

Maintaining and Restoring Riparian Areas in Grazed Ecosystems

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<http://rangelandwatersheds.ucdavis.edu>



**From coastal to Sierra riparian systems –
there is significant effort to restore
riparian areas in grazed watersheds**

I can be good!

I Promise!

**We can prescribe grazing to support riparian
restoration objectives**

These sites are on the same stream, both grazed by cattle.

Sites are separated by about a mile, and by a gulf in management .



Managing grazing in functional systems to enhance/maintain ecosystem services.

Services Provided



If grazing is the primary stressor – success is relatively simple with prescribed grazing management



Degradation Pathway

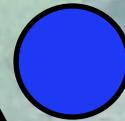


Managing grazing in non-functional systems to restore ecosystem function and services.

Services Provided

Once a threshold is passed – success is difficult with prescribed grazing management alone

Degradation Pathway



The Tool Box

• ***Prescribed Grazing*** Management of the intensity, season, frequency of grazing and rest from grazing.

- ***Grazing Facilities*** The drinking water, supplemental feed, and fencing infrastructure needed to implement prescribed grazing.

CEAP Literature Review

“Control of grazing intensity by both livestock and native ungulates promotes recovery of riparian plant communities.”

“... supports the effectiveness of water developments, supplement placement and herding for reducing riparian vegetation utilization, or time spent in riparian areas.”

A Scientific Assessment of the Effectiveness of Riparian Management Practices

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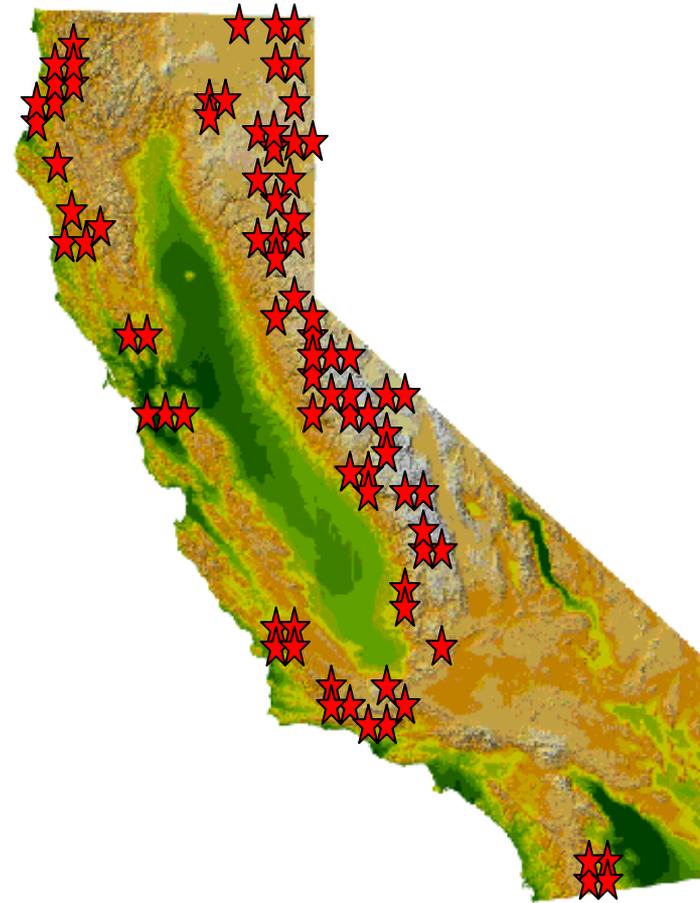
Case Studies

- **Grazed riparian areas across CA can be found with excellent to poor health.**
- **What management is associated with excellent and poor health?**



Survey of Rangeland Riparian Sites

- 128 sites, public and private
- Major rangeland ecosystems
- Snap shot of the population of CA rangeland riparian areas.
- Representative of the population (the good, the bad, the ugly)





