

PINEDALE REGION

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

Close work with the BLM continued to improve watershed health with an emphasis on riparian and aquatic habitats. Although numerous aquatic and terrestrial species will benefit from these ongoing efforts, Bonneville cutthroat trout (BCT) and their habitat will be the primary beneficiary and the indicator of restoration success. Juvenile trout survival in the Thomas Fork watershed is limited by poor stream habitat conditions within this allotment. Restoration of heavily impacted woody riparian vegetation along these streams will increase streambank stability, enhance trout cover, and increase shading which will reduce water temperatures and sediment loading, thus improving fish populations throughout the entire Thomas Fork drainage.

Cooperative efforts in 2009 included assisting BLM and permittees with maintenance work on the Raymond watershed fence and riparian exclosures and extensive coordination with BLM range and wildlife personnel to assist with monitoring livestock annual use and distribution. Several on-the-ground projects were implemented in the Thomas Fork watershed and are described in more detail below. Furthermore, to provide additional information supporting BLM's 2001 allotment evaluation, a range suitability analysis for the allotment was performed using Dennis Oberlie's GIS based rangeland suitability tool (Oberlie 2009).

A settlement agreement was reached in September between the BLM and other parties on an appeal of the 2005 Allotment Management Plan. This agreement requires the BLM to consult with WGFD to develop BCT habitat objectives which has led to increased discussions and communication between BLM and regional aquatic habitat and management personnel. Resolution of BLM commitments made in the settlement agreement is becoming the primary focus of the allotment evaluation, which is ongoing into the spring of 2010.

Riparian greenline data collected during summer 2008 was analyzed and summarized in cooperation with the BLM. Our preliminary interpretation of data from the 14 trend studies located outside of grazing exclosures indicates an upward trend at 6 sites, a downward trend at 3 sites, and no apparent trend at 5 sites (Table 1). However, final interpretation is pending additional BLM review and discussions with the BLM.

Table 1. Preliminary trends from data collected in 2008 at 14 greenlines outside of grazing exclosures on the Smithsfork Allotment.

Greenline Site Name	
Upward Trend	South Fork Raymond Creek
	Lower Raymond Canyon
	Lower Coal Creek
	Coal Creek – Outside Exclosure
	Upper Huff Creek
	Lower Muddy Creek – Outside Exclosure
Downward Trend	Upper Little Muddy Creek
	Lower Stoner Creek
	North Corral Creek
No Clear Trend	Huff Creek – Outside Exclosure
	First Creek
	Muddy Creek
	Mill Creek – State
	Mill Creek – Federal

- Over 2,000 acres Rx burned on BTNF and BLM lands in 2009.
- Over 1,100 acres of conifer mechanically cut from aspen stands in the Wyoming Range.
- 3 Conservation Easements completed on nearly 10,000 acres of private land.
- Landscape-scale habitat assessment completed on over 600,000 acres.
- Shrub monitoring indicates interesting results.
- The Conservation Fund completed a Conservation Easement on 2,451 acres in the upper Green River.
- Upper Huff Creek stabilized and two sites protected with exclosures.
- Exclosure extended to protect a spring on Coal Creek.
- More than 2,000 willow cuttings planted in the Coal, Huff, and Little Muddy Creek drainages
- Approximately 450 willow cuttings and 25 cottonwood cuttings planted along Rock Creek.

Because seed sources are extremely limited throughout this allotment, efforts have been made to reestablish woody riparian species. A proposal was submitted to BLM to greatly increase these efforts in the coming years. In the spring of 2009, this accelerated effort was initiated using hand-powered, rebar stinger tools to plant approximately 400 willow cuttings in the Little Muddy and Klein Creek exclosures. To increase efficiency and planting success, a high-pressure, waterjet stinger tool was constructed and used to plant approximately 1,200 more willows in the Coal and Huff Creek exclosures in the fall (Figure 1). Continuation of these aggressive restoration efforts is planned for the next several years.



Figure 1. Numerous willow cuttings were planted to improve stream stability and habitat.

Smiths Fork Basin Conservation Easement and Public Access Opportunities (Goal 1) - Floyd Roadifer
The prescreening process was completed for several potential conservation easement and access opportunities in the Smiths Fork basin. Habitat and Access Evaluation Process (HAEP) forms are being developed for three properties that the landowners expressed an interest in exploring these opportunities. Other landowners in the Lower Bear River basin have expressed an interest in similar opportunities and prescreening evaluations have been initiated. Habitat for numerous species will be permanently protected and important public access will be secured if these opportunities come to fruition.

Wyoming Front Aspen Restoration (WYFARP) (Goal 2) - Jill Miller and Eric Maichak
Through summer 2009, about 1833 acres of conifer, primarily subalpine fir, have been slashed within aspen stands substantially encroached by conifers in the WYFARP project area, with 155 acres prescription burned in late May 2009. Several thousand tons of subalpine fir were masticated and harvested by Terra Firma (Jackson, WY); 150 tons were sold to Questar and Encana for use as local energy development reclamation materials, as well as 1,200 tons sold to Basic American Foods for use as bio-fuels in potato processing. Furthermore, about 500 subalpine fir trees were harvested and shipped to Utah for sale as Christmas trees. Following prescribed burning of the Maki Creek allotment, 150+ yearling steers were permitted access to graze the allotment for nearly the full duration of permitted use, based on the BLM predictions that 1) above average precipitation and subsequent elevated herbaceous production in adjacent meadows, as well as 2) the likelihood that yearling steers would experiment with various forage types prior to selecting particular forage species would ultimately minimize livestock browsing of regenerating aspen and use of treated stands. To evaluate this decision, BFH personnel conducted 90 aspen monitoring circles immediate post-grazing (13-15 August) in three stands on BLM and USFS lands (Figure 2): control (no treatment, wildlife use only, USFS), burn (cut summer 2008, RX burn early July 2009, wildlife use only, USFS), and burn/graze (cut summer 2008, RX burn late May 2009, livestock and wildlife use, BLM) and compared these data to pre-treatment aspen circle data (N = 54 – 60 circles/stand) collected in 2006 and 2007. Within pre-treatment data, aspen density (Figure 3) and % browsed (Figure 2) did not differ. Within post-treatment data, stem densities on both burn and burn/graze stands differ from the control (Figure 3). Immediate post-grazing % browsed differed between the burn/graze and burn stands, between the burn/graze and control stand, but not between the burn and control stand (Figure 4).

We conclude that cut/burn treatments rejuvenated aspen stands by increasing stem densities and altering the height composition of treated stands relative to the control. No published studies have examined the effect of yearling steer browsing and use on aspen, yet we found that yearling steers rather than wildlife actively browsed newly regenerating aspen in excess of the 20%-26% browsing threshold that has been found by at least two other studies in the Intermountain West to reduce long-term aspen productivity and sustainability. Although we did not collect herbaceous utilization or vegetation nutrient/palatability measures, we suggest that aspen browsing levels of this magnitude support traditional optimal foraging theory rather than novel ‘wet year’ and ‘uneducated grazer’ hypotheses.

