



Ecological Value of Managing Livestock Grazing Distribution





Ken Tate, Leslie Roche, and Mel George



California Rangeland Watershed Laboratory
rangelandwatersheds.ucdavis.edu

Livestock Distribution Examples

Riparian health
Microbial water quality
Sensitive amphibian species conservation

California Rangeland Watershed Laboratory


Too much fun in the riparian area!




Riparian Grazing

Excessive use can lead to loss of riparian ecosystem functions and services

- Water
- Feed
- Microclimate






- Bank instability
- Erosion
- Lower water table




Livestock Distribution – Riparian Health

Survey 130 Riparian Areas


- Cross-section of rangeland streams.
- Correlate riparian health and grazing management.


Riparian Health Assessment



stability




fish habitat



macroinverts

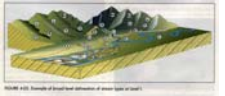
Overall Health Score	Description
0 – 5	poor
6 – 10	marginal
11 – 15	suboptimal
16 – 20	optimal

Grazing Management




Off-site water, herding, season, frequency, fencing, etc.

Site Characteristics



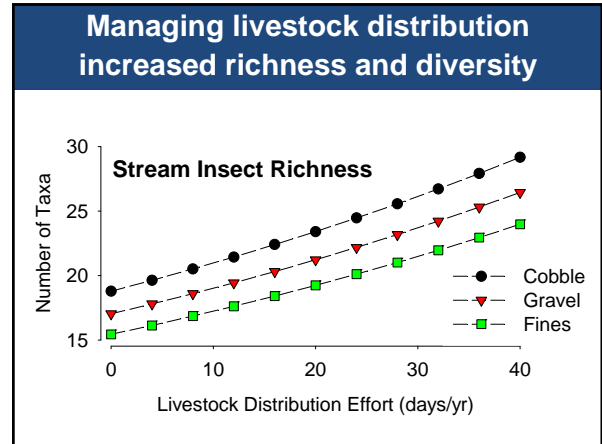
Elevation, channel slope, substrate, watershed disturb., past disturb., etc.

Livestock Distribution – Riparian Health




Positive Correlations

- Off-stream attractants such as water tanks and supplement (days/yr).
- Herding to control utilization and time spent in riparian area (days/yr).



USDA Conservation Effectiveness Assessment Project



CHAPTER 5

A Scientific Assessment of the Effectiveness of Riparian Management Practices

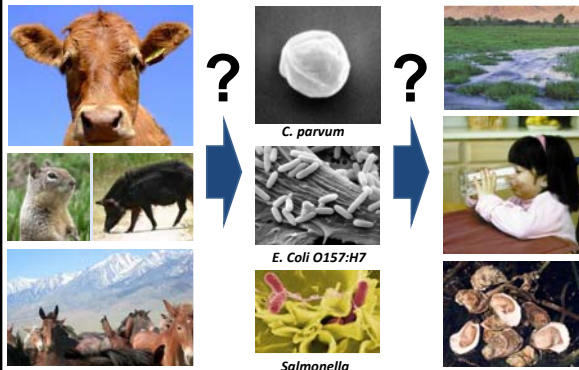
Mal R. George,¹ Randy D. Jackson,² Chad S. Boyd,³ and Ken W. Tate⁴

¹Authors are Cooperative Extension Specialist, California Regional Research and Information Center, Plant Sciences Department, University of California, Davis, CA 95616, USA; ²Associate Professor, Department of Agronomy, University of Wisconsin, Madison, WI 53706, USA; and ³Riparian Scientist, USDA/ARS, Reno, OR 97702, USA.

Correspondence: Mal R. George, Plant Sciences Dept., University of California, One Shields Avenue, Davis, CA 95616, USA. Email: mrg@ucdavis.edu




Livestock Distribution – Microbial WQ



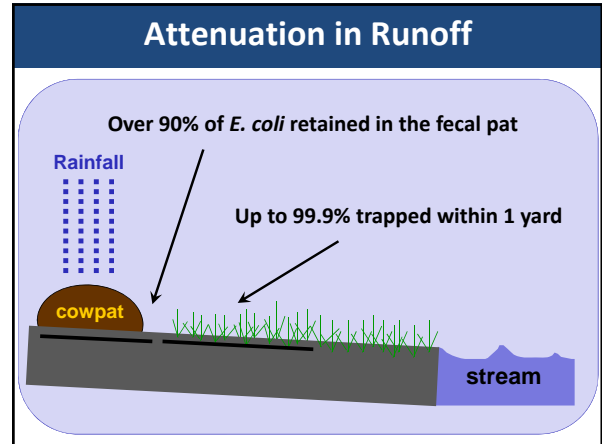
Microbial WQ pathogens shown: *C. parvum*, *E. Coli O157:H7*, and *Salmonella*.