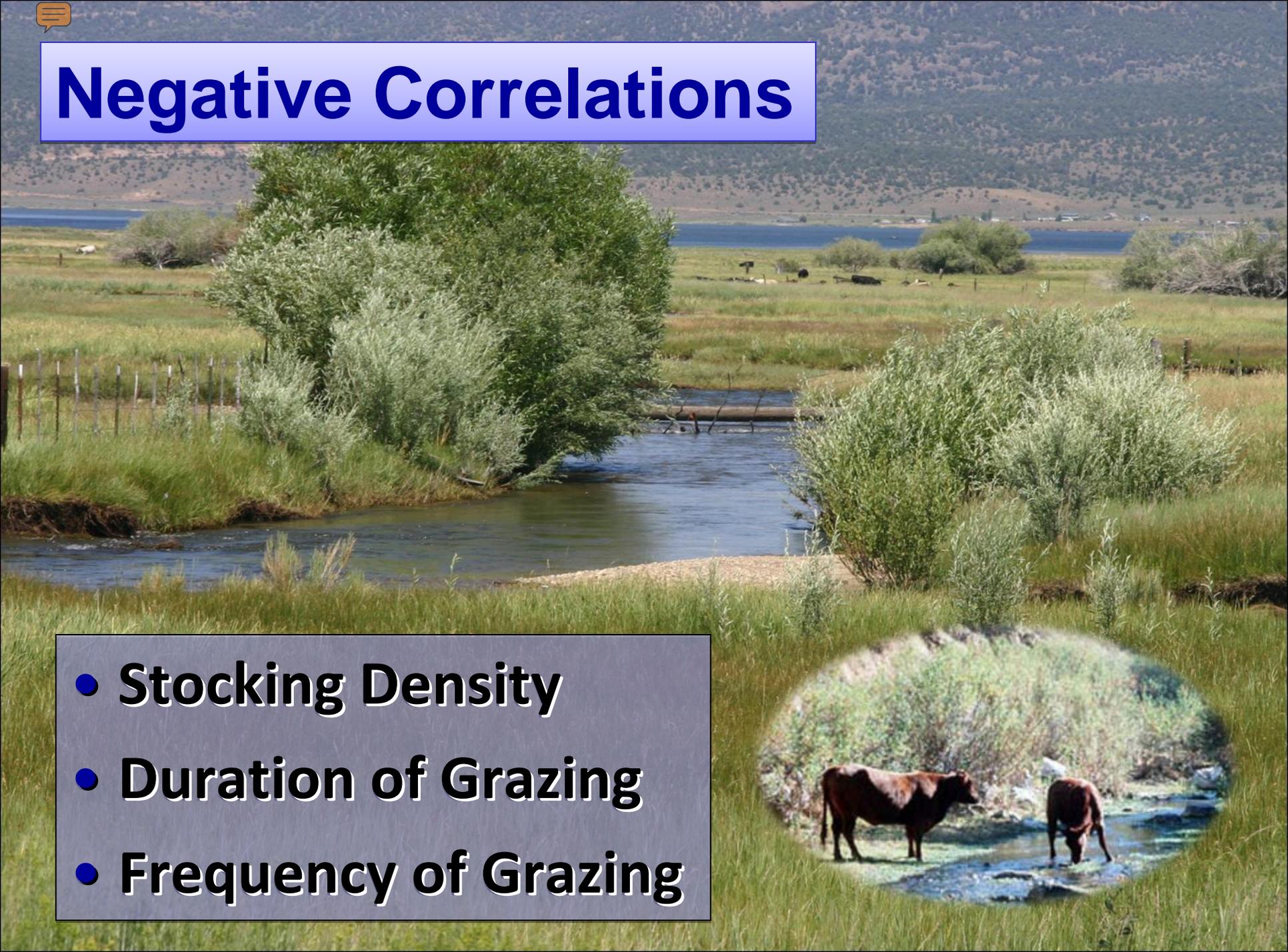
Key Findings

- **Several grazing practices are significantly correlated to riparian health.**
- **Correlation is strongest for meadow streams where channel stability is most dependent upon riparian vegetation (forage).**
- **Recent grazing explains a small amount of variation in riparian health: cumulative & historic variables.**

The background of the slide is a photograph of a river flowing through a landscape with green grass and mountains in the distance under a cloudy sky. In the top left corner, there is a small orange speech bubble icon.

