



U.S. Department of the Interior
Bureau of Land Management

Wyoming

Pinedale Anticline Project Office

Monitoring and Mitigation Project Summary

March 2020



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Pinedale Anticline Project Office Monitoring and Mitigation Projects

Introduction

The Pinedale Anticline Natural Gas Field is located in the Upper Green River Basin of west-central Wyoming, south of Pinedale. The Anticline's 198,000 acres of rolling sagebrush are 80 percent federally owned. The area has one of the richest concentrations of natural gas in the United States, currently estimated at more than 25 trillion cubic feet.

The Pinedale Anticline Project Office (PAPO) was created by the Pinedale Anticline Project Record of Decision (ROD) to provide overall management of on-site monitoring and off-site mitigation activities. The PAPO obtains, collects, stores, and distributes monitoring information to support the adaptive management process and analyzes mitigation projects primarily focusing on mule deer, pronghorn and Greater sage-grouse, but also addresses raptor, pygmy rabbit, and white-tailed prairie dog habitat.

The PAPO is staffed with employees of the Wyoming Department of Agriculture, Wyoming Game & Fish Department, Wyoming Department of Environmental Quality and the Department of the Interior/Bureau of Land Management.

This document is a compilation summarizing PAPO-funded projects, mitigation and monitoring that is either completed or in progress at this time. Many of these projects are in partnership with other community non-profit organizations, private sector businesses and residents, and local government.

Funds for the PAPO mitigation and monitoring projects are held by the Wyoming Community Foundation in a trust account and are administered by the PAPO.



Air Quality

UW Spatial Air Quality Assessment-PASQUA (Monitoring) (2009-2010)

The project consisted of an air quality spatial measurement and survey approach for improving emission inventory factors, along with VOC input data for ozone modeling associated with the PAPA.

PAPO Funded: \$543,001/Final Cost: \$543,001

Status: Completed

American Recovery & Reinvestment Act / Diesel Emissions Reduction Act (2010)

The State of Wyoming DEQ successfully created a project that provided emissions control solutions for nine Sub-Recipients' non-road construction equipment servicing the natural gas fields in Sublette County, Wyoming. The purpose of the project was to achieve significant reductions in diesel emissions pollution (nitrogen oxides, particulate matter, hydrocarbons, and carbon monoxide). Working with the nine Sub-Recipients, twenty (20) pieces of equipment were identified, totaling twenty-five (25) eligible engines.

The monetary contributions from ARRA funds were offered by the Environmental Protection Agency (EPA). The funds assisted in offsetting costs while providing solutions such as engine retrofits of engine upgrades and engine repowers. The State of Wyoming DEQ administered the Diesel Emission Reduction Act (DERA) funds to eligible Sub-Recipients for installation of emission controls on their equipment. Detailed information regarding the DERA program and ARRA funding are available on EPA's website at <http://www.epa.gov/otaq/eparecovery/>. The nine Sub-Recipients are: A&T Welding, Waller's Trucking, Basic Energy Services, R.S. Bennett Construction, Randy R. Pitt Construction, Koch Construction, Terry R. Pitt Construction, Reed's Construction, and Green River Rock.

PAPO Funded: \$262,470/Final Cost: \$262,470 (JIO co-funded)

Status: Completed

Cooperating Partners: EPA



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Wood Stove Changeout (2010)

The Wood Stove Change-out Program created an opportunity for Sublette County residents to replace older, non-certified wood stoves for newer, less emitting EPA-certified units. Residents, business, public or private organizations were encouraged to register for a certificate that provided up to \$3,500 towards the purchase and installation of an EPA-certified wood or natural gas stove to replace an inefficient unit. Certificates were awarded in a raffle. After installation of these new stoves, estimated emissions reduced to about 1.4 tons per year.

PAPO Funded: \$103,750/Final Cost: \$103,750 (JIO Contributed \$105,485)

Status: Completed

Ozone Mitigation (2017) This project was initiated to address increasing issues with ozone presence in the Upper Green River Basin. With funds provided by the JIO Board, the Team solicited project ideas from industry and the public. These funds were allocated to the DEQ's Ozone Precursor Emission Reduction Pilot Program.

PAPO Funded: \$250,000

Status: Ongoing

Cooperating Partners: Wyoming DEQ



Wildlife Mitigation Projects

Mesa Fertilization (2010)

A fertilization treatment was a pilot mitigation project for a small area of sage brush on the Mesa to increase the quality and quantity of forage primarily for wintering mule deer. The initial treatment included applying nitrogen fertilizer 468 acres of sagebrush in crucial mule deer winter range on the Mesa.

PAPO Funded: \$46,000/Final Cost: \$33,646

Status: Completed

Partners/Cooperators: BLM Pinedale Field Office, Wyoming Game and Fish Department



Wind River Front Wildlife Friendly Fence Project (2010)

This project consisted of fence modification along the Wind River Front within the Red Desert to Hoback mule deer migration corridor. Over 200 miles of fence were identified for modification within the migration corridor and this PAPO contribution helped to support these modification efforts.

PAPO Funded: \$250,000/ Final Cost: \$250,000

Status: Completed

Mesa Fertilization (2011)

This on-site mitigation project was a continuation of the initial pilot fertilization treatment of sagebrush on the Mesa. An additional 1,000 acres of sagebrush was fertilized with nitrogen for the objective of increasing the quality and quantity of vegetative forage in mule deer crucial winter range.

