



Water is Life:

Restoring riparian and wet meadow resiliency in sagebrush country to benefit wildlife and working lands



United States
Department of
Agriculture

Natural Resources Conservation Service

Jeremy Maestas, Ecologist
West National Technology Support Center, Bend, OR



Conifer Expansion



Wildfire & Invasives



Residential Development



Grazing Land Cultivation



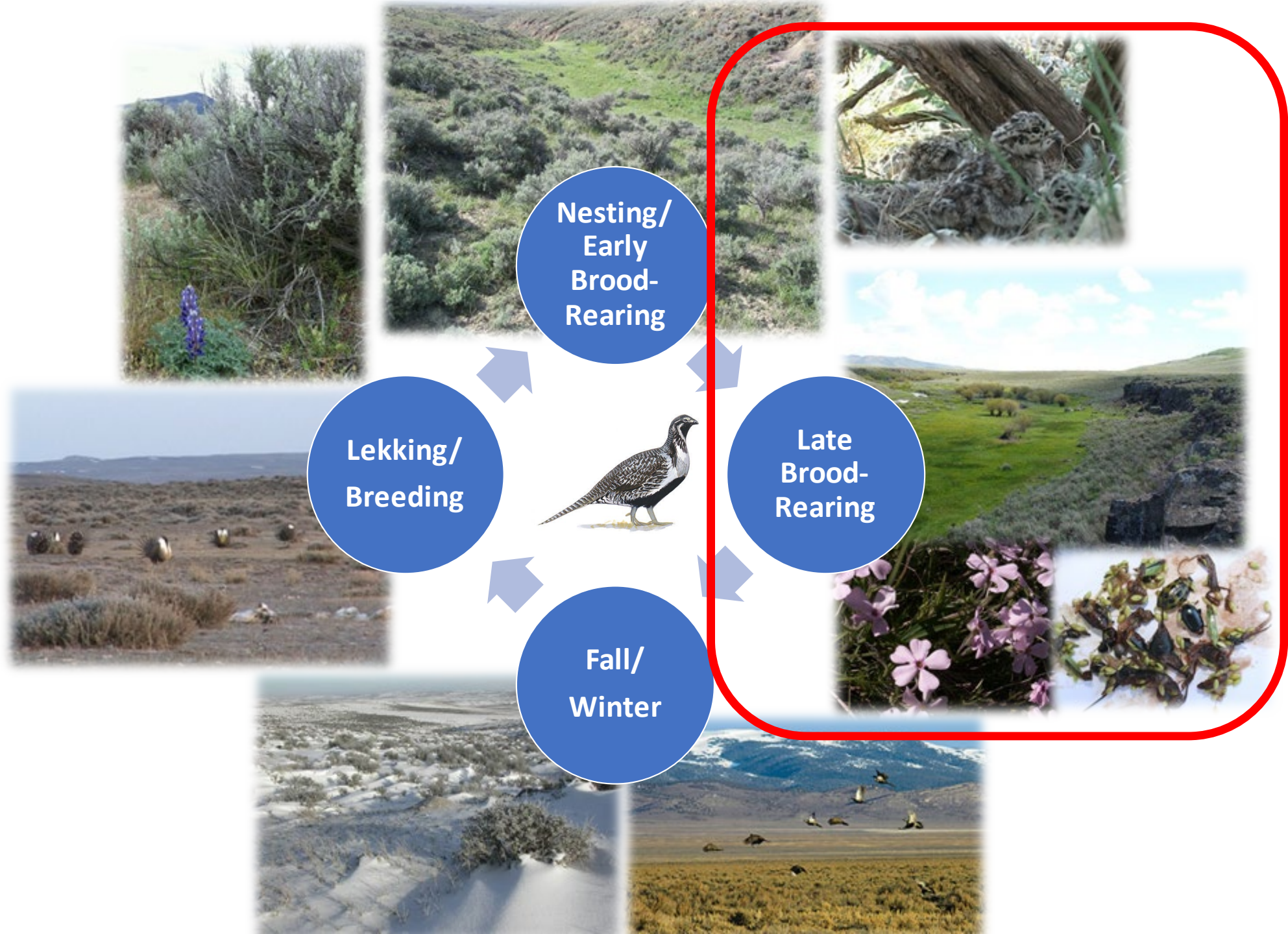
Infrastructure



Mesic Habitat Degradation



Since 2010: >1,800 ranchers, 7 million acres

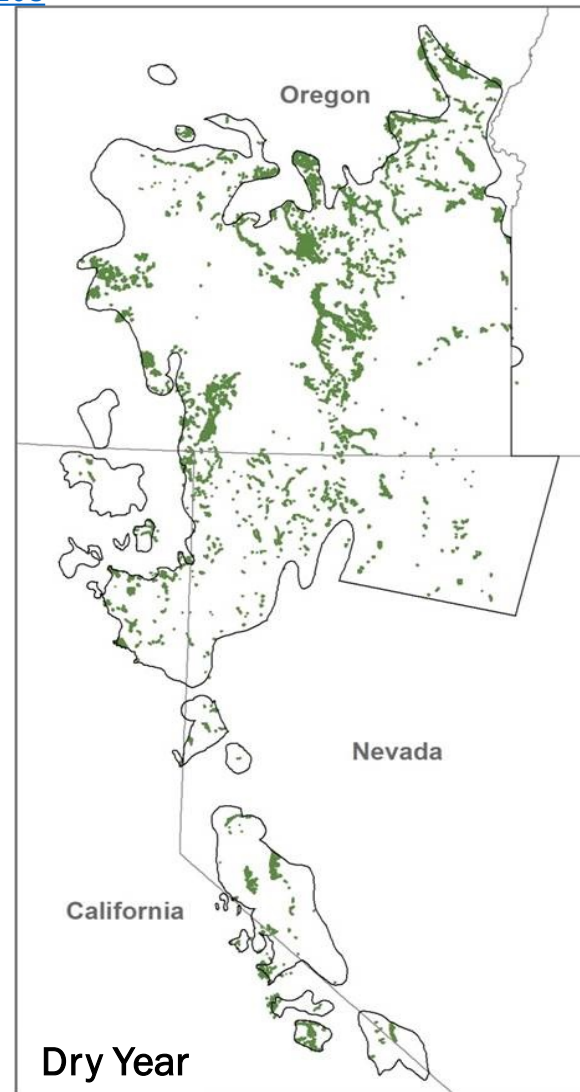
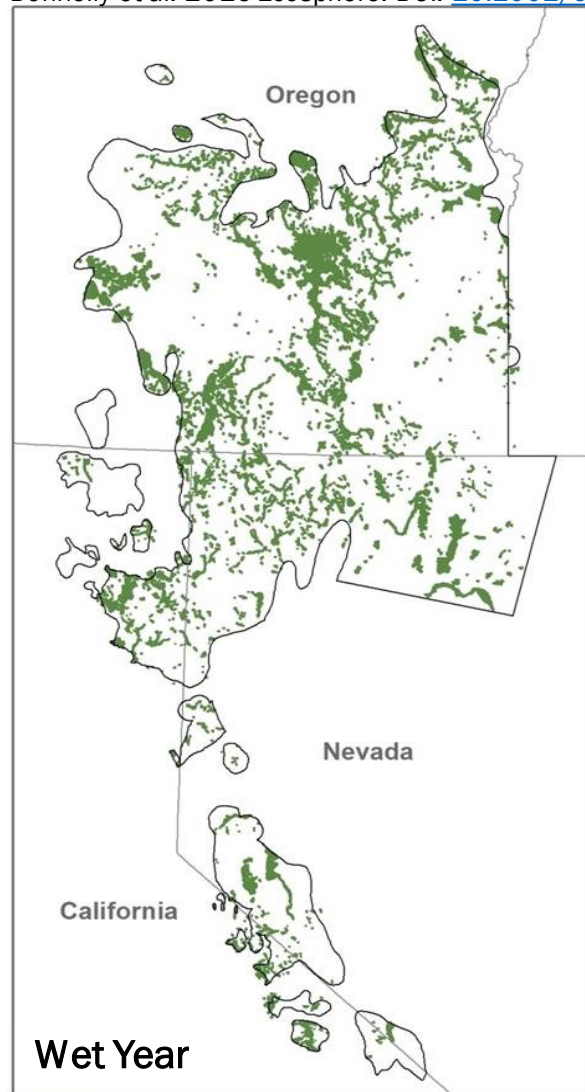