Correlated to Riparian Health

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



Negative Correlations

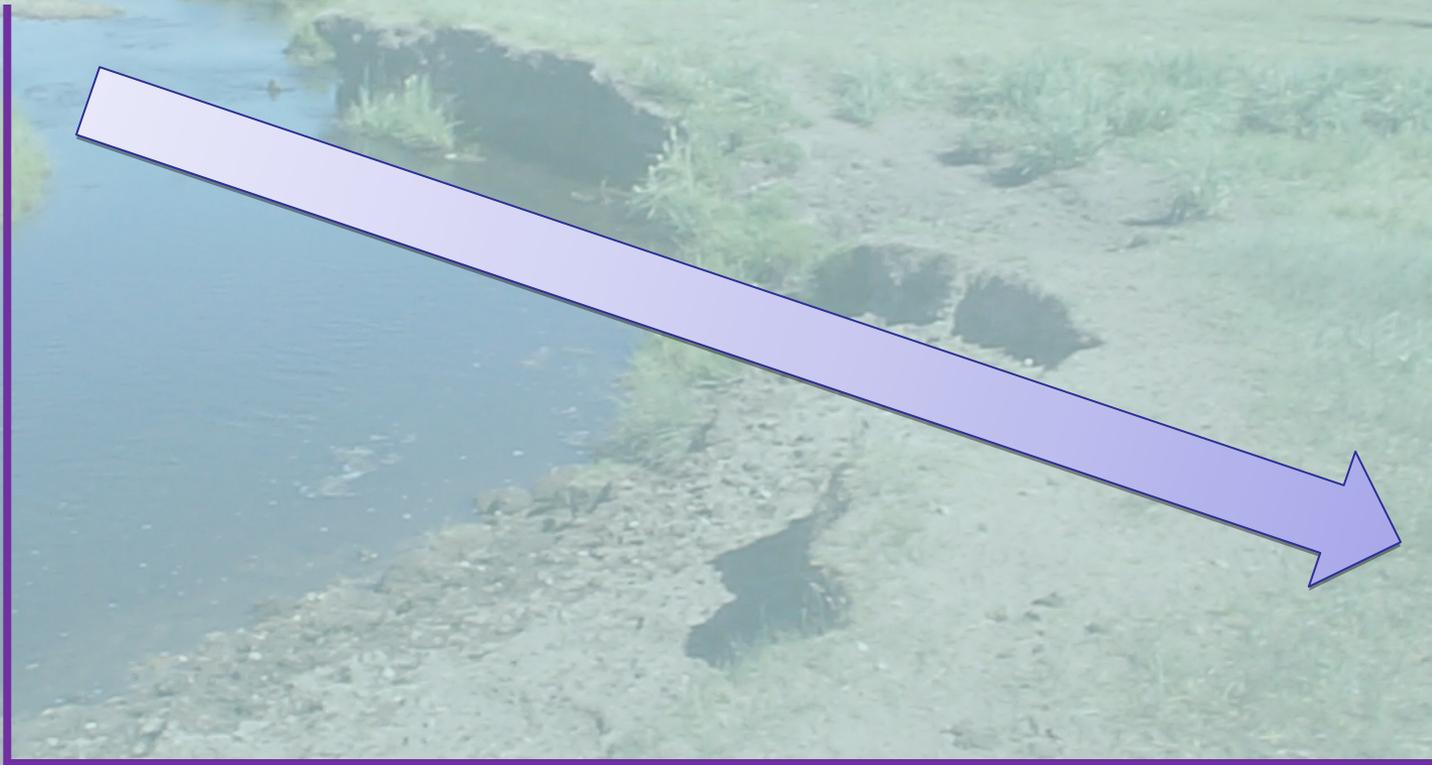
- **Stocking Density**
- **Duration of Grazing**
- **Frequency of Grazing**