PAPO Funded: \$215,700/\$Final Cost: \$54,542

Status: Completed

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Partners/Cooperators: BLM Pinedale Field Office, Wyoming Game and Fish Department

Sommers/Grindstone Conservation Project (2011)

This project consisted of three distinct conservation projects: 1) the Sommers/Todd Place project, 2) the Scott Place project, and 3) the Duke Place project. All three combined projects encompassed approximately 19,000 deeded acres at two critical locations along the Green River in northern Sublette County along with an important corridor and buffer area between the Bridger Teton National Forest and the Green River. This project included conservation practices to maintain and enhance valuable wildlife habitat, to preserve a significant historical site, and to provide public fishing access.

PAPO Funded: \$6,000,000/Final Cost: \$6,000,000 This project was co-funded with JIO funds.

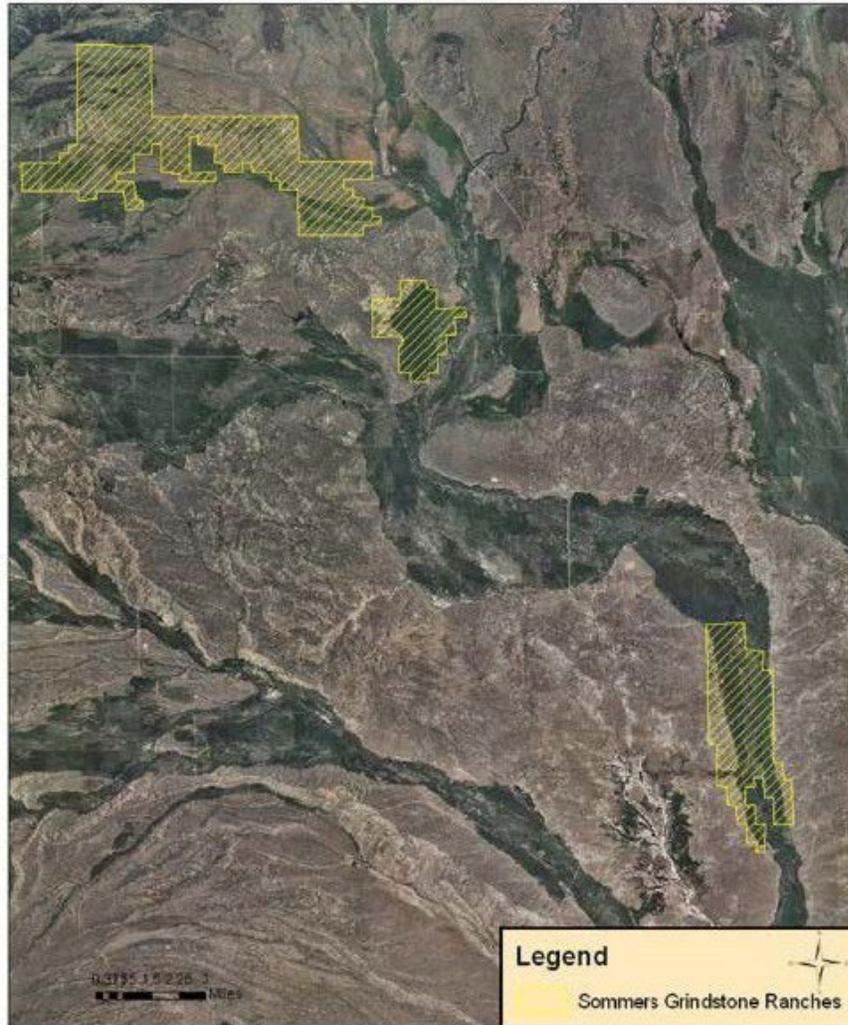
Status: Completed

Partners/Cooperators: Albert Sommers & Maggie Miller – Landowners, Numerous other financial partners





SOMMERS-GRINDSTONE PROJECT



Pinedale Anticline Reclamation Seed Trial (2011-2012)

A trial seed mix was developed by local agency biologists to improve species diversity of reclaimed areas on the Pinedale Anticline. The mix specifically targeted mule deer and Greater Sage-grouse habitat. Twenty acres of pipeline right of way located within the Pinedale Anticline was seeded with this beneficial seed mix to improve mule deer and Greater Sage-grouse habitat.

PAPO Funded: \$5,243/Final Cost: \$5,243

Status: Completed

Cooperating Partners: Wyoming Game and Fish Department, Wyoming Department of Agriculture, Natural Resources Conservation Service District, BLM

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Mesa Fertilization Data Collection (2012)

The objective of this project was to collect quantitative data for the 2010 and 2011 fertilization projects to determine effectiveness of treatments. Results of the collected data indicated that while fertilization of sagebrush may increase biomass, nutritive value of the vegetation was not enhanced, but rather may have actually diminished. The final report, entitled *Mesa Fertilization Data Collection* (WGFD Service Contract No. 07SC0403657, 15 Feb 2015) can be found on the PAPO website.

PAPO Funded: \$100,000/Final Cost: \$79,720

Status: Completed

Partners/Cooperators: BLM Pinedale Field Office, Wyoming Game and Fish Department

Mesa Habitat Improvement Project (2012)

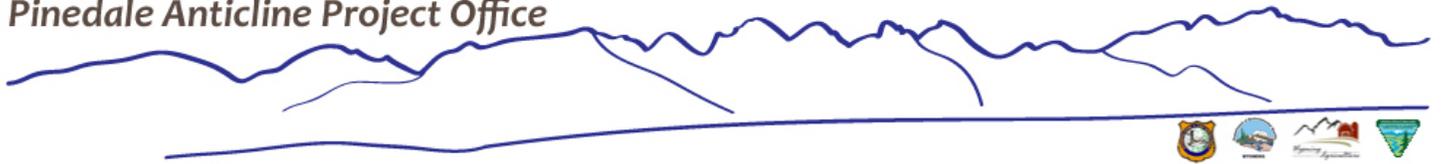
This project consisted of the installation of a water supply well to redistribute livestock away from reclaimed lands located in the Pinedale Anticline core development area. The water well includes an overflow area which provides water and forage for wildlife from early spring to late fall.

