



# Threat Reduction: Riparian and Wet Meadow Degradation

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# Topics we will cover:

- Nature and extent of threat and why it's a problem
- Strategies for tackling the threat
- Examples of successful strategies and outcomes
- Primary practices and programs







# On the Range, Water is Life

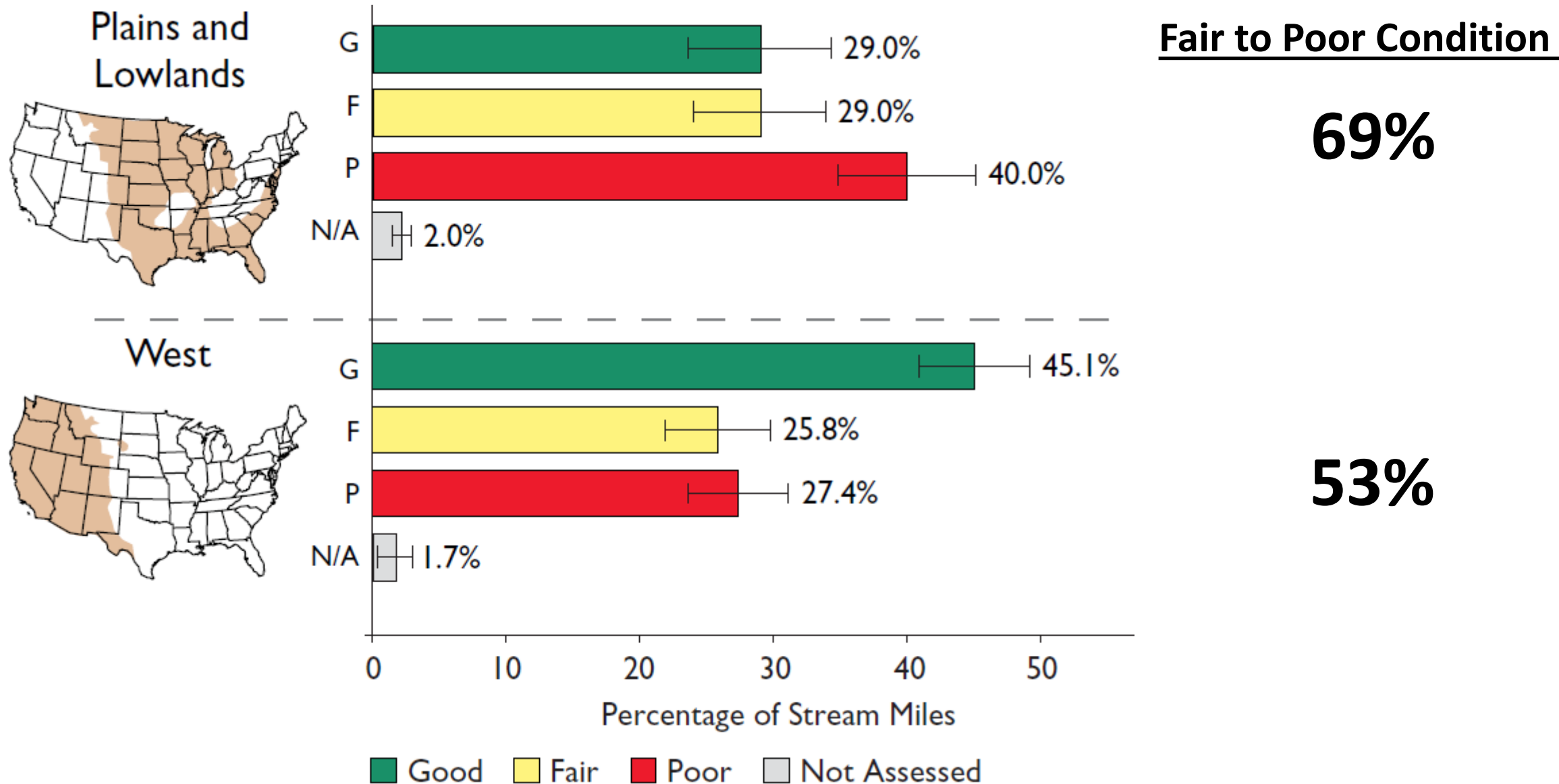


Photo by: MT Stockgrowers Assoc.





# Wadeable Streams Assessment





**We have lots of this**



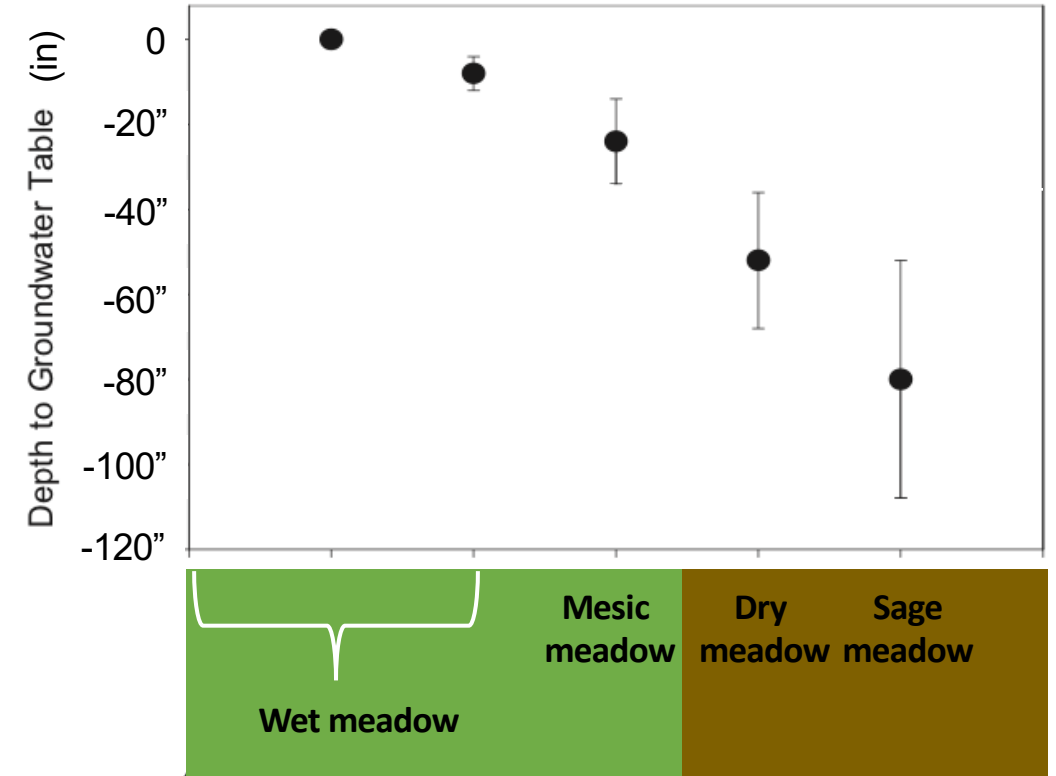
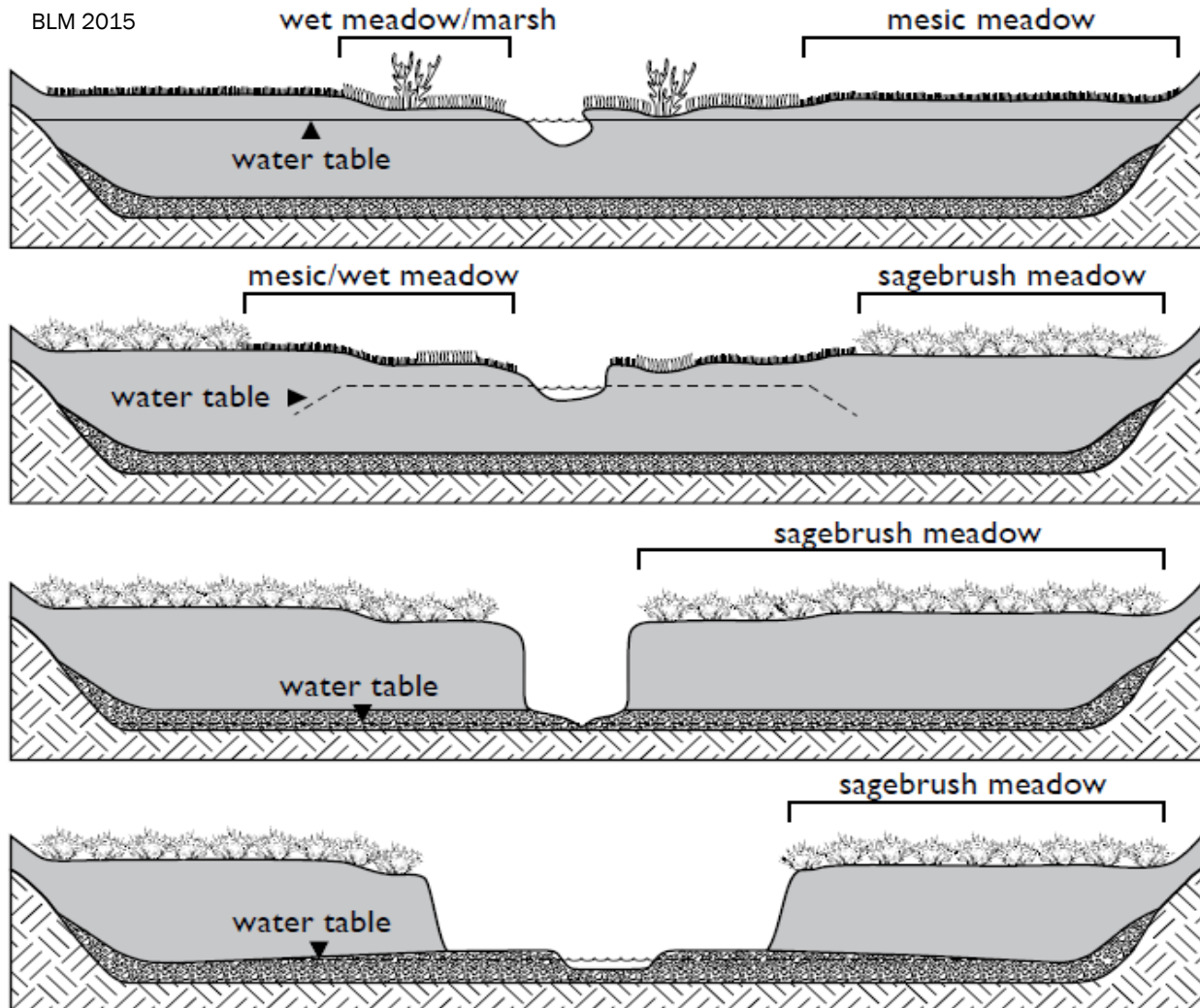






