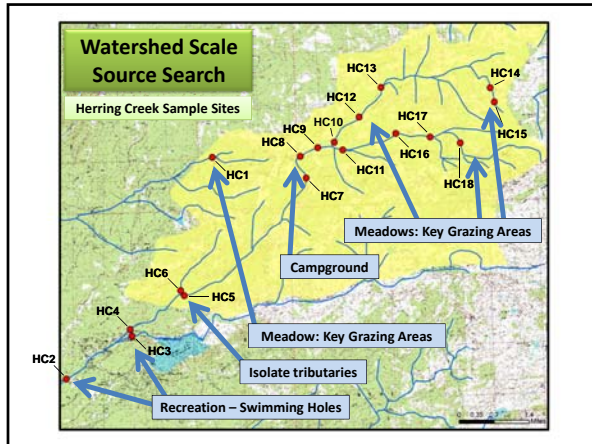
The Concern

USFS grazing practices are increasing fecal indicator bacteria (FIB) and nutrient levels in waterbodies.

Risks to human and ecological health.

Project Objectives

1. Monitoring for microbial pollutants and nutrients on 15 allotments across 5 Forests (192 sample sites).
2. Correlate water quality with range health and livestock management.
3. Make information available so decisions can be made.



Timeline	
Period	Activity
Sum 2010	Initiate project. Pilot monitoring on Stanislaus NF. Field trips.
Win 2010-11	Evaluate results of pilot monitoring. Enroll forests and allotments in the project. Develop monitoring plan. Share plan broadly for review and comment.
Sum 2011	Conduct monitoring on 12 to 15 allotments on 4 to 5 forests across California. Field trips and workshops.
Win 2011-12	Analyze, report, and publish results. Outreach to share results with stakeholders. Plan follow-up monitoring based on results of Year 1.

Manage for many outcomes, not just one, nor one at a time

Forage and Livestock Production
Weed Control – Diversity
Wildlife and their Habitat
Productive and Healthy Soils
Water Quantity and Quality

USDA Conservation Effectiveness Assessment Project - Literature Review

40 scientists reviewed research base supporting effectiveness of NRCS rangeland conservation practices

Research to support many of the practices
Focus on single practice and single outcome
Difficult to extrapolate to ecosystem or ranch scale

Need – ranch enterprise scale research on adaptive, integrated implementation of practices for multiple outcomes.

CHAPTER 1
A Scientific Assessment of the Effectiveness of Riparian Management Practices
M. B. Green, R. S. Johnson, C. E. Ruff, and M. Van

Mail survey to 2000 CA and WY ranchers

Knowledge about grazing to achieve both agricultural and ecological goals

Information needed to manage for goals

Best way to provide information

Rangeland Decision-Making Survey
The Rangeland Decision-Making Survey is a mail survey of ranchers in California and Wyoming. The survey asks ranchers about their knowledge of grazing and its effects on agricultural and ecological goals, and about the information they need to manage for these goals. The survey also asks ranchers about the best way to provide information to them.

URL: <http://conservationpractices.nrcs.wy.gov/rds/>

Some Final Principles

- Ecosystem services must be a goal.
- A big tool box exists, no magic bullet.
- Site specific, adaptive management.
- Flexibility to make changes.
- Logistically and economically feasible.
- Integrated into overall ranch plan.