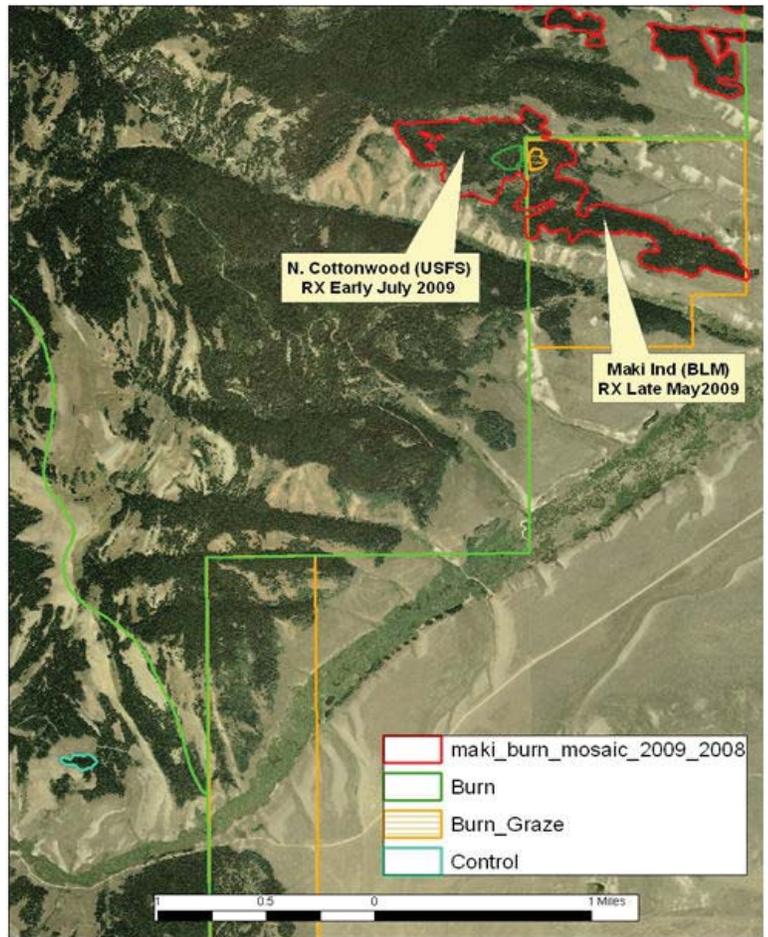


Figure 2. Cut/RX burn treatments of the WYFARP and Maki Aspen Enhancement projects and aspen stands monitored on BLM and USFS lands, east-central slope of the Wyoming Range, western Wyoming.

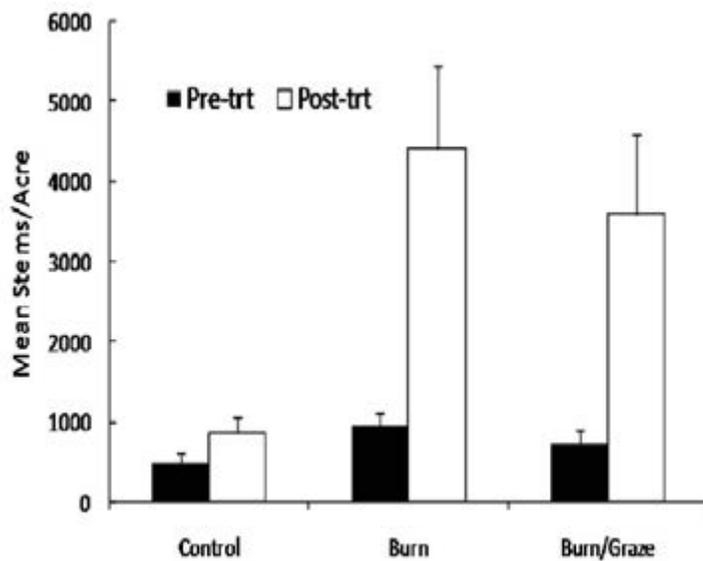


Figure 3. Mean total aspen suckers (+SE) encountered pre- and post-treatment on aspen stands that were untreated (Control), burned, and burned/grazed, east-central Wyoming Range, western Wyoming.

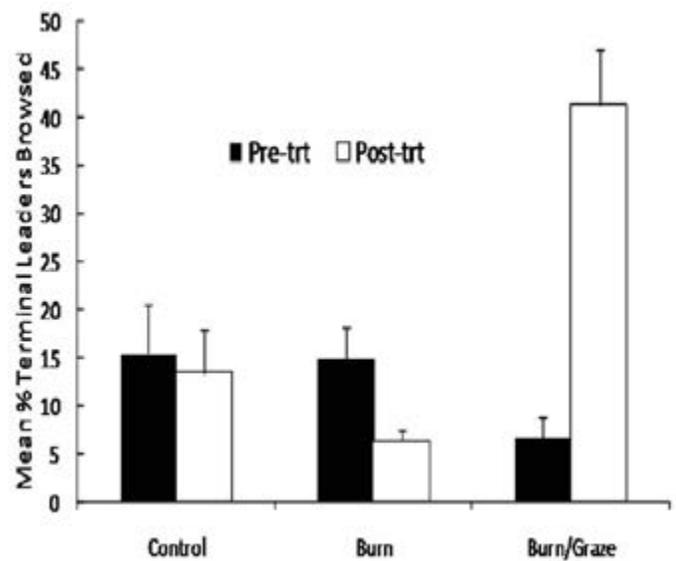


Figure 4. Mean % terminal leaders of aspen suckers browsed (+SE) found pre- and post-treatment on aspen stands that were untreated (Control), burned, and burned/grazed, east-central Wyoming Range, western Wyoming.

Kemmerer Ranger District USFS - 16 Allotments Permit EIS, Assessment and Monitoring (Goal 1) - Floyd Roadifer

Because of current habitat conditions found in this large area (175,728 acres) and the wide variety of terrestrial and aquatic species affected, WGFD personnel provided extensive comments on the scoping for this EIS. Upper portions of the Smiths Fork, Hams Fork, and Thomas Fork watersheds are all affected. Numerous meetings and discussions with Kemmerer RD personnel were held to discuss a variety of issues and concerns and to prioritize areas for potential vegetation treatments.

An evaluation tour of portions of these allotments with Dr. Alma Winward was coordinated by regional personnel. Monitoring issues and concerns as well as existing soils and vegetation data were reviewed and discussed both prior to and during the tour. These efforts led to the establishment of two nested frequency trend monitoring transects in tall forb communities in cooperation with FS personnel. One site is on Green Knoll and another is in the Devil's Hole watershed. Plans are being developed to establish similar additional monitoring sites in 2010. Notes from the tour were summarized and are available on the WGFD web site or from Regional habitat personnel.

Carney Conservation Easement (Goal 1) - Floyd Roadifer

In December 2009, The Conservation Fund completed Phase I of this important conservation easement when development rights were purchased on 2,451 acres. This easement is located in the upper Green River. Four separate conservation easements now exist on this property. The overall goal is to eventually permanently conserve and enhance the entire approximately 5,700 acre ranch. To complete the WGFD Habitat Evaluation Process (HAEP) in 2006, WGFD field personnel provided extensive information regarding wildlife and fisheries values for this property, which was ranked in the top 10 most valuable properties in the state. Furthermore, the Department provided a letter of support for a WWNRT grant proposal to help fund this project in October 2007. Additional input was more recently provided on the "Conservation Plan" & "Ecological Site Descriptions / Management Recommendations" for this easement developed by the JIO.

Bear River Cooperative Wetland Reserve (Goal 1) - Floyd Roadifer

The wildlife and aquatic habitat biologists have been working cooperatively with the USFWS Partners for Fish and Wildlife and NRCS on a voluntary Wetland Reserve Program (WRP) agreement on a large ranch outside of Cokeville on the Bear River. Assistance was provided in the development of a Compatible Use Agreement and Water and Vegetation Management Plan. Potential large scale riparian vegetation restoration opportunities are being discussed with landowners and other partners.

JIO Conservation Easements and Conservation Plans (Goal 1) - Jill Miller and Dan Stroud

The JIO has completed three conservation easements in 2009, on the Cross Lazy 2 Ranch, CRC Ranch and Diamond H Ranch totaling 9,792 acres of land. The conservation plans associated with these three easements total 28,325 acres where vegetation objectives are set in an effort to better mitigate loss of wildlife habitat from the Jonah gas field. Frequently these conservation plans include livestock grazing management strategies, vegetation treatments or other tools to improve or conserve wildlife habitat conditions on each specific ranch and their associated federal allotments.

BLM Landscape Planning (Goal 1) - Jill Miller

BLM Pinedale Field Office has recently decided to undergo landscape planning in the Boulder and North LaBarge areas. This effort involves grazing management, permit renewal, travel management, vegetation management and wildlife concerns into one NEPA planning document. WGFD has been involved with many components of this planning effort including setting vegetation objectives, designing sagebrush treatments, commenting on travel management and coordinating with permittees. The anticipated outcome is a better coordinated effort towards multiple uses on these BLM lands.