PAPO Funded: \$51,500, Upper Green River Cattle Assoc Funded: \$20,000/Final Cost:\$84,136

Status: Completed

Partners/Cooperators: Upper Green River Cattle Association, BLM

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Mesa Wildlife Friendly Fence Modification Phase I (2012)

This project consisted of retrofitting nearly 100-miles of existing fence to wildlife friendly specifications in mule deer, pronghorn, and Greater Sage-grouse crucial winter range on the Mesa. Phase I of this project modified approximately 45-miles of fence to wildlife friendly specifications. Additionally, over 10-miles of fence were marked with fence indicators to decrease fence strikes by Greater Sage-grouse.

PAPO Funded: \$500,000/Final Cost: \$500,000

Status: Completed



Bald Eagle Key Habitats (2013)

This research project was to better understand key habitats for Bald Eagles by examining the potential relationship of eagle habitat use with the degree of anthropogenic landscape features associated with energy development. The data was used to ensure that future mitigation efforts targeted the most effective areas to protect the species. For more information, contact the BLM Pinedale Wildlife Resources Division.

PAPO Funded: \$60,000/Final Cost: \$60,000

Status: Completed

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Hoback Mitigation & Protection Project (2013)

This project complemented a state-wide effort to raise more than \$8,000,000 to purchase oil and gas leases for the extended protection of wildlife habitat.

PAPO Funded: \$200,000/Final Cost: \$200,000

Status: Completed

Sage-grouse Fence Marking for Collision Reduction (2013)

This on-site mitigation project consisted of marking 11-miles of fence within high priority areas of the PAPA to reduce fence strikes by Greater Sage-grouse.

PAPO Funded: \$6,330/Final Cost: \$6,643

Status: Completed

Sublette Mule Deer Mitigation Projects, Phase I (2013-2014)

The PAPO designed a multi-year mitigation project which included several acres of habitat treatments to specifically benefit mule deer in transitional seasonal ranges. These included the Ryegrass, Soapholes and Mesa areas. Implementation of these habitat treatments began in 2016 and will continue for several years.

PAPO Funded: \$300,000

Status: In progress



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Sublette Mule Deer NEPA and Cultural Work (2013-2016)

NEPA and cultural survey work were completed for Sublette Mule Deer Mitigation Projects Phase I.

PAPO Funded: \$130,000/Final Cost: \$127,499

Status: Completed

North Mesa Basin Reservoir Improvement (2014)

The purpose of this water well/reservoir improvement project is to provide a year-round water supply for livestock and wildlife while improving habitat for Greater Sage-grouse and mule deer on the North Mesa

PAPO Funded: \$47,500 Status: Ongoing

Partners: WDA, Grazing permittee



Mesa Wildlife Friendly Fence Modification Phase II (2014-2015)

This project completed the wildlife-friendly fence installation project on the Mesa to help minimize mortality of mule deer, pronghorn antelope, and Greater Sage-grouse. Phase II included modifying approximately 32-miles of fence to wildlife friendly and marking nearly 13-miles of fence with fence indicators to decrease fence strikes by Greater Sage-grouse.

PAPO Funded: \$175,000/Final Cost: \$175,000

Status: Completed

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Sage-grouse Mitigation Projects (2014 to present)

Below is a list of mitigation projects for Greater Sage-grouse occurring in the Duke's Triangle and Yellow point lek complexes. Projects were developed as identified in the "Pinedale Anticline Project Area Greater Sage- Grouse Mitigation Action Plan" (January 2014, Page 13, Table 4).

PAPO Funded: \$150,000

Status: In progress

East Fork Well-Windmill Conversion- project consisted of converting an existing water well windmill to solar power, establishing an overflow and subsequent green zone, and rehabilitating the site to enhance benefits to Greater Sage-grouse and other wildlife.



Before



After

Greater Sage-Grouse Crossing Signs – The project consisted of placing four Greater Sage-grouse crossing signs along high traffic roads in the Duke's Triangle area.

Fence Marking – This project consisted of marking over 15-miles of "high collision risk" fences for Greater Sage-grouse on-site within the Mesa, Duke's Triangle, and Yellowpoint lek complexes.

Duke's Triangle Sagebrush Mowing – This project consisted of mowing three areas near the active Lower Sand Springs Draw lek. The purpose of each mowing was to create lek habitat further away from highly developed industrial oil and gas areas. Mowed areas were seeded with forbs known to benefit Greater sage-grouse.



Mesa Sagebrush Mowing – The project consisted of mowing two areas to the west of the active Oil Road Fork lek. The purpose of mowing was to create lek habitat further away from highly developed industrial oil

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and gas areas. Mowed areas were seeded with forbs known to benefit Greater Sage-grouse.



Greater Sage-grouse Decoy Project – This project was in conjunction with the Duke’s Triangle and Mesa mowing projects. It employed a creative approach in which decoys were crafted and placed in mowed areas near existing active leks but further away from human disturbance. The decoys and audio systems playing grouse mating noises successfully lured males to the newly created lek sites. In 2015, up to 19 birds were observed strutting on the newly created lek sites near the Oil Road Fork Lek and in 2016 a maximum of 30 birds were observed at the new lek sites. In 2015, 16 birds were observed at the new lek sites near the Lower Sand Springs Draw lek and in 2016 40 birds were observed at the new lek sites.

Guzzlers – This project consisted of installing two guzzlers to provide water to Greater Sagegrouse and other wildlife.



Flushing Bars for Hay Land Producers (2015)

The purpose of this project was to offer the fabrication and installation of flushing bars to hay land producers located in close proximity to the PAPA. Hay meadows provide important brood rearing habitat for Greater Sage-grouse and flushing bars are designed to flush grouse and other birds to reduce injuries and mortalities from haying equipment.

PAPO Funded: \$15,000

Status: In progress



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Rolling Thunder Ranch Aspen Treatments (2015)

The primary goal of this project is to increase aspen regeneration which will benefit a variety of resident and migratory game and non-game wildlife species utilizing this species during their life cycles. It will directly improve habitat for focus wildlife populations wintering in the PAPA area such as mule deer, pronghorn and Greater Sage-grouse that also utilize the surrounding areas in spring, summer, and fall.

PAPO Funded: \$60,000/Final Cost: \$60,000

Status: Completed

Cooperating Partners: Rolling Thunder Ranch, Wyoming Game and Fish Department

Sagebrush Mower (2015)

This project was a 50% cost share with the Muley Fanatic Foundation to purchase a sagebrush mower that will be used for mitigation projects requiring this equipment.

PAPO Funded: \$10,000/Final Cost: \$9,188

Status: Completed

Cooperating Partners: Muley Fanatic Foundation, Wyoming Game and Fish Department



Webb Draw Sagebrush Treatment (2015)

This pilot project will evaluate the results of mechanical treatments in the sandy soils and big sagebrush communities located in Webb Draw.

PAPO Funded: \$2,000

Status: In progress

Weed Inventory and Treatment (2015)

This project consisted of surveying the delineated flanks of the PAPA north of Paradise Road for noxious or

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undesirable species and follow up treatment of any discovered infestations. No state or Sublette County listed noxious weeds were found during the inventory.

PAPO Funded: \$25,000/Final Cost: \$25,000

Status: Completed

Cooperating Partners: Sublette County Weed and Pest, BLM

Horse Creek Wyoming Range Weed Treatments (2016)

This project consisted of treating weeds within the Horse Creek area where a wildfire burned over 9,000 acres in 2007. The Sublette County Weed and Pest District has been working to manage weeds in the area with contributed funds from the PAPO. The Horse Creek area is an important habitat for mule deer that use the Pinedale Anticline.

PAPO Funded: \$25,000/Final Cost: \$24,989

Status: Completed

Partners/Cooperators: Sublette County Weed and Pest District



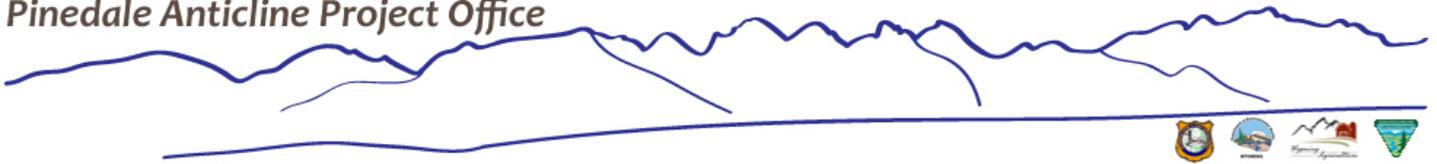
Red Desert to Hoback Mule Deer Migration Corridor (2016)

This project addressed supporting the integrity of the mule deer migration through conversion of 4 miles of fence to wildlife friendly standards.

PAPO Funded: \$24,000 Status: Completed

Partners: WGFD, WLCI, Rolling Thunder Ranch

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Great Conservation Idea (2016)

This project by the Sublette Conservation District is to provide a source of funds to be used for small projects with a relatively short turnaround time. The funds are to be used for projects benefitting sage-grouse habitat.

PAPO Funded: \$20,000 Status: Ongoing

Partners: Sublette Conservation District

Hoback Rim Wildlife Friendly Fence (2017)

Modification of fences within mule deer migration routes to wildlife friendly specifications to reduce stress and facilitate deer migration. The objective of this project is to modify 29.8 miles of existing fences across two ranches to wildlife friendly design. Secondly, about 2 miles of fence will be completely removed in a key riparian area.

PAPO Funded: \$178,800

Total Project Cost: \$703,700

Status: In Progress

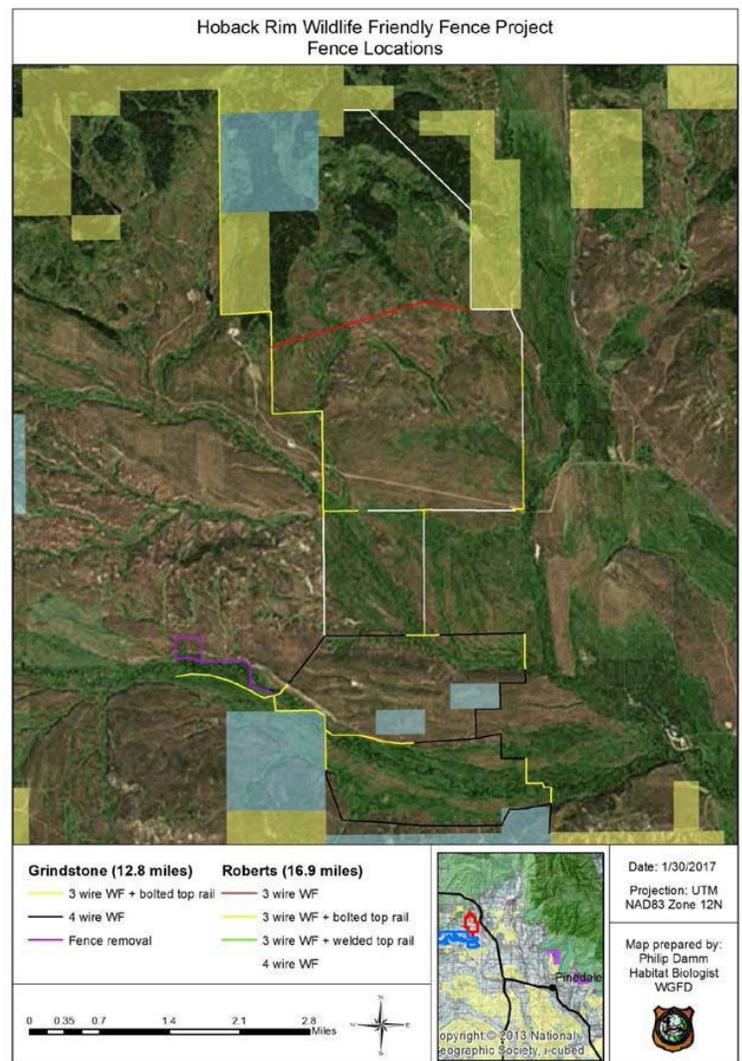
Cooperating Partners: Wyoming Game and Fish Department, NRCS, Grindstone Cattle Company, Patricia and Shad Roberts Trustees, Rolling Thunder/Rim Ranches, Ultra Resources, Inc., Red Desert to Hoback Partnership, WWNRT, Governor's Big Game License Coalition