# The Channel Incision Problem

BLM 2015



(adapted from Lord et al. 2011)

***As water table drops,  
green groceries go away***

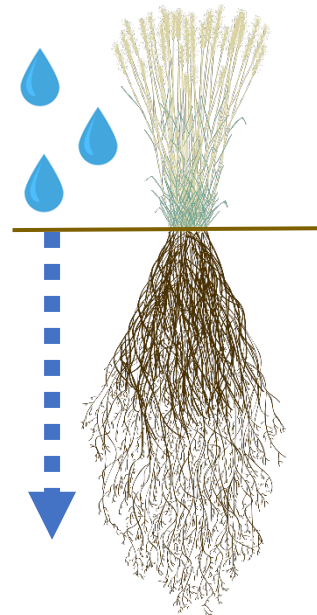


# Impaired Watershed Health

Woodland vs. Grassland/Shrubland

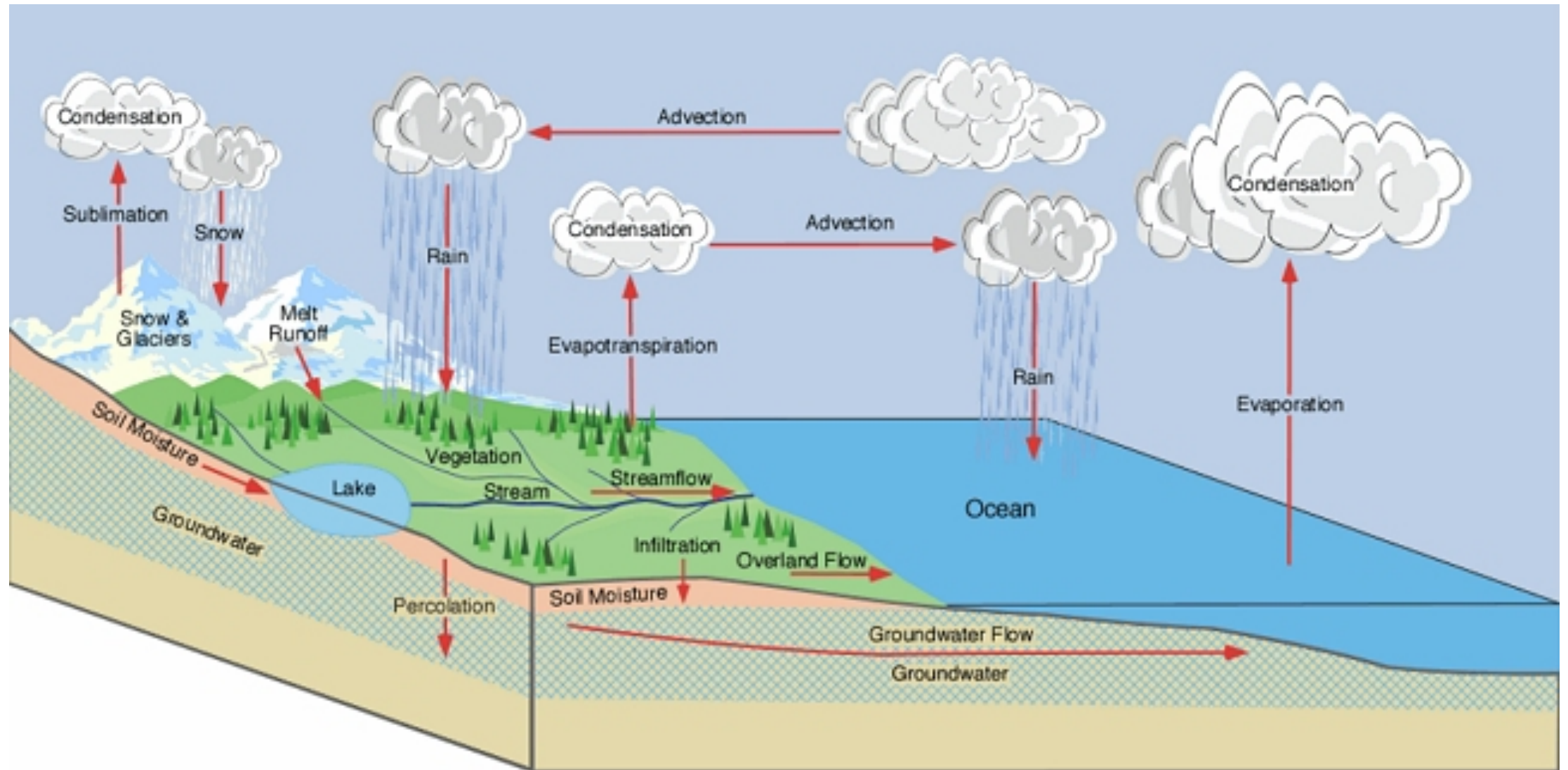


Bare Ground vs. Healthy Plants



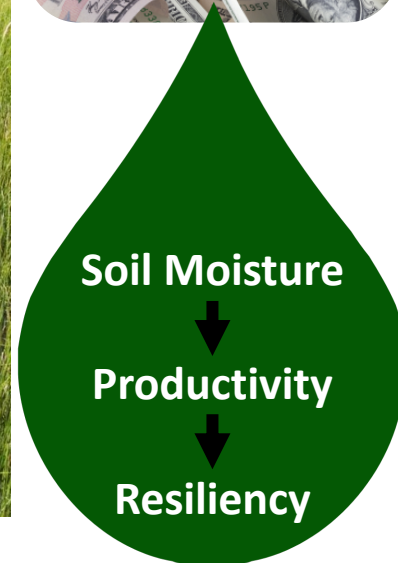


# Remember the water cycle?





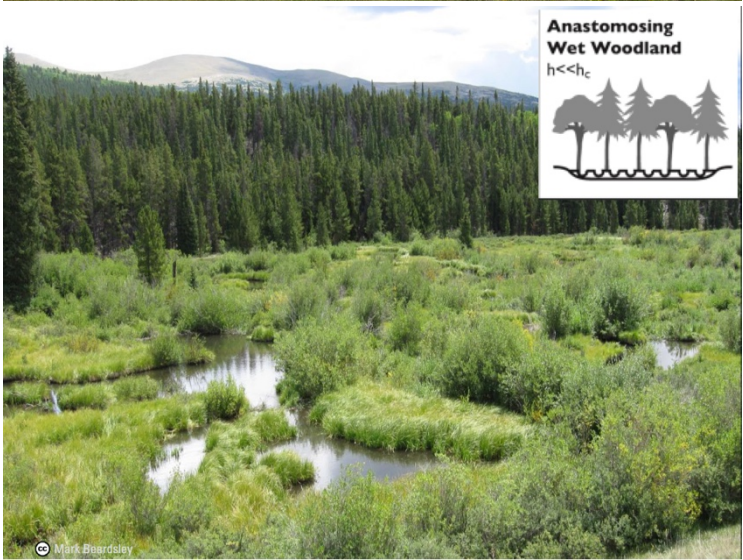
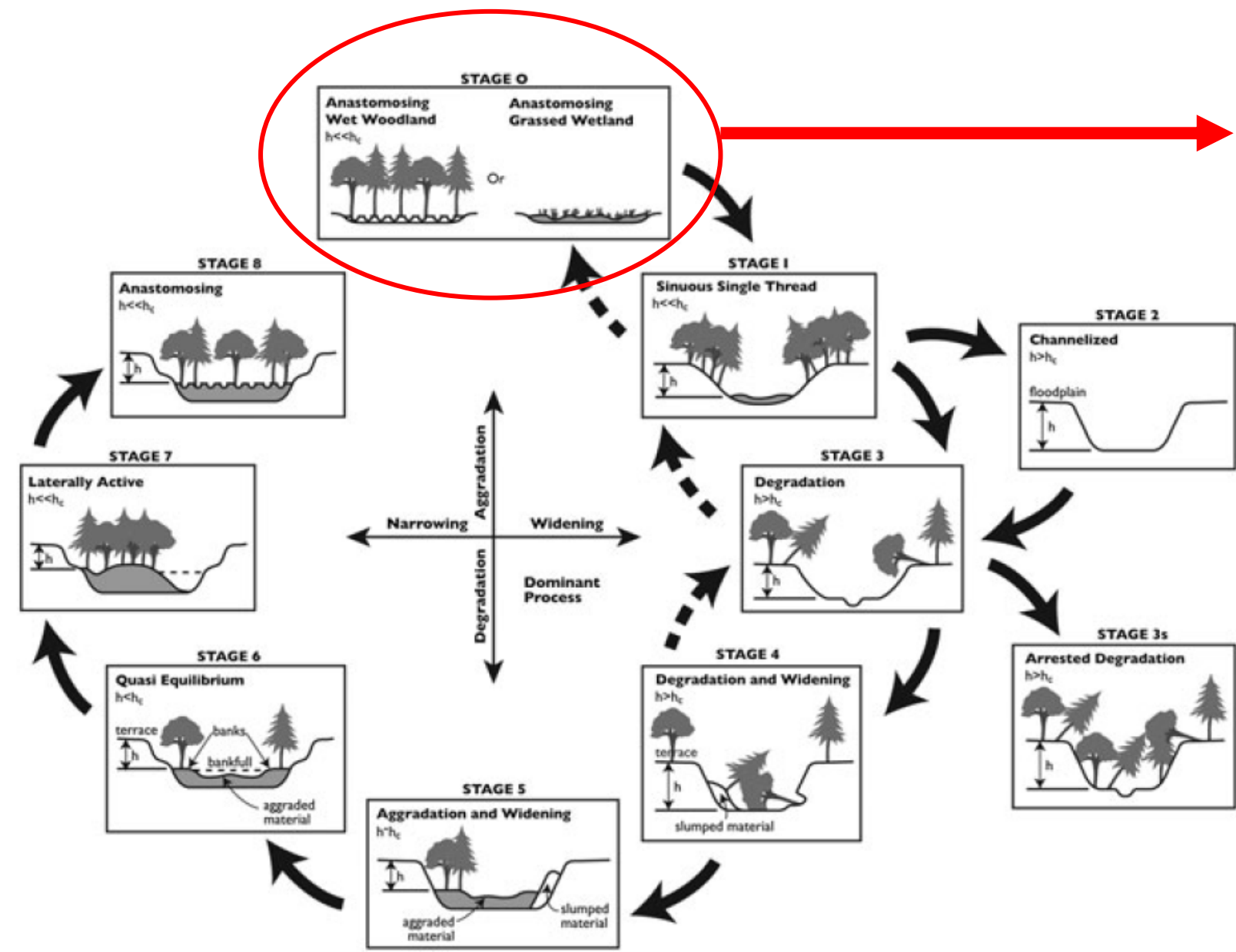
# Shared Vision: This is about *Resiliency*



*Resilience to drought, fire, flooding*