Pinyon Ridge (Goal 2) - Jill Miller

WGFD has been encouraging BTNF to complete a prescribed burn on Pinyon Ridge since the mid-1990's. In 2008, WGFD along with the Interagency Fire Effects Monitoring Crew established pre-burn monitoring in sagebrush communities in the Pinyon Osborn prescribed burn project which was currently involved in NEPA processes. WGFD was very excited that the Pinyon Osborn Environmental Assessment was completed in 2008 with a Decision to implement aspen and sagebrush treatments. After an appeal was issued in 2008, the Decision to implement treatments was reversed in 2009. This prompted a 2009 effort to pursue further field inventory data to re-affirm the current condition of aspen stands in the area and assess the need for treatment in these stands (Figure 5). The inventory work included habitat typing of the aspen stands and a risk priority assessment to recommend the highest priority places to focus management actions for maintaining aspen on the landscape. The inventory was completed on 3500 acres of aspen and indicated a majority of the aspen stands were in moderate to highest priority categories and the primary habitat type encountered was aspen with an understory of Snowberry and meadowrue.

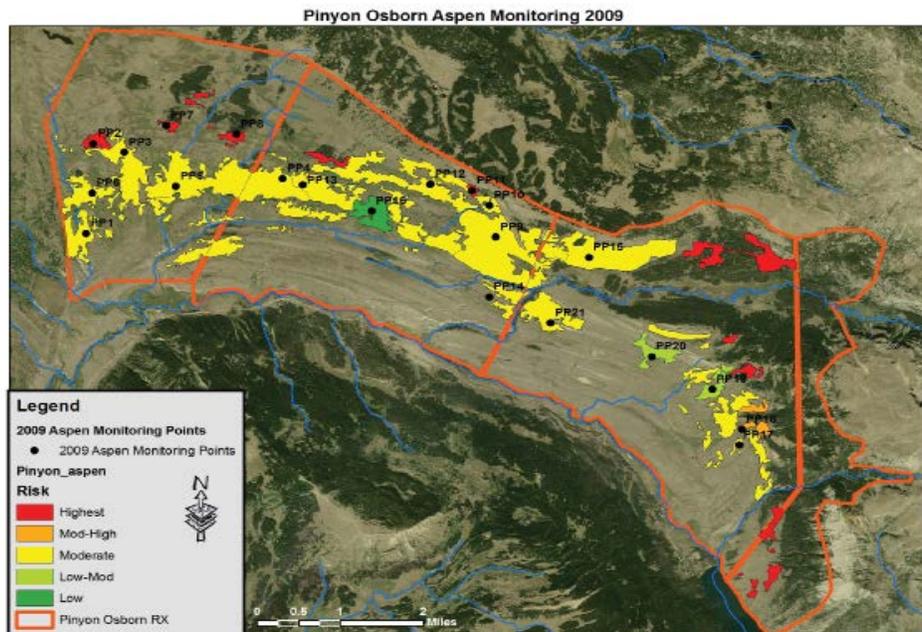


Figure 5. Pinyon Ridge aspen priority map.

Coal Creek Road Improvement (Goal 2) - Floyd Roadifer

A site visit and initial planning was coordinated with the BLM to resurrect a project proposal to reduce sediment loading from the road along Coal Creek. Maps and brief descriptions of the proposed project were prepared and provided to all landowners affected (i.e. BLM, State, and private). Because of the need to coordinate planning efforts and solutions among multiple landowners, a trust fund proposal was submitted seeking \$15,000 to hire a consultant to develop conceptual plans to address the numerous problems identified. These conceptual plans will be used to develop detailed site specific plans and funding proposals to solve the Coal Creek road issues.

Smiths Fork Basin Fish Passage and Screening (Goal 2) - Floyd Roadifer

WGFD continued providing support and assistance to TU and the Coal Creek diversion-screening project on state land was completed spring 2009. The diversion, used by the Clark Ranch, will complement on-going riparian management efforts. WGFD assisted TU with fish sampling to evaluate the structure. A fish trapping weir was collaboratively operated with TU on the reconstructed reach of lower Grade Creek, associated with the fish passage work completed there in 2008. WGFD personnel continued coordinating with TU and landowners to address fish passage issues and develop screening projects on the Whiteswater Ditch, the Stoner Nelson Wheelock Ditch, and the Spring Creek Teichert diversion.

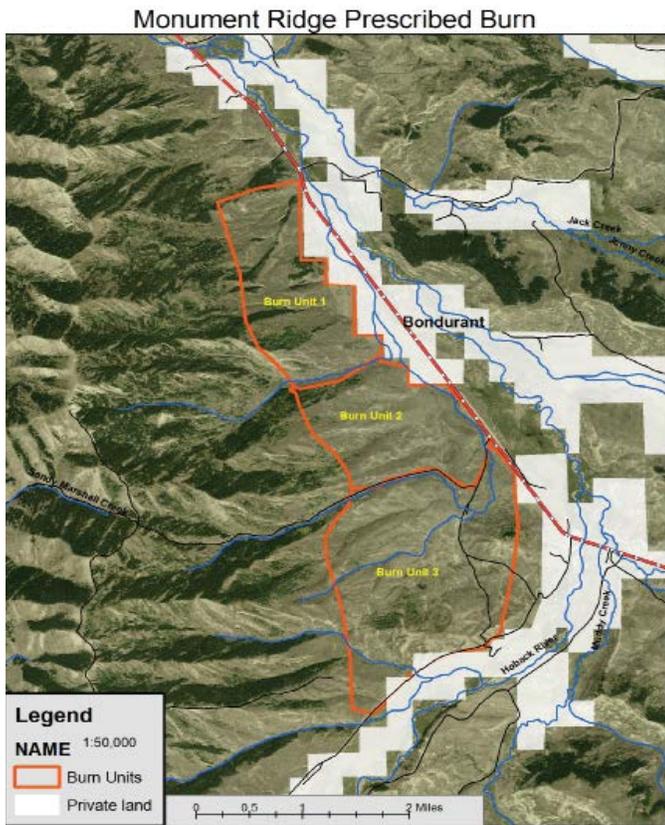


Figure 6. Monument Ridge prescribed burn area to be treated in 2010.

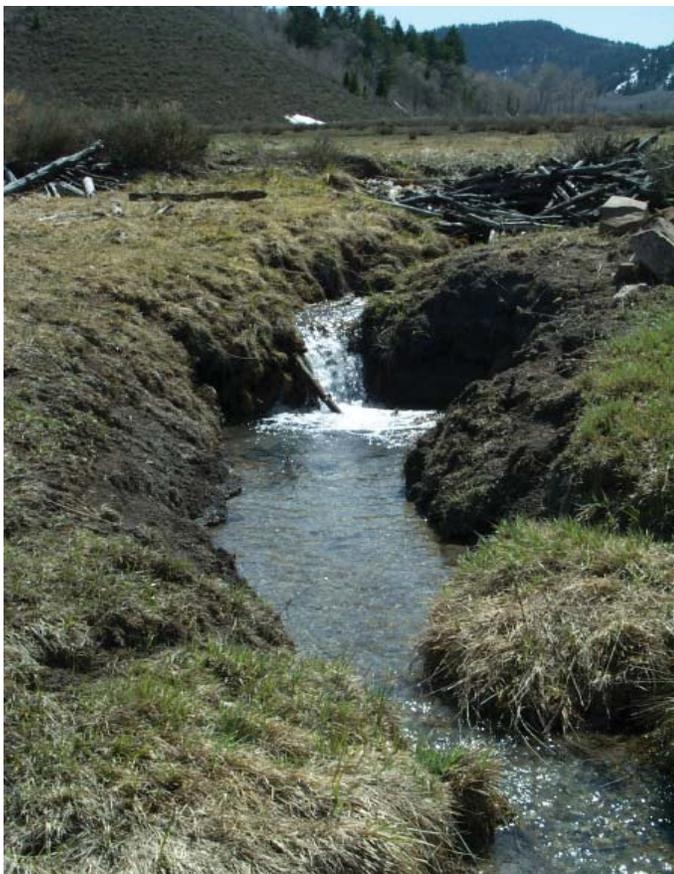


Figure 7. A relict beaver dam had developed into an actively eroding headcut.

Monument Ridge II Prescribed Burn (Goal 2) - Jill Miller. Monument Ridge II is the second unit to be prescribed burned in the three unit project area (Figure 6). Because a burn window was not met in fall 2009, this project is planned for implementation in 2010. This project will burn 30-60% of an 850 acre burn unit of sagebrush. The objectives include reintroducing disturbance to this mature monotypic sagebrush stand that serves as important transitional range for mule deer and pronghorn. Additionally, fuels objectives will be met by breaking up continuous fuel loads adjacent to private land in the town of Bondurant. Pretreatment data collected in 2009 indicate mountain big sagebrush canopy cover of 26% in addition to silver sagebrush canopy cover of 7%. Ground cover measurements indicated 79% cover, which is lower than the potential for this site.

Huff Creek Headcut Stabilization and Enclosure (Goal 2) - Floyd Roadifer. Two active headcuts (Figure 7) were stabilized on the upper reaches of Huff Creek and grazing exclosures were constructed around approximately 10 acres of riparian habitat at each project site. This stream provides some of the most critical spawning habitat for Bonneville cutthroat trout in the Thomas Fork drainage. To maintain the water table at an elevation available to the roots of desirable riparian vegetation, structural reinforcement (i.e. rock and large wood) was used to prevent the stream bed from further down cutting (Figure 8). The exclosures will reduce herbivory and bank trampling, which combined with the structures, will result in less sediment loading into the creek. To accelerate the recovery of woody riparian vegetation, approximately 500 willow cuttings were planted along the stream banks within both exclosures with assistance from a group of local Boy Scouts completing an Eagle Project.



Figure 8. Headcut stabilized with rock, large wood, and willow plantings. The site is protected with a riparian exclosure fence.

Twin Creek Watershed and Fish Habitat Improvement (Goal 2) - Floyd Roadifer

The Twin Creek / Rock Creek watershed provides crucial habitats for a wide variety of aquatic and terrestrial wildlife. To prioritize and guide future restoration, enhancement, and monitoring efforts in this watershed, a detailed summary of completed, ongoing, and potential future habitat projects was prepared. This working document is available through the Pinedale Regional Aquatic Habitat Biologist (See “Twin Creek Watershed Cooperative Habitat Initiative” for further details).



Figure 9. Trout Unlimited members assisted with planting willows along Rock Creek.

Riparian conditions have improved on the 0.3 mile of lower Rock Creek fenced in 2008. To accelerate recovery of woody riparian species, approximately 450 willow cuttings and 25 cottonwood cuttings were planted along stream banks in both the spring and fall of 2009 (Figure 9). This reach of Rock Creek is important to the overall success of collaborative efforts to restore a variety of native fish populations in the Twin Creek watershed.

WGFD continued cooperative efforts with TU and landowners to address fish passage issues on Rock Creek and Twin Creek. WGFD assisted TU with fish sampling at multiple stations, including sampling the old DOT gravel pits that filled with water after Twin Creek ruptured its banks in March (Figure 10). Screening projects initiated in 2008 on Rock Creek were completed in 2009 and assistance was provided with operation and monitoring. The upstream landowner and TU began implementation of a similar project where 4 diversions were consolidated into 2, and this will be completed spring 2010. TU is developing a design to address fish passage needs at the BQ diversion on Twin Creek and WGFD is assisting with a \$20,000 fish passage grant. The BQ diversion dam will be replaced with a fish friendly structure and fish screen in fall 2010.



Figure 10. Restoration efforts in the Twin Creek watershed face numerous challenges such as this location where the stream cut through its bank and filled an abandoned gravel pit.

WGFD personnel coordinated with BLM, State Land Board and Rock Creek State land lessee on the long-standing idea to construct drift fences in the canyons draining from Dempsey Ridge into Rock Creek. A draft EA was provided to the BLM to facilitate project implementation.

Maki Aspen Prescribed Burn (Goal 2) - Jill Miller and Dan Stroud

USFS crews completed final burns in 200 acres of slashed conifer in early-mid July 2009 during moist fuel conditions. About 1,450 acres of aspen and mountain big sagebrush were ultimately burned, primarily from the central to northern portion of the project area (Figure 11). Seventy-five acres of aspen stands and 275 acres of

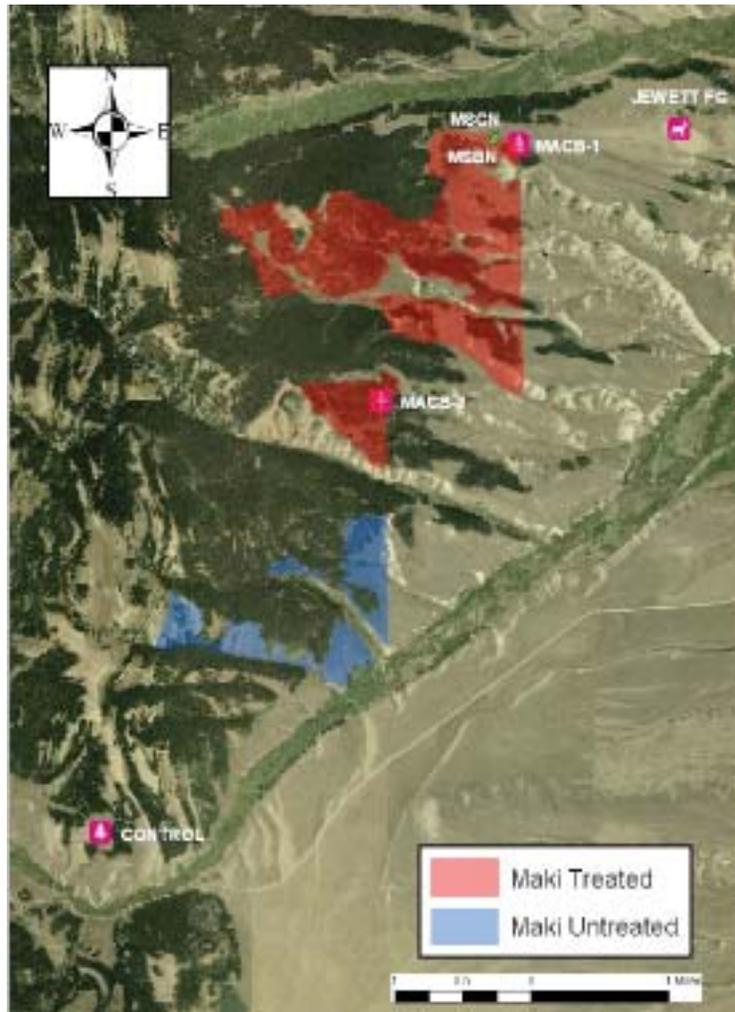


Figure 11. Maki Aspen Enhancement project area, including final aspen and mountain big sagebrush habitats treated and untreated, conifer habitats commercially harvested, aspen monitoring sites (tree symbol), sagebrush monitoring sites (green circles), and adjacent Jewett elk winter feedground (elk symbol), east-central slope Wyoming Range, western WY.

sagebrush in the southern portion of the project area originally identified for slash/burn treatments were omitted. WGFD and GTNP personnel assessed impacts of aspen treatments by implementing circular plots in two treated stands (MACB1: burned late September 2008; MACB2: burned early July 2009) and one untreated stand (CONTROL) in 2006 (pre-treatment) and 2009 (≤ 1 yr post-burn, (Figure 11). At sagebrush monitoring sites (treatment, MSBN, control and MSCN, personnel implemented line-point intercept, belt transects and herbaceous production clippings. We found that density of aspen was <1000 stems/ac pre-treatment on all sites but then increased on MACB1 and particularly MACB2 less than one year following burn treatments (Figure 12). The proportion of terminal leaders browsed (Figure 13) did not exceed 20% except on MACB1 (24.5% (approximately 1 mile from the Jewett elk winter feedground) in 2006. Most aspen comprised the 1-3' height category pre-treatment but then comprised the 0-1' category less than one year post-burn. In mountain big sagebrush, species richness of grasses and forbs did not differ between treatment and control. The burned site had a live sagebrush density of 243 stems/hectare (100% classified as 'mature'), while the control site was higher at 45,369 live stems/hectare (74.6% classified as 'seedling'). Bare ground cover was 21.4% and 4.2% on burn and

control sites, respectively. Production of grasses (551.2 kg/ha) and forbs (618.1 kg/ha) was higher on the burn than control site (grass: 386.6 kg/ha, forb: 212.5 kg/ha). We suggest that slashing/scattering/burning of conifers within aspen stands ‘re-sets’ vegetation succession and promotes aspen persistence. Declines in current year browse levels from both MACB1 and 2, relative to pre-treatment observations, were unexpected and may be a result of elevated personnel activity and/or quantity/quality of aspen and herbaceous production in the nearby 9,600 acre Horse Creek Wildfire. Substantial decreases of live sagebrush density and basal ground cover, as well as increase of herbaceous production on the burned site were expected. The relatively high abundance of seedling sagebrush on the control site was similar to several other lower elevation sites (BLM) in 2009, and suggests that above average precipitation during the growing seasons of 2008 and 2009 stimulated sagebrush seedling germination and recruitment. Completion of this project is the result of over 20 years of planning, and teamwork among WGFD, USFS, the associated livestock permittee and adjacent landowners/ranch managers, as well as funding provided by USFS (\$300,000), WVNRT (\$60,000), and WGFD (\$25,000).

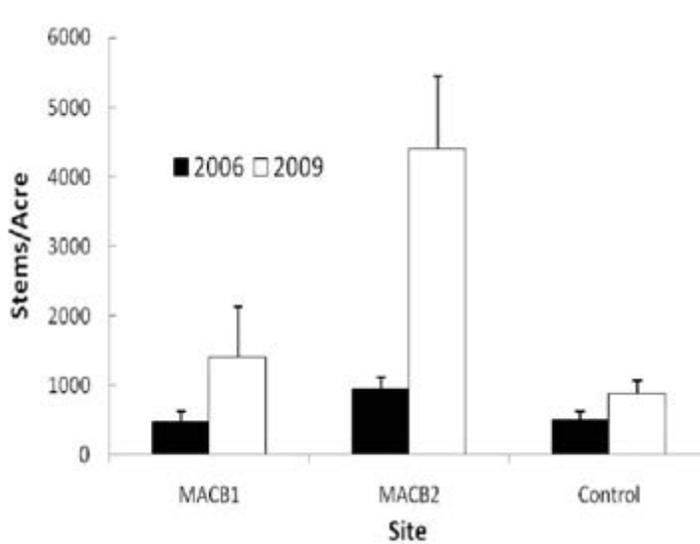


Figure 12. Total aspen stem density (+SE) from aspen stands within Maki Aspen Enhancement project area, pre-treatment (2006) and \leq 1yr post-treatment (2009), east-central slope Wyoming Range, western WY.

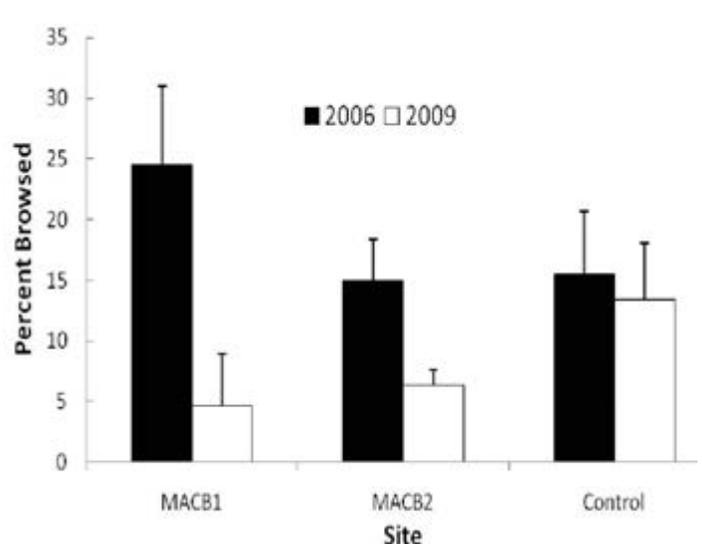


Figure 13. Proportion of aspen terminal leaders browsed within current year (+SE) from aspen stands within Maki Aspen Enhancement project area, pre-treatment (2006) and \leq 1yr post-treatment (2009), east-central slope Wyoming Range, western WY.

New Fork River Riparian and Channel Habitat Enhancement (Goal 2) - Floyd Roadifer

The new owners of the former Rossetter property hired a consultant to develop fisheries habitat enhancement projects on their property and the downstream “Airport Section” state parcel, located approximately 6 miles south of Pinedale. WGFD aquatic personnel reviewed these plans and provided input. Project funding proposals are being developed and coordination with the state land grazing lessee has been initiated.

The “Lazy River Ranch,” located between the confluence of Boulder Creek and the East Fork confluence, was evaluated with the landowner and a consultant. Summary notes were drafted and sent to the consultant for review. Intensive management efforts appear to be allowing for recovery of riparian vegetation, particularly the herbaceous component. However, recovery of cottonwoods and other woody species is still a concern.

Coal Creek Exclosure Expansion (Goal 2) - Floyd Roadifer

The existing Coal Creek exclosure was extended upstream (approximately 6 acres) to protect a previously fenced perennial spring on state land (Figure 14). In addition to improving water quality and riparian habitat, the new fence effectively closes an illegal trail created by ATV riders. This trail follows directly alongside the creek upstream and contributes to degradation of riparian and aquatic habitats.

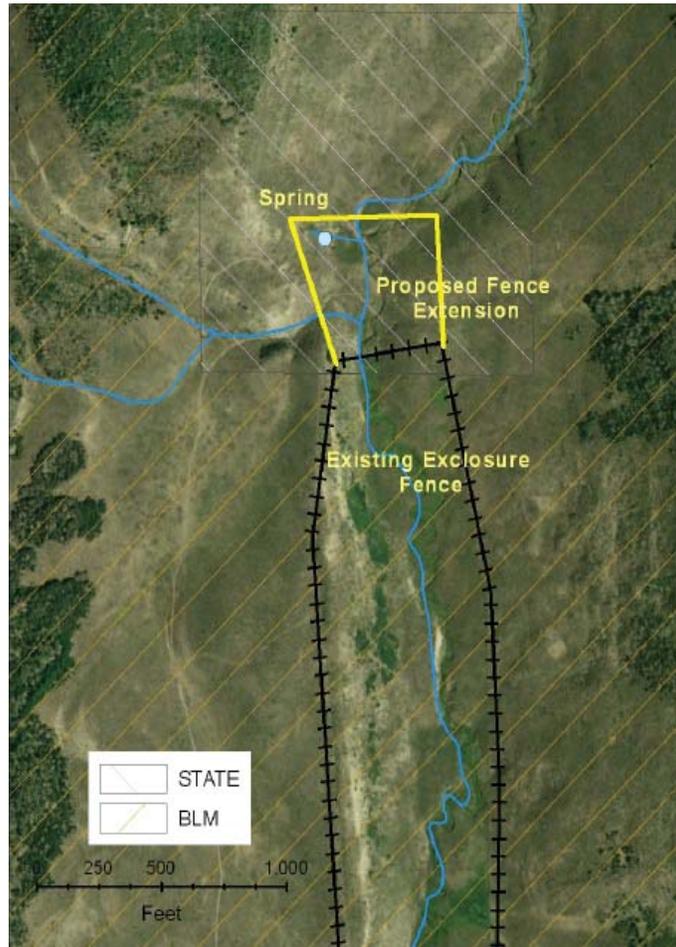


Figure 14. The Coal Creek exclosure was extended to protect a cool water spring for the benefit of Bonneville cutthroat trout.

Chicken Creek Prescribed Burn (Goal 2) - Jill Miller

The Chicken Creek prescribed burn was implemented in the fall of 2009 (Figure 15). It was a 1500-acre project with sagebrush, aspen, conifer, and willow vegetation. Much of the aspen was encroached by conifers (mainly limber pine). Many of the aspen stands also showed reduced vigor compared to the sizes of boles on the ground remaining from decades earlier. The objectives of the Chicken Creek burn were as follows: 1) treat 30-50% of sagebrush with 15% canopy cover or greater in a mosaic pattern over the landscape; 2) attain 60% ground cover in treated sagebrush/grass areas within 2 years post burn and 80% within 5 years post burn; and 3) attain 1,000 stems per acre in burned aspen areas that are 10 feet tall within 15 years.



Figure 15. Chicken Creek Prescribed burn on implementation day, fall 2009.

Cottonwood II Aspen Treatment (Goal 2) - Jill Miller

Cottonwood II is a mechanical thinning and prescribed burn project, similar to the Maki Aspen Enhancement project. Both feature similar objectives and utilize similar implementation tools to expand the treatment across additional acres on the landscape. Monitoring objectives include aspen and ground cover objectives that will ultimately reduce conifer encroachment and return a young aspen forest to the area. Current aspen sucker density was monitored in 2007. In 2009, ground cover measurements were collected indicating 96% and 93% cover in the two selected stands. Mechanical treatment was implemented on approximately 1,000 acres in 2009 and will be completed in 2010. Prescribed burning may be implemented as early as fall 2010 (Figure 16).



Figure 16. Cottonwood II Aspen stand with mechanical thinning of conifers completed prior to burning implementation.

Fremont Ridge, Year 10 (Goal 2) - Jill Miller

The Fremont Ridge prescribed burn is a 1,418-acre area which was burned using two entries in the fall of 1999 and the spring of 2000. In 2009, 10-year monitoring was completed to determine if vegetation objectives have been met. The vegetation on Fremont Ridge is dominated by a sagebrush-bitterbrush mix with an understory of bluebunch wheatgrass, Idaho fescue and needlegrasses. The primary vegetation objectives were to improve habitat conditions for wintering elk by increasing bitterbrush density, reducing sagebrush density and increasing herbaceous production. After ten years, bitterbrush densities were not increased compared to pre-burn data, sagebrush densities were reduced in areas that had fire introduced to them and it is uncertain if overall herbaceous production was increased (due to sampling methodologies and known affect of local precipitation.) Ground cover data was compared between post-burn monitoring events and increased from 62% cover two years post-treatment to 91% cover in 2009 (Figures 17 and 18).



Figures 17 and 18. Plot 3 on Fremont Ridge pre-burn (left) and 10 years post-burn (right).

Little Flattop, Wood Draw, Year 3 (Goal 2) - Jill Miller

The Wood Draw portions of Little Flat Top were prescribed burned in the spring of 2007. Included were a 742 acre area of aspen forest and a 147 acre willow community along Willow Creek in the foothills of the Wind Rivers. In 2008 the 15,089-acre New Fork wildland fire prevented year 2 post burn aspen and ground cover monitoring at Wood Draw as well as willow monitoring in Willow Creek. In 2009, this data was collected in both areas (Figure 19). In year 3 post burn, aspen sucker density was 7333 stems per acre. 11.6% of the leaders were browsed. Ground cover has already met the Year 5 post-burn objectives of 60% cover according to year 3 data. In the Willow unit it does not appear that browsing by ungulates is likely to hamper the growth of willow stems, because browse levels were fairly low (23% for both species combined.)

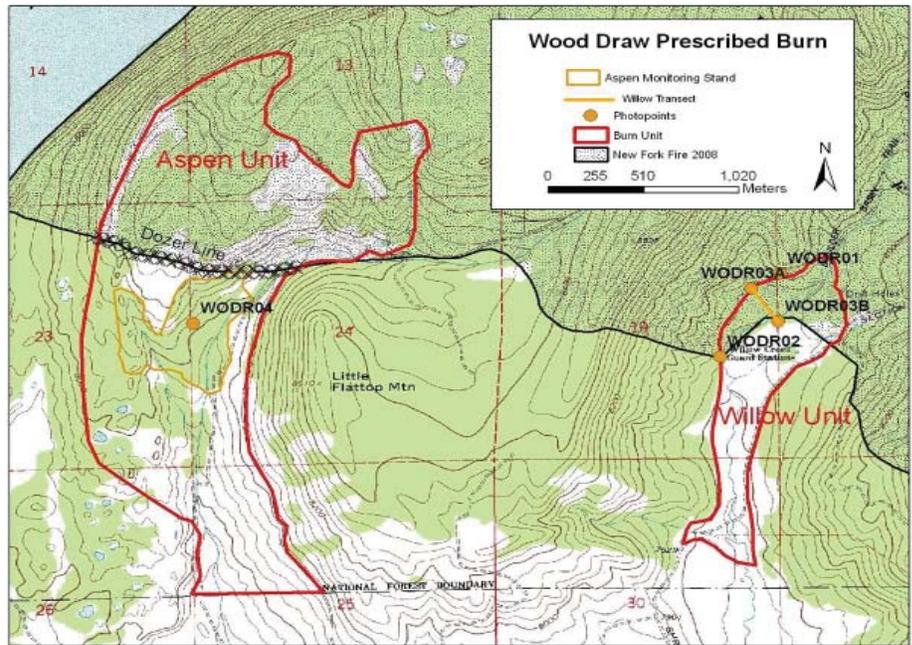


Figure 19. Map of the Little Flattop Wood Draw Unit prescribed burn, monitoring sites and the New Fork Wildfire.

New Fork Boulder-Lake Rim, Year 5 (Goal 2) - Jill Miller

The Lake Rim Unit of the New Fork-Boulder prescribed burn was treated in the spring of 2004. The unit includes a ridge along the north shore of New Fork Lake, with aspen, conifer, and sagebrush vegetation. At the Lake Rim unit, aspen sucker density was measured pre-burn using randomly located, non-permanent circular plots. Unfortunately, the aspen in this area did not burn. A sagebrush macroplot also did not experience fire. Therefore, only permanent photopoints remain to document fire effects. In 2009, these photos were retaken to document vegetation changes that have occurred post-treatment. The current conditions include a mix of snowberry, sagebrush grass and a good diversity of forbs throughout the unit. Some aspen regeneration is present in areas where fire was introduced (Figures 20 and 21).



Figures 20 and 21. New Fork Boulder—Lake Rim Unit monitoring photo pre-burn (left) and year 5 post-burn (right).

New Fork Boulder-Marsh Creek, Year 5 (Goal 2) - Jill Miller

The Marsh Creek unit of the New Fork-Boulder Prescribed burn was treated in the spring of 2004. The unit consists of Wyoming big sagebrush vegetation with small pockets of aspen. At the Marsh Creek unit, only permanent photopoints were used to monitor fire effects. In 2009, these photos were retaken to document 5 year post-burn conditions. The conditions demonstrate a good treatment mosaic in sagebrush with productive herbaceous growth in burned areas. Aspen were probably not treated with enough fire to get ideal post treatment response of suckering (Figures 22 and 23).



Figures 22 and 23. New Fork Boulder—Marsh Creek unit monitoring photo pre-burn (left) and year 5 post-burn (right).

Fremont Butte Individual Sagebrush Treatment (Goal 2) - Jill Miller

This sagebrush mowing project was jointly developed by the BLM permittee, Sublette County Conservation District (SCCD), BLM, WGFD and NRCS to enhance Wyoming big sagebrush habitat conditions for sage grouse as well as other obligates to this ecosystem. The sagebrush is old, decadent and demonstrates less than potential understory diversity and productivity. The project will utilize WGFD personnel to mow a broad mosaic into 250 acres of sagebrush throughout the 5,000 acre Fremont Butte Individual allotment. Polygons are designed to have 20-50% cutting of sagebrush in a mosaic, depending on season of use by sage grouse. This project was designed to demonstrate how a variety of interests can successfully implement a sagebrush treatment in Statewide Sage Grouse Core Areas with winter, nesting and brood rearing habitat in close association to these treatment areas. We anticipate this project to be implemented in fall 2010.

Squaretop Windmill Conversion (Goal 2) - Jill Miller

This project will replace a functioning windmill livestock well with a solar pump. It will allow water to flow all summer and create a pond and “green” overflow area. Brood rearing sage grouse, pronghorn and other sagebrush-obligate species will all benefit. Additionally, removing the perch structure of the windmill may decrease predation on sage grouse chicks. Livestock will be excluded from the green area and watered out of a separate water trough which will increase the potential benefits to wildlife. This project design mirrors two similar projects in this allotment that JIO was involved with that demonstrated favorable results. It is part of a larger project involving the permittee, BLM, WGFD, NRCS and SCCD with overall objectives to successfully manage wildlife and livestock in a cooperative manner. The project will be implemented in 2010.

Mesa Fertilization (Goal 2) - Jill Miller and Dan Stroud

This project has been developed through the JIO and the BLM to mitigate loss of mule deer winter range on the Pinedale Anticline. The project components include treating sagebrush adjacent to energy development with three different rates of fertilizer as well as light Spike treatment in an attempt to improve sagebrush vigor and ultimately browse conditions for mule deer and antelope. Implementation is scheduled for 2010.

Seed Trials (Goal 2) - Jill Miller

Critical wildlife habitat supporting mule deer, pronghorn, and sage-grouse in high elevation rangeland and sagebrush ecosystems of southwest Wyoming is threatened by energy development. The objective of the field studies is to evaluate the restoration of native plant species after disturbances, such as well pads. In October 2005, 72 entries of 50 native species were drill seeded on a wellpad site, in single species plots, with four replications. Also, two seed mixtures were broadcast- and drill seeded, and one seed mixture was hydro-seeded on disturbed areas adjacent to the plots on the same well pad. Cover and density have been monitored annually by NRCS, BLM and WGFD personnel. Grasses, forbs and shrubs have all been evaluated for performance so that reclamation practices on western Wyoming's low precipitation sites can be improved (Figure 24).



Figure 24. Seed trial plot with rows of basin Wildrye grass showing high scores for evaluation.

Horse Creek Wildfire (Goal 3) - Jill Miller

The 9600 acre Horse Creek Fire occurred during the summer of 2007. It was located on the Piney Front foothills of the Wyoming Range, in the Big Piney Ranger District. Mixed aspen and conifer forest was burned, and widespread aspen regeneration occurred, mainly in previous aspen forest, but also in burned conifer areas. The BTNF fire management organization and WGFD biologists became interested in monitoring the reforestation by aspen in the burned area. With the local elk population above the herd unit objective, and potential cattle grazing, it is possible that browsing pressure could threaten the aspen recovery. In 2009, the Fire Effects Crew and WGFD biologists revisited the aspen monitoring stand to retake photopoints, estimate sucker density and height, and add ground cover monitoring to the data collection. Aspen suckers per acre have nearly doubled in the second growing season post burn at our monitoring location (from 6024 to 12,296 stems per acre.) Height distributions of suckers have begun to increase as well (Figure 25). Some individuals have exceeded 2 meters in height already. Browsing incidence in year one was 14.4% use while in year two it was 17% use. Further monitoring is planned to ensure elk browsing does not prohibit successful aspen regeneration. Ground cover measurements taken from 22 randomly located transects within the aspen monitoring stand show that there is almost 40% bare ground in year 2 post burn. This contrasts with the 10-20% usually found in aspen stands treated by prescribed fire in the first few years post treatment. Ground cover will continue to be tracked until it reaches 80%.

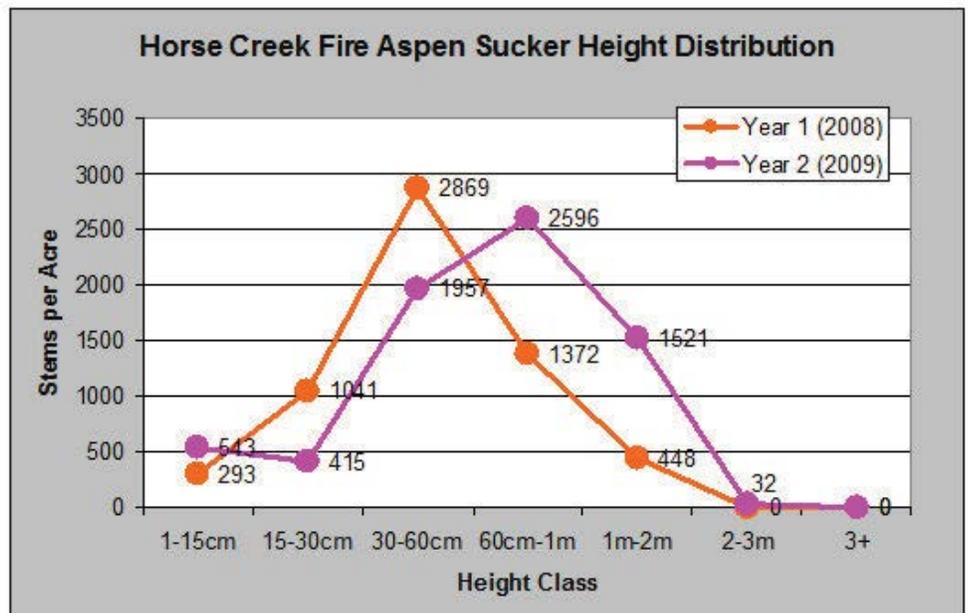


Figure 25. Horse Creek wildfire aspen sucker height distribution.

Wyoming Range Mule Deer Initiative (Goal 4) - Jill Miller

Pinedale, Green River and Jackson biologists have been heavily involved in the Wyoming Range Mule Deer Initiative since 2008. This process has included winter range habitat data collection, season setting presentations, mule deer habitat assessment oversight, population objective discussions and many other discussions with partner agencies and private individuals.

Aquatic Habitat Information and Technical Assistance Requests (Goal 5) - Floyd Roadifer

Regional habitat personnel provided input for the Bear River Conservation Action Plan (CAP), an effort led by The Nature Conservancy. Similar collaboration involved providing comments and participating in a public scoping meeting for developing a management plan for the Cokeville Meadows Refuge (CMR). USFS anticipates this planning process will be completed in approximately two years and will guide CMR management for the next 15 years. Habitat conditions and potential fisheries opportunities in Jim Lake and the Jim Creek watershed (East Fork River tributary) were summarized and shared with the BLM, USFS, and FMPE. Riparian habitat conditions and potential enhancement/restoration opportunities on the old “Zembo Ranch” were evaluated and discussed with the ranch manager. Finally, assistance was provided to the USFS with maintenance of the Kendall Warm Springs enclosure.

Wyoming Range Allotment Closure (WRAC) and Triple Peak Forage Reserve (TPFR) Monitoring (Goal 5) - Jill Miller

In 2009, WGFD and BTNF personnel monitored nested frequency locations in both the WRAC and TPFR. The Horse Creek location in WRAC was installed in 2004. In 2009 this location had frequency read for indicator species only (five forbs and two grasses.) We wanted to see some change or shift in these species if the site is recovering. Although data did not indicate a large species shift, ground cover did improve from 37% cover to 44% cover in five years. Tall forb communities take very long to recover when they are in a degraded state and top soil is missing. We would not expect to see large species shifts for many more years on this site.

The TPFR had one nested frequency site what was read in 2009 in the Lunch Creek Meadows vicinity. This site was initially set up in 1984 with the last reading completed in 2004 prior to our monitoring in 2009. The ground cover actually shows a decrease from 75% to 60% cover, both of which are less than potential for this site. We plan to re-read both of these sites on a five-year cycle to evaluate proper management for healing and recover of these tall forb communities (Figure 26).



Figure 26. Photo of the nested frequency monitoring site in Horse Creek, showing tall forb communities in need of further recovery.

Moose Habitat Assessment (Goal 2) - Jill Miller

The moose habitat assessment was initiated in 2007 in the Jackson Herd Unit (HU) and continued in 2008 and 2009 to the Sublette HU. The impetus behind conducting a moose habitat assessment were concerns that several of the moose herd units in Wyoming are experiencing poor calf recruitment and recent population declines. While the specific reasons for the declines are not fully understood, habitat conditions remain a common theme and are generally an important component of the decline equation. Thus, managers at recent herd unit review meetings have recommended field personnel develop habitat enhancement proposals benefiting moose. A proposal was developed to address the above recommendations by providing a systematic and comprehensive review, including management recommendations, of important moose habitats on a HU basis.

The primary objectives of the inventory assessment are: 1) Accelerate WGFD efforts to implement Strategic Habitat Plan and wildlife habitat productivity with emphasis on moose; 2) Provide moose HU based maps and reports depicting current ecological conditions for important moose habitats; 3) Provide prioritized list of future management recommendations for important habitats within HUs; and 4) Use above prioritized list to submit and solicit funding for habitat enhancement project proposals. During 2007, the TSS completed habitat assessment for most of the Jackson Moose HU (approximately 95,000 acres) and provided a report. Habitat evaluation components included: 1) dominant understory and overstory species composition; 2) site potential evaluation; 3) digital photos hyperlinked to display in ArcMap; and 4) management recommendations by geographic area. The 2008 progress included 160,000 acres in the Sublette Moose HU in the Hoback drainage and Upper Green River areas. In 2009, the assessment completed 134,000 acres along the west slope of the Wyoming Range from Bondurant to LaBarge Creek (Figure 27).

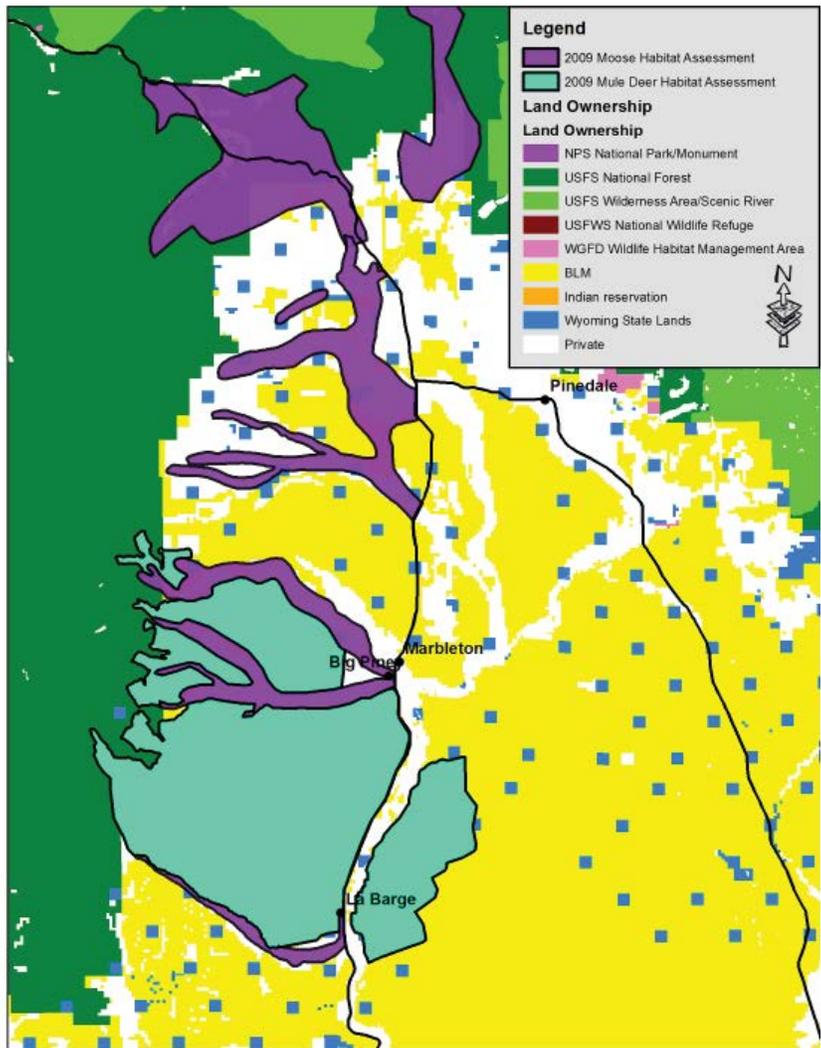


Figure 27. Moose and Mule Deer Habitat Assessment map of areas completed in 2009.

Mule Deer Habitat Assessment (Goal 2) - Jill Miller

The mule deer habitat assessments began in 2008, completing 163,000 acres between LaBarge Creek and Fontenelle Creek in the Green River Region. In 2009 this effort was expanded to include 350,000 acres from LaBarge Creek north through Deer Hills as well as a portion of the Little Colorado Desert, east of the Green River (Figure 27 above). This project was modeled after the Moose Habitat Assessment and included similar objectives on important winter and transitional ranges for the Wyoming Range Mule Deer Herd. Habitat conditions are generally considered to be in poor condition on many of our mule deer winter ranges and have experienced significant impacts from energy development. This assessment effort produces an elevated understanding of current habitat conditions as well as recommending potential ways to improve the quality of habitat for mule deer. A GIS product is an additional component of this project which can be used by WGFD and partner agencies to enhance project development.

Winter Range Shrub Monitoring (Goal 2) - Jill Miller

Shrub conditions in 2009 had excellent production this season which was expected due to the spring precipitation we experienced. This is the second season of good production following nine years of drought conditions. Mountain big sagebrush, Wyoming big sagebrush, black sagebrush, bitterbrush and true mountain mahogany are monitored for annual leader production on established transects throughout Sublette County. We expect seed production was favorable both years with good conditions to support seedling survival as well. The first three years of growth are critical to survival of seedlings. Once they survive to year three their chances of success are quite good due to root establishment and the ability to adjust to varying annual moisture regimes. Future year's monitoring will determine if young plants have been established. Spring monitoring includes incidence of browse, age classification and hedging categories on the shrubs. Spring monitoring has indicated a general condition of over browsed shrubs, severe hedging categories, and very little recruitment, especially on shrubs that are highly preferred by mule deer on winter ranges such as bitterbrush, true mountain mahogany and black sagebrush (Figure 28).

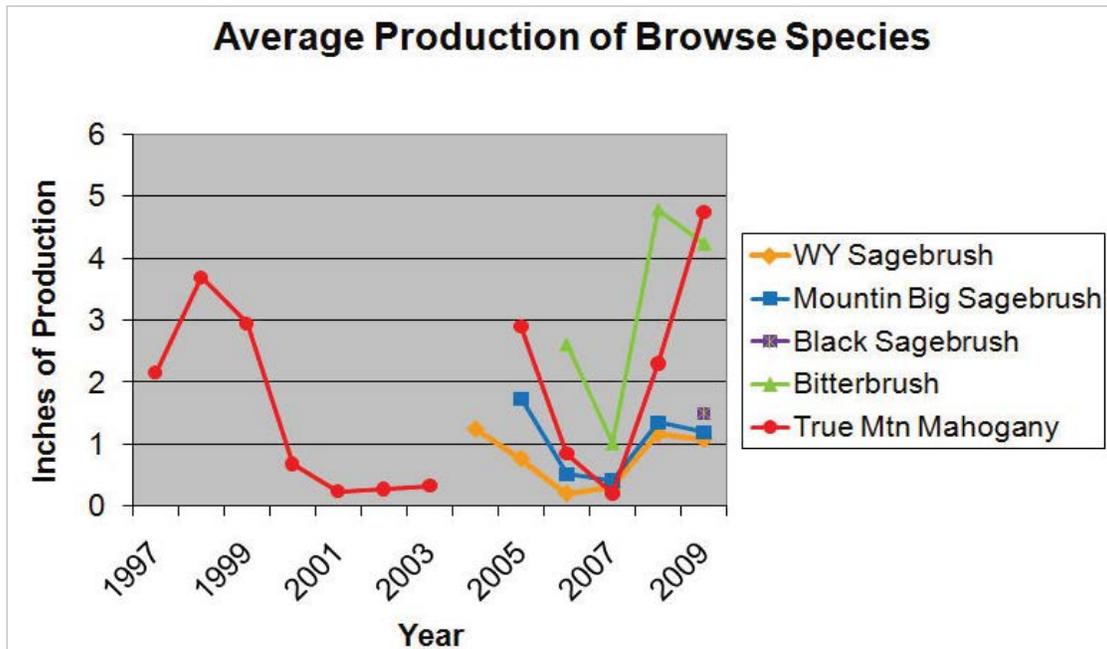


Figure 28. Winter range shrub monitoring for 2009 showing leader growth on different shrub species throughout the Pinedale Region.

Baseline Vegetation Inventory through JIO (Goal 2) - Jill Miller and Dan Stroud

The JIO completed over 127,000 acres in Baseline Vegetