Grazing Strategies for Riparian and Wet Meadow Improvement in the Sagebrush Steppe

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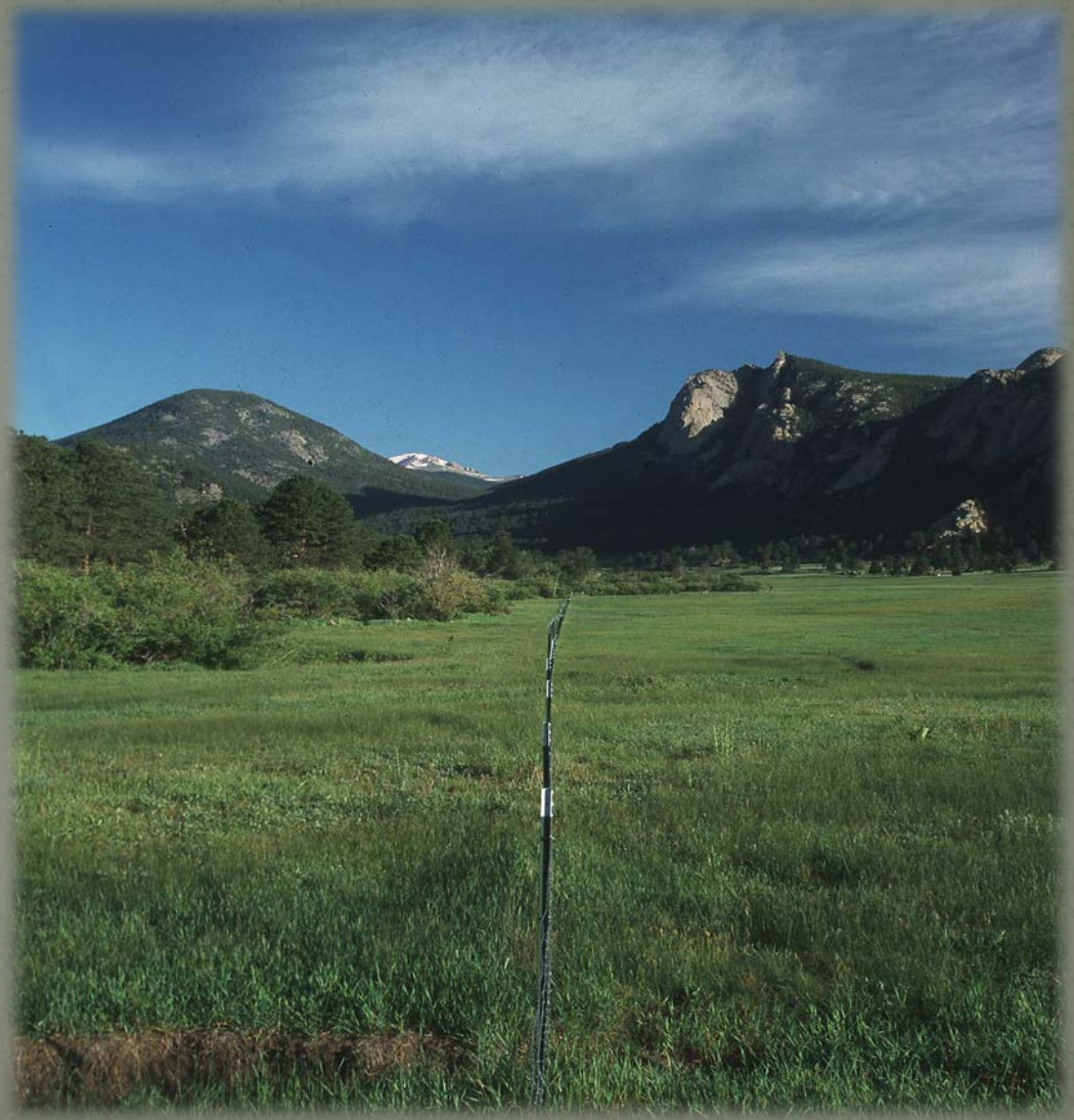
Photos by: BLM

Nesting/ Early Brood-Rearing
Late Brood-Rearing
Fall/ Winter
Lekking/ Breeding

Habitat

Physical Features

- Terrain
  - Slope
  - Aspect
- Distance to water
- Wildlife Corridor
  - Amount & Type of Cover
- Vegetation
  - Current
  - Potential



Our Lands Are Susceptible to Many Types of Disturbances

- Fire
- Insect and Disease
- Drought/Flood
- Early and Late Frosts
- Logging
- Grazing

The challenge on rangelands is to find the balance between total protection, proper use, and overuse.

When problems occur it is not generally stocking rates but rather lack of appropriate management.

Many times, the first action to correct a rangeland problem is to cut numbers or close the area to grazing.

Apache National Forest, Arizona

Reducing numbers often results in use only in critical or riparian areas. Uplands become over-rested and stagnated.

Complete protection of riparian areas often results in dense thatch beds.

Consequences of Over-rest

- Material from previous years doesn't decompose.
- Mineral cycle is disrupted.
- Dead plant material prevents sunshine from reaching current year's leaves. Leaves are long and slender-less digestible, nutritious, or palatable
- Soil is insulated causing later initiation of growth and reduction of plant vigor.

We often see “simplistic” solutions to grazing problems

- Riparian areas are corridor fenced to eliminate livestock…
- Fences become barriers to recreation and wildlife
- Uplands are ignored, management continues to be substandard
- Riparian areas become stagnated, uplands overused

Consequences of Overuse

- Loss of species diversity
- Water cycle disrupted
- Loss of plant vigor and production
- Soil compaction
- Overall habitat quality is reduced for many species.

We can do better:

- Manage for diversity
- Implement basic principles
- Adjust for specific needs of critical areas
- Don’t sacrifice one aspect of the rangeland environment to accommodate other concerns
- Approach management on a landscape basis

ISSUES

If we have them, what are we going to do about them?

Assess Current Conditions

- Channel type/Meadow type.
- Vegetative conditions (species, density, height, etc.).
- Site potential (herbaceous, herb. + wood, woodies)
- Grazing impacts (over use, trampling, bank slump, browse use, etc.)
- Stratify (valley bottom, topography, vegetation complexes, etc.).

Streambank Strength

Three basic aspects:

1. **Bank material erodibility**: Susceptibility to erosion by the water flow in the channel.

2. **Shear strength**: Its ability to withstand gravitational forces tending to cause bank failure by slumping or slipping.

3. **Tensile strength**: Ability of plant roots to resist tension cracking in the upper part of steep banks.

Riparian stabilizing species

Margins or transition areas:

Non-Distinct Margins

Wet Meadows

1. Pugging
2. Pedestalling
3. Diversity
4. Small seeps, fens, springs
5. Protection/Access

Proper Functioning Condition Assessment

- Focus initially on the physical function
- Build understanding of the attributes & processes that help produce desired benefits and values

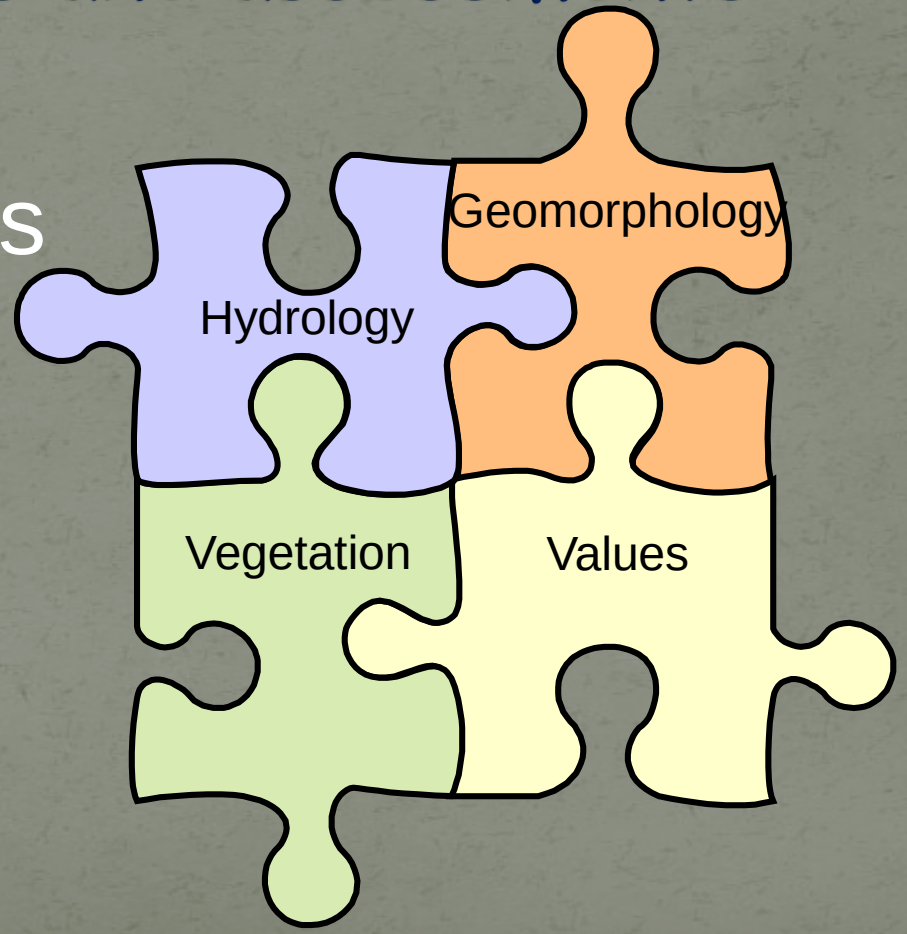
- Identify attribute or process that is not in working order
- Develop steps to take

Identify Issues

based on the inventories and assessments completed for an area

Attributes & Processes

- Hydrology
- Riparian-wetland Vegetation
- Geomorphology



Objectives

Packers make it to the Super Bowl!!!

The Key to Success

Make sure our management isn't hampering physical processes, and many riparian/meadow areas will heal themselves

1990

Owl Creek, MT

2001

Ranch Plan or Land Use Plan Goals

Physical function

- Achieve and maintain sustainable riparian communities needed for proper functioning condition.

*Values (*Desired Conditions)

-Provide for aquatic and riparian habitat.

-Provide sustainable livestock forage.

-Provide conditions for multiple uses of public lands.

Project Scale Riparian Resource Condition Objectives

Identify specific riparian and upland resource condition objectives to achieve management goals for the watershed.

Resource Condition Objectives should…

- Identify the intended outcome in relation to the attribute important to the system
- Be easily measured and have milestones along the route to a longer term goal
- Be sensitive to monitoring methods
- Be part of an overall adaptive management strategy
- Be established with stakeholders
- Be consistent with applicable laws
- Are not stubble height, woody browse use, or streambank alteration

Within ten years, from the time of plan implementation, provide recruitment and establishment opportunities for riparian stabilizers on Tabor Creek Designated Monitoring Area #1, with an estimated increase in stabilizing riparian vegetative cover from 40% to 70%+.

1979

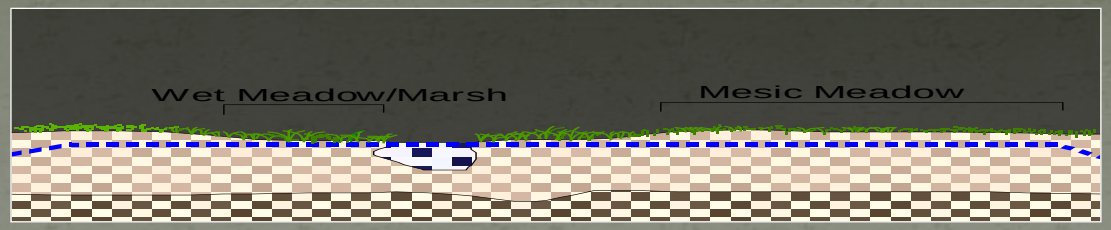
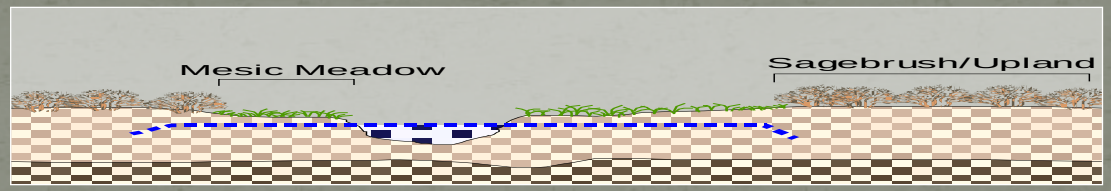
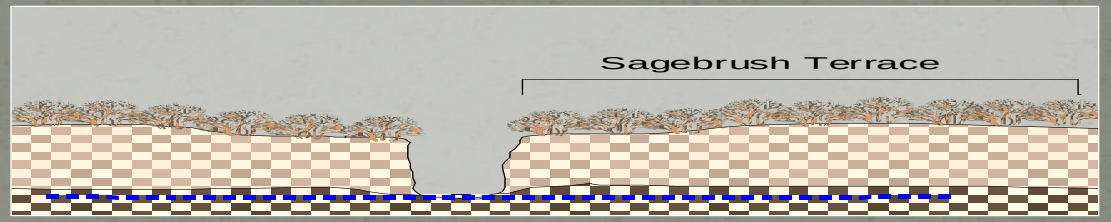
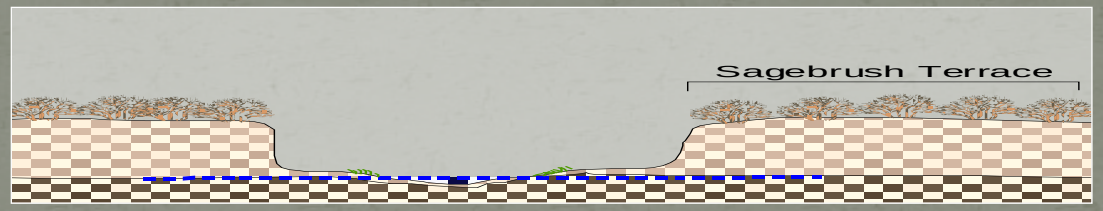
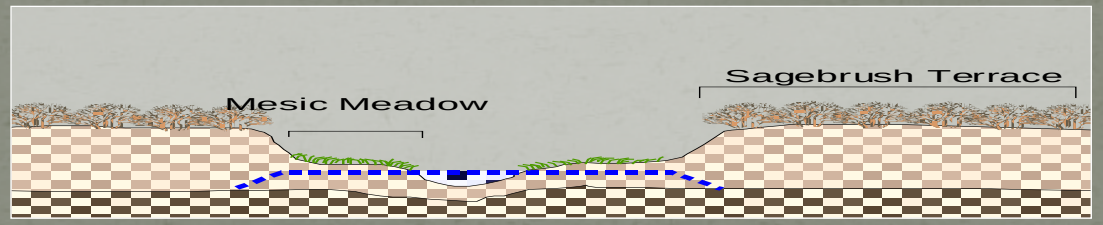
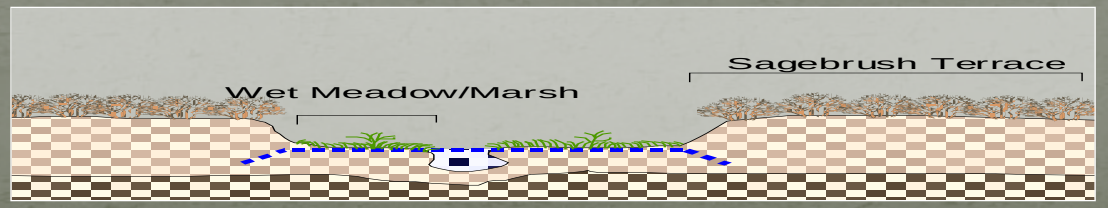
1987

Channel Shape

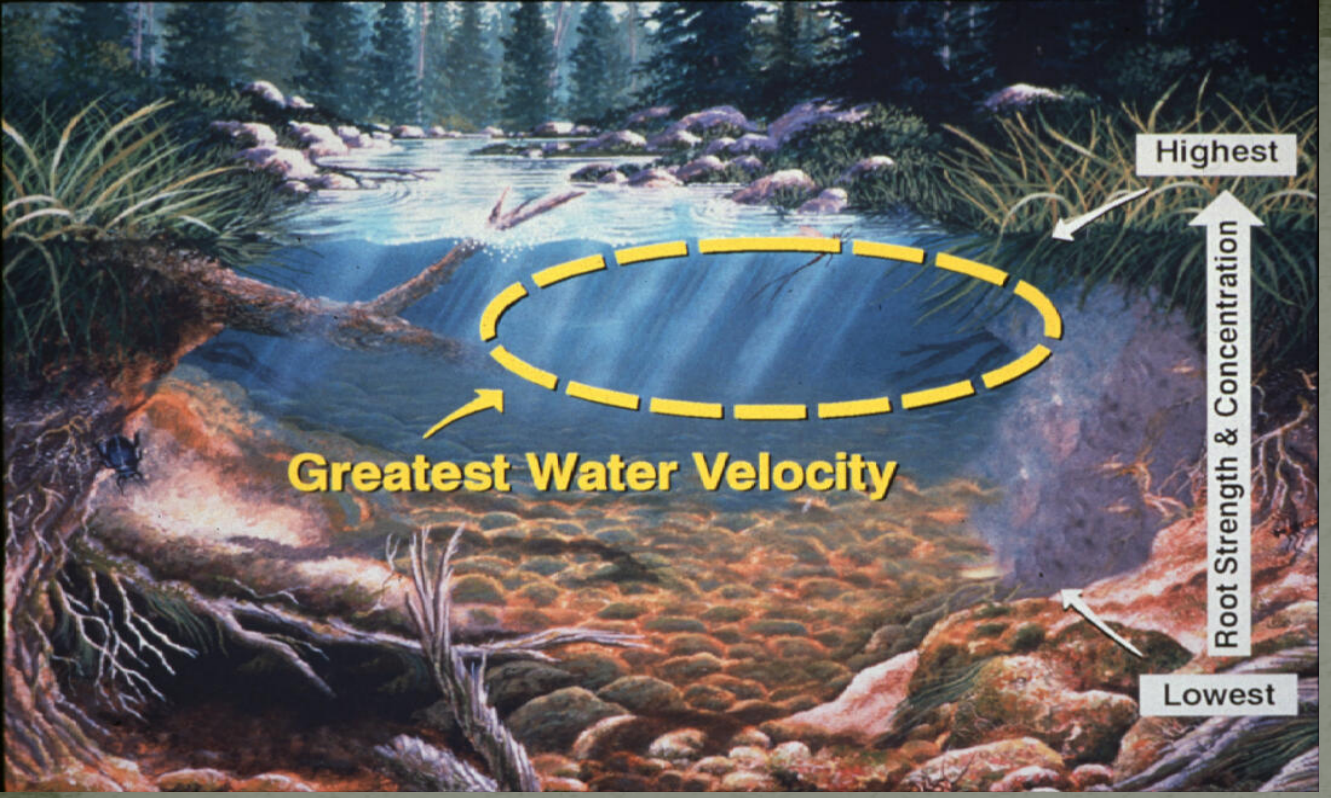
"most streams cross-section are not parabolic or semicircular [dish-shaped] in shape along the straighter reaches" Leopold 1994

"Rather, they are usually trapezoidal in shape with distinctly developed streambanks" Leopold 1994

States of Channel Succession

Dynamic Stability	State A		PFC
Pre-incision	State B		FAR
Incision	State C		NF
Channel Widening	State D		NF
Channel Widening	State E		FAR
Dynamic Stability	State F		PFC

Vegetation and Riparian Areas



Total Biomass

Table 1. Comparison of riparian grazing management strategies related to duration and timing of use and recovery periods that often preclude or support riparian function and recovery.

Often Precluding Riparian Functions and Recovery	Supporting Riparian Functions and Allowing Recovery
Long Season of Use – Plants experience repeated defoliation throughout season Platts, 1991; Clary et al., 1996; Saunders & Fausch, 2007; George et al., 2011; Raymond & Vondracek, 2011.	**Short Grazing Period** – Grazed plants are not re-grazed Myers, 1989; Glimp & Swanson, 1994; Lyons et al., 2000; Lucas et al., 2004; Magner et al., 2008; Saunders & Fausch, 2007; Saunders & Fausch, 2007, 2012; Raymond & Vondracek, 2011; Dalldorf et al., 2013.
Little Time for Recovery – Plants without time to regrow before next grazing event Myers, 1989; Fitch and Adams, 1998; Jansen & Robertson, 2001; Lucas et al., 2004; Saunders & Fausch, 2007, 2012; Dalldorf et al., 2013; Kamp et al., 2013.	**Long Recovery Periods** – All plants recover before subsequent grazing event Myers, 1989; Fitch and Adams, 1998; Lyons et al., 2000; Jansen & Robertson, 2001; Lucas et al., 2004; Magner et al., 2008; Saunders & Fausch, 2007, 2012; Dalldorf et al., 2013; Kamp et al. 2013.
Late Season Use – Little time to regrow or amass residual stubble before dormancy Green & Kauffman, 1995; Parsons et al., 2003.	**Regrowth Before Winter** – Vegetation grows and provides residual to protect streambank at high water in spring Myers, 1989; Boyd and Svejcar, 2004.
Consistent Season of Use – Use repeated in the same phenological stage year after year Gillen et al., 1985; Myers, 1989; Masters et al., 1996a, 1996b; Wyman et al., 2006; Schwarte et al., 2011; Boyd & Svejcar, 2012; Dalldorf et al., 2013.	**Vary Season from Year to Year** – Grazing different seasons or phenology stages every year Gillen et al., 1985; Myers, 1989; Masters et al., 1996a, 1996b; Wyman et al., 2006; Schwarte et al., 2011; Boyd & Svejcar, 2012; Dalldorf et al., 2013;
Repeated Growing Season Use – Grazing every year without rest Platts, 1991; Masters et al., 1996b.	**Occasional Growing Season Rest** – Opportunity for plants to regrow leaves and roots Platts, 1991; Masters et al., 1996a, 1996b.
No Woody Recovery – Woody plants stay short and within height accessible to herbivores Kovalchik & Elmore, 1992.	**Woody Plants Allowed to Grow** – Woody plants grow above grazing height Platts, 1991.
Large Pasture – Lacking riparian objectives Platts, 1991; Masters et al., 1996a, 1996b; Fitch and Adams, 1998; Lucas et al., 2004; Wyman et al., 2006.	**Riparian Pasture** – With riparian objectives Platts, 1991; Masters et al., 1996a, 1996b; Lucas et al., 2004; Wyman et al., 2006.

Maggie Creek in **1986** with annual season-long grazing, and in **2000** with rest in 1994-1997, then 3-4 weeks of grazing in March to June by cow-calf pairs.

Susie Creek in **1980** with annual season-long grazing and in **1994** with 4 years early use (late March or early April to late April or mid-May) by cow-calf pairs.

Coyote Creek in **1977** with annual season-long grazing and in **2010** with rest 1994-1996 followed by early-mid use (April to July) by cow- calf pairs alternating with rest every other year.

Riparian Pasture

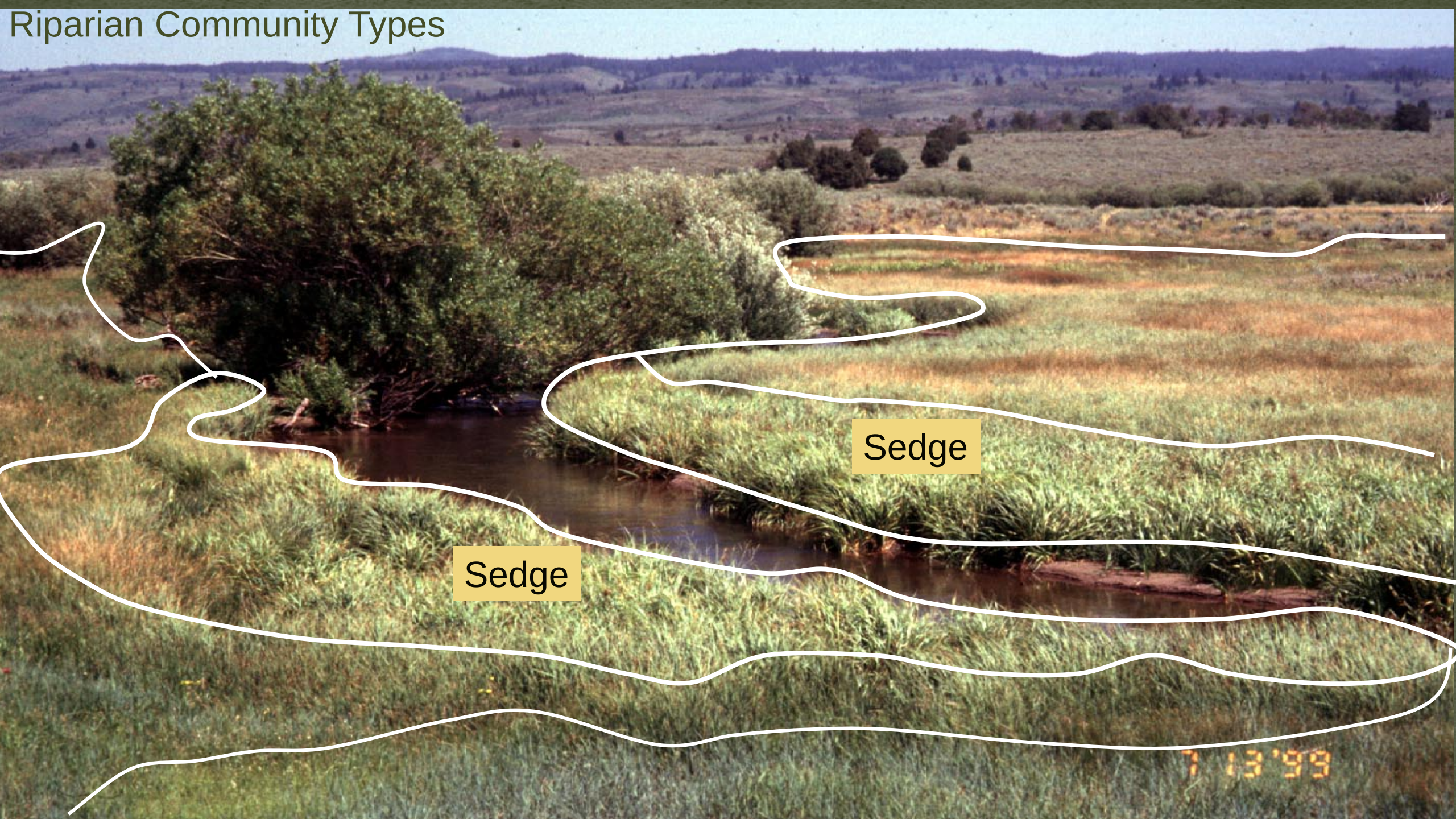
Spring Grazing

Idaho - 1991
Season Long Grazing

Idaho - 1997
Riparian Pasture, Spring Use

Kentucky Bluegrass and Red Top
East Fork Castle Creek

Riparian Community Types



- Plan grazing based on Plant Development and Recovery.
  - Don’t graze the same place at the same time every year.
  - Defoliate plants Moderately.
  - Provide for plant growth prior to and/or regrowth following defoliation.

You can expect healthy, functional rangelands, characterized by improved ground cover and increased species diversity.

1991

1999

2007

2012

2014

Improvement with spring and fall (cool season) use. Occurred on Susie Creek, NV. Grazed until 1991 with annual hot-season use by cow-calf pairs. By 1999, spring and fall (cool season) grazing by cow-calf pairs allowed willow recovery. By 2007, beaver occupied the reach and by 2012 recovery is transitioning the area to cattails and by 2014, a meadow (Swanson et al., 2015).

Once you have provided for basic rangeland health:

- Use, or continue to use, livestock as a tool to:
  - Enhance riparian values.
  - Improve wildlife habitat.
  - Alter plant community composition
  - Modify vegetative structure.
  - Improve forage palatability.
  - Influence livestock and wildlife behavior.

Points to Ponder

- Was past management responsible for current condition?
- Planned changes in management?
- Return of water table needed to restore desired plant community and hydrology?
- Other uses of landscape?

Grazing Livestock

Grazing management as a restoration technique may include economic factors of continuing to graze a particular pasture or allotment while at the same time allowing for desired plant growth and recovery.

Project Planning

No one time fix –

incorporate ongoing adaptive management and maintenance

Economically and Ecologically Feasible

- Livestock grazing is a sustainable use of our rangelands
- It requires active management
- Every situation is unique and must be addressed on an individual basis
- Management isn’t getting any easier!
- Never enough money, people, or data!
- Success based on personal commitment and responsibility!
- Success based on support and understanding of livestock manager and partners = common vision and goals.

"I want to be a Green Bay Packer some day!"
"Got Questions?"

Additional information and resources

- BLM National Riparian Service Team: http://www.blm.gov/or/programs/nrst/index.php#
  - Technical references, training opportunities, etc.
- Sage Grouse Initiative: http://www.sagegrouseinitiative.com/
  - YouTube recording, additional mesic habitat resources
- *Practical Grazing Management to Meet Riparian Objectives* (Swanson et al. 2015): http://journals.lib.uidaho.edu/index.php/jra/article/view/16