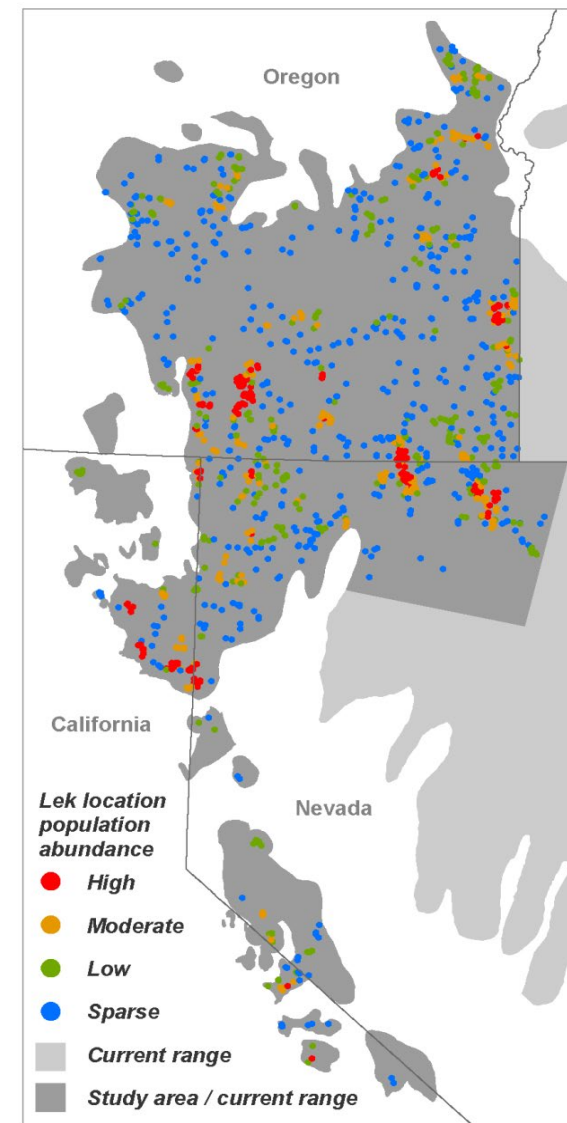
“Emerald Islands” in the Sagebrush Sea



Ken Miracle

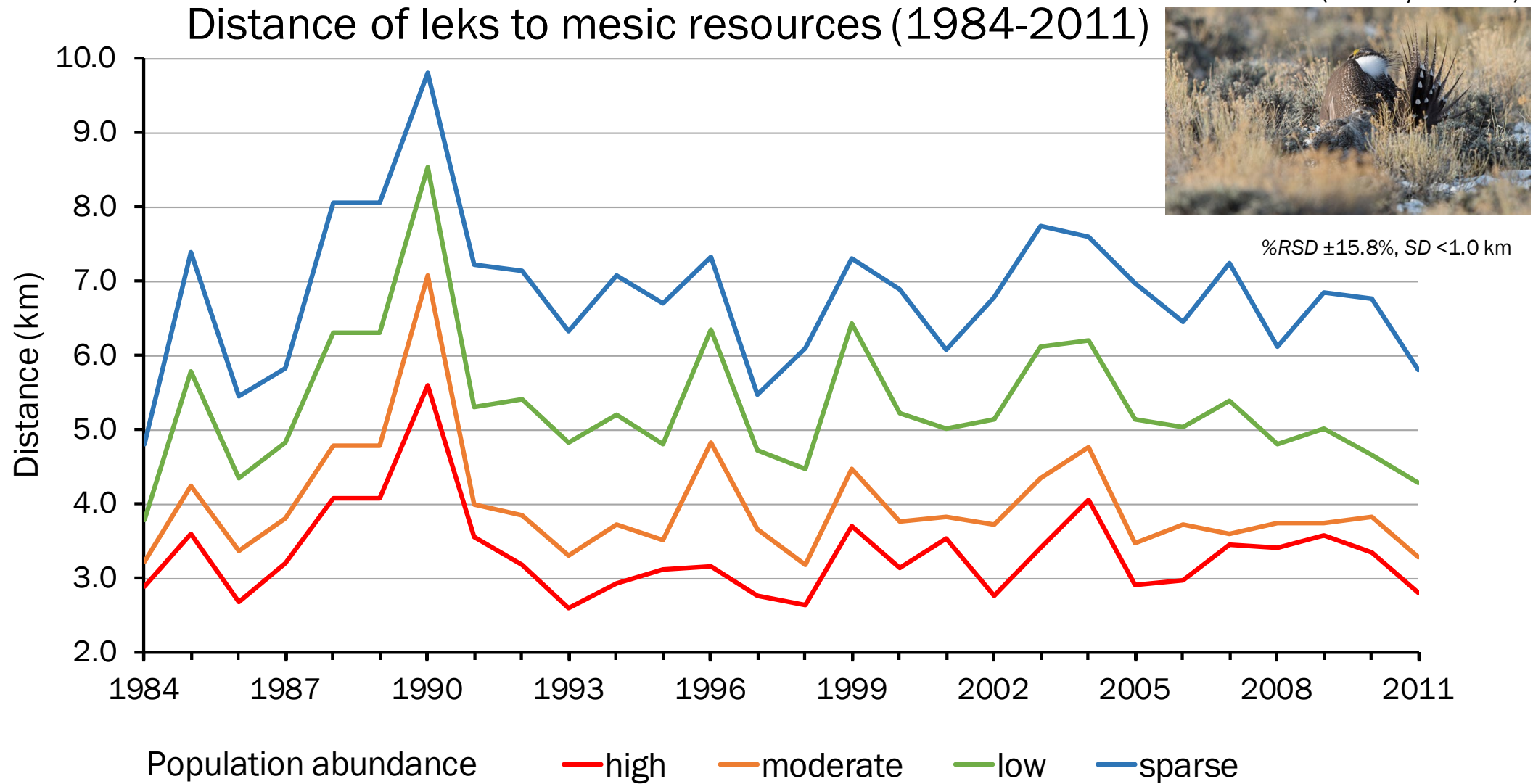


Spatiotemporal availability of mesic resources (1984-2011)



Lek locations and population abundance

(Donnelly et al. 2016)



