APPENDIX B: Enhancing Ecosystem Resilience of Riparian/Wet Meadow Habitats In the Upper Gunnison Basin

Restoration Sites: Upper Gunnison Basin (2012-2014)

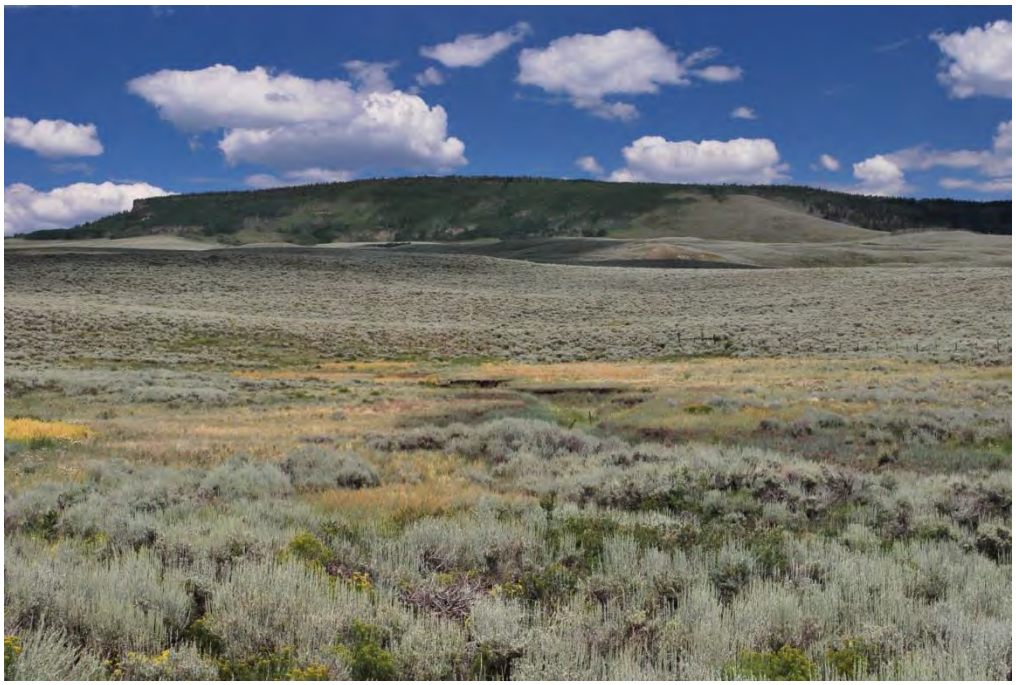
1. CPW Ballantyne State Habitat Area, Chance Gulch, tributary of Tomichi Creek, Gunnison County.

2. Moncrief Ranch, Kezar Basin, along West Smith Creek, a tributary of Cebolla Creek, south of Blue Mesa Reservoir.

Final Report to Colorado Parks and Wildlife: December 15, 2014
The Nature Conservancy and the Gunnison Climate Working Group

Restoration Sites

3. Alluvial fan above unnamed tributary of Ohio Creek, West Flat Top Mountain, US Forest Service lands above Redden Ranch, August 2014.



4. West Flat Top Mountain at Henkel Road, US Forest Service lands.

Restoration Sites

5. Kaichen State Habitat Area, Wolf Creek, tributary of Cebolla Creek (photo by Claudia Strijek).

6. Redden Ranch, West Flat Top Mountain, unnamed tributary to Ohio Creek.

Assessing Restoration Needs & Staking Structures

7. Bill Zeedyk evaluating restoration needs to address a head cut at Chance Gulch with BLM, WRV, NRCS and BIO-logic, June 2014

8. Ben Stratton, hydrologist, and Suzie Parker, biologist, US Forest Service, stake location for a one rock dam rock structure at West Flat Top Mountain, June 2014.

Hauling Rock to Restoration Sites & Low Water Crossing

9. Gunnison Gravel delivering rock to staging area at Chance Gulch, July 2014.

10. Gunnison Gravel front-end loader builds a low water crossing at Chance Gulch, August 2014.

Monitoring Vegetation Response

11. Gay Austin, Bureau of Land Management, reads vegetation transect, while Wendy Brown, local volunteer, inputs data onto iPad in Chance Gulch, August 2014.

12. Renee Rondeau, Colorado Natural Heritage Program, and Gay Austin, Bureau of Land Management, identify a plant during the vegetation monitoring at Chance Gulch, August 2014.

Field Tour and Training for Partners & Field Crews

13. Bill Zeedyk, restoration expert, leads field tour of Wolf Creek for representatives of Western State Colorado University, Upper Gunnison River Water Conservancy District, and others as part of training to kick off the field season, August 2014.

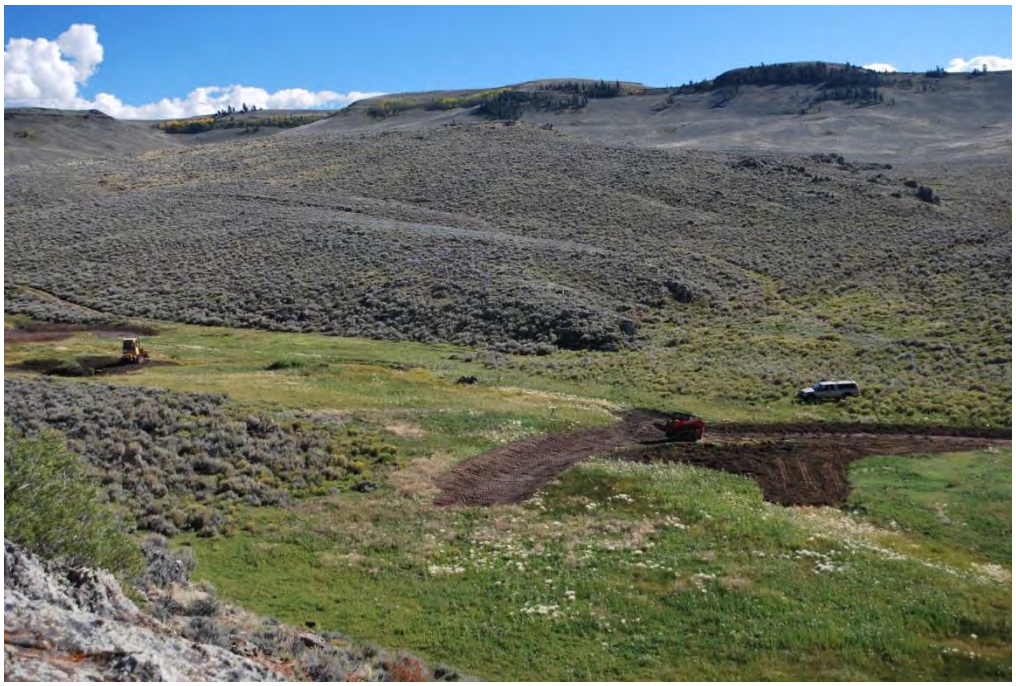
14. Hands-on training by Bill Zeedyk with Western Colorado Conservation Corps youth field crew members and Chayla Rowley, Natural Resources Conservation Service engineer, August 2014.

WCCC Completes Rock Structures

15. Western Colorado Conservation Corps, Nathan Seward, CPW, Bill Zeedyk and Shawn Conner celebrate completion of a Zuni bowl (center) with one rock dam (foreground) at Chance Gulch, August 2014. Photo: Andrew Breibart, BLM.

16. Western Colorado Conservation Corps field crew complete one rock dam structure at West Flat Top Mountain on US Forest Service lands above Redden Ranch, consisting of locally collected volcanic rock, August 2014.

Other Restoration Techniques



17. Stonefly Earthworks builds a "double bay plug and pond" structure at Moncrief Ranch, Kezar Basin, to rewet a meadow and reduce invasive species. NRCS planted native seed on the disturbed soil, September 2014.

18. Ted Harter, Ranch Manager, Moncrief Ranch, inspects a drift fence, a line of fence placed across the stream channel, to reduce trailing and soil compaction by livestock and wildlife.

Community Multi-Day Volunteer Event

19. Gunnison High School Biology Class students and teachers build a one rock dam at Chance Gulch, Wildlands Restoration Volunteer event, September 2014.

20. Wildlands Restoration Volunteers Crew Leader Mark Flower hauls rock with help of volunteers on West Flat Top Mountain, US Forest Service lands, September 2014.

Community Multi-Day Volunteer Event

21. Western State Colorado University Ecological Monitoring class completes a one-rock dam in Chance Gulch, directed by Nathan Seward, CPW (in background).

22. Wildlands Restoration Volunteer Crew Leader Clayton BonDurant (low center) and volunteers complete Zuni bowl to control a head cut on West Flat Top Mountain on US Forest Service lands, September 2014.

Community Multi-Day Volunteer Event & Outreach

23. Bill Zeedyk explains the function of a one rock dam, a grade control structure, to volunteers and partners at West Flat Top Mountain during the Wildlands Restoration Volunteer five-day volunteer event, September 2014.

24. Andrew Breibart, BLM hydrologist, leads a field tour of Chance Gulch restoration structures for Western State Colorado University Masters of Environmental Management students, August 2014.

Outreach Activities

25. Shawn Conner, BIO-Logic, explains the restoration techniques to the Western Colorado Conservation Corps field crews, US Forest Service, National Park Service and other partners at West Flat Top above Redden Ranch, USFS. August 2014.

26. Bill Zeedyk and Liz With-NRCS lead field tour of Kezar Basin for Colorado State University graduate students, NRCS and the Gunnison Conservation District.

Team Members & Restoration Experts

27. Project team (from lower left): Andrew Breibart-BLM, Jim Cochran-Gunnison County, Matt Vasquez-USFS, Renee Rondeau: CNHP, Betsy Neely-TNC, Gay Austin-BLM and Nathan Seward-CPW (with daughter Reilly). With Ian Davidson, NFWF (upper left). Photo by Luann Rudolph, TNC.

28. Restoration experts Shawn Conner, BIO-Logic, Inc. and Bill Zeedyk, Zeedyk Ecological Consulting discussing placement of rock structures in Chance Gulch.

Before and After Photographs

29, 20, 31. Before and after pictures of Kaichen State Habitat Area, Wolf Creek Ranch meadow showing building of media luna, one year later and two years later. The media luna was effective in spreading water across a drying meadow, increasing native wetland plants such as beaked sedge, and reducing invasive species such as Canada thistle. Photographs by Renee Rondeau, CNHP and Betsy Neely, TNC.

2012

2013

2014

Before and After Photographs

32, 33, 34. Photographs taken about 100 yards below a media luna, Kaichen State Habitat Area, Wolf Creek Ranch, along Wolf Creek, an intermittent tributary of Cebolla Creek. Photographs by Renee Rondeau, CNHP.

2012: Sedges were limited to far left (top)

2013: Sedges have increased towards the right (middle)

2014: Sedges have increased all the way to the right and standing water was approximately one inch deep or deeper throughout the area (bottom)

Before and After Photographs

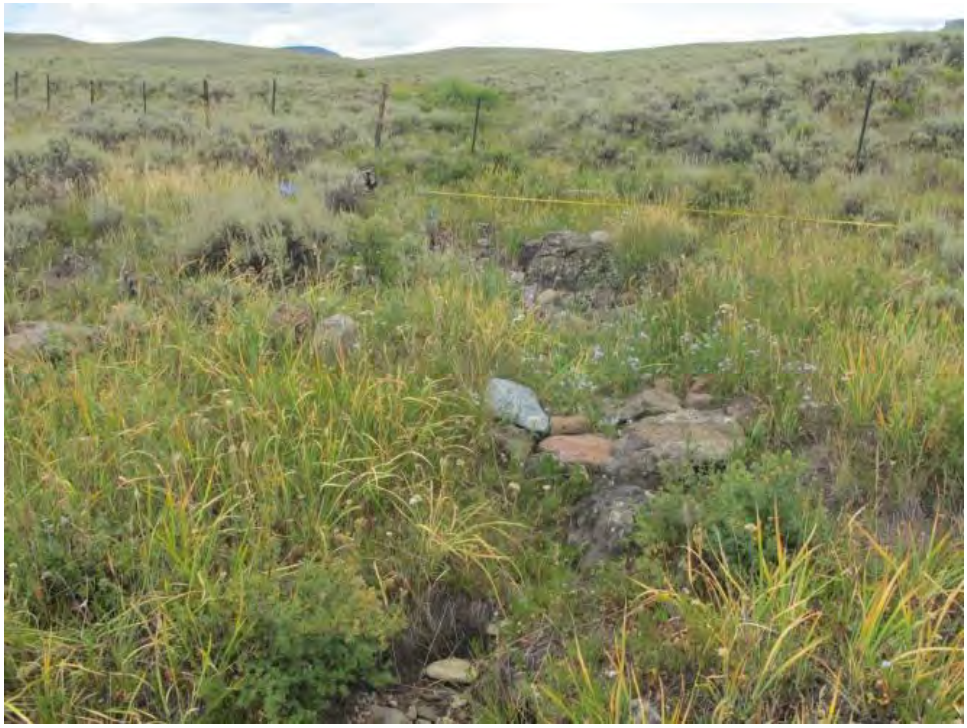
2013

2014

35, 36. Repeat photograph of a meadow with drift fences built in 2013 across a meadow at West Flat Top on USFS lands. Preliminary results indicate that the fences are effective in diverting cattle from their trail, reducing trailing and soil compaction. Renee Rondeau, CNHP.

Before and After Photographs

2013



2014

37, 38. Picture taken shortly after installation and one year later showing positive response to a Zuni bowl (above near fence), built to control a head cut, and a one rock dam (below), built to capture sediment to raise the bed of the channel, and recruit vegetation on West Flat Top Mountain on US Forest Service lands. Photographs by Renee Rondeau, CNHP.

Before and After Photographs

2013

2014

39-40. Control (transect placed above treatment area) on BLM lands at Wolf Creek, a tributary to Cebolla Creek. Photographs by Renee Rondeau, CNHP.

Before and After Photographs

2012

2013

41-42, Redden Ranch: One rock dam before installation and one year later. Note the grasses are filling in above and within the structures. Photographs by Renee Rondeau, CNHP.