Wetland Meadow and Riparian Restoration for Climate Change Resiliency in the Gunnison Basin

A Collaborative Project of the Gunnison Climate Working Group

By

Andrew Breibart, Bureau of Land Management

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Upper Gunnison Basin, Colorado
3 Climate Scenarios for 2035

Climate models using 72 models

2 emissions scenarios

Hot & Dry
Feast & Famine
Warm & Wet
Ecological Vulnerability Assessment

- 24 ecosystems
- 74 species

Rated highly vulnerable:
- Montane wetlands
- Riparian ecosystems
- Gunnison sage-grouse
Riparian/Wetland Habitats
Significant Impacts to Brood-Rearing Habitat Associated With Climate Change

- Increased temperatures and less precipitation as well as an increase in severity and frequency of droughts are likely to lead to:
  - Fewer mesic meadows
  - Less wetland vegetation
  - Less cover
  - Fewer insects
Goal

Build resilience by restoring hydrologic function of persistent wet meadows to help the Gunnison sage-grouse, other species & ranchers adapt to a changing climate.
Accelerated Erosion

Obligate and facultative wetland species-sedges and rushes

Facultative upland species-Potentilla and Artemisia
Stream Reaches for Potential Treatment

Criteria:

1. Brood-rearing habitat

2. Performance during drought & wet years based on NDVI

3. Close proximity to grouse lek

Yellow/green: reaches w/highest potential for positive response

Black: priority catchments containing stream reaches with potential for positive response

Chapman 2015
Priority Restoration Sites

Kezar Basin Private

West Flat Top USFS & Private

Wolf Creek BLM & Private

Chance Gulch BLM & Private
Techniques

• Grade Control/Old Paradigm
  ✓ Hardened Low Water Crossing
  ✓ Lay Back
  ✓ Log and Fabric Step Falls
  ✓ One Rock Dams (ORD)
  ✓ Rock Run Down/Rock Mulch Rundown
  ✓ Zuni Bowl

• Reconnect Floodplains and Wetlands /New Paradigm
  ✓ Hardened Low Water Crossing
  ✓ Media Luna
  ✓ ORD
  ✓ Plug and Spread
  ✓ Sod Dams

• Drift Fences/Behavioral Change
Techniques
Grade Control and Flow Dispersal

Mesa Verde National Park 13th century

Gunnison Basin 21st century

Drought intervention-magnitude and duration of flood events. Slows water and spreads into banks and wetlands.
Sediment Capture from 2015 Spring Rains
Monitoring Response

- Vegetation
- Soil moisture & temperature
- Groundwater wells & water levels
- Geomorphology
- Insects
- Neotropical migratory birds
Management Objectives

• Increase the cover of native wetland species (obligate and facultative) in the restored portion of the treated properties between 2012 and 2017.

• Decrease the average cover of upland species in the restored portion of treated properties between 2012 and 2017.
<table>
<thead>
<tr>
<th>Site Name</th>
<th>Year established</th>
<th>No. of years</th>
<th>No. of transects associated with structures</th>
<th>No. of controls</th>
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<th>Photo points</th>
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<td><strong>Total</strong></td>
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<td><strong>35</strong></td>
<td><strong>174</strong></td>
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</table>
Redden: 2012-2015

Percent Cover of Wetland Spp.

REDDEN WETLAND SPECIES

2012  GRT32_0 m
Control

2013

2015
Wolf Creek Wetland Species Cover: 2012-2014

WOLF, MIDDLE FORK WETLAND SPECIES

Percent Cover of Wetland Spp.

- Structures
- Control

2012 2013 2014

Rondeau 2014
Drift Fence: West Flat Top

- Goal: reduce cattle trailing through meadow

2013 ➔

- While not excluded from area, cattle found alternate route through upland to get to stock tank.

- Over time, trailing should be eliminated.

2014 ➔

Rondeau 2014
2012-2015 Progress

- 23 stream miles, 7 sites, 750 structures
- Treated 125 acres, benefited 990 acres
- >150 volunteers, crews, students
- NRCS adopted practices
- Programmatic BA with USFWS to cover all restoration treatments in Gunnison sage-grouse habitat.
Lessons Learned

- Watersheds don’t recognize fences.
- Collaboration is key
- Outreach and training
- Monitor response
Thanks to Partners & Supporters!
Interested in helping or learning more about this project? Contact Betsy Neely at 720-974-7015 or bneely@tnc.org or Andrew Breibart at 970-642-4944 or abreibart@blm.gov.

We’re always looking for some muscle!