# Shifting Baseline: We forget what our valley bottoms could be!

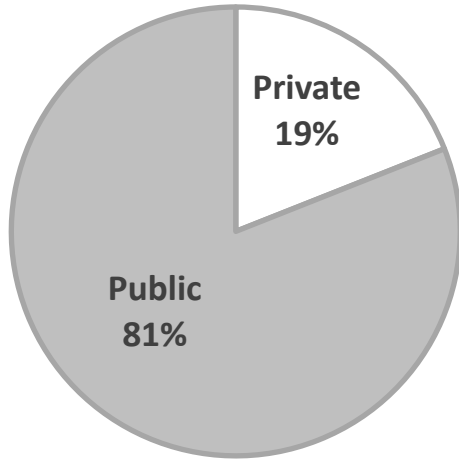


**Stream Evolution Model**  
Cluer & Throne (2013) DOI: [10.1002/rra.2631](https://doi.org/10.1002/rra.2631)

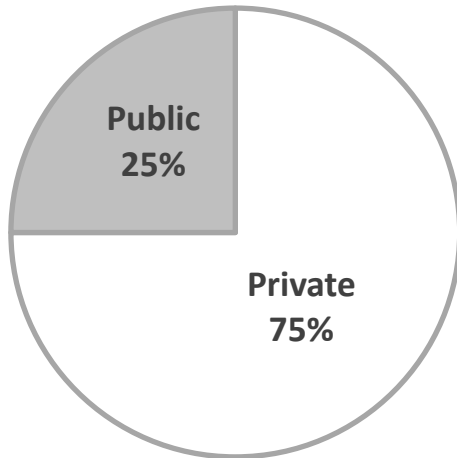


# Private landowners hold the key to addressing this resource concern

Overall Ownership

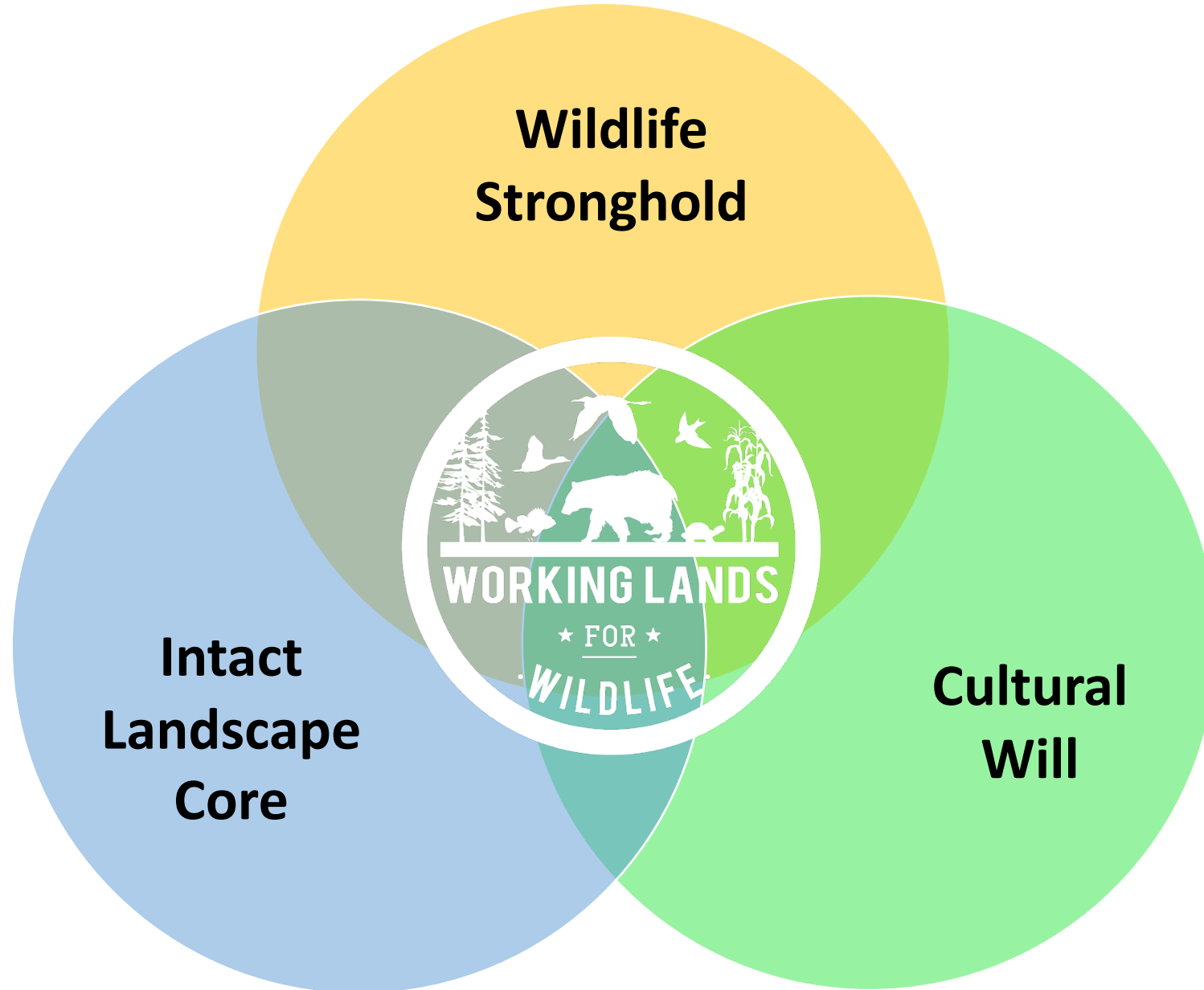


Mesic Resources





# ***Where do we see greatest outcomes?***







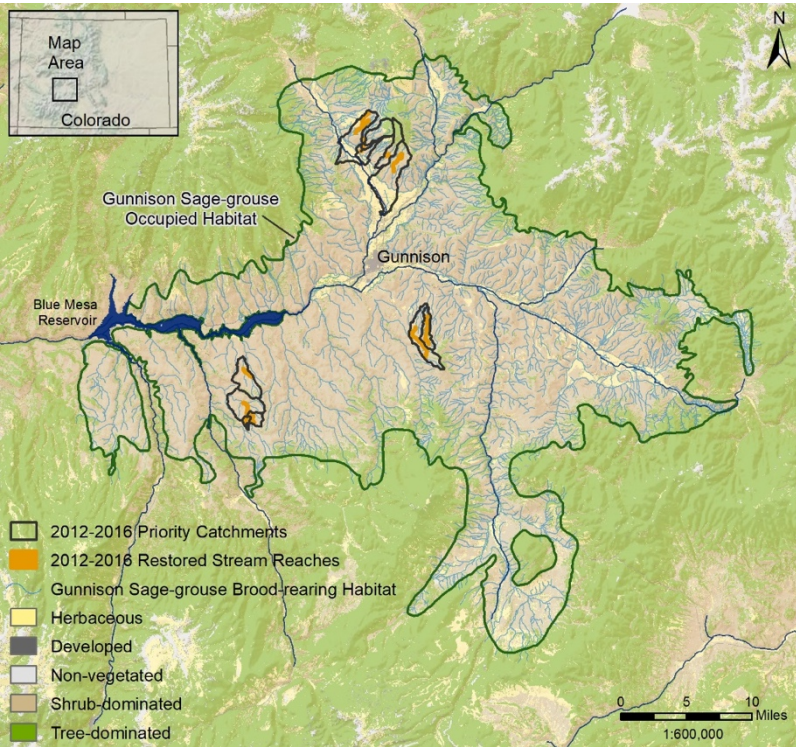
# ***Gunnison Basin Wet Meadow and Riparian Restoration and Resilience-Building Project***