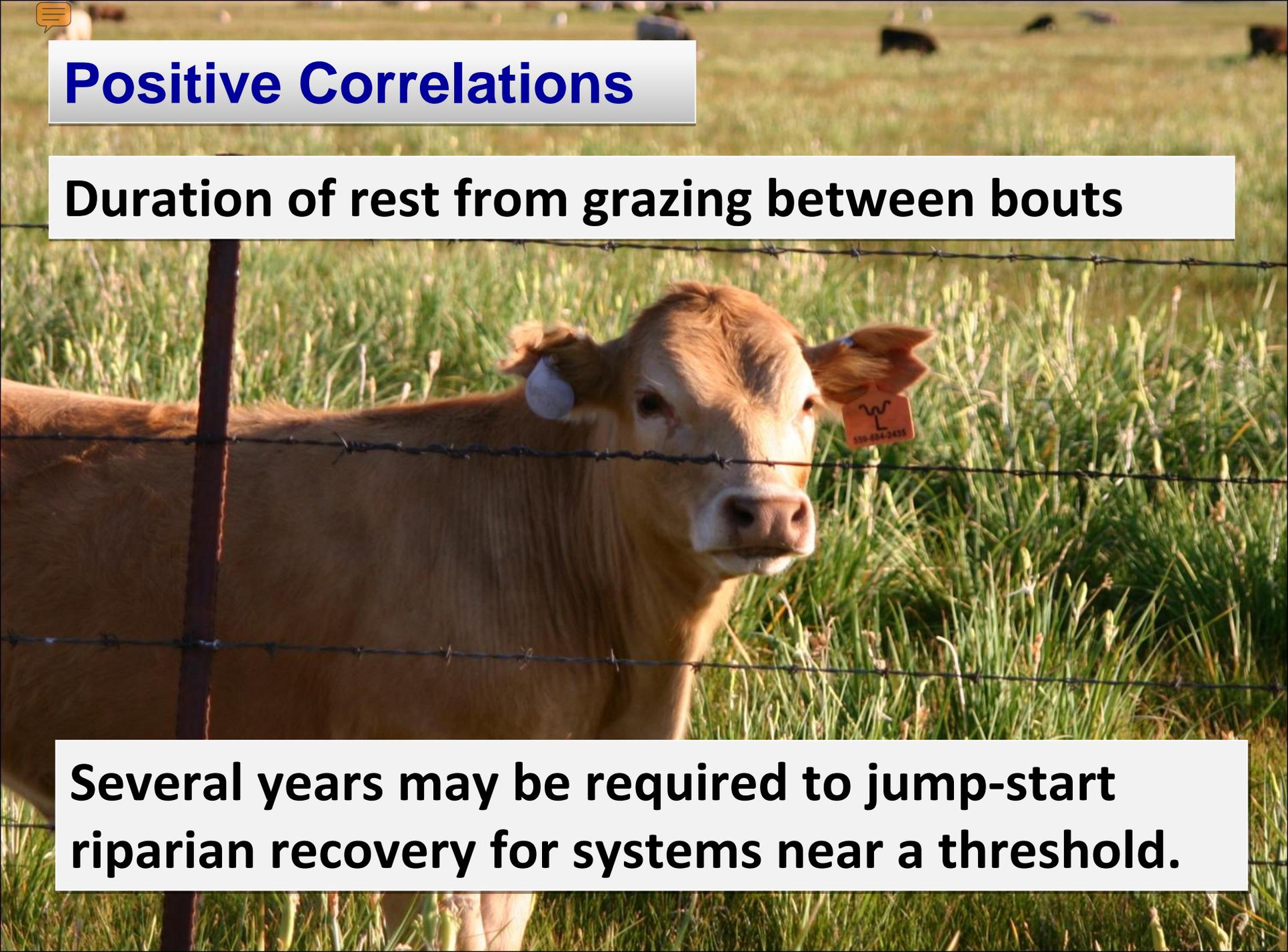


Grazing and Riparian Health

Riparian Health

Grazing Intensity and Frequency



A photograph of a brown cow standing behind a barbed wire fence in a lush green field. The cow has two ear tags: a white one on its left ear and a red one on its right ear with a black 'W' and the number '550-884-2435'. The background shows other cows grazing in the distance under bright, natural light.

