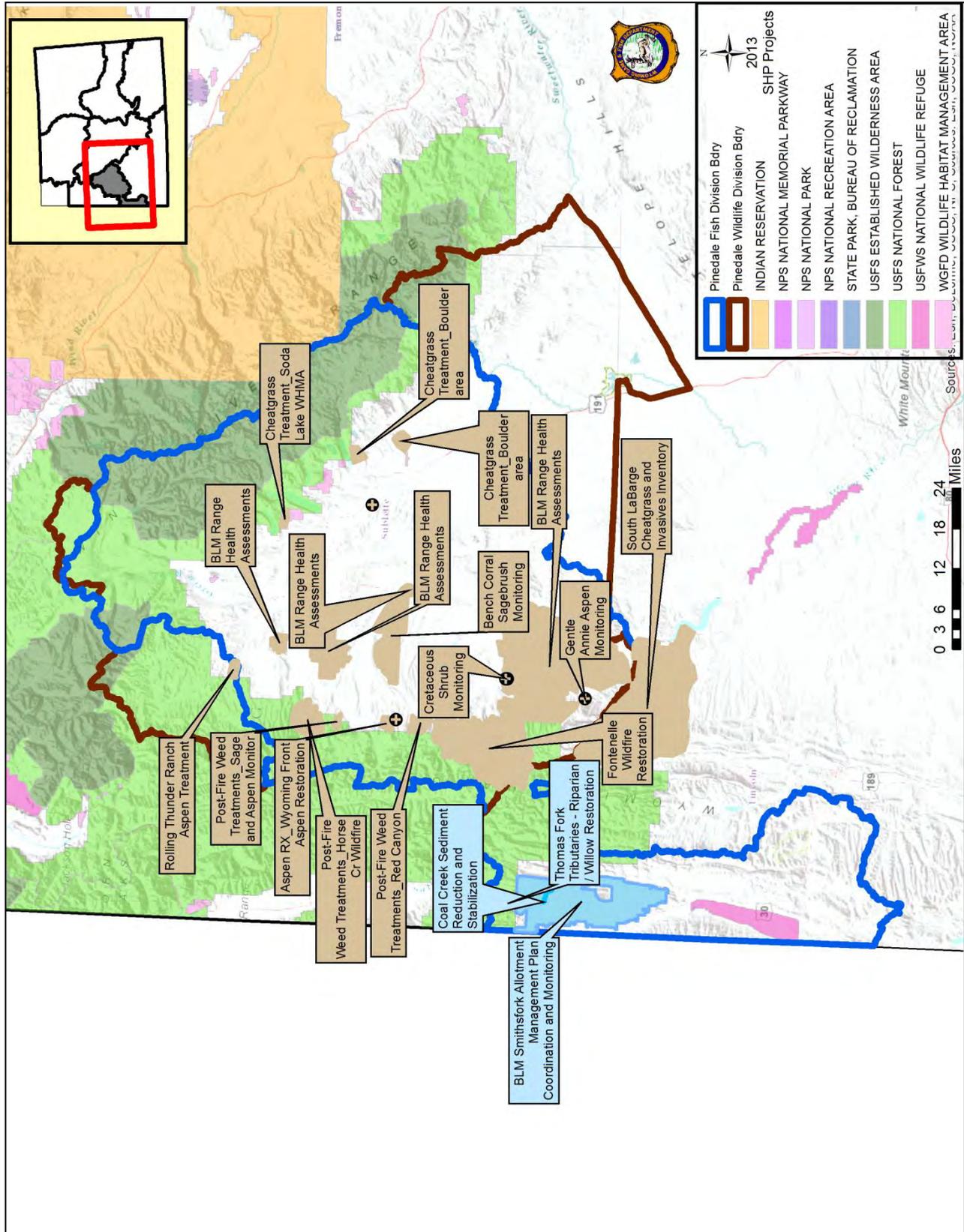


PINEDALE REGION



Wyoming Range Tall Forb Trend Monitoring (Goal 1) – Jill Randall and Floyd Roadifer

Regional WGFD Habitat and BFH personnel assisted the Bridger Teton National Forest (BTNF) with scheduled monitoring (key species and ground cover data) at three tall forb sites in the Triple Peak Forage Reserve (TPFR) and four in the Wyoming Range Allotment Complex (WRAC). Sites in the WRAC included three locations in North Horse Creek and one in South Horse Creek. TPFR sites consisted of one location in South Cottonwood and one in Sheep Creek.

The aquatic habitat biologist participated in a back country coordination trip to the WRAC forage reserve with the regional wildlife biologist to check hunter activity and evaluate general habitat conditions. The WRAC forage reserve is clearly providing improved abundance and availability of forage for wildlife and increased ground cover across the landscape. Benefits will be far reaching and long term (Figure 107).



Figure 107 – Tall forb site on South Cottonwood Creek in the Wyoming Range.

BLM Smithsfork Allotment Management Plan Coordination and Monitoring (Goal 1) – Floyd Roadifer

The Pinedale AHAB coordinated closely with Kemmerer BLM to complete the final study designs and implement an allotment-wide stream temperature monitoring plan. A total of 19 stream temperature loggers and three air temperature loggers were deployed across the Smithsfork Allotment in late May and early June. Summer data were downloaded in mid-October. Preliminary results indicate reliable data is available from all but two of the 22 temperature recorders. Some very high stream temperatures (i.e. exceeding 80 degrees Fahrenheit) were recorded. Also, in June the AHAB assisted BLM and other cooperators with riparian trend monitoring at all 17 designated monitoring locations in the Smithsfork Allotment using Winward Greenline methods. Assistance was provided to the BLM with measuring post-grazing stubble height and willow utilization across the allotment throughout the season.