Over 60% of cattle fecal loading is near livestock attractants in summer



We can position salt, feed, water to attract cattle and pathogens to "safe" areas
 – not near streams or runoff areas –



Distribute cow pats away from streams – whole range is a buffer –




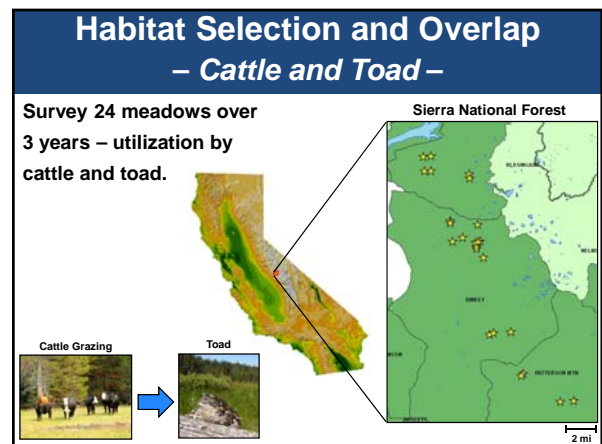
fecal pat

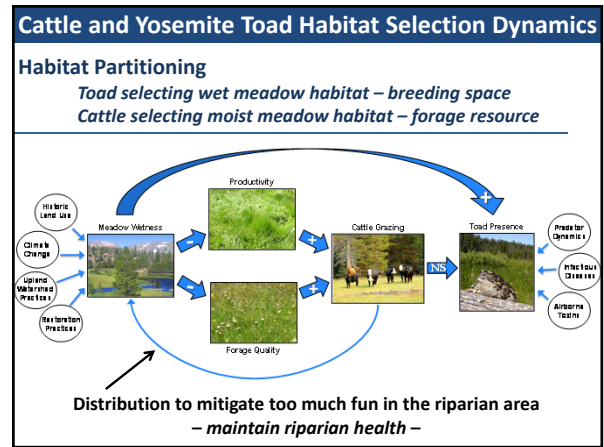
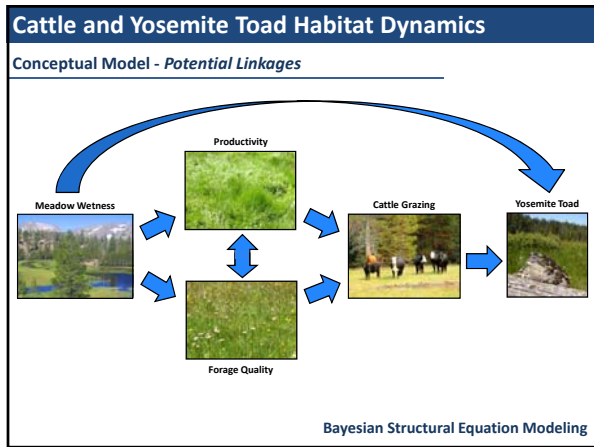
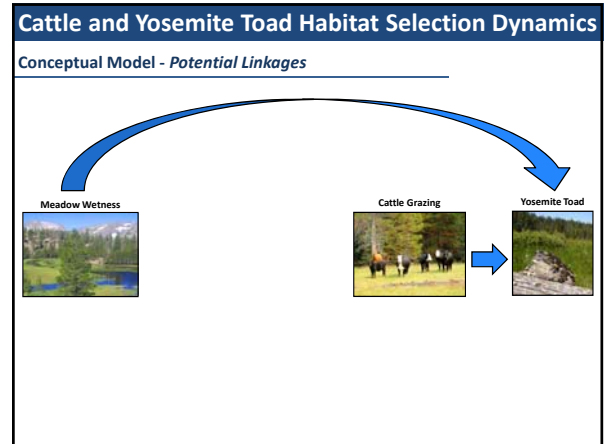
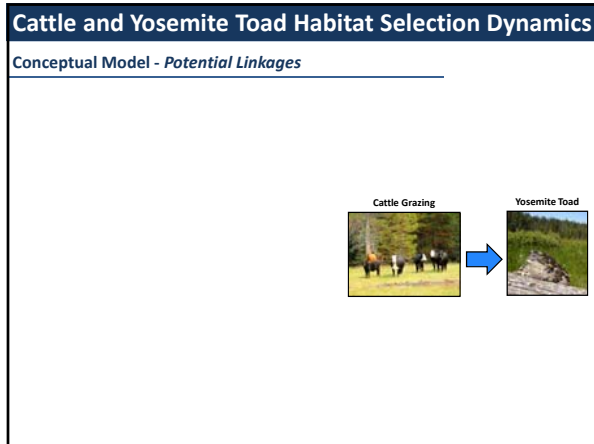
- Over 90% bacteria trapped in fecal pat
- Up to 99.9% trapped per yard of hillslope.
- Up to 80% trapped in functional riparian area.



Cattle and Yosemite Toad – Habitat Competition –

- 'Species of Special Concern' and nominee for federal endangered species status
- Central Sierra Nevada Mountains
- Meadows
 - Breeding and rearing habitat
 - Key cattle grazing areas
- Are cattle displacing toads?



Ecological Value of Managing Livestock Grazing Distribution

- Hydrologic function
- Clean Water
- Habitat Quantity and Quality
- Plant and Animal Diversity
- Profit – Ranch Viability

Questions

California Rangeland Watershed Laboratory
rangelandwatersheds.ucdavis.edu