Positive Correlations

Duration of rest from grazing between bouts

Several years may be required to jump-start riparian recovery for systems near a threshold.



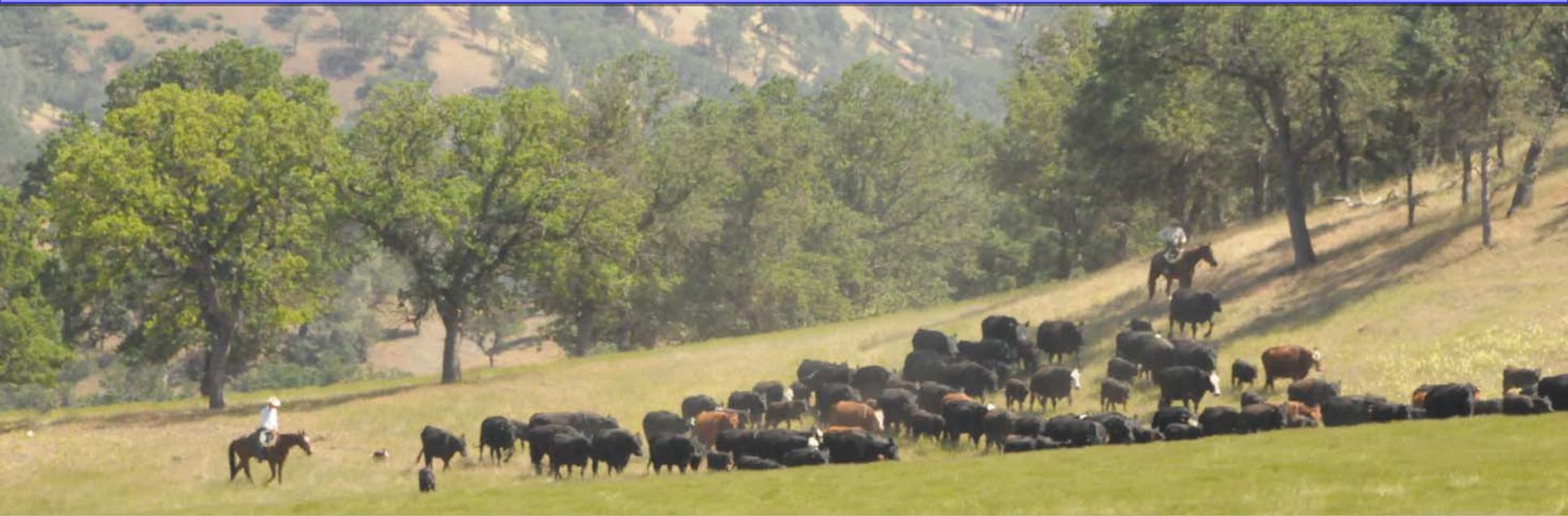
Positive Correlations



Off-stream water, supplement