***Goal:*** Build resilience of riparian & wetland habitats to help wildlife and ranchers adapt to increased climate variability



# Gunnison Working Group





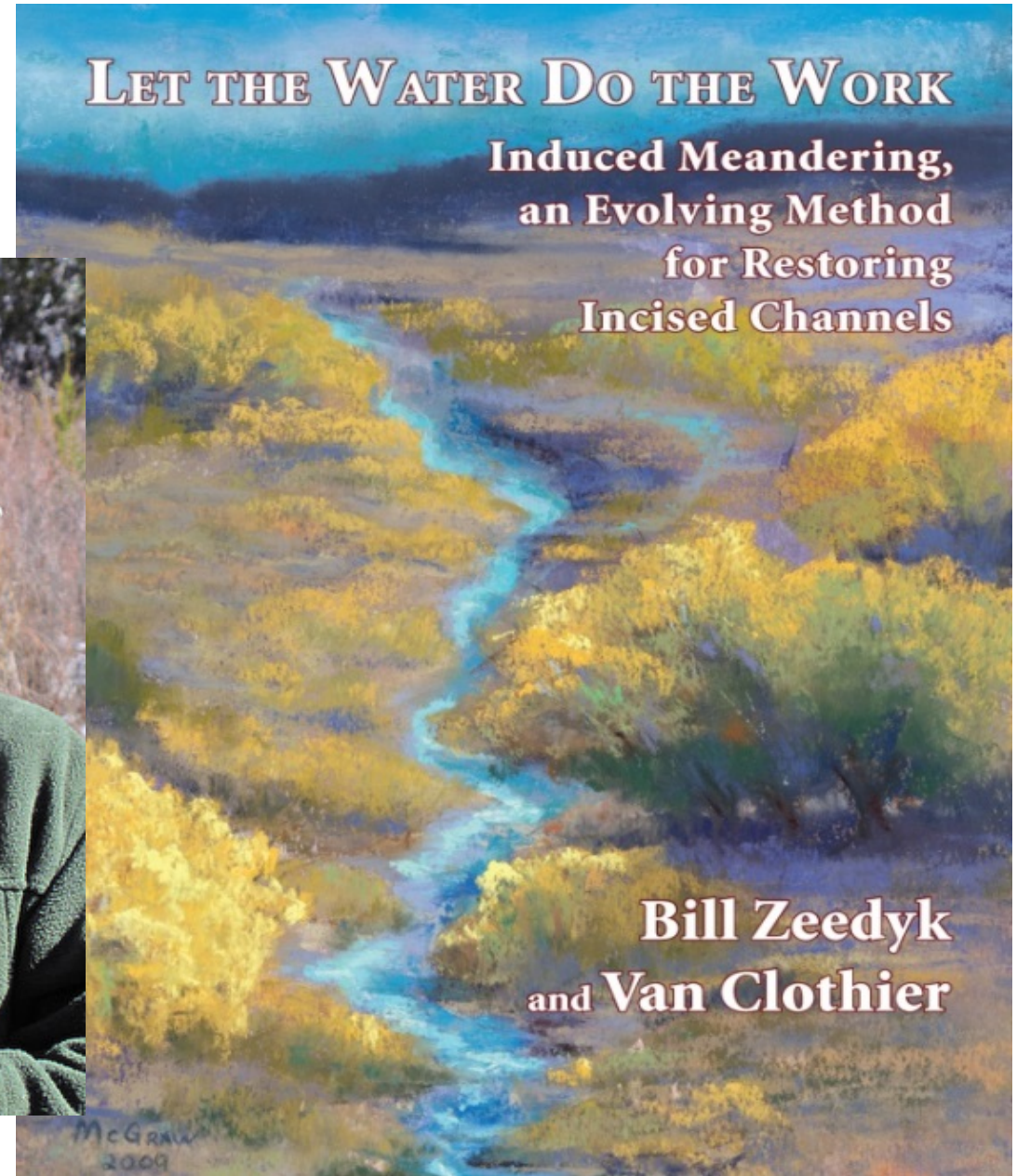




# “Sticks and Stones”



Bill Zeedyk, Restoration Specialist, New Mexico

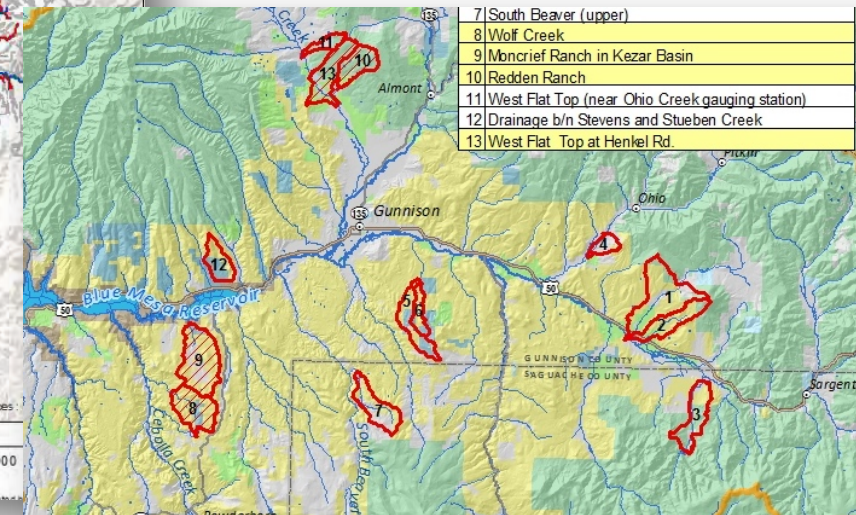
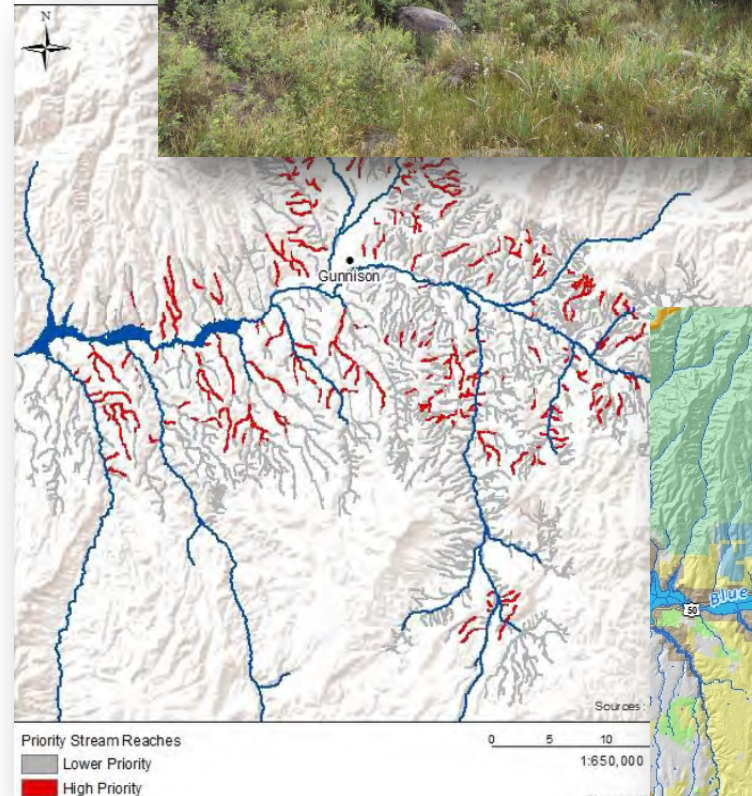
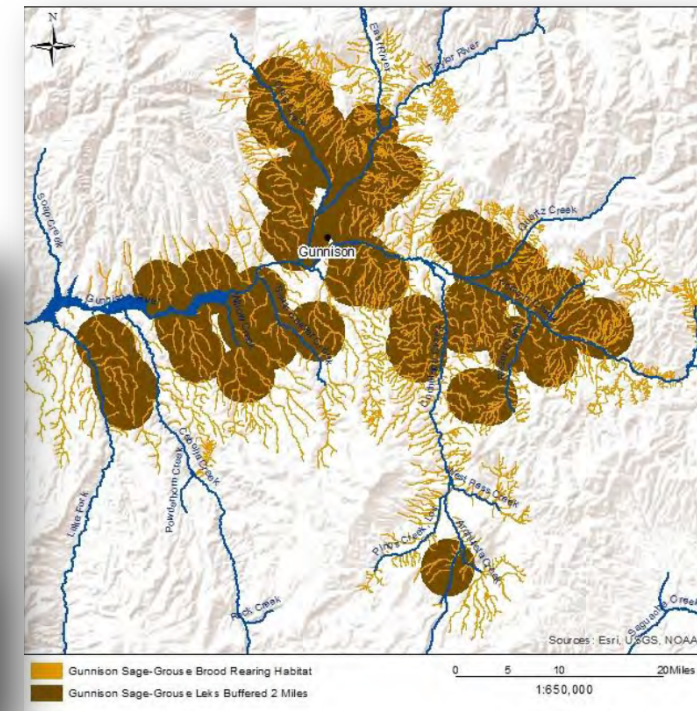
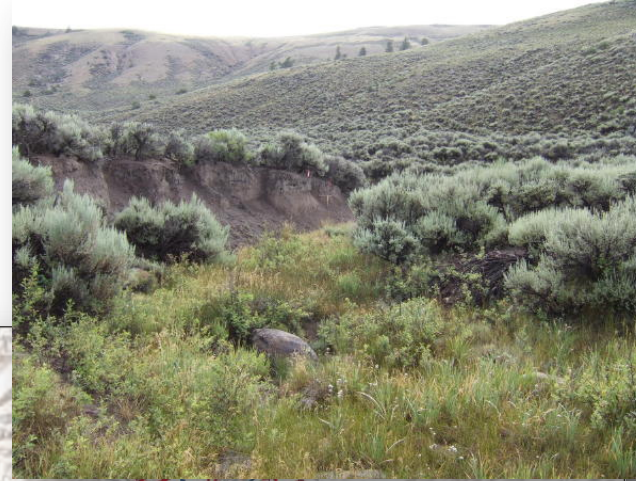






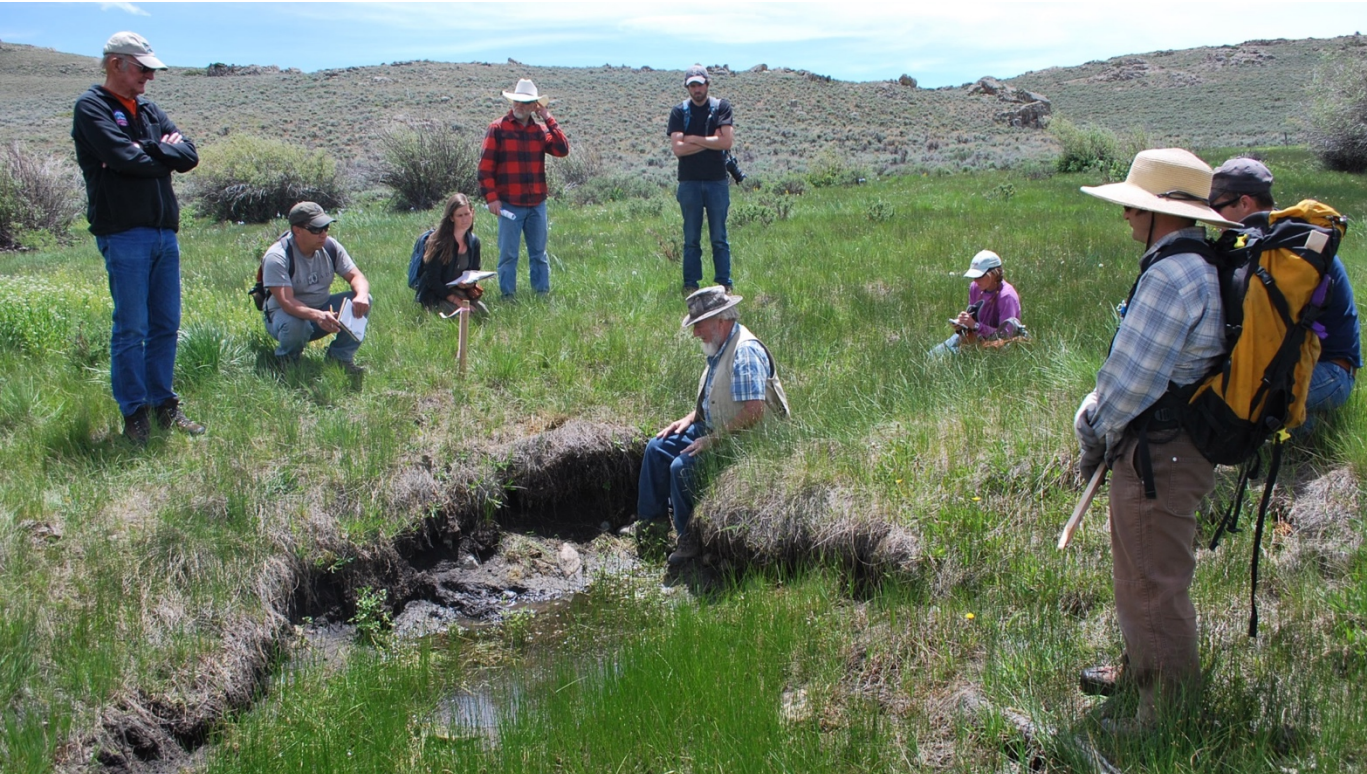
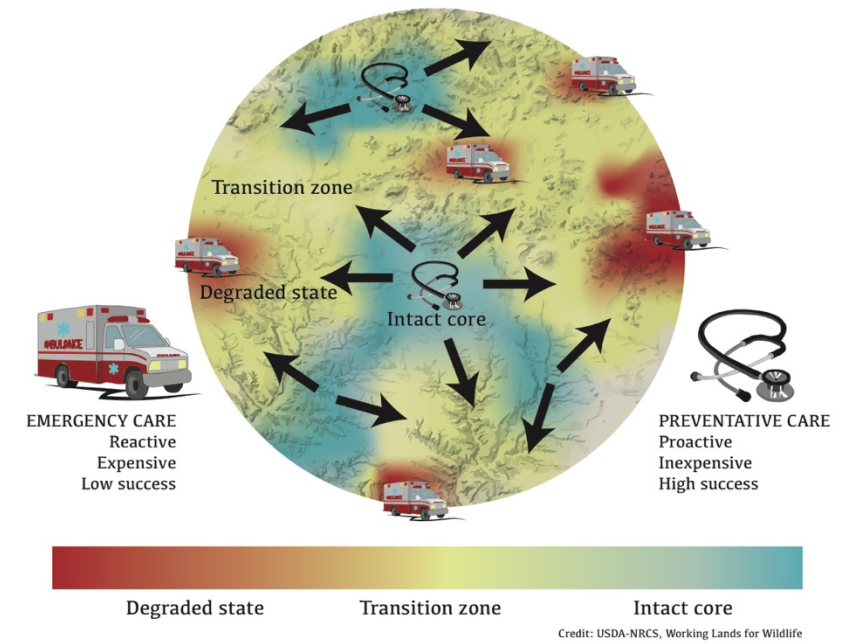
# Identifying Priority Areas

- Restoration potential (e.g., level of incision, valley bottom width)
- Proximity to sage grouse leks (e.g., 2-mi buffer)
- Landowner readiness
- Refined with local knowledge





# Intervene early to address resource concern





## Since 2012:

- >1,500 structures
- 24 stream miles
- >150 crews, volunteers, students

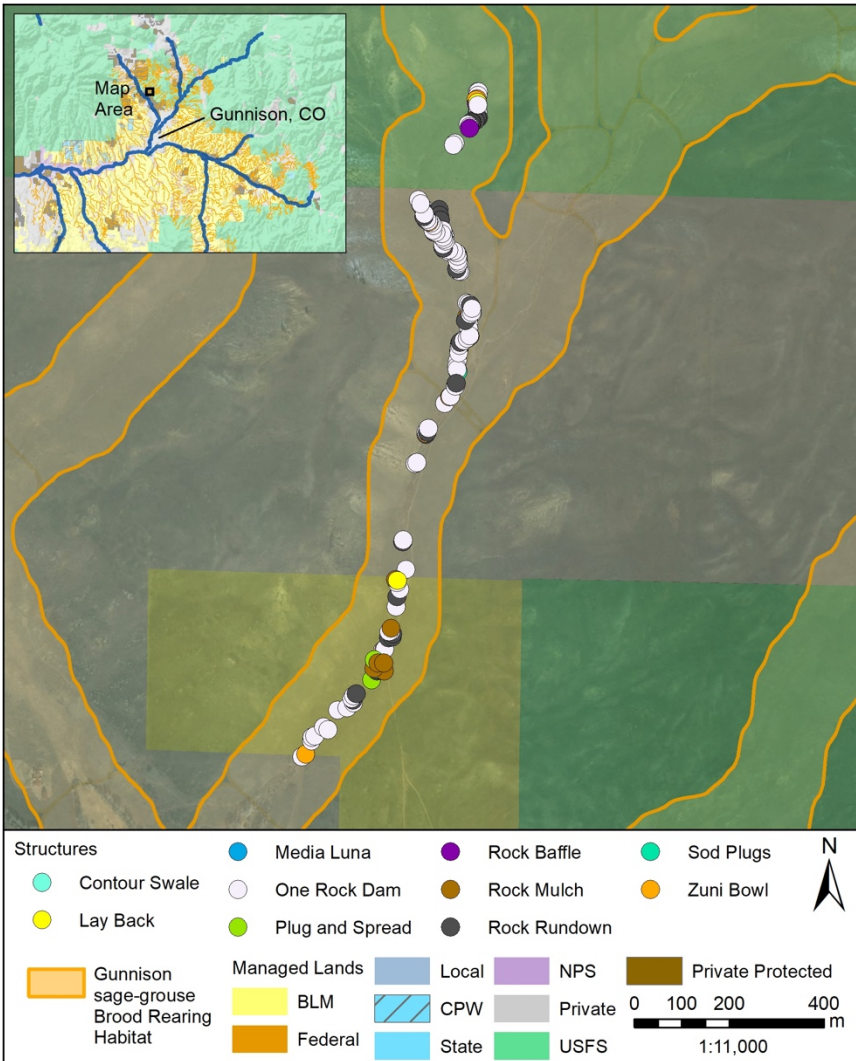


Photo courtesy : Nate Seward







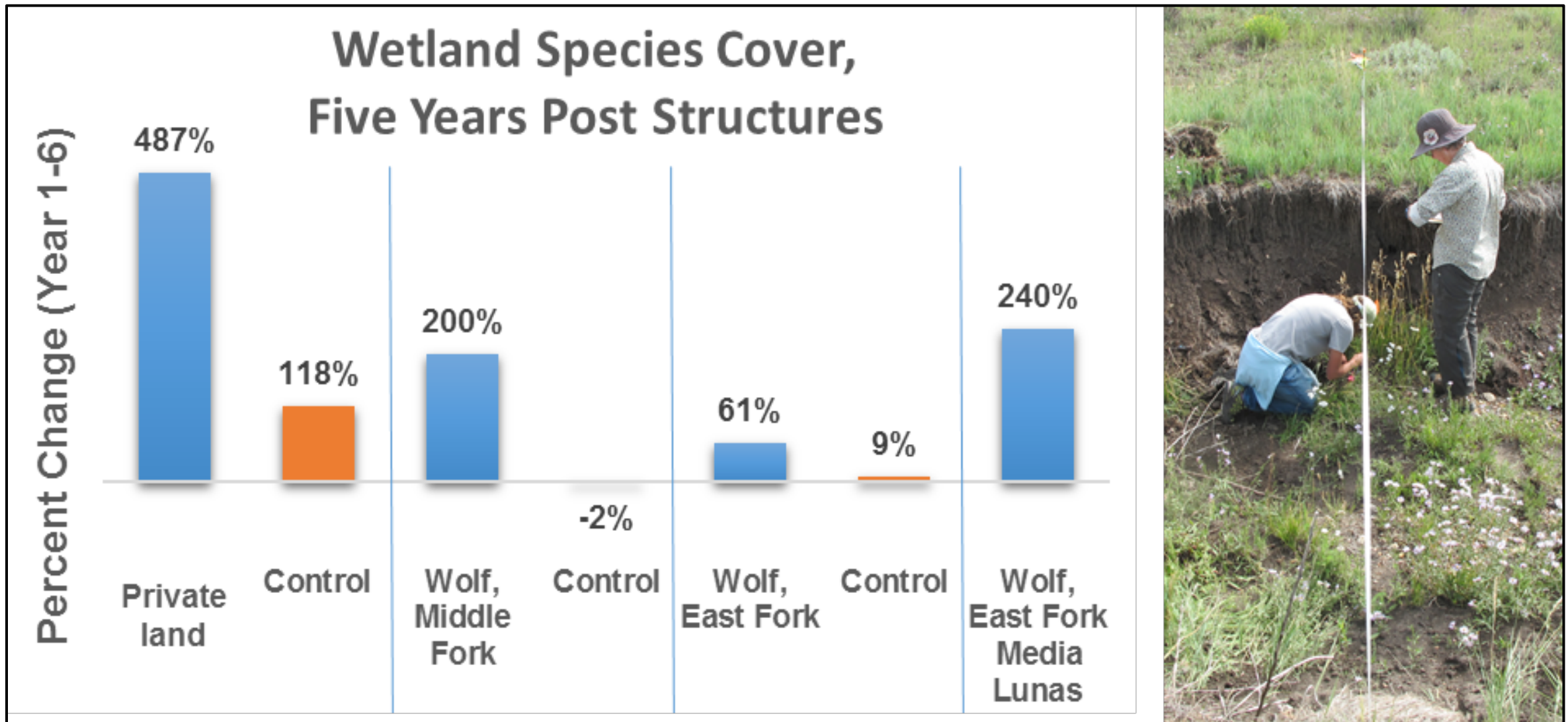


Figure 23. Wetland species cover change in treatment (blue) and control (orange) sites five years post-restoration in Gunnison Basin, CO (Rondeau et al. 2018). Figure and photo by: Renee Rondeau



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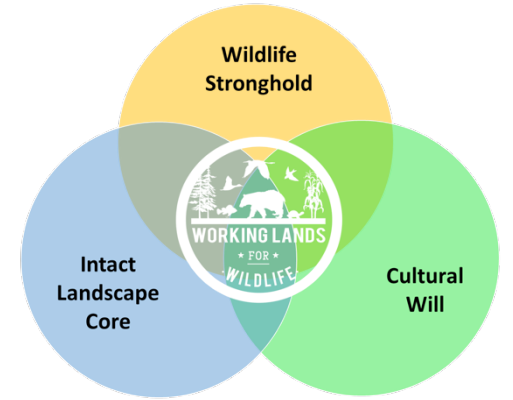


KEZAR C3

RECONYX



# What made this example successful?



- Strong cultural will
- Found 'sweet spot' to achieve outcomes for ranching and wildlife
- Used a spatially targeted, strategic approach
- Adapted practices/programs to achieve outcomes
- Engaged diverse partnership to take it to scale



# An awakening for SGI



United States Department of Agriculture



## Sage Grouse Initiative 2.0

Investment Strategy, FY 2015-2018



Natural Resources Conservation Service  
August 2015

USDA is an equal opportunity employer and provider.

[nrcs.usda.gov/initiatives](http://nrcs.usda.gov/initiatives)



### CONSERVATION ACTION

#### Threat: Mesic Area Loss and Degradation

**Purpose and Need:** Loss and degradation of mesic habitats exacerbate declines in many populations because grouse rely on these areas for abundant forbs and insects to feed chicks in late summer. Impacts include direct drainage, down-cutting of channels, conversion to exurban uses and conifer expansion.

**Priority Areas:** Rangelandwide, locally in all Management Zones.

**Conservation Objective:** Avoid further loss of riparian edges, wet meadows, seasonal wetlands and irrigated fields by acquiring conservation easements that maintain mesic habitats. Restore and enhance degraded mesic areas to help increase populations.

**Funding Source:** Environmental Quality Incentives Program (EQIP) and Agricultural Conservation Easement Program (ACEP)

**SGI Targeting:**  
As upland nesting habitat typically dries in late summer, sage grouse follow the “green line” in search of productive wet habitats that provide food and cover for maturing young. New SGI science shows that 85 percent of leks are within six miles of mesic resources. The largest leks are within two miles of wet habitats. This is the first time science has shown that scarcity of wet habitats drive the location of grouse breeding sites on uplands as hens choose to mate and nest within a reasonable walk of where they can find late summer foraging for their broods. Wet habitats comprise less than 2 percent of the landscape, of which 80 percent are not federally owned, making private lands central to sage grouse conservation. Maps linking bird density to their mesic resources are helping partners in California, Nevada and Oregon identify the most important wetlands to focus restoration, enhancement and protection efforts (SGI 2014).



Priority areas for addressing mesic area loss and degradation.



Photo courtesy of Sage Grouse Initiative.

**SGI Outcomes:**  
Mesic habitats and associated brood survival is a limiting factor in Western sage steppe landscapes (Atimian et al. 2010, Blomberg et al.

15



# Traditional Restoration

Google

stream restoration

All

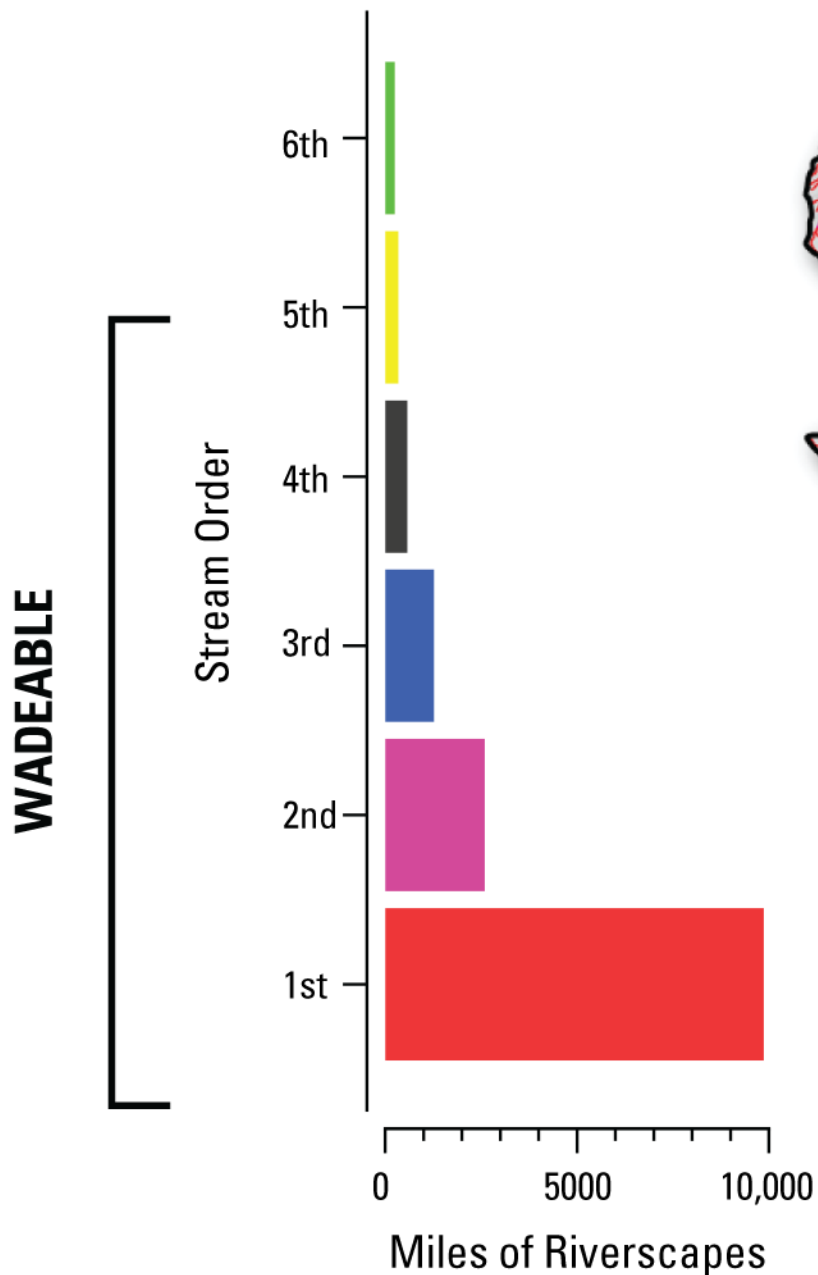
News

Images

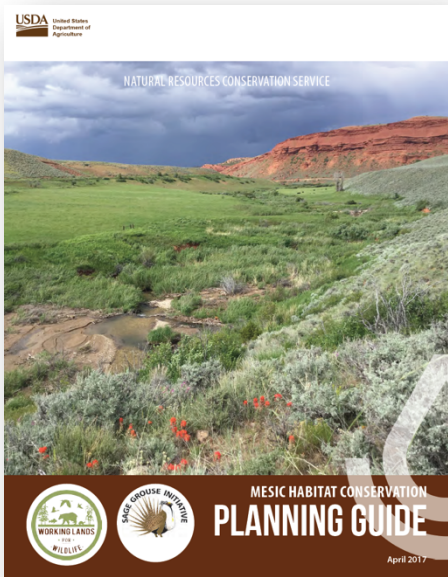




# We need scalable solutions







# How, What?

## Higher Cost, Limited Extent

- Easements
- Mechanical restoration

## Lower Cost, Broader Extent

- Low-tech restoration (“sticks and stones”)
- Grazing management
- Spring protection and enhancement
- Conifer removal

**ACEP**  
Agricultural  
Conservation  
Easement Program

**EQIP**  
Environmental  
Quality Incentives  
Program

**CSP**  
Conservation  
Stewardship  
Program

**RCPP**  
Regional Conservation  
Partnership Program





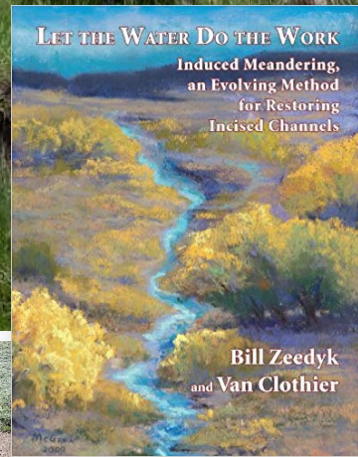
# Expanding our toolbox to include new Low-Tech Tools



Wheaton Et-Al Lab



Zeedyk Structures



Beaver Dam Analogues (BDAs)



Gunnison Basin Working Group



Bridge Creek  
ca. 1993



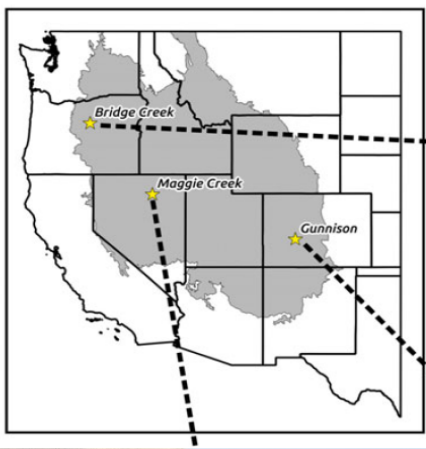
Bridge Creek  
2009



Reimagine what's possible







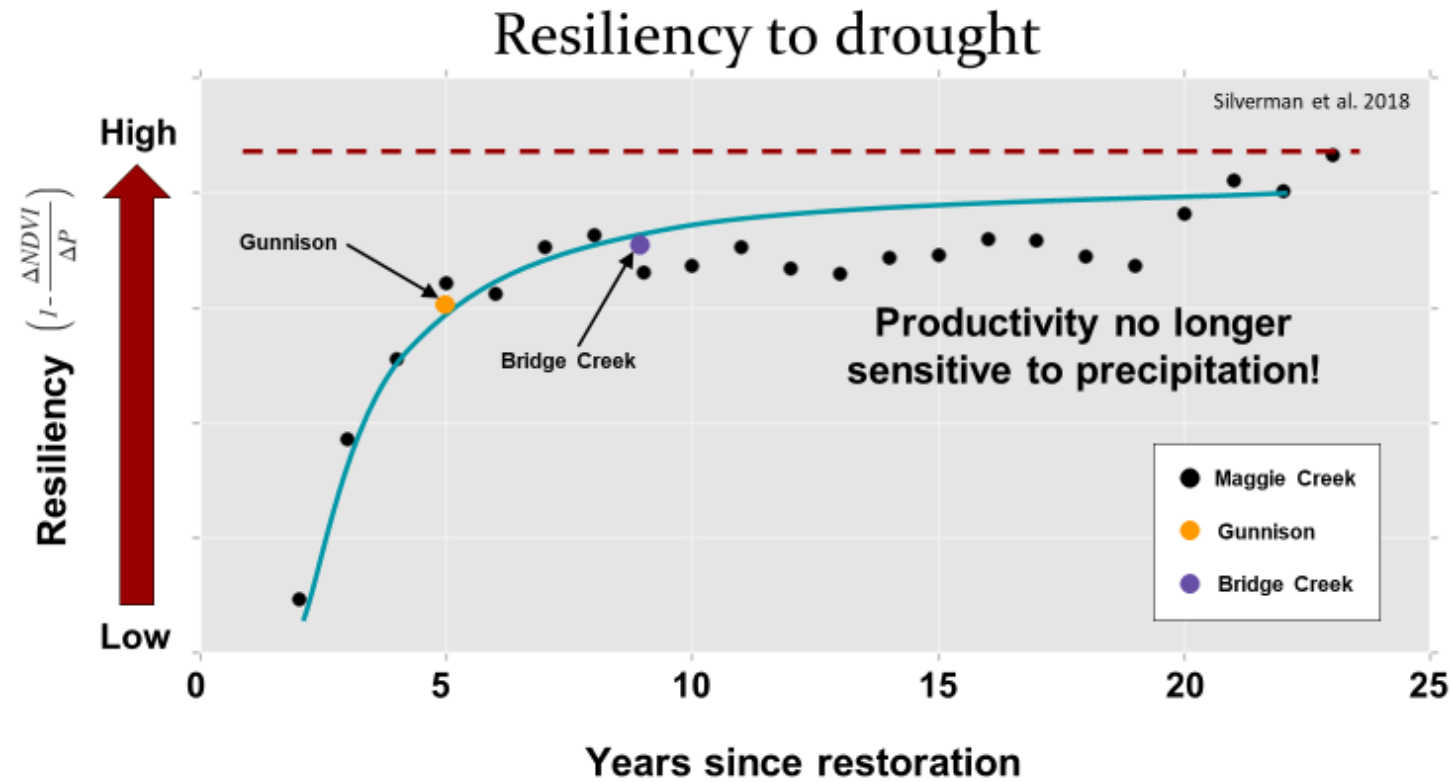
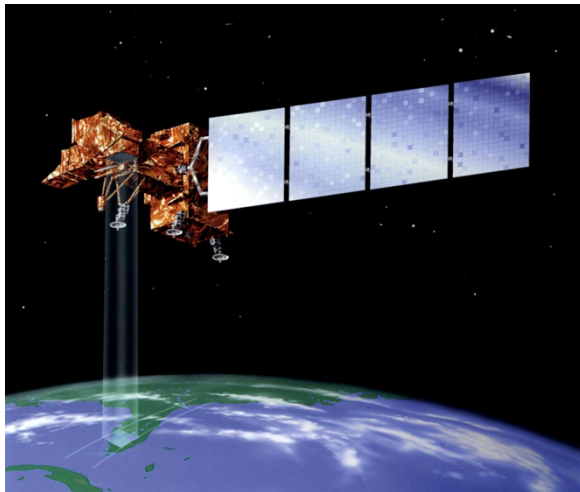
Beaver Dam Analogues