The AHAB collected, downloaded and mapped GPS coordinates for seven upland water developments constructed in the Smithsfork Allotment, circa 2000. Photos were also taken at these locations. This information was provided to the BLM to develop a maintenance plan. Coordination continued with the BLM and other partners to develop and establish goals, objectives, and management actions needed to improve Bonneville cutthroat trout habitat as required in the 2005 Smiths Fork Allotment Management Plan and 2009 Settlement Agreement. On-going activities included establishment of objectives for riparian greenlines, development of trample guidelines, and development of objectives for other stream habitat parameters (temperature, shading, pool to riffle ratios, sediment levels, etc.). Existing allotment data and protocols relative to “Standards and Guidelines Assessments” were reviewed and discussed with the BLM and the allotment was toured with the BLM and other cooperators to evaluate these conditions. The BLM is summarizing and analyzing monitoring results and has begun the process of revising the Allotment Management Plan (AMP). The Smithsfork Grazing Association in cooperation with the Wyoming Department of Agriculture and Lincoln County Conservation District recently initiated efforts to restart Coordinated Resource Management (CRM) processes to aid with development of a revised AMP.

Thomas Fork Tributaries – Riparian / Willow Restoration (Goal 2) – Floyd Roadifer

Coordination with the BLM and other partners to implement large-scale willow restoration in the Coal Creek watershed continued (Figure 108). Annual maintenance was completed in June on all riparian exclosures (11 total) in the allotment with help from the Utah Conservation Corps. Based on willow inventories completed in 2012, key locations were discussed and cooperatively



Figure 108 – Successful willow restoration in Klein Creek exclosure at a head cut stabilized in 2004.

selected for construction of a series of small exclosures. BLM installed a number of these in July. Willow (~235) and dogwood (~15) cuttings were planted in the lower end of the large Huff Creek exclosure in October.

The willow restoration effort implemented in 2010 on the small tract of well-managed private land on lower Coal Creek was evaluated in October. Successful establishment of willow cuttings on this site was estimated at approximately 50% survival three years after planting.

Coal Creek Sediment Reduction and Stabilization (Goal 2) – Roadifer

Coal Creek is a tributary to the Thomas Fork River in western Wyoming and provides important habitat for Bonneville cutthroat trout. Conceptual plans to address the large amounts of sediment contributed into the stream at eleven (11) key sites along a two (2) mile stretch of Coal Creek were developed in 2010. During 2012 and 2013, plans were refined with contract help from AVI, Inc. Proposed solutions include new road crossings, stream and road re-alignments, and re-contouring/re-vegetating back slopes and toe slopes.

A draft EA for the Coal Creek Stabilization project was scoped in spring of 2013. In December, the EA and various alternatives were reviewed with the BLM. Re-routing the road for a short distance (Site 2) was discussed and the BLM elected to present this as an alternative to the landowner whose property the road easement crosses. The landowner remains consistently opposed to this alternative. Consequently progress on the EA and project planning has been delayed until the BLM can schedule an on-site meeting to discuss the project with the landowner and permittees. Final approval (FONSI) is anticipated in June 2014 following this meeting. A contract was prepared and approved during the summer and in October 375 cubic yards of rock was delivered to a stock pile site on Coal Creek. Various grant writing and fund raising efforts continue and the Department is seeking to improve road crossings over Coal Creek and tributaries in 2014.

Lynx Habitat Assessment (Goal 2) – WLCI, Jim Wasseen

This assessment of lynx habitat will help the BLM gain an understanding of pre- and post-treatment impacts to localized snowshoe hare (SSH) populations from aspen regeneration treatments. The information garnered from the assessment will allow for a greater understanding of when and where to thin forested areas in the Wyoming Range. Work completed included 50 permanent snowshoe hare pellet plots within the Camp Creek treatment one-year post burn and 50 permanent snowshoe hare pellet plots within the proposed Miller Mountain treatment area. Additional data collected at each of the above locations included stand measurements, snowshoe hare browse, horizontal cover, and photo points. In the Camp Creek treatment area, the plots were split among: slashed but unburned; burned; and un-slashed unburned.

Trumpeter Swan Project (Goal 2) – WLCI Jim Wasseen

This project includes construction and restoration of shallow water wetland ponds on private lands to enhance summer habitat for trumpeter swans and other waterfowl, waterbirds, and wildlife in the Green River Basin. At the Swift Ranch, island construction for nesting, head gate installation on a feeder to the pond, and site reclamation and cleanup work were completed in 2013. At the Sullivan Pond, project planning for construction of two ponds was completed in 2013. At Rimfire Ranch, eight pre-planted vegetation mats were installed which completes work at this site.

Wildlife Habitat Management Areas (Goal 2) – Miles Anderson, Matt Miller, Kade Clark, Breanne Thiel

- In Sublette County, 3.5 acres of noxious weeds were sprayed on PAAs, WHMAs and Feedgrounds.

- 36 miles of crucial winter range habitat boundary and elk fence were maintained on and around the **Soda Lake WHMA**. A contractor installed a solar panel/water pump system and tanks were installed (Figure 109) to facilitate the Draft Horse Grazing Plan and provide water for wildlife.



Figure 109 – Soda Lake solar well.

- 1.2 miles of crucial winter range elk fence was maintained on **Muddy Creek Feedground**.
- 4.5 miles of crucial winter habitat boundary fence was maintained on **Fall Creek WHMA**.
- 11.6 miles of crucial winter habitat boundary fence was maintained on **Half Moon WHMA**. Livestock grazing of 440 AUMs (3,769 acres) were used to improve nutritional quality of rangeland health/forage in cooperation with Fontenelle fire regeneration project.
- Livestock grazing of 335 AUMs (525 acres) were used to improve nutritional quality of rangeland health and forage on **Black Butte WHMA**.
- Development of a new public fishing area near Pinedale was completed. **The Richie-Vible PAA** includes a parking area on the East Fork River.