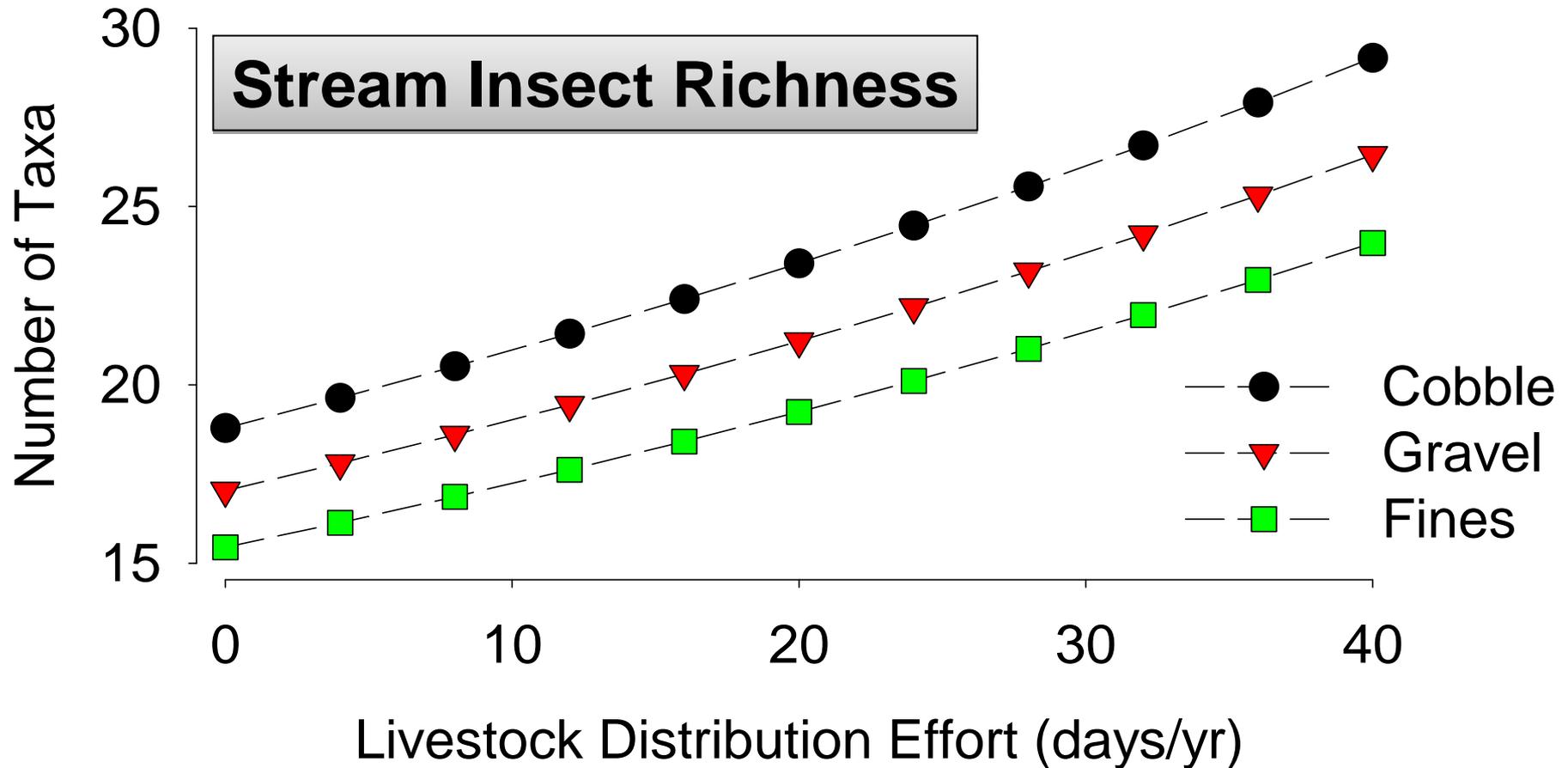


Positive Correlations



Herding – time spent managing livestock, distributing use away from riparian area

Time spent managing livestock utilization of riparian areas improves stream health



Grazing and Riparian Health

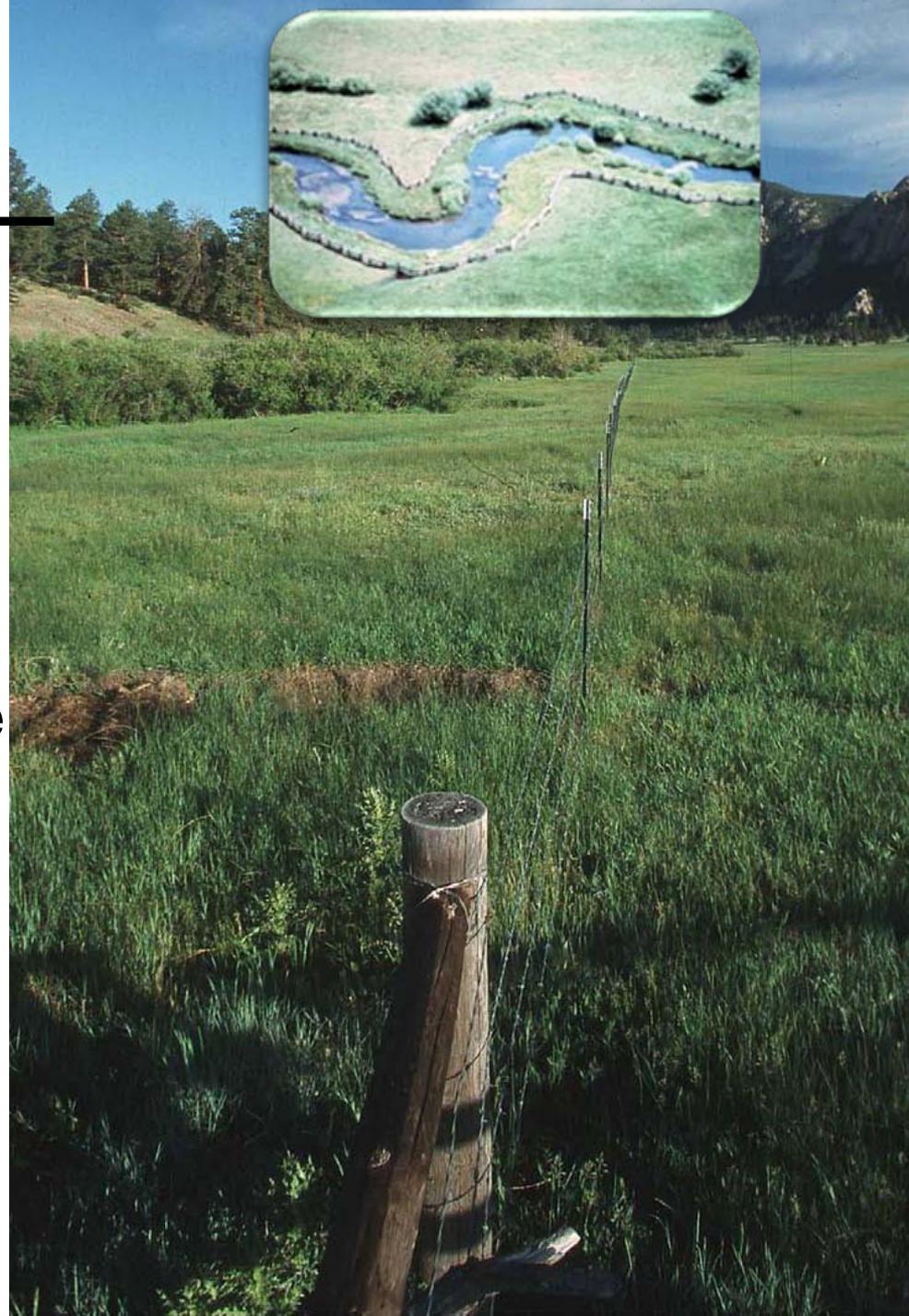
Riparian Health

bank stability, access to floodplain, richness and diversity, filtration, etc.

Effort to Limit Utilization and Frequency

Riparian Fencing

- **Exclusions:** vegetation management for weeds, fuels, N uptake, etc.
- **Riparian pastures:** integrate into grazing program based on timing, intensity, frequency of use.



Summer and Fall – Annual Range



Riparian v. upland forage quality differential
protein, moisture, digestibility, phosphorus

**Fencing riparian areas as discrete
management units may be a necessity**

Some Key Points

- **Riparian enhancement must be a goal.**
- **A grazing tool box is required, not a magic bullet.**
- **Site specific, adaptive grazing management.**
- **Logistically and economically feasible, part of day-to-day business.**
- **Integrate w/ larger restoration/management plan.**

Water Quality & Cattle Grazing

The same riparian grazing practices apply

Factors that increase risk of water pollution with pollutants

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

Factors that reduce risk of water pollution with pollutants

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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