Grazing Management



Zeedyk Structures

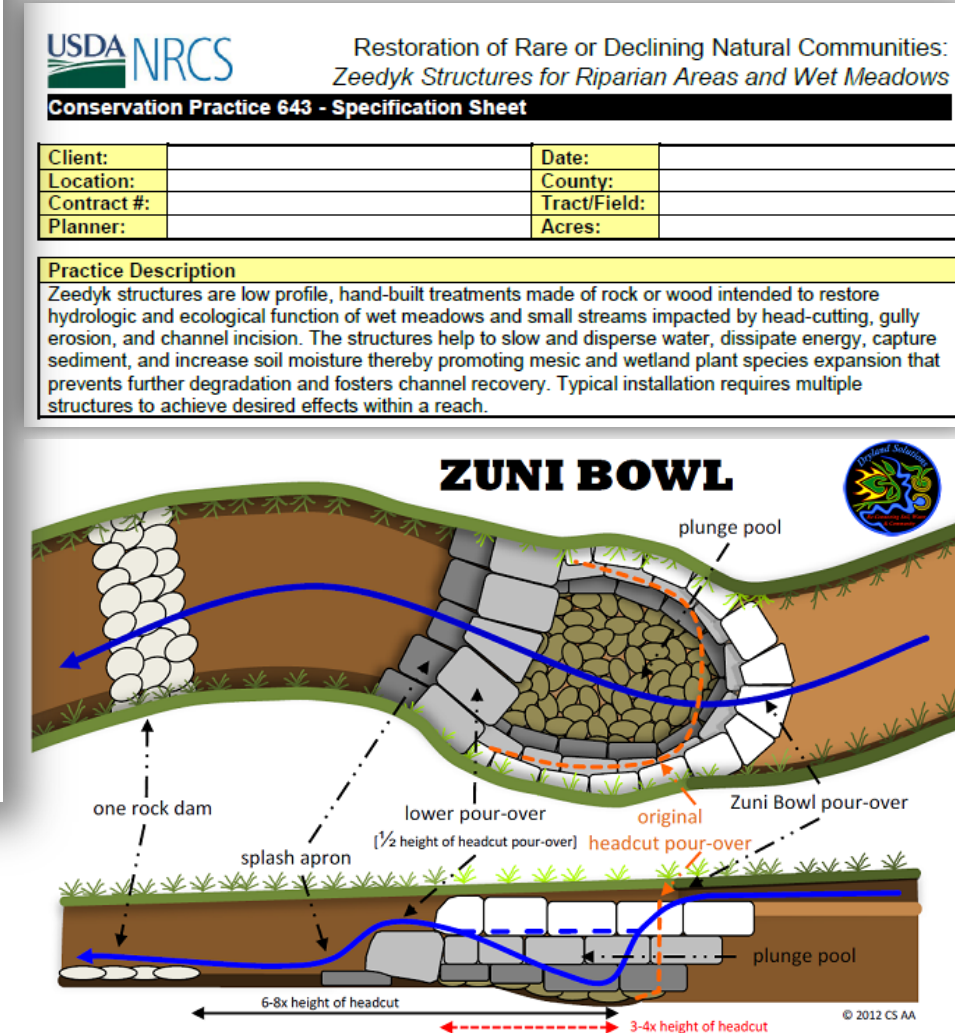


## Low-Tech Restoration Works

Restoration increased productivity  
**+25%** and kept plants greener longer



# Practices and Planning Support Documents





# Technology Transfer





# LOW-TECH RIPARIAN RESTORATION

## FIELD WORKSHOP SERIES



**11 Hands-On Workshops  
>400 Participants**







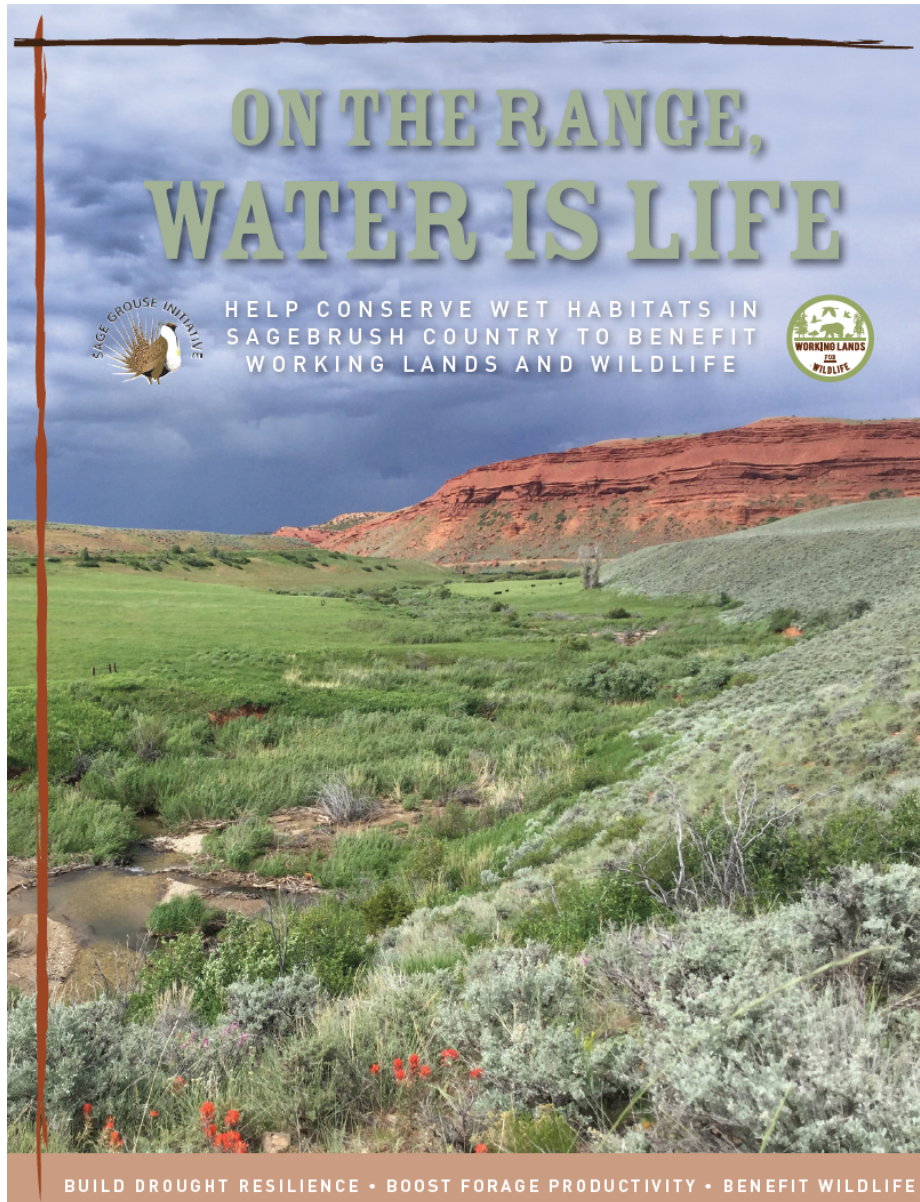
**Following  
restoration,  
Birch Creek flows  
42 days longer**



*“When you see the results, it’s almost like magic. It makes the effort worthwhile.”*  
~ Jay Wilde



# Communications



## *Water Is Life: Introducing SGI's Mesic Habitat Conservation Campaign*



**MESIC HABITAT**  
refers to land with  
a well-balanced  
supply of moisture  
throughout the  
growing season. It  
includes streamside  
(riparian areas), wet  
meadows, springs  
and seeps, irrigated  
fields and high-  
elevation habitats.

[sagegrouseinitiative.com/water-is-life/](https://sagegrouseinitiative.com/water-is-life/)





# Southwest Montana Landscape



In less than 2 years,  
~400 meadow restoration structures installed



The Nature Conservancy  
Montana



USDA  
United States Department of Agriculture  
Natural Resources Conservation Service



Beaverhead Watershed Committee



California



Utah



Nevada



Montana/Dakotas



Idaho

**Who's next???**

***Great Plains***

***Desert Southwest***

Wyoming





**1 Low-Tech Wet Meadow Restoration:  
Reading the Landscape to Recognize Opportunities**

July 22nd, 9am-10:30am PDT/10am-11:30am MDT

More info: [www.partnersinthesage.com](http://www.partnersinthesage.com), [www.sagegrouseinitiative.com](http://www.sagegrouseinitiative.com)



**2 Virtual Workshop**  
**August 11-14, 2020**  
**Four Days - Five Modules - All Free!**



**FIVE MODULES - 4 DAYS**

Pick and Choose! Attend All 5, or just the first one

- 1: Introduction to Low-Tech Process-Based Restoration
- 2: Underlying Science & Case Studies for Low-Tech
- 3: Planning Low-Tech Process-Based Restoration
- 4: Designing Low-Tech Process-Based Restoration
- 5: Implementing Low-Tech Process-Based Restoration

Register for Free:  
<https://tinyurl.com/y86a82o6>



Courtesy of:





# Resources

- SGI Water is Life Campaign materials: <https://www.sagegrouseinitiative.com/water-is-life/>
- SGI Mesic Habitat Planning Guide: [http://www.sagegrouseinitiative.com/wp-content/uploads/2017/04/Mesic Habitat Conservation Planning Guide1.pdf](http://www.sagegrouseinitiative.com/wp-content/uploads/2017/04/Mesic_Habitat_Conservation_Planning_Guide1.pdf)
- NRCS Technical Note on Zeedyk rock structures: <https://www.sagegrouseinitiative.com/starter-guide-for-healing-incised-meadows-with-hand-built-structures-in-sagebrush-country/>
- Low-Tech Restoration Design Manual and Pocket Guide: <http://lowtechpbr.restoration.usu.edu/>
- Low-Tech Restoration Science: <https://www.sagegrouseinitiative.com/new-science-low-tech-riparian-meadow-restoration-keeps-rangelands-greener-longer/>





## Discussion & Questions