Airport PAA development New Fork River (Goal 3) – Miles Anderson, Matt Miller, Kade Clark, Breanne Thiel

A new public access area was developed along the New Fork River just south of Pinedale (Figure 110). The new area required construction of one mile of new road, requiring mitigation and wetland area creation, a new parking area and boat ramp.



The WGFD worked with the OSLI which provided the special use lease. The area is now open to the public, creating fishing and waterfowl hunting opportunities along the New Fork River delineated on access area public informational signs. The new boat ramp (Figure 111) provides the opportunity to launch and remove boats between **New Fork Mesa PAA** (on Tyler Street) and **New Fork Boulder Bridge PAA**.

Figure 110 – Airport PAA parking area and boat ramp



Figure 111 – Boat ramp construction.

Wyoming Range Aspen 2013: Treatments, Outcomes, & New Partnerships (Goal 2) – Eric Maichak and Jill Randall

On-the-ground treatments, collaborative monitoring through new partnerships, and continued aspen research occurred along the east slope of the Wyoming Range in 2013. As part of the Wyoming Front Aspen Restoration Project (WYFARP), an estimated 225 acres of slashed conifer remaining from postponed 2011 prescribed burns were ignited by interagency personnel in early June (Figure 112). Elevated sagebrush moisture and subsequent rain events made initial and follow-up burn containment easy. Collaboration among WGFD, BLM, Sublette Co. Conservation District (SCCD), and Grand Teton Park personnel in July, August, and October made for efficient monitoring over a landscape scale at 12 sites ranging in age from same-year to 15-year post-treatment (Table 2).



Figure 112 – E. Maichak, Big Piney BFH Biologist, ignites conifer in a decadent aspen stand in western Wyoming.

Table 2. Aspen monitoring data from Wyoming Front Aspen Restoration Project.

Site	Treatment(s)	Years Post-Treatment	Sucker Density	Dominant Height Class*	% Terminal Leaders Browsed**	% Ground Cover
Camp Creek	Cut-RX Burn	0	6,297	0' – 1'	9	N/A
Upper Billies	Cut-RX Burn	1	14,653	0' – 1'	32	N/A
Maki (USFS)	Cut-RX Burn	5	6,497	3' – 6'	2	76
Gentle Annie	Cut-RX Burn	15	2,687	3' – 6'	9	N/A
Budd-Fish Creek	Wildfire	1	36,500	1' – 3'	4	54
Fish Creek	Wildfire	1	12,870	1' – 3'	7	42
North LaBarge – Spring Creek	Wildfire	1	24,700	1' – 3'	13	75
North LaBarge – Trail Ridge	Wildfire	1	14,630	1' – 3'	3	60
Springman	Wildfire	1	32,165	1' – 3'	17	71
Springman – Feedground	Wildfire	1	13,430	1' – 3'	10	49
West Ind.	Wildfire	1	9,280	1' – 3'	15	57
Nameless Cr.(USFS)	Wildfire	1	46,250	1' – 3'	6 (July) 36% (Sept.)	N/A

* Height class with the greatest % of the total suckers encountered among categories.

** Percentage of aspen suckers 0' to 6' tall with current-year browsing of terminal leader.

With good summer precipitation, aspen regeneration in recent burns was excellent this year (9,000 to 36,000 stems/acre) with suckers ranging from the 0-1' to the 3-6' height classes, including the 15-year post-burn Gentle Annie site with 636 stems/acre greater than 10' tall. Terminal browsing of suckers 0-6' tall was low (3% to 17%) on sites excluding livestock use or greater than five years post treatment, while Upper Billies (1-yr post-burn) with use of range riders showed 34% use. Ground cover was encouraging, (42% to 76%) but possibly diminished particularly in the Fontenelle wildfire area following a 100-year flooding event in September. Research comparing aspen densities from a variety of methods and WYFARP sites continued by University of Montana Forestry MS student. Preliminary results strongly suggest that most methods (e.g., Point-Center-Quarter) substantially underestimate density when compared to circular plot. Planned events for 2014 include slash/pile burning of remaining WYFARP aspen; continued collaborative monitoring of Fontenelle wildfire (Figure 113) and other sites; and final analysis and defense of aspen densities and methodology comparison by UM Forestry MS Student.



Figure 113 – Aspen regeneration in the West Ind. (A) and Budd-Fish (B) allotments, 1-year post-burn in the Fontenelle wildfire. Note the visual difference in sucker density between A and B (9,280 vs. 36,500 stems/acre).

Fontenelle Wildfire Restoration (Goal 2) – Jill Randall and Floyd Roadifer

In the summer of 2012, the Fontenelle wildfire burned across approximately 64,000 acres largely in the Piney Creek watersheds, as well as a smaller portion of the LaBarge Creek drainage. Eleven federal grazing allotments (USFS and BLM) along with private and state lands were affected. Extensive support and cooperation amongst numerous partners led to implementation of a variety of restoration actions in 2013 including weed control, fence reconstruction, fireline rehabilitation, and rest from livestock grazing in ten allotments. These combined actions will optimize this opportunity to fully restore healthy plant communities and maximize the potential benefits to wildlife habitat (Figure 114) while reducing risks of negative impacts. Cooperators include the Bridger Teton National Forest (BTNF), Pinedale BLM, NRCS, WGFD, SCCD, Sublette County Weed and Pest (SCWP), federal permittees and private landowners. Funding from WGFD Trust Fund, WGBGLC, WWNRT, Sublette County Commissioners, and RMEF assisted with these efforts. The Half Moon Wildlife Habitat Management Area was also made available for 440 AUMs to provide alternative pasture for one of the permittees. Livestock use is expected to resume on these allotments once quantified monitoring of key vegetation (aspen and ground cover) indicates proper restoration has occurred.

Regional WGFD Habitat and BFH personnel assisted with interagency aspen monitoring at seven locations on BLM and one location on BTNF (Nameless Creek in the LaBarge Creek drainage) within the wildfire perimeter. Please see (Table 2 from previous paragraph) monitoring data for comparisons between wildfire and prescribed fire monitoring data in 2013. Due in part to permitted livestock grazing, browse use of aspen terminal leaders in the Nameless Creek drainage exceeded the 30% management threshold (36% use measured in September), but had excellent stem density (46,250 stems/acre) in year one post-fire.

GPS locations were recorded for numerous other potential aspen monitoring sites in the LaBarge drainage and photos were taken for future reference. These sites are located in the following drainages: Witherspoon, Road, Cabin, Packsaddle, Bald Hornet, and Spring Creeks. Two separate high precipitation events this summer combined with the severity of the burn caused massive sediment movement in portions of the Spring Creek drainage. This situation was evaluated and photographed with the BTNF Fisheries Biologist.



Figure 114 – Aspen regeneration on Thompson Pass in an area previous dominated by conifers.

The relatively large scale of the Fontenelle wildfire in combination with numerous past treatments is expected to provide abundant and widely distributed forage in the Wyoming Range that will greatly reduce potential impacts from excessive browsing by wild ungulates. This is expected to increase the likelihood of long-term successful restoration of healthy and desirable plant communities, such as aspen.

Wyoming Range Mule Deer Habitat (Goal 2) – Jill Randall

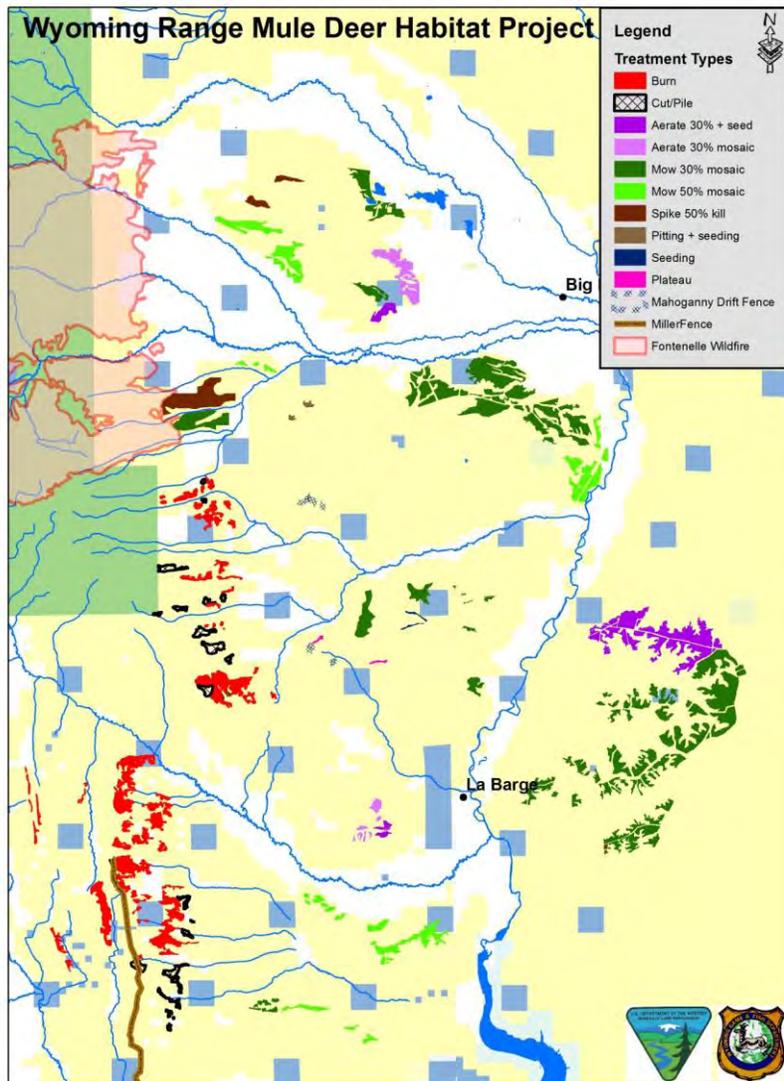


Figure 115 – Map of the proposed treatments associated with the Wyoming Range Mule Deer Habitat Project.

The Wyoming Range Mule Deer Habitat Project is an interagency cooperative project with the Pinedale BLM and WGFD to treat important winter and transitional habitats used by mule deer. The project has continued on schedule with the NEPA process underway through work of a third-party contractor. A signed NEPA Decision is expected in May 2014 which will allow the first treatments to be implemented in Summer 2014. The preferred alternative includes treatment of 28,224 acres over a ten-year period (Figure 115). The anticipated projects include mowing, Lawson aerator, Spike, pitting, Plateau application and inter-seeding in shrub communities as well as aspen enhancements to include prescribed fire and mechanical disturbance (Figure 116). The enhancements include

treatments in 21 allotments, requiring considerable coordination and discussion with many livestock

permittees to work with the multiple uses on the landscape. There is potential to positively affect the sagebrush, mixed mountain shrub and aspen communities used by Wyoming Range mule deer and other wildlife long into the future. This project is a direct result of actions requested from the public through the Wyoming Range Mule Deer Initiative which was completed in 2011.

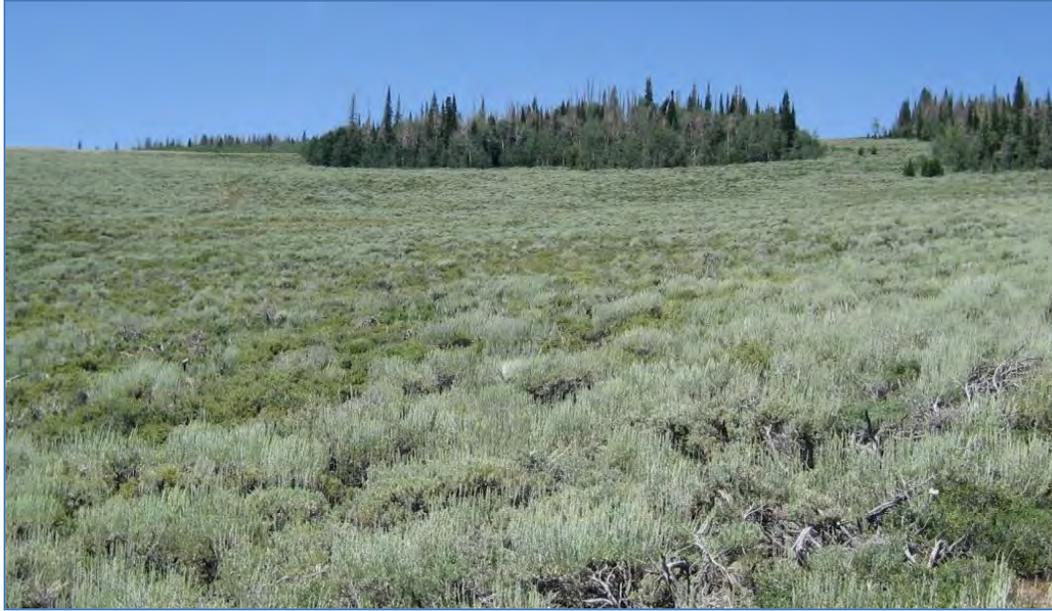


Figure 116 – Treatments are proposed to enhance bitterbrush, thin sagebrush and prescribed burn conifer-encroached aspen to improve mule deer transitional range in the Gentle Annie area.

Sublette Mule Deer Habitat Mitigation Plan (Goal 2) – Dan Stroud

PHASE I

Mule deer wintering on the Anticline/Mesa met a “population trigger” in 2010. That trigger specifies “A 15% decline in population in any year, or cumulatively over all years, compared to the reference area would trigger a mitigation response.” After meeting this trigger as per the Pinedale Anticline Record of Decision, efforts were undertaken to assess winter and transitional range habitats for Mule deer which migrate to the Anticline/Mesa to winter (Figure 117).

During 2011, habitat assessments were conducted within the Ryegrass, Soapholes and Mesa areas. Areas were identified for various treatments on a number of sites, and included prescribed burning, Spike and mechanical treatments (primarily Lawson aerator) as well as some exclosure

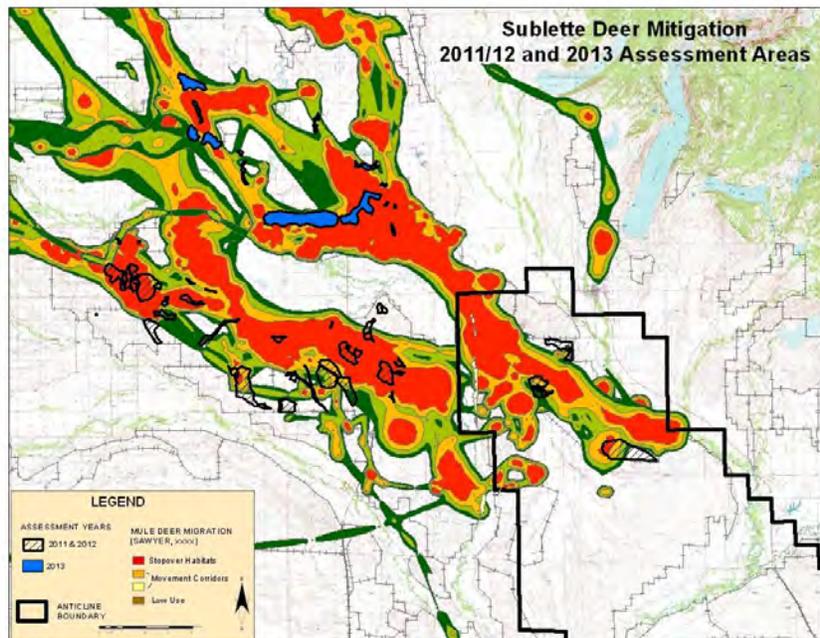


Figure 117 – Areas identified for habitat enhancement efforts in Phase I and II

fencing on several riparian areas. Due to various revisions the Environmental Assessment (EA) has undergone, treatments originally targeted for 2013 were postponed until completion of the EA in 2014. Depending upon the alternative selected, between 1,800 and 4,000 acres will be treated in the assessment area. Pre-treatment data were collected on nine sites during 2013 in anticipation of implementation in 2014. Most sites scheduled for treatment during the first year involve the use of a Lawson aerator and seeding in Wyoming big sagebrush sites. Data collected on these sites included line point intercept (canopy cover) and shrub belts (age classes).

PHASE II

The original “plan” for Sublette Mule Deer Mitigation was a WGFD ten-year plan. Added assessments were initiated in 2013 on the second migration corridor identified by Hall Sawyer’s previous work with collared deer. Approximately 2,077 acres of treatments were identified during the 2013 assessment (Figure 118). Data collection will be completed on these sites during the 2014 field season. Another disturbance calculation will need to be done as identified by the Governor’s Sage-Grouse Executive Order. This will again be done using the Density Disturbance Calculation Tool (DDCT) to determine whether or not the projects can be done with the existing amount of disturbance.

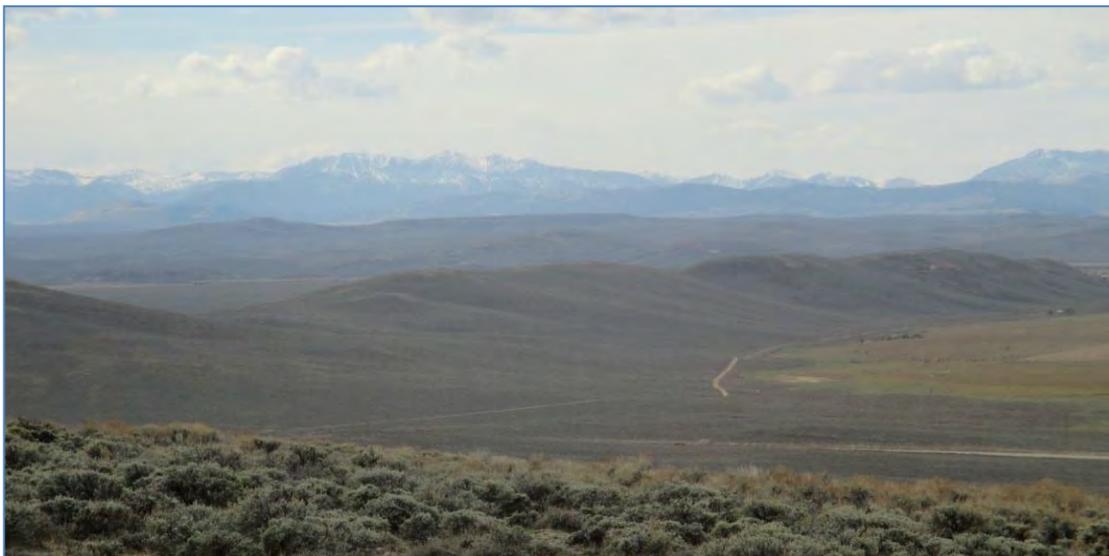


Figure 118 – Ridgeline used by mule deer as a migration corridor and being considered for projects during Phase II

Rolling Thunder Ranch – Aspen Regeneration Project – Dan Stroud

The Pinedale Anticline Project Office awarded \$60,000 to the Rolling Thunder Ranch for ongoing aspen regeneration work. Approximately 350 acres were treated during 2013 (Figure 119), and the ranch plans to treat up to 1,300 acres of aspen communities in the future (Figure 120). Most stands are over-mature with limited regeneration or are being suppressed by conifers. The first 350 acres involved a clear-cut and slash piling, which will be burned during winter months. This area is within a key migration corridor for Sublette mule deer which migrate to the Mesa area to winter and fawning occurs on the ranch. Future efforts may also involve Lawson aerator treatments and modified livestock management.



Figure 119 – Aspen stand clear-cut with slash piles.



Figure 120 – Example of extensive aspen communities located on Rolling Thunder Ranch

Multi-Treatment Sagebrush Monitoring on the Wyoming Range Front, 2014 (Goal 2) – Eric Maichak and Jill Randall

Personnel from WGFD, BLM, and the SCCD collaborated to collect vegetation data from 12 BFH macroplots (sites) in several sagebrush habitats on the Cretaceous Mountain and Bench Corral areas. Sites included past treatments of prescribed fire, pitting, ripping, herbicide, and feedground elk relocation (population increase) as well as respective control (reference) sites for all treatments except elk population increase. In this update, metrics of focus include percent cover of sagebrush, Shannon-Weiner Species Diversity Indices, and combined grass-forb herbaceous production (Table 3), while several other metrics collected (percent ground cover, shrub density and percent composition) will be addressed in a future publication. Among

treatment types, percent cover of sagebrush was lowest on sites treated by fire and elk population increase, while other sites within treatment type were similar between treated and reference sites. Shannon-Wiener Diversity Indices are higher on mechanically and herbicide-treated sites than respective reference sites, and also increase as one goes from lower to higher elevation sagebrush communities (Wyoming big sagebrush, low sagebrush and mountain big sagebrush). Fire and herbicide-treated sites had higher herbaceous production than respective reference sites, while reference sites had higher production than mechanically-treated sites. All sites appeared to have a boost in annual production and green-up as a result of heavy rains and wet snow in September and October. Several sites on past fire, mowing, and herbicide treatments are scheduled for monitoring in 2014.

Table 3. Select information from sagebrush treatment sites monitored in 2014, Wyoming Range Front, Western Wyoming.

Site	Treatment Type	Years Post-Treatment	Dominant Sagebrush Type	% Cover Sagebrush	Shannon-Weiner Diversity Index	Herbaceous Production (grass & forb, lb/ac)
Maki (USFS)	Fire	5	Mt Big	0	2.50	551
Maki (USFS)	Reference	n/a	Mt Big	31	2.47	303
Cretaceous	Fire	20	WY Big	2.6	1.40	226
Cretaceous	Reference	n/a	WY Big	30.4	1.83	121
Bench Corral	Spike Herbicide	19	WY Big	18.8	1.62	239
Bench Corral	Reference	n/a	WY Big	18.2	1.47	185
Bench Corral	Elk Increase	17	WY Big	2.8	1.30	128
Bench Corral	Elk Increase	17	WY Big	14.8	1.67	85
Bench Corral	Pit Mechanical	18	Low	26.4	2.03	183
Bench Corral	Reference	n/a	Low	31.8	1.88	193
Bench Corral	Rip Mechanical	19	Low	23.6	2.10	82
Bench Corral	Reference	n/a	Low	32.4	1.81	99

Post-Fire Weed Treatments, Big Piney Ranger District (Goal 2) – Jill Randall



In 2012 and 2013 a backcountry horse sprayer was hired to focus on weed control in the Big Piney Ranger District (BTNF) in locations inaccessible by ATVs (Figure 121). Most of the areas targeted were areas that were either burned through wildfire or prescribed fire or were popular trails for recreation. In order to fully realize the positive effects of fire to wildlife habitat, weeds were treated to allow native vegetation to thrive. In 2012, 25 acres were treated within a 500-acre project area. In 2013, 36 acres were treated within a 400-acre project area.

Figure 121 – Canada thistle is sprayed in an area that previously burned.

Additionally, efforts were targeted in the Wyoming Front Aspen Restoration Project to treat weeds three to four years after prescribed fires in the Maki Creek and Red Canyon areas. This was accomplished by contracting SCWP employees to hike through the burned area with backpack sprayers and treat any weeds detected. Maki Creek had 322 acres surveyed and 431 acres were surveyed in Red Canyon (Figure 122) with all encountered weeds treated with herbicide.

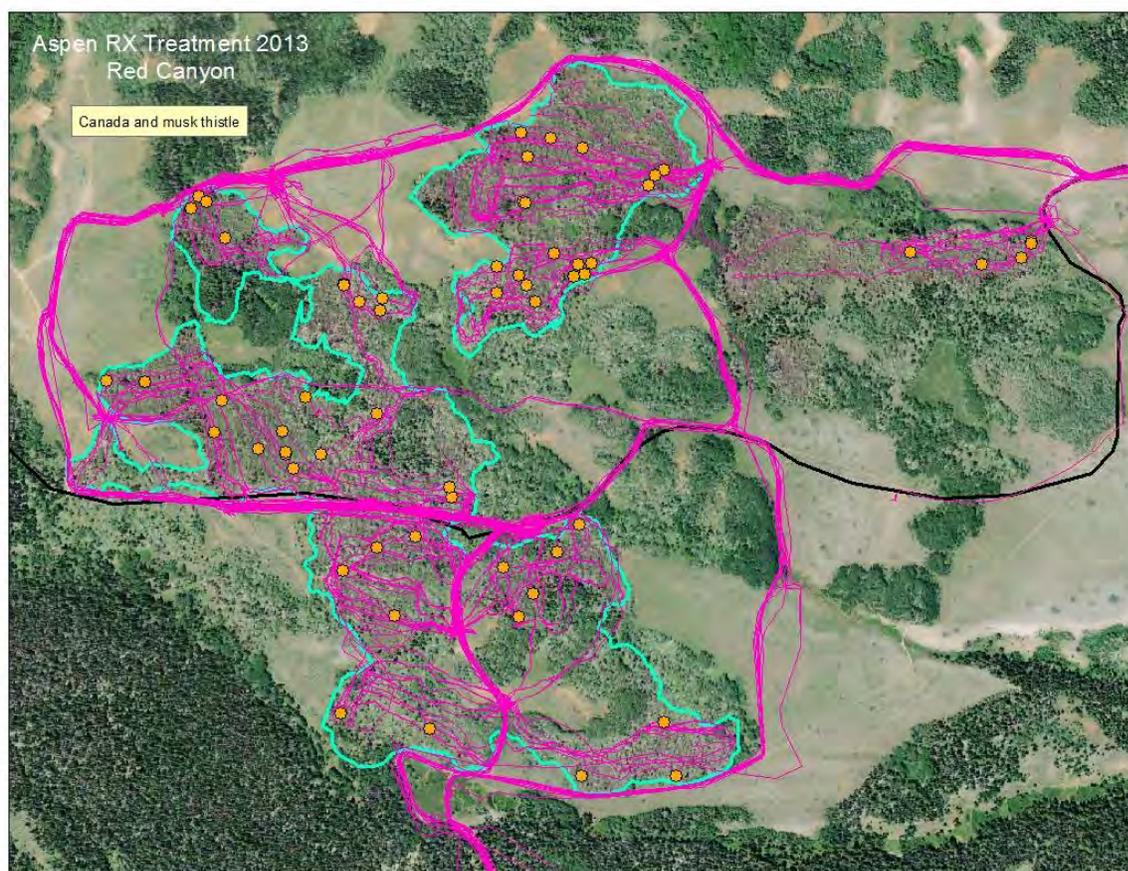


Figure 122 – Map of a portion of Red Canyon with pink tracks indicating the walking route for the survey and orange dots indicating treatment locations.

Cheatgrass Treatments (Goal 2) - Jill Randall and Miles Anderson

The Sublette Invasive Species Taskforce, a partnership with SCWP, BLM, WGFD, WLCI, SCCD, and Upper Green River Basin Sage Grouse Local Working Group, treated 2,964 acres of cheatgrass in fall 2013 across Sublette County. Included in that acreage are 221 acres on the Fall Creek WHMA and 259 acres on Soda Lake WHMA. All treatments (aerial and ground) used the chemical Imazapic. SCWP and WGFD monitored two permanent transects and four photo points as part of this effort.

Additionally, survey efforts for cheatgrass and other noxious weeds were conducted in 2013 on 9,251 acres of private land south east of Boulder, 100 acres on Soda Lake WHMA and along 402 miles of road within the South LaBarge portion of the Wyoming Range Mule Deer Habitat Project. These areas will be prioritized for treatment in 2014.

Winter Range Shrub Monitoring (Goal 5) - Jill Randall

The growing conditions were better in 2013 than in 2012 for most shrubs on winter ranges in spite of below average snowpack in the winter of 2012-13. Improved growing conditions were due to spring and summer rains (Figure 123) which can have a different effect on shrubs than winter snowpack due to rates of infiltration. Leader production on Wyoming big sagebrush and

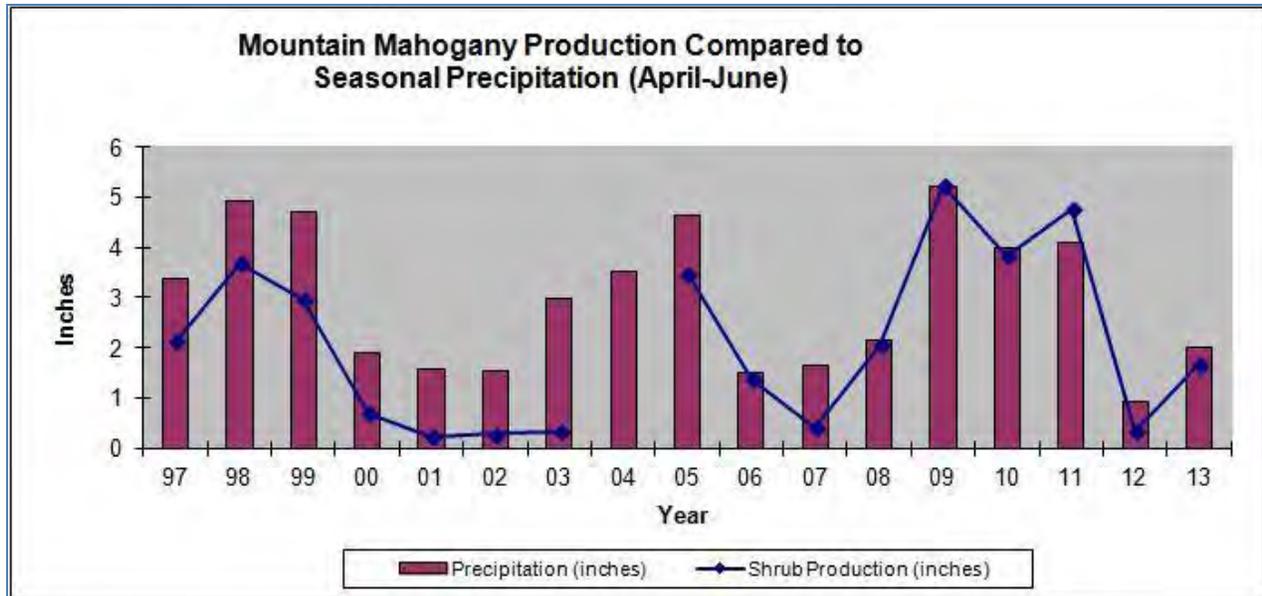


Figure 123 – Average leader production of true mountain mahogany compared to spring precipitation near Big Piney.

black sagebrush were the species most notably improved compared to the 2012 leader growth. However, average leader growth was still less than one-half-inch for Wyoming big sagebrush sites and less than two inches for mountain shrubs. Specifically, there is concern about a lack of annual growth observed in the winter ranges southeast of Boulder. Due to annual precipitation variation across the region and overall shrub conditions, this area experienced very low levels of growth. This could cause over-winter mortality of deer associated with forage quantity and quality for this part of the region regardless of winter severity. In 2013, 33 permanent transects were monitored in spring and fall by habitat biologists, wildlife biologists and game wardens (Figure 124).

In 2013, a significant amount of seed was produced on sagebrush and mahogany plants across the region. If growing conditions are favorable in 2014, a new age cohort could be recruited into many areas that lack age class diversity. This recruitment requires consecutive years of favorable conditions to first allow seed to be produced and then seedlings to get a taproot established for survival in drier years. Many shrub treatments planned for Wyoming Range and Sublette mule deer herds have the objective of establishing young age class shrubs for long-term improvements of winter foraging conditions.



Figure 124 – Monitoring winter range shrubs on the Mesa.

Wyoming Range Mule Deer Research (Goal 5) – Dr. Kevin Monteith (UW COOP), Gary Fralick, Jill Randall, Alyson Courtemanch

The Wyoming Cooperative Fish and Wildlife Research Unit (UW COOP) and the WGFD, along with numerous funding partners, initiated the Wyoming Range Mule Deer Project during winter 2012-2013. The overarching goal of the project is to investigate the nutritional relationships between mule deer population dynamics, energy development and disturbance, habitat conditions, and climate to provide a mechanistic approach to monitoring and management of mule deer. The first helicopter capture occurred in March 2013 with the capture of 70 adult females in the northern (Big Piney/LaBarge) and southern (Kemmerer/Evanston) winter ranges. Thirty-five deer were captured on each respective winter range and animals were fitted with GPS collars that will be worn for two years. This enabled WGFD to track trends in nutritional condition, reproduction, survival, movement and habitat selection of each individual.

In early December, UW COOP and WGFD recaptured deer collared in March 2013, in addition to capturing new deer fitted with collars retrieved from mortalities. For each captured animal, WGFD measured changes in nutritional condition over the summer and downloaded GPS data from collars. Using ultrasonography, WGFD measured body fat of each captured deer in March and December of 2013 to track changes in nutritional condition as deer left and entered winter ranges. Although there are numerous factors that may influence nutritional condition, such as habitat and climatic conditions, the demands of reproduction add a substantial cost to females in terms of the energetic demands of successfully rearing fawns. By measuring the fluctuations in fat reserves (i.e. nutritional condition), WGFD will be able to develop a better understanding of the nutritional relationships among habitat, reproduction, and survival.

UW graduate student Samantha Dwinnell established 50 shrub transects in each of the northern and southern winter ranges, as well as on the Pinedale Anticline, to monitor trends in browse production and utilization of Wyoming big sagebrush in relation to climate and disturbance from energy development. This past summer she collected fecal samples from summer home ranges of collared deer (Figure 125) to evaluate diet composition and nutritional quality of forage. She collected samples from each home range in June, July, and August to capture the potential change in forage quality as fawns grow and energetic demands of maternal care increases. The next step will include the use of microhistological analysis to identify plant species that comprise the majority of each individual's diet and collecting plant samples from those species in Summer 2014 to evaluate the digestibility and crude protein of summer forage. UW will continue measuring habitat conditions of winter and summer ranges through May 2015.



Figure 125 – Summer range used by a collared doe mule deer where fecal samples were collected in 2013