Higher bird abundance near reliable wet habitats



In the West, Water is Life

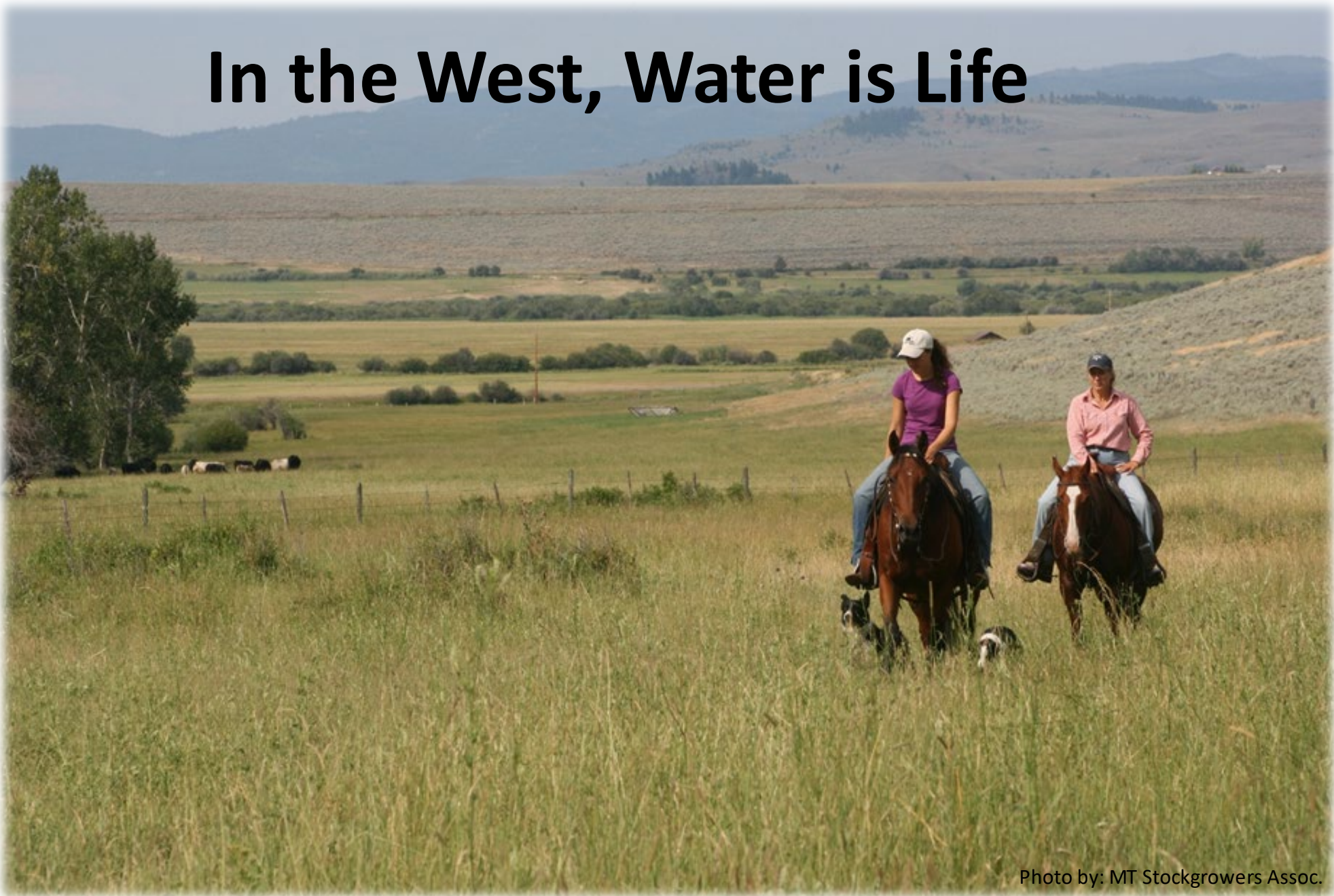
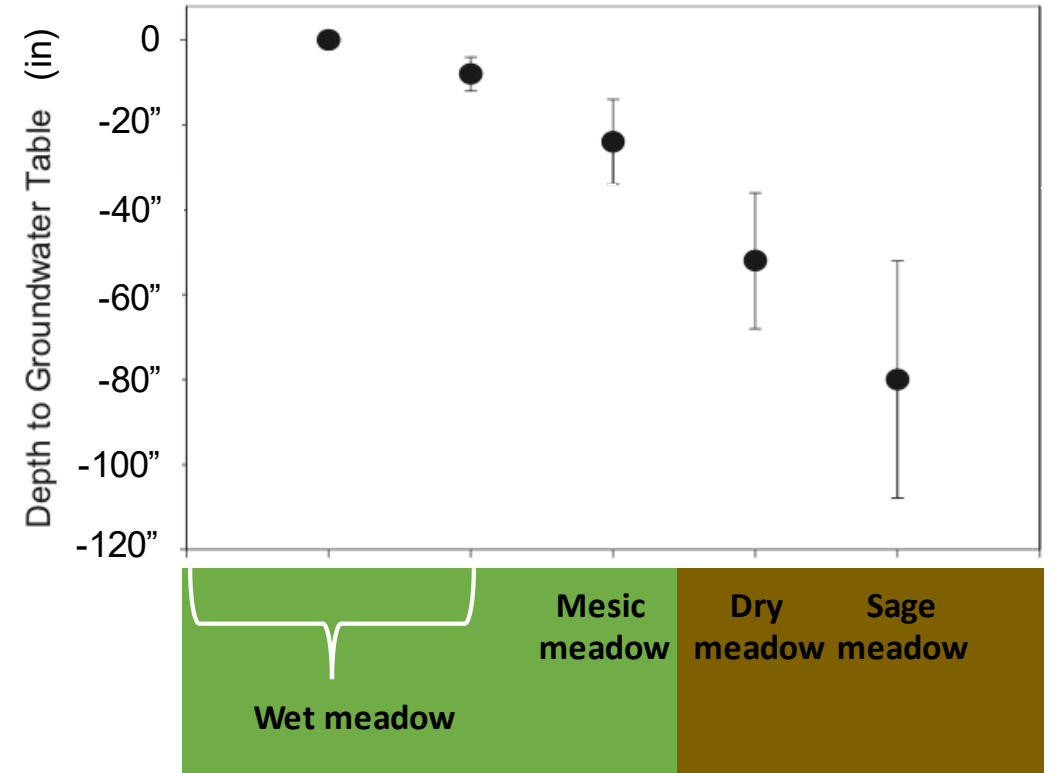
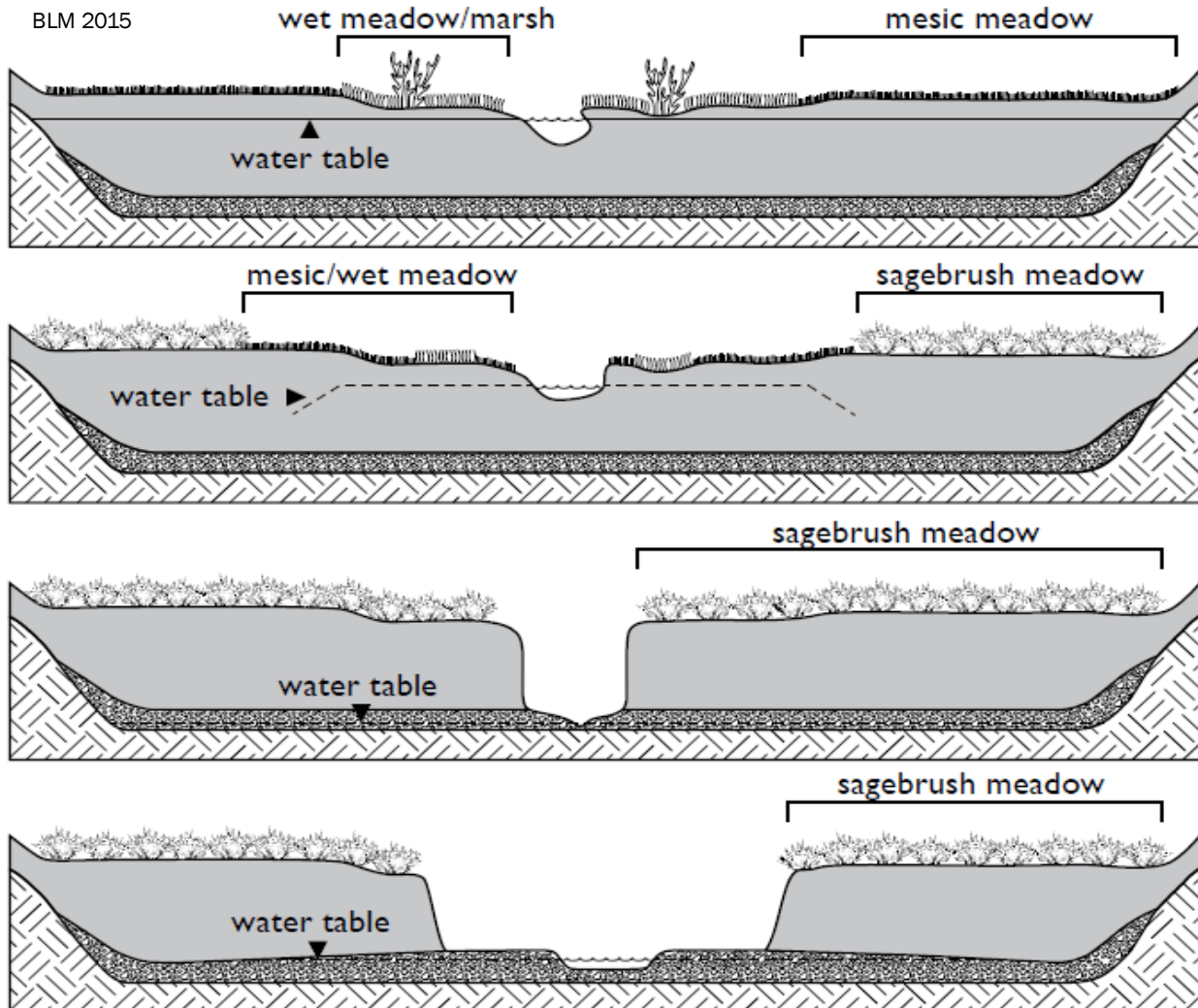


Photo by: MT Stockgrowers Assoc.



The Channel Incision Problem

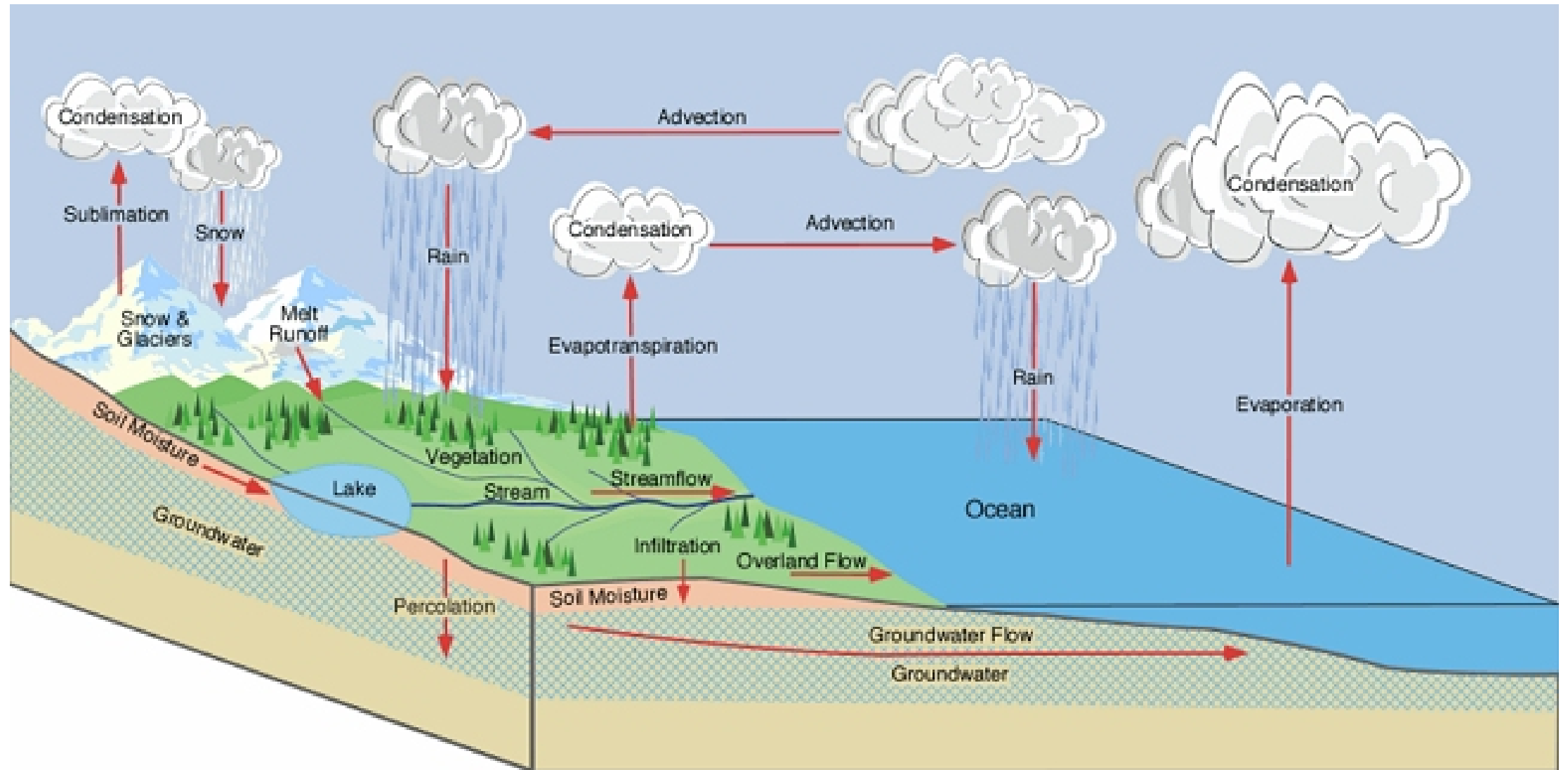
BLM 2015



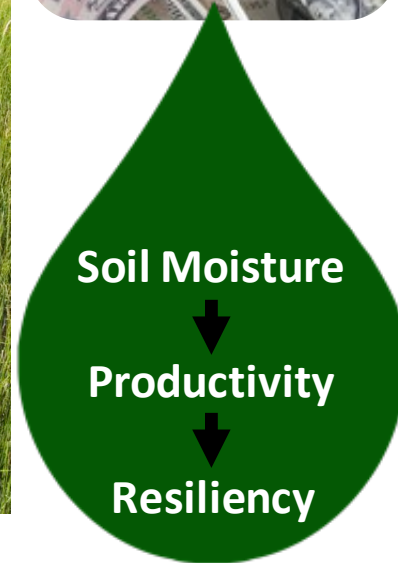
(adapted from Lord et al. 2011)