Hoback Ranches Wildlife Friendly Fence (2018)

The objective of this project is to ease the twice annual migration for Mesa mule deer by modifying, with new construction, 18.4 miles of fences in the Hoback Ranches subdivision to wildlife friendly design. Existing fences are typified by loose wires, old posts, and less than ideal wire spacing, which all can contribute to negative outcomes for wildlife. Added benefits of the project are to resident elk and those coming to and from Franz feedground, in addition to the increasing year-round resident moose population.

PAPO funded: \$128,000

Status: Ongoing



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Partners/Cooperators: WGFD, Landowners, Hoback Ranches Service and Improvement District, Red Desert to Hoback Partnership



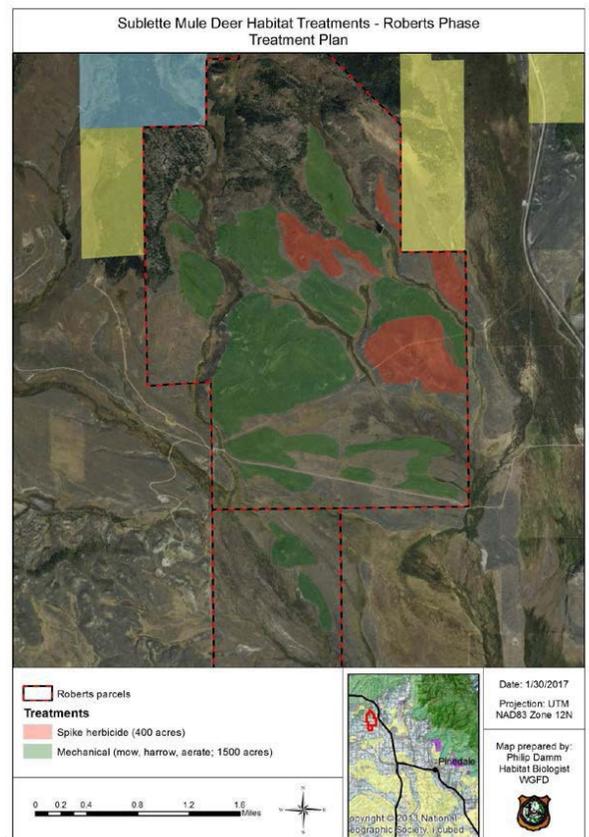
Sublette Mule Deer Habitat Treatments – Roberts Phase (2017)

The objective of this project is to stimulate growth of younger age sagebrush and bitterbrush, and forbs and grasses, by removing old, large stature sagebrush. Increases in productivity and cover of bitterbrush are also expected. These objectives will be accomplished by mechanically treating 1500 acres and applying Spike on 400 acres in mosaic fashion. Integrally,

this project request also includes allocation for noxious weed control. The project is an expansion of the extensive work (habitat and wildlife friendly fencing) occurring on adjacent Rolling Thunder/Rim Ranches and on the Mesa and Ryegrass landforms, and is part of an overall landscape-scale effort to improve mule deer habitats of the Mesa portion of the Sublette Herd.

PAPOFunded:\$20,560 Total Project Cost:\$70,000
 Status: In Progress

Cooperating Partners: Wyoming Game and Fish Dept, Patricia and Shad Roberts Trustees, Rolling Thunder/Rim Ranches



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Monument Ridge (2017)

The Monument Ridge project is primarily an aspen enhancement project on Bridger Teton National Forest (BTNF), near Bondurant. This area is used heavily by Sublette Herd mule deer, including a considerable number migrating from the Pinedale Anticline Project Area's winter range in addition to those migrating along the Red Desert to Hoback migration corridor. In addition to being classified as high use migration corridor and stopover habitats, many does fawn in the project area or pass through here just before or after fawning. Treatment will be by prescribed fire following mechanical slashing of encroaching conifers.

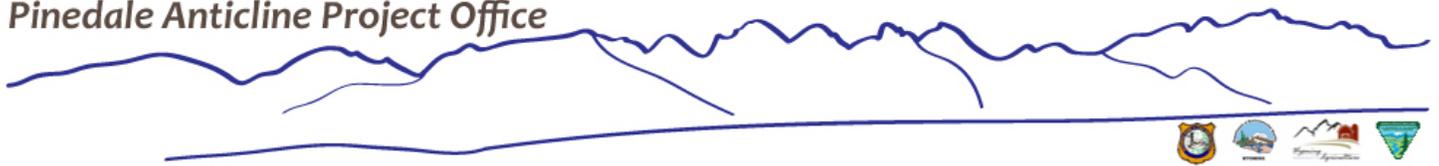
PAPO Funded:\$50,000 Total Project Cost:\$150,000

Status: In Progress

Cooperating Partners: Bridger-Teton National Forest, Wyoming Game and Fish Dept.



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Mesa Mule Deer Shrub Planting (2018)

The objective of this project is to bolster productivity in mixed mountain shrub communities by planting 5,000 nursery grown shrub seedlings, like serviceberry, silver buffaloberry, and bitterbrush. This project occurs on the western and eastern flanks of the Mesa on mule deer crucial winter range just outside of Pinedale. The project is part of an overall landscape-scale effort to improve mule deer habitats of that Herd. This project work is expected to last one year; however, success will inform future planting locations and may lead to an additional planting phase.

PAPO Funded: \$58,000 Status: Ongoing

Partners/Cooperators: WGFD, BLM



Pape-Miller Mule Deer Habitat (2018)

The objectives of the Pape-Miller Mule Deer Habitat project are: 1) to improve important sagebrush habitats for mule deer by removing old, large stature sagebrush on about 1500 acres in a mosaic fashion using large mechanical implements and Spike herbicide; and, 2) to ease the migration for Sublette mule deer by rebuilding ~10 miles of fences to wildlife friendly design. Added benefits of the project are to elk and moose on year round habitats and are likely to sage grouse nesting and brood rearing habitats.



PAPO Funded: \$100,000 Status: Ongoing

Partners/Cooperators: WGFD, Landowners, NRCS

Soaphole Perennial Pepperweed (2018)

This project is designed to expand the work of Sublette County Weed and Pest in working with landowners to achieve treatment of acres infested by perennial pepperweed. The project area (and individual sites) spans several important wildlife ranges, including sage grouse core area and mule deer crucial winter range and migration corridor. Specific management techniques will include herbicide treatments with the best suited application type (aerial, UTV/ATV, or backpacks) for each area.

PAPO Funded: \$20,000 Status: Completed

Partners/Cooperators: Landowners, OSLI, BLM, WGFD, Sublette County Weed and Pest

Roosevelt Fire Vegetation Restoration and Rehabilitation (2018)

This Roosevelt Fire Vegetation Restoration and Rehabilitation (RFVRR) project is aiding in vegetative

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recovery following a large-scale wildfire, the Roosevelt Fire, which burned over 60,000 acres in fall 2018. Actions proposed include: mapping and control of noxious weeds within the burn perimeter across multiple land owner- ships; securing alternative pasture so that burn areas can be rested; provide trucking costs; hire riders; or purchase hay in exchange for using private hay ground during the summer season.

PAPO Funded: \$200,000 Status: Ongoing

Partners/Cooperators: Sublette County Weed and Pest, USFS, JIO, BLM, WGFD, Sublette County



Sublette County Invasive Species (2019) This project consists of treatment of invasive species to conserve wildlife habitat and other values in 3 separate project areas: Horse Creek Fire, Soaphole Perennial Pepperweed Phase 2, and Sublette County Cheatgrass.

PAPO Funded: \$120,000

Status: Ongoing

Cooperating Partners: Sublette County Weed and Pest

Jackson Fork Ranch Bison Fence Modifications (2019) This project includes implementation of a system of drop-down structures along 3.5 miles of existing bison fence in the upper Hoback area to facilitate passage of migrating mule deer and other wildlife.

PAPO Funded: \$25,000

Status: Ongoing

Partners: WGFD, Landowners



Wildlife Monitoring Projects

Mule Deer Monitoring (2009-2017)

The purpose of this monitoring is to collect quantitative data and report mule deer population parameters and habitat use within the Pinedale Anticline Project Area (PAPA) in comparison with the reference area populations and habitat use. Annual monitoring reports for mule deer can be found on the JIO PAPO website (<http://www.wy.blm.gov/jio-papo/papo/wildlife.htm>).

2009-2010, PAPO Funded: \$205,550/Final Cost: \$189,796

2010-2011, PAPO Funded: \$98,600/Final Cost: \$98,600

2011-2012, PAPO Funded: \$155,110/Final Cost: \$155,110

2012-2013, PAPO Funded: \$160,000/Final Cost: \$160,000

2013-2014, PAPO Funded: \$98,300/Final Cost: \$98,300

2014-2015, PAPO Funded: \$90,700/Final Cost: \$65,129

2015-2016, PAPO Funded: \$123,200

2016-2017, PAPO Funded: \$93,000

Status: Completed



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Mule Deer/Pronghorn Monitoring (2018-2020)

In 2018, the mule deer and pronghorn monitoring flights and costs were combined.

2017-2018, PAPO Funded: \$257,992.00

2018-2019, PAPO Funded: \$100,000

2019-2020, PAPO Funded: 100,000

Status: In Progress

Mule Deer Monitoring - Data Analysis (2007-2009)

Contract awarded to Western EcoSystems Technology, Inc. The purpose of this data analysis was to provide seamless collected monitoring data (i.e., survival and resource selection) for the Pinedale Anticline that is consistent with analyses presented in the Sublette Mule Deer Study report (Sawyer et al. 2009). The final report included years 2001-2007, but did not include the winters of 2007-08 or 2008-09 because GPS radiocollars from that period were not expected to drop off before April 2010. The goal of the survey was to continue tracking the existing GPS collars, with recovery in April 2010, and to complete the data analysis for winters 2007-08 and 2008-09. The final analysis may be found in the *Mule Deer Monitoring in the Pinedale Anticline Project Area: 2010 Annual Report* (Western Ecosystems Technology, Inc. 10 Sept 2010) on the JIO PAPO website (<http://www.wy.blm.gov/jio-papo/papo/wildlife.htm>).

PAPO Funded: \$35,500/Final Cost: \$35,500

Status: Completed

Monitoring Cameras (2010)

PAPO Funded: \$8,044

Status: Completed

Habitat Assessment (2011)

PAPO Funded: \$3,375.00

Status: Completed

Noise Monitoring (2010 - 2020)

The purpose of the project was to:

- Determine background ambient sound levels (L90) in dense sagebrush cover at reference leks (outside the gasfield)
- Determine sound levels (L50) at treatment leks (in the gasfield)
- Determine sound levels (L50) of common gas field activities near treatmentleks.

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Acoustic data was collected at thirty-nine different locations in the PAPA. Sites included three reference leks, nineteen treatment leks, and seventeen gas field sound sources. The reference leks were in the Speedway and Ryegrass complexes, and the treatment leks were in the Mesa, Duke's Triangle, and Yellowpoint complexes. The final Baseline Greater Sage-grouse Sound Levels Study reports are posted on the PAPO website ([http:// www.wy.blm.gov/jiopapo/papo/wildlife.htm](http://www.wy.blm.gov/jiopapo/papo/wildlife.htm)); see Annual Monitoring Reports.

2010 PAPO Funded: \$12,000/Final Cost: \$7,493

2010-2011 Contract awarded to U.C. Davis PAPO Funded: \$10,432/Final Cost: \$10,432

2013-2014 Contract awarded to Sandhill PAPO Funded: \$55,930/Final Cost: \$55,930

2014-2015 Contract awarded to Sandhill PAPO Funded: \$55,066/Final Cost: \$55,066

2015-2016 Contract awarded to Sandhill PAPO Funded: \$56,000/Final Cost: \$56,000

2016-2017 Contract awarded to Sandhill PAPO Funded: \$65,000/Final Cost: \$65,000

Status: All are completed

2017-2018 PAPO Funded: \$70,000

2018-2019 PAPO Funded: \$65,000

2019-2020 PAPO Funded: \$65,000

Status: In Progress

Pronghorn Monitoring (2010-2016)

The purpose of the monitoring is to collect quantitative data and report pronghorn population parameters and habitat use within the PAPA in comparison to reference area populations and habitat use. Final reports are posted on the PAPO website (<http://www.wy.blm.gov/jiopapo/papo/wildlife.htm>); see Annual Monitoring Reports.

2010, PAPO Funded: \$217,605/Final Cost: \$203,233

2010-2011, PAPO Funded: \$163,500/Final Cost: \$163,500

2011-2012, PAPO Funded: \$165,700/Final Cost: \$165,700

2012-2013, PAPO Funded: \$170,000/Final Cost: \$170,000

2013-2014, PAPO Funded: \$121,101/Final Cost: \$121,101

2014-2015 PAPO Funded: \$85,483/Final Cost: \$85,483

Status: Contracts awarded to Western EcoSystems Technology, Inc.; completed

2015-2016, PAPO Funded: \$121,000

2016-2017, PAPO Funded: \$85,000

Status: Contracts awarded to Western EcoSystems Technology, Inc.; in progress

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Pygmy Rabbit Monitoring (2009-2020)

The purpose is to collect quantitative data and report occurrence and numbers of pygmy rabbits, and to identify distribution and population changes within the Pinedale Anticline Project Area (PAPA) in comparison to reference area populations and habitat use. Final reports are posted on the PAPO website (<http://www.wy.blm.gov/jio-papo/papo/wildlife.htm>); see Annual Monitoring Reports.

2009-2010 PAPO Funded: \$76,747/Final Cost: \$75,720.

Contract awarded to University of Wyoming, Wyoming Natural Diversity Database

2010-2011 PAPO Funded: \$167,554/Final Cost: \$167,554

2011-2012 PAPO Funded: \$256,499/Final Cost: \$256,499

2012-2013 PAPO Funded: \$256,499/Final Cost: \$256,499

2013-2014 PAPO Funded: \$197,420/Final Cost: \$197,420

2014-2015 PAPO Funded: \$197,420/Final Cost: \$197,420

2015-2016 PAPO Funded: \$191,000/ Final Cost: \$191,000

2016-2017, PAPO Funded: \$180,000/Final Cost: \$142,244

Status: Completed

2017-2018, PAPO Funded: \$187,000

2018-2019, PAPO Funded: \$185,000

2019-2020, PAPO Funded: \$185,000

Status: In progress



Pygmy Rabbit Power Data Analysis (2015)

The power data analysis included estimating occupancy within the Development areas to verify occupancy changes with oil and gas influence and developing potential alternatives to the level of survey effort for future years.

Pinedale Anticline Project Office



PAPO Funded: \$8,270.00

Project Status: Contract awarded to Hayden-Wing Associates LLC;
Completed

Raptor Monitoring (2010-2013)

The purpose is to determine the location and activity status of approximately 650 raptor nests/territories and searches for new nests within the PAPA and surrounding 1-mile buffer. Surveys of the New Fork and Green River Corridors (within the PAPA boundary and 1-mile buffer) were conducted to determine the occurrence/potential occurrence of winter bald eagle roosts. After 2014, raptor monitoring was conducted by industry as-needed.



2010 PAPO Funded: \$48,859/Final Cost: \$48,859

2010-2011 PAPO Funded: \$22,156/Final Cost: \$22,156

2011-2012 PAPO Funded: \$126,066/Final Cost: \$126,066

2012-2013 PAPO Funded: \$100,000/Final Cost: \$94,607 Status: Contract awarded to Hayden-Wing;
completed

Greater Sage-Grouse Monitoring (2009-2010)

The project was awarded to KC Harvey for the purpose of quantitative data collection and reporting of Greater Sage-grouse population parameters and habitat use within the PAPA in comparison to reference area populations and habitat use; also monitored noise at leks.

PAPO Funded: \$209,583/Final Cost: \$205,468

Status: Completed

Greater Sage-Grouse Monitoring Equipment

The project was awarded to Advanced Telemetry Systems to provide monitoring equipment to facilitate Greater Sage-grouse monitoring contract awarded separately to KC Harvey, Inc.

PAPO Funded: \$26,305/Final Cost: \$26,305

Status: Completed

Greater Sage-Grouse Nesting (2010-2011)

Contract awarded to Wyoming Wildlife Consultants, LLC.

Pinedale Anticline Project Office



PAPO Funded: \$100,860/Final Cost: \$100,860

Status: Completed

Greater Sage-Grouse Winter Flights & Lek Searches (2010-2014)

The project was awarded for the purpose of PAPO/WGFD/BLM staff to perform Greater Sage grouse winter concentration survey via helicopter flights as well as fixed-wing flights to locate collared winter Greater Sage- grouse.



2010 PAPO Funded: \$33,000/Final Cost: \$23,718

2010-2011 PAPO Funded: \$35,000/Final Cost: \$34,523

2011-2012 PAPO Funded: \$36,733/Final Cost: \$30,585

2012-2013 PAPO Funded: \$35,000/Final Cost: \$35,927

2013-2014 PAPO Funded: \$35,000/Final Cost: \$10,586

Status: Completed

2014-2015 PAPO Funded: \$35,000

2015-2016 PAPO Funded: \$35,000

Status: In progress

Spot Image/Satellite Imagery for Wildlife Monitoring (2009-2012)

2009-2010 PAPO Funded: \$4,745/Final Cost: \$4,745

2010-2011 PAPO Funded: \$4,475/Final Cost: \$4,475

2011-2012 PAPO Funded: \$5,625/Final Cost: \$5,625

2013-2014 PAPO Funded: \$5,700/Final Cost: \$5,700

Status: Project awarded to SkyTruth.org.; completed

Snow Depth & Traffic Monitoring (2009-2010)

The purpose is to quantitatively monitor and report Snow Depth and Traffic Volumes with the PAPA in comparison to referenced area populations and habitat use.

2009-2010 PAPO Funded: \$42,826/Final Cost: \$42,789

2010-2011 PAPO Funded: \$26,050/Final Cost: \$26,050

2011-2012 PAPO Funded: \$35,135/Final Cost: \$35,048

Status: Contract awarded to Asset Environmental Services II, LLC.; completed

Pinedale Anticline Project Office



Third Party Review of PAPA Wildlife Monitoring Projects (2009-2010)

This coordinated effort was a peer review of the PAPA Wildlife Monitoring and Mitigation Plan which assessed the scientific appropriateness of the monitoring design outlined in the Wildlife Monitoring Matrix and associated Request for Qualifications (RFQs). It also evaluated the ability of the monitoring design to provide reliable information for wildlife response to energy development on the PAPA.

Project awarded to the Wyoming Cooperative Fish and Wildlife Research Unit.

PAPO Funded: \$8,400/Final Cost: \$7,500

Status: Completed

White-tailed Prairie Dog Monitoring (2009-2020)

The purpose is to collect quantitative data and report occurrence and numbers of white-tailed prairie dogs and to identify distribution and population changes within the PAPA for comparison to the reference area populations and habitat use. Contract awarded to Hayden-Wing Associates

2009-2010 PAPO Funded: \$95,362/Final Cost: \$88,166

2010-2011 PAPO Funded: \$65,004/Final Cost: \$65,004

2011-2012 PAPO Funded: \$65,263/Final Cost: \$65,263

2012-2013 PAPO Funded: \$65,663/Final Cost: \$65,663

2013-2014 PAPO Funded: \$62,366/Final Cost: \$62,366

2014-2015 PAPO Funded: \$64,406/Final Cost: \$64,406

2015-2016 PAPO Funded: \$65,000/Final Cost: \$65,000

2016-2017 PAPO Funded: \$86,000/Final Cost: \$81,480

Status: Completed

2017-2018 PAPO Funded: \$103,000

2018-2019 PAPO Funded: \$100,000

2019-2020 PAPO Funded: \$100,000

Status: In progress



White-Tailed Prairie Dog Power Analysis (2015)

PAPO Funded: \$9,513

Status: Contract awarded to WEST Inc.; Completed

Revised Noise Report from Sandhill Company (2014)

PAPO Funded: \$4800 Project Status: Completed



Other PAPO Actions

Murdock Conservation Project (Pre-PAPO)

USQ (collaboration of Ultra, Shell and QEP Resources, Inc. (fka Questar)) requested reimbursement of \$300,000.00 funding to the Green River Valley Land Trust's acquisition of the Murdock Conservation Easement. On Oct. 21, 2009, the PAPO Board approved a total of \$270,000.00 reimbursement to USQ (\$90,000.00 for each contributor) which was credited toward each party for the December, 2009 payment into the PAPO Mitigation Fund.

PAPO Funded: \$270,000
Project Status: Completed

Reimbursement to QEP

2009 Mule Deer Study

On April 3, 2009, the PAPO Board approved a reimbursement to Questar (now known as QEP Resources, Inc.) of \$97,134.77 for the 2008-2009 Sublette Mule Deer winter study. These costs were incurred by QEP prior to the full formation of the PAPO and Mitigation Management Board. All evaluated data were received and accepted by PAPO and WGFD.

PAPO Credit: \$97,134.77
Project Status: Completed

Reimbursement Request from Shell for Pronghorn Study (Pre-PAPO)

On April 3, 2009, the PAPO Board approved a reimbursement to Shell for \$144,000.00 for Pronghorn Antelope Collaring and Monitoring Study. These costs were incurred by Shell prior to the full formation of the PAPO Office and Mitigation Management Board.

PAPO Funded: \$144,650
Project Status: Completed