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

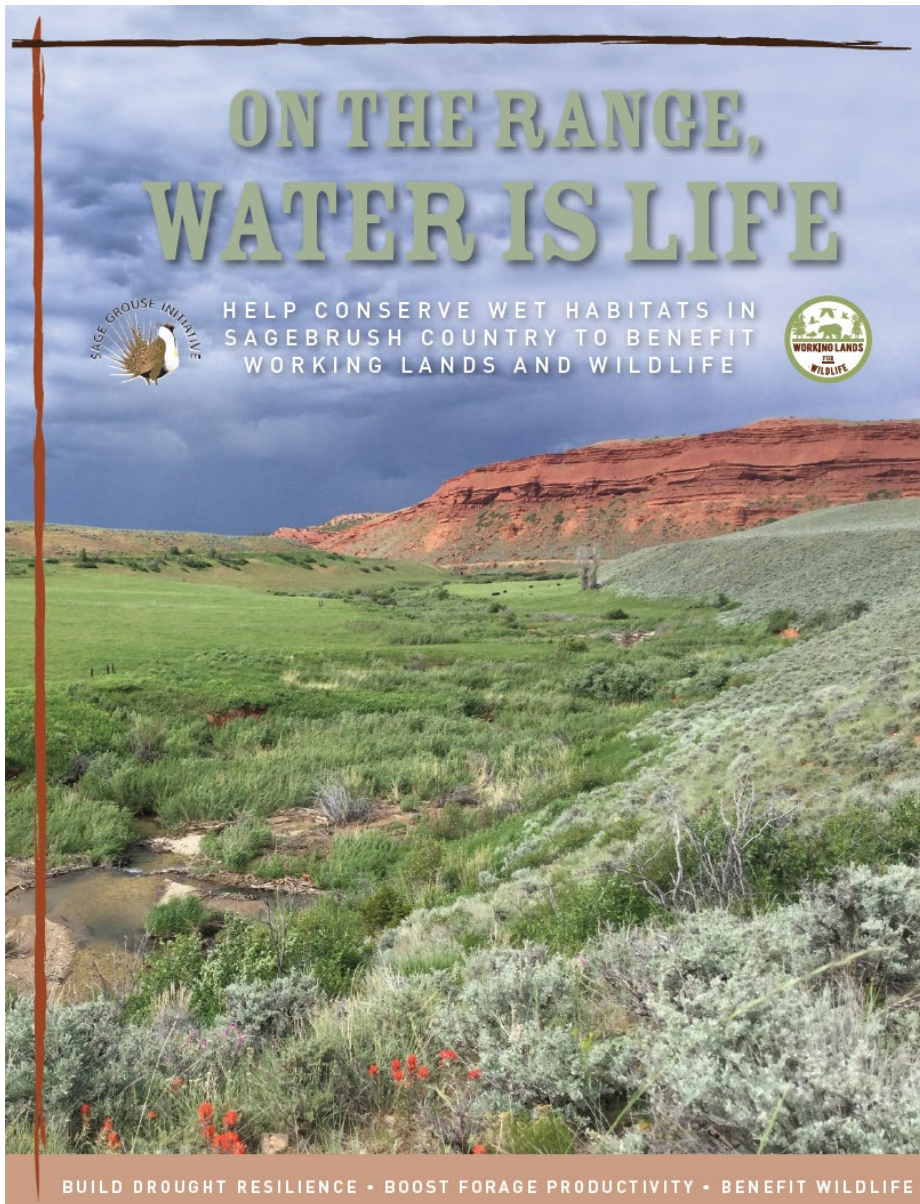
Remember the water cycle?



Shared Vision: This is about *Resiliency*



Resilience to drought, fire, flooding



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 streamsides
(riparian areas), wet
meadows, springs
and seeps, irrigated
fields and high-
elevation habitats.

sagegrouseinitiative.com/water-is-life/

What are we helping landowners do?



Higher Cost, Limited Extent

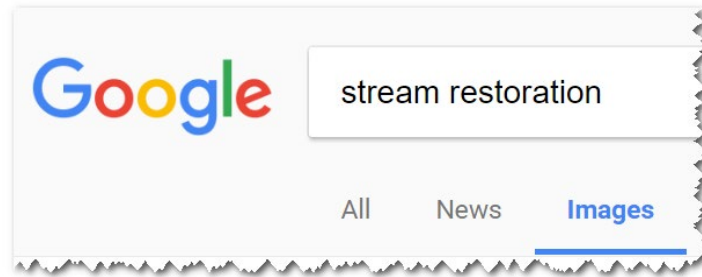
- Easements
- Mechanical restoration

Lower Cost, Broader Extent

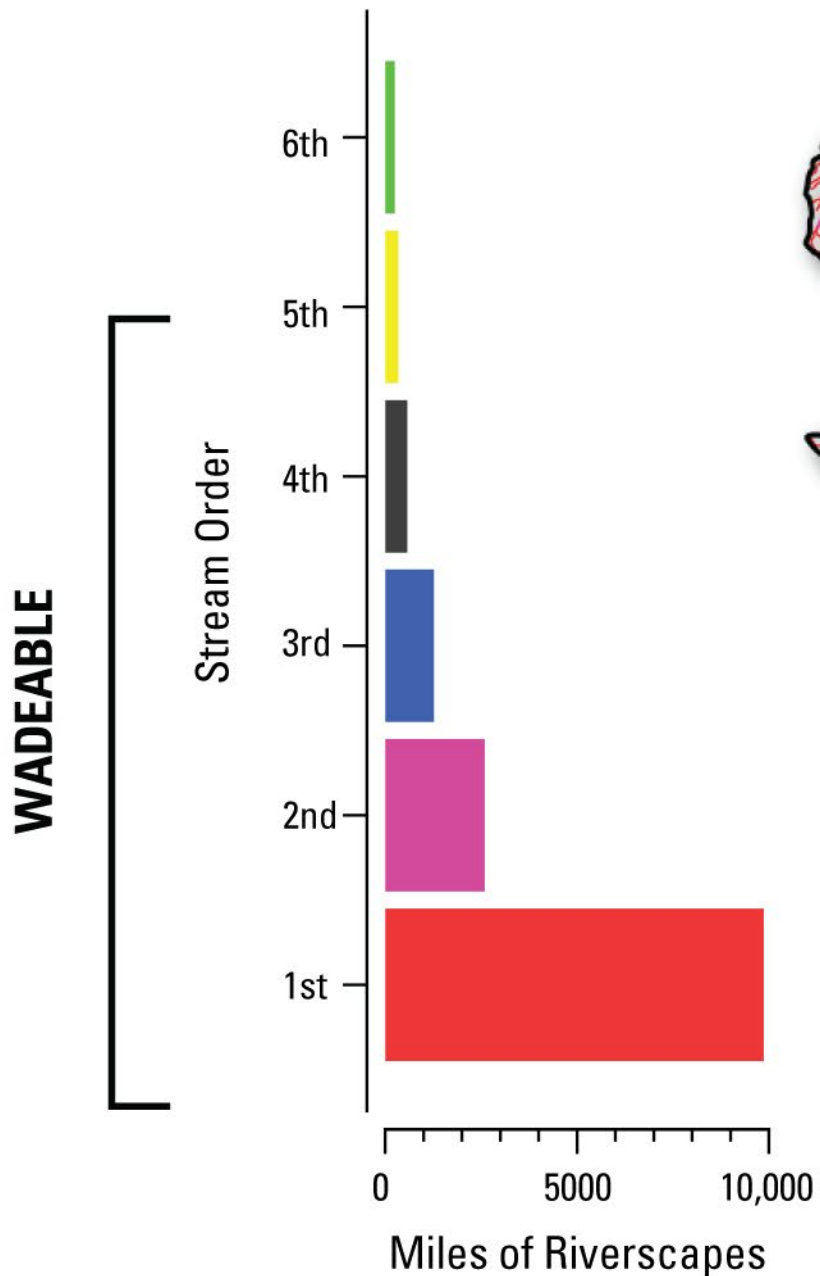
- Low-tech restoration (“sticks and stones”)
- Grazing management
- Spring protection and enhancement
- Conifer removal



Traditional Restoration



We need scalable solutions

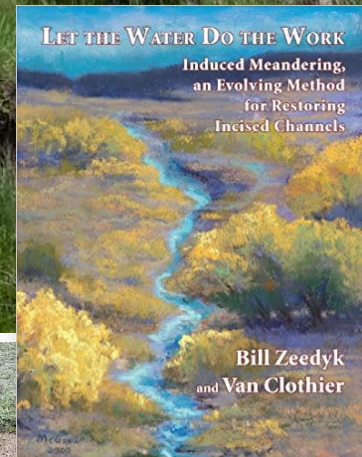


Expanding our toolbox to include new Low-Tech Tools

Perennial systems



Intermittent/ephemeral systems

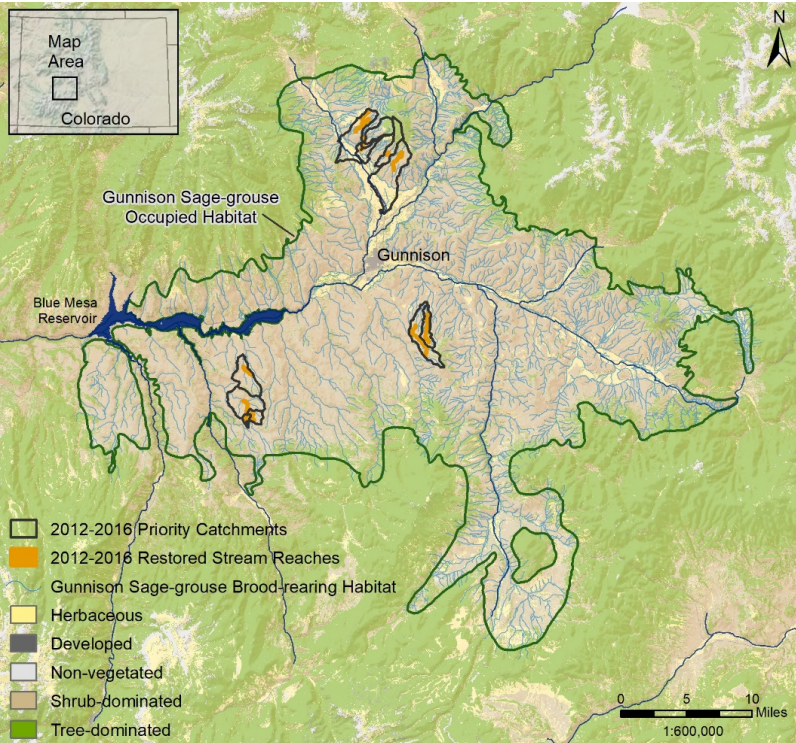


Beaver Dam Analogues (BDAs)



Gunnison Basin Working Group

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



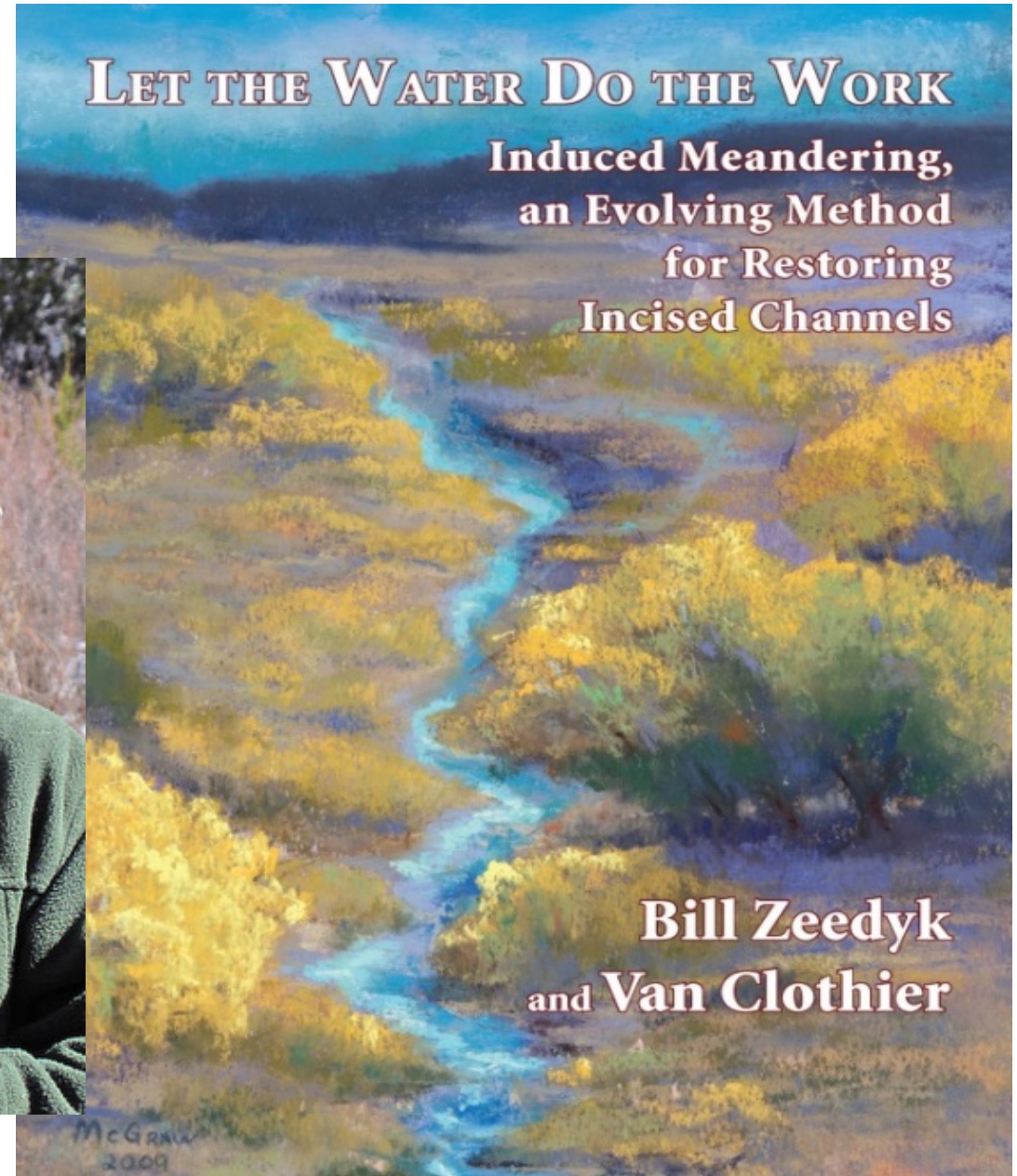
Goal: Build resilience of riparian & wetland habitats to help wildlife and ranchers adapt to increased climate variability



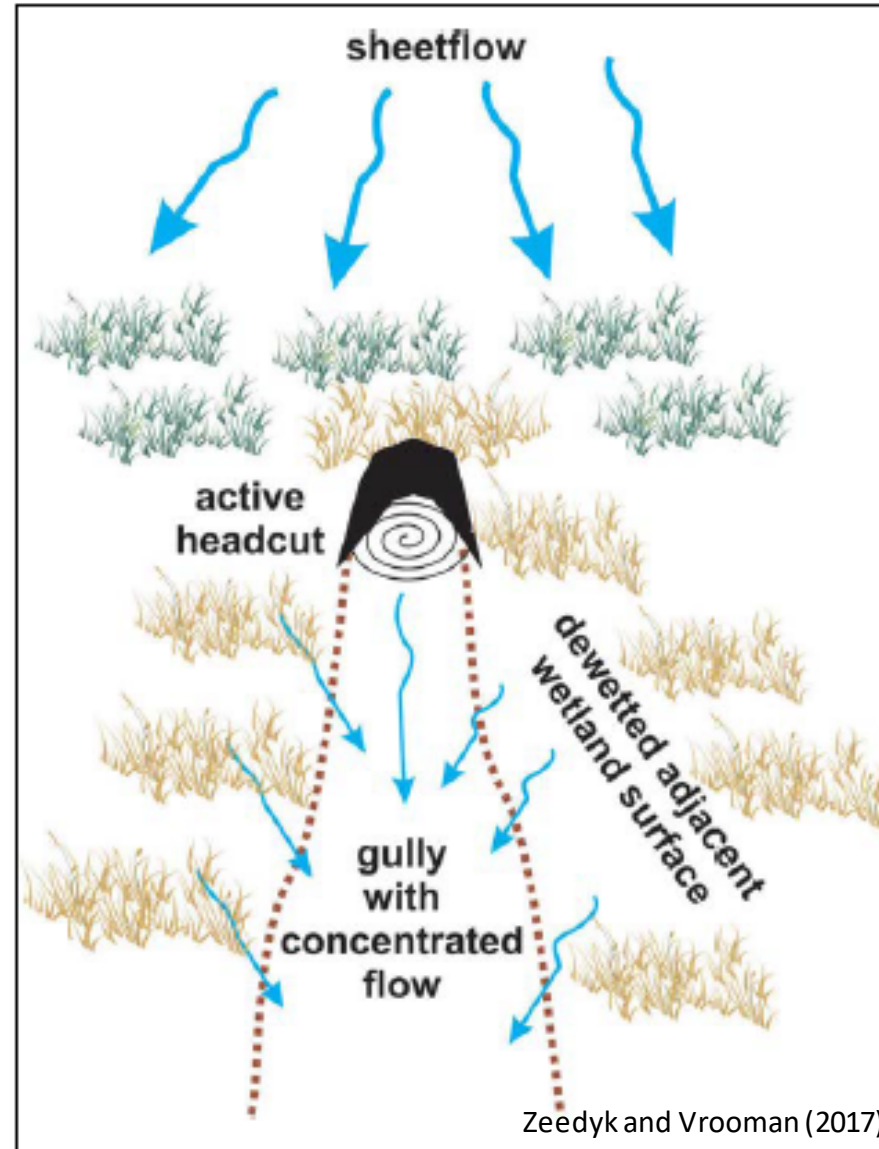
“Sticks and Stones”



Bill Zeedyk, Restoration Specialist, New Mexico



Sheetflow vs. Concentrated Flow



Headcut Control Structures



Zuni Bowl



Log and Fabric
Step Falls



Rock Rundown



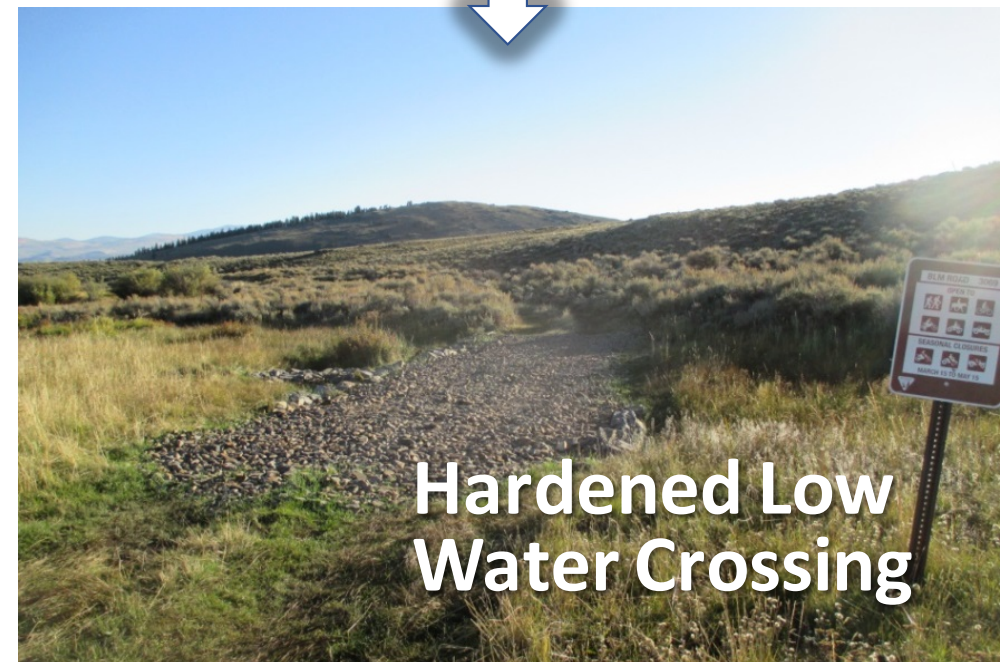
Rock Layback



Rock Mulch

Grade Control Structures

One Rock Dam



Hardened Low Water Crossing

Flow Dispersal Treatments

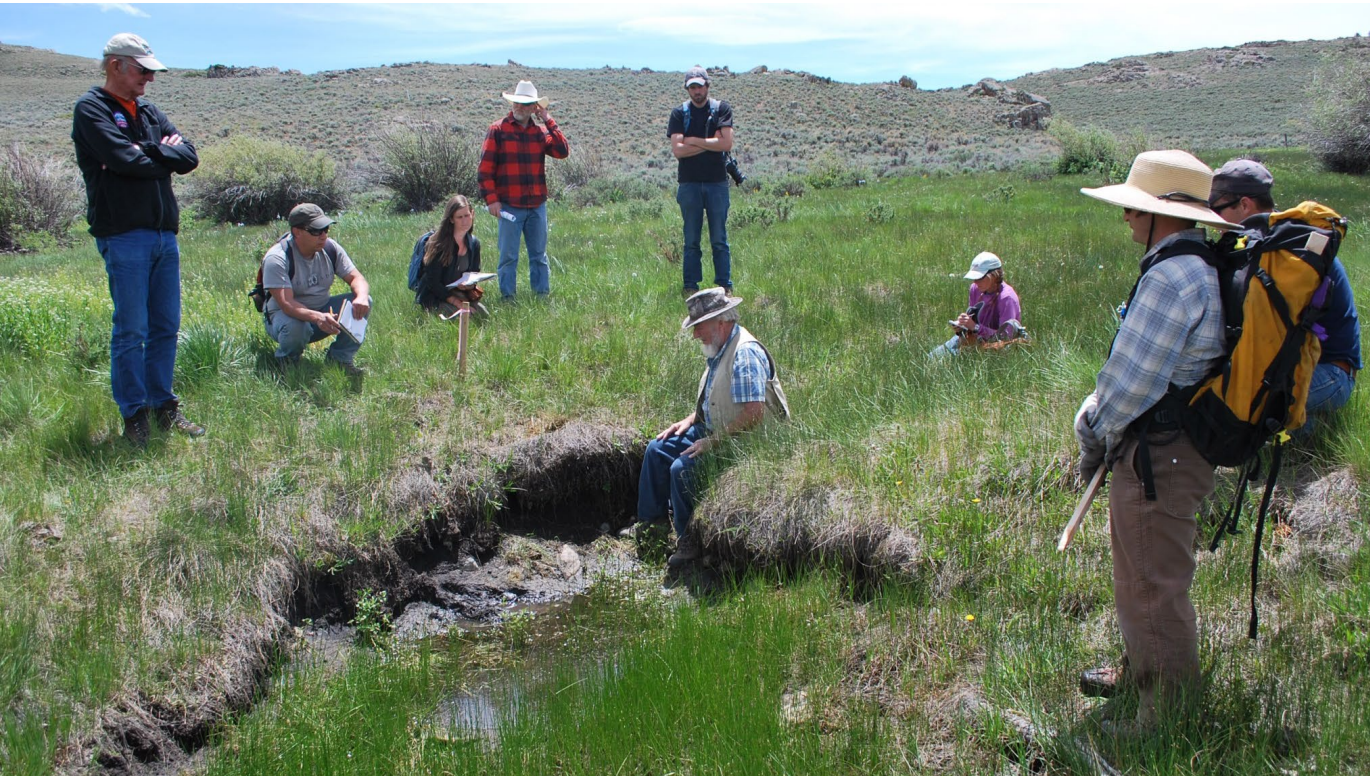
Media Luna



Drift Fence

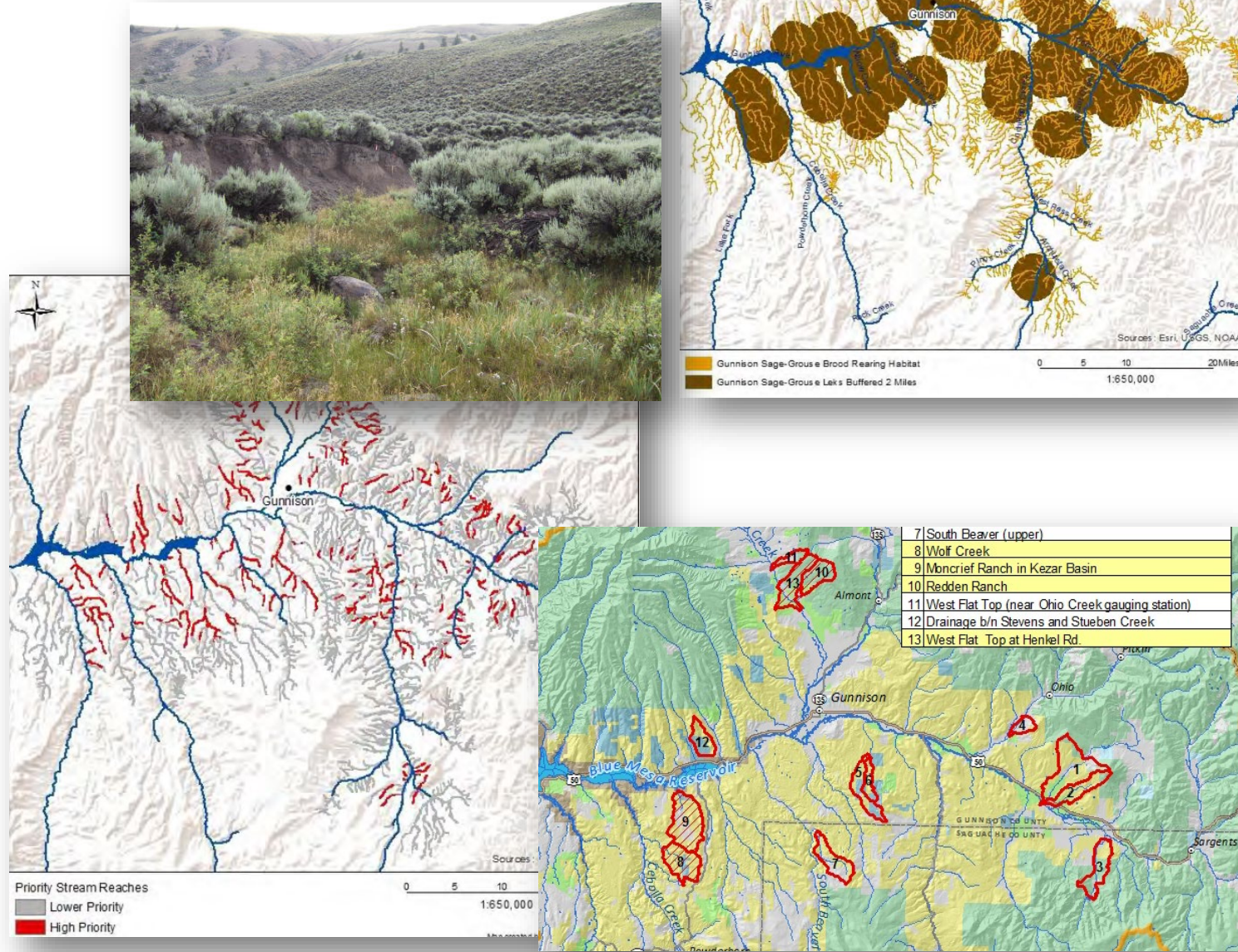


Pick the low hanging fruit first



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



Since 2012:

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

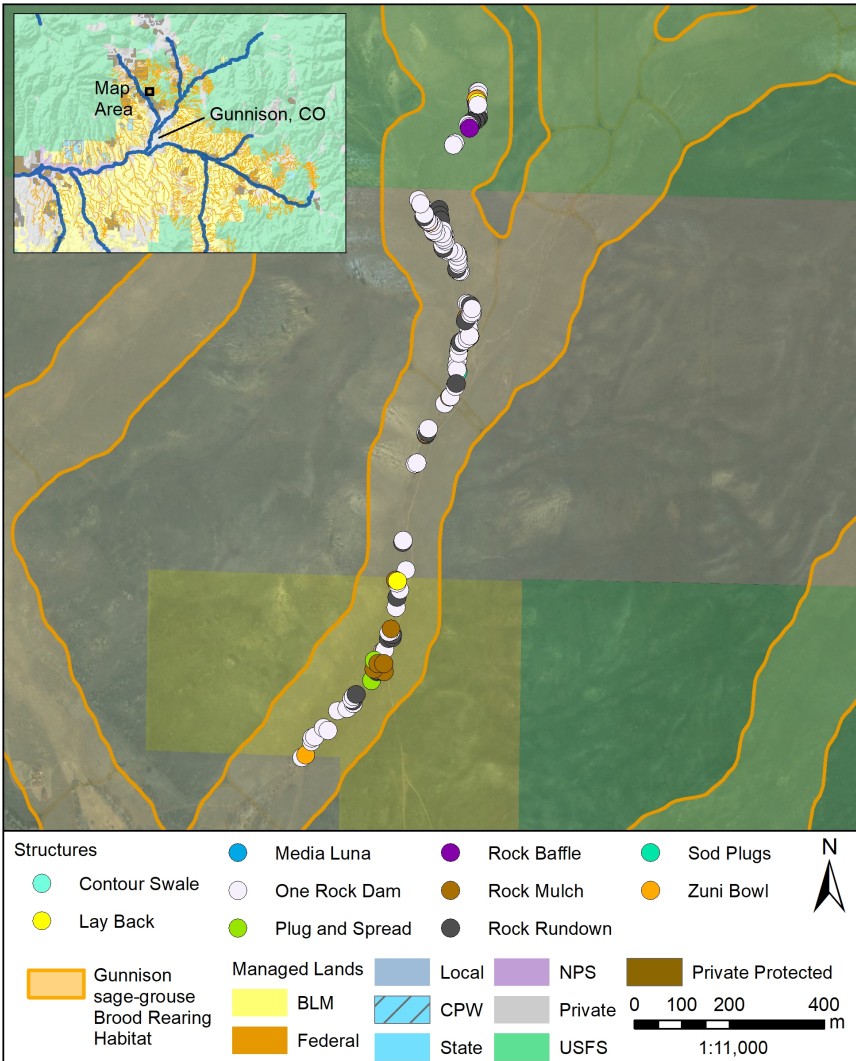


Photo courtesy : Nate Seward



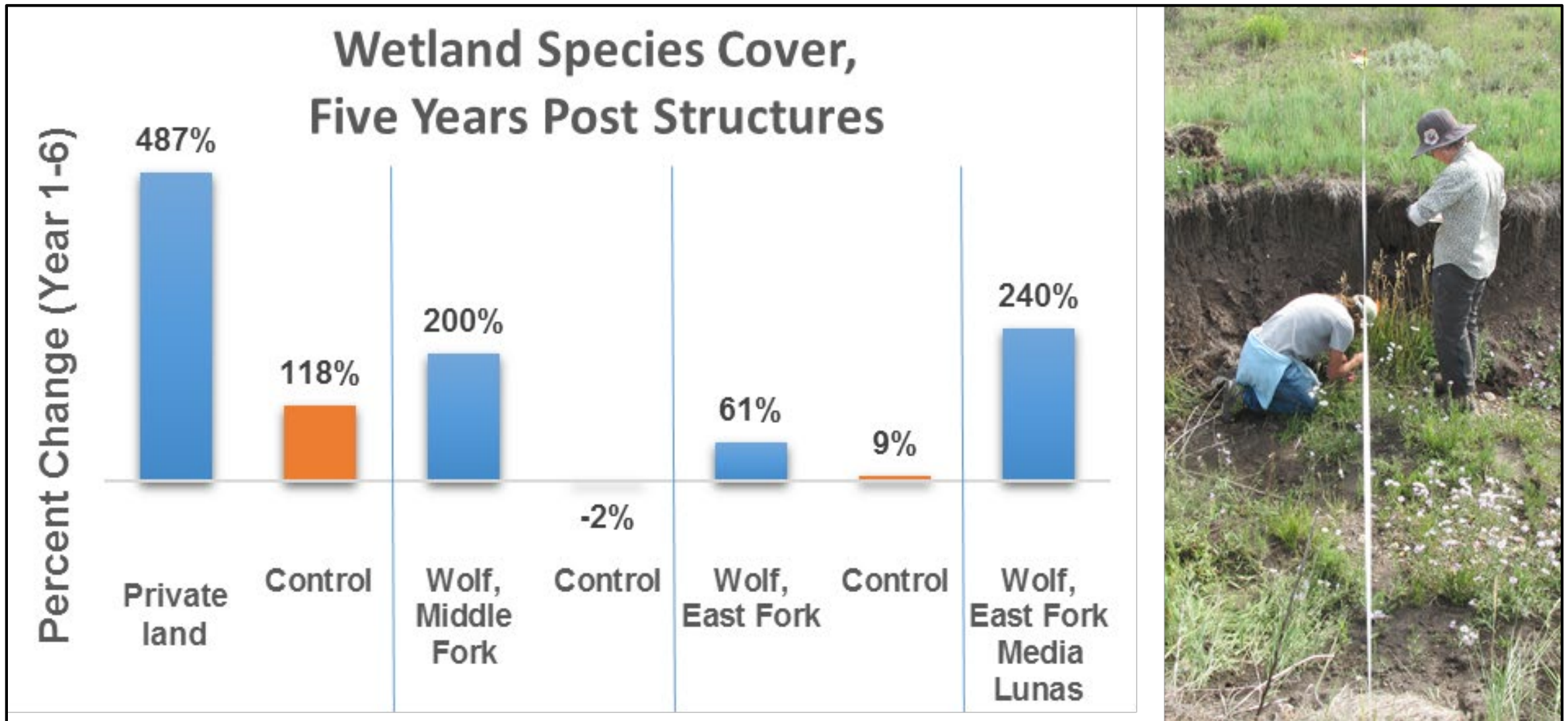


Figure 23. Wetland species cover change in treatment (blue) and control (orange) sites five years post-restoration in Gunnison Basin, CO (Rondeau et al. 2018). Figure and photo by: Renee Rondeau

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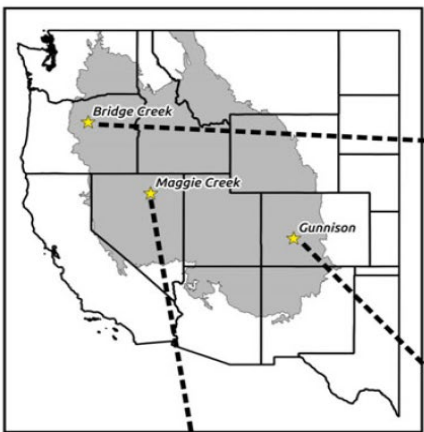
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KEZAR C3

RECONYX



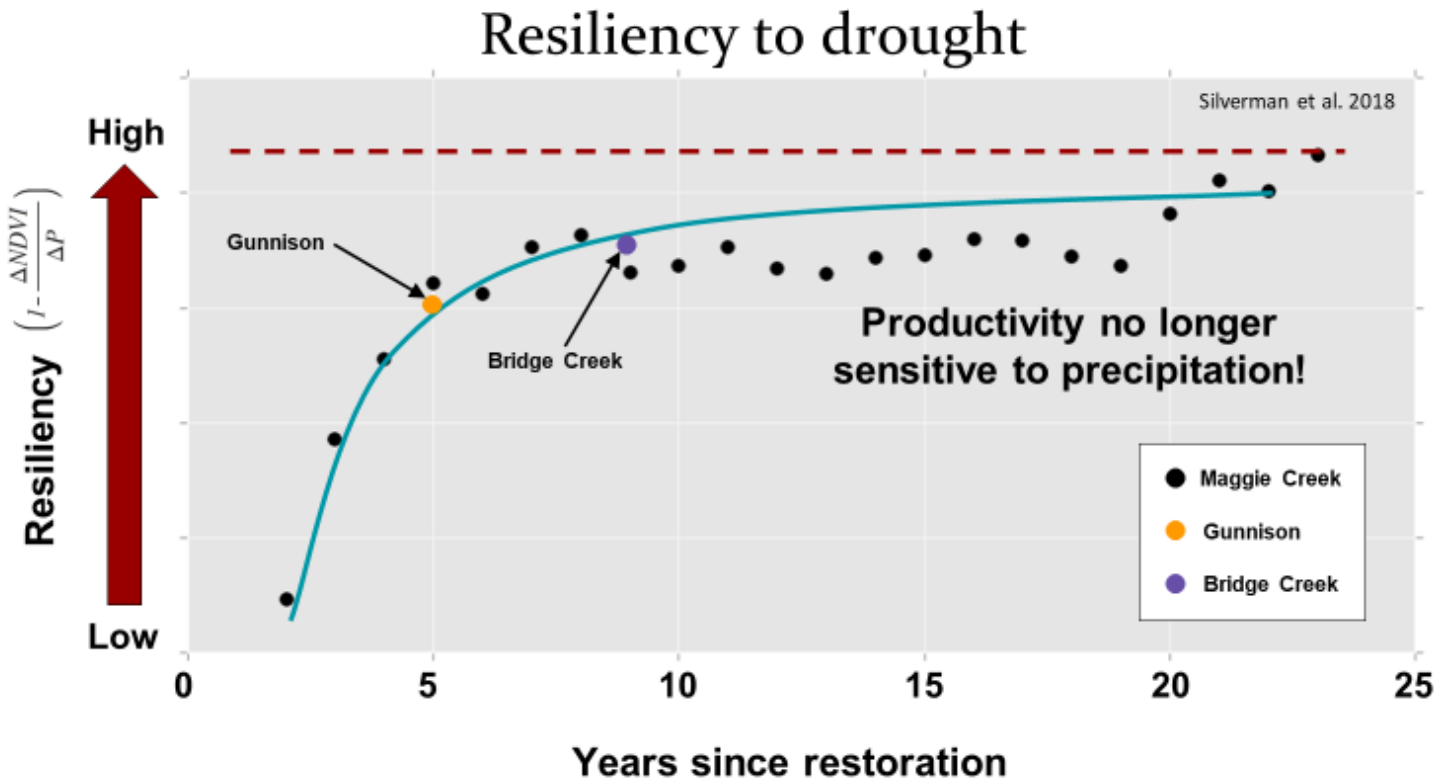
Beaver Dam Analogues



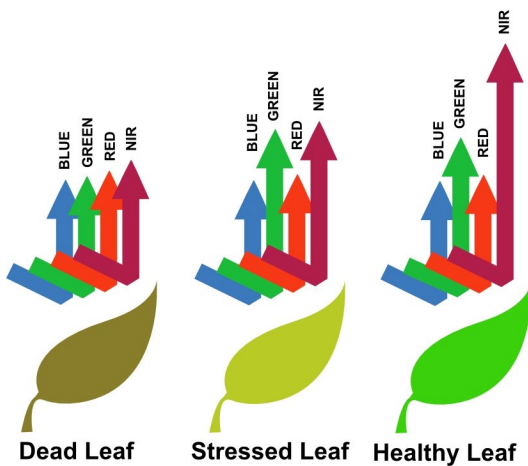
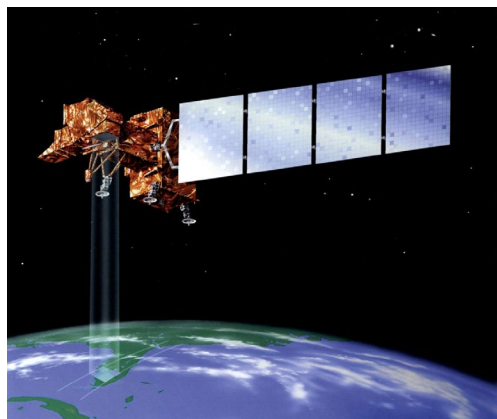
Grazing Management



Zeedyk Structures

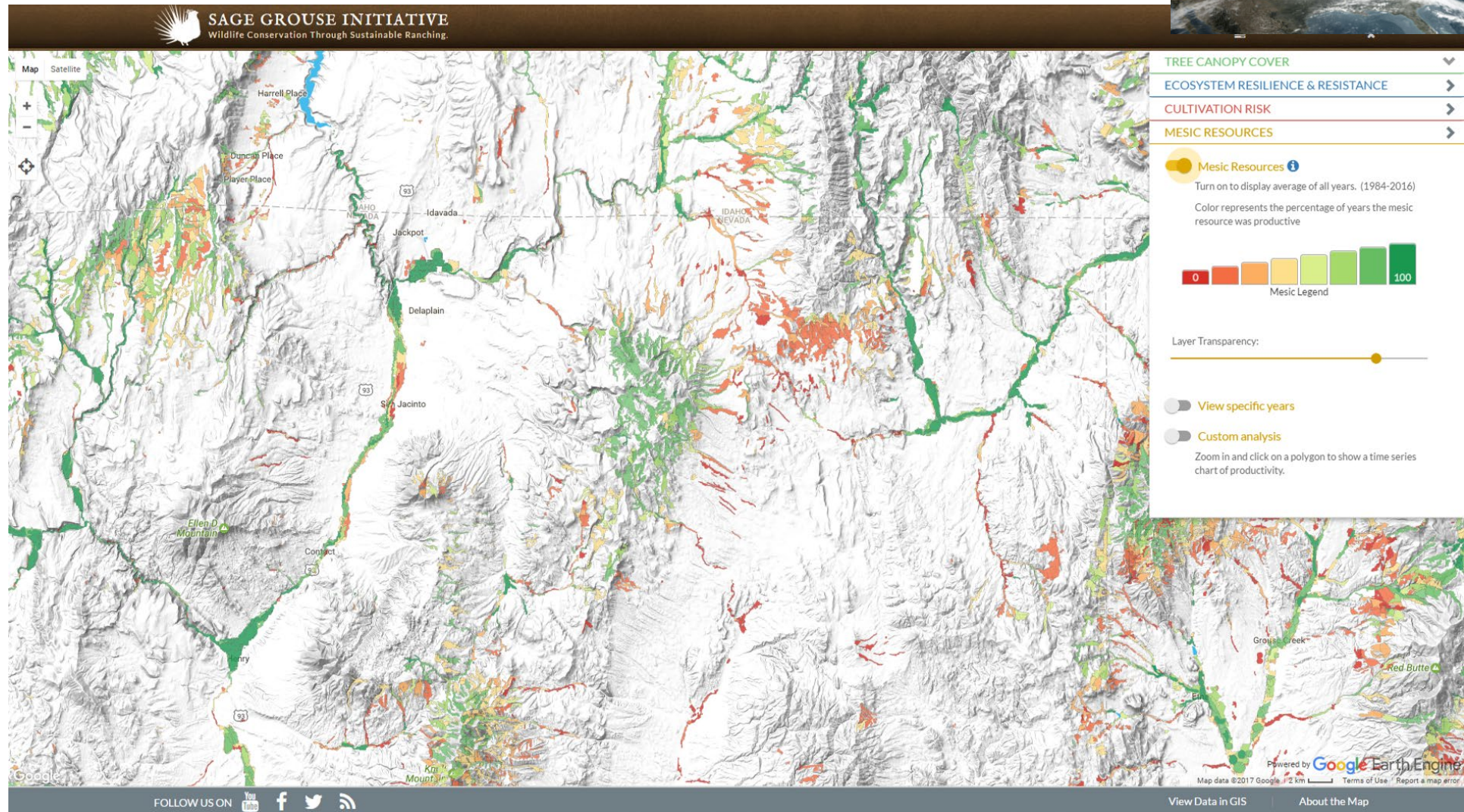


Restoration increased productivity **+25%** and kept plants greener longer



NDVI

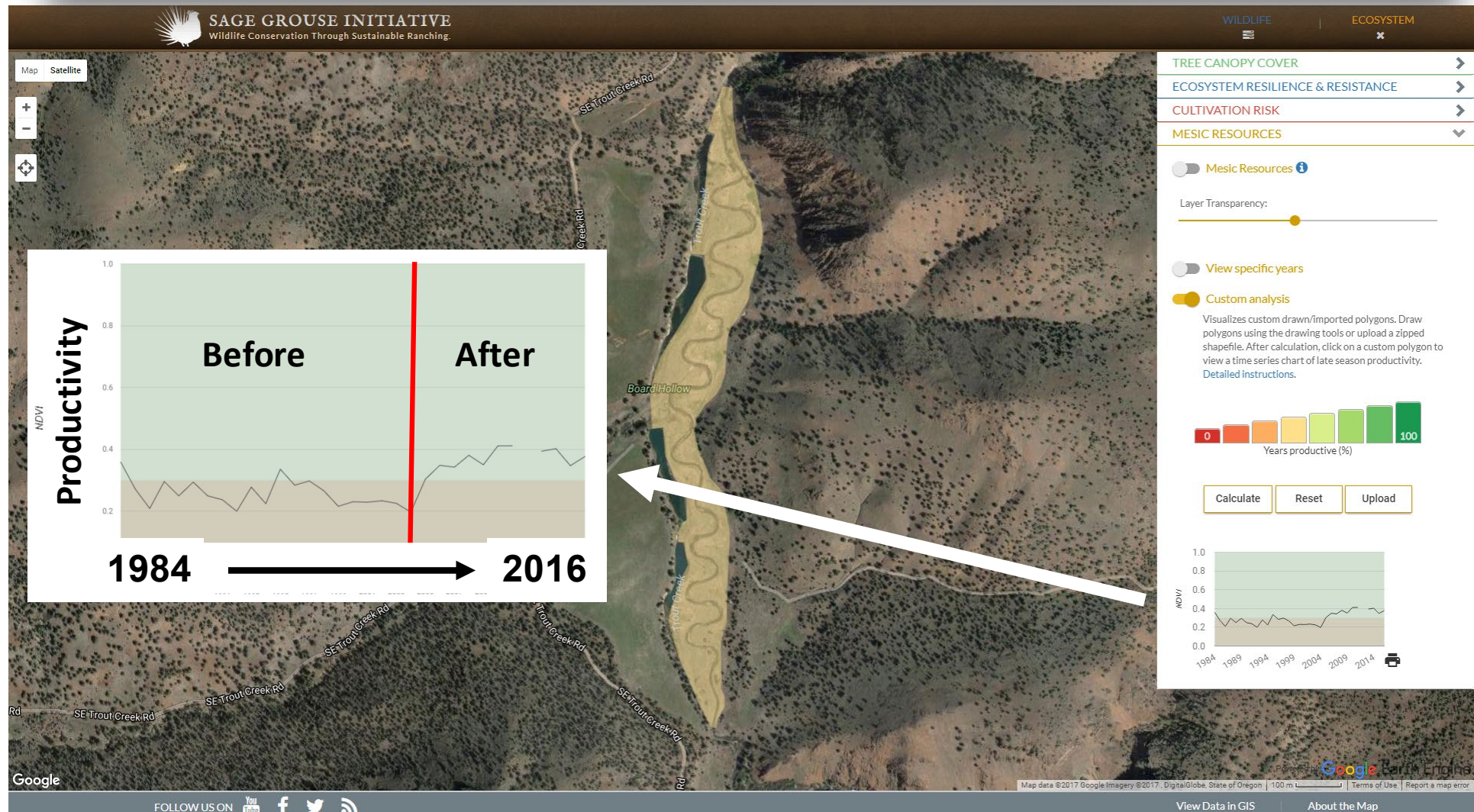
Tools you can use





☒ Custom analysis

Upload



Resources

- SGI Water is Life Campaign materials and tools:
<https://www.sagegrouseinitiative.com/water-is-life/>
- 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/>
- Low-Tech Process-Based Restoration of Riverscapes – On-Demand Training Videos:
<http://lowtechpbr.restoration.usu.edu/resources/Topics/>
- Low-Tech Meadow Restoration webinar: <https://www.youtube.com/watch?v=f5PZzIxEAts>



United States Department of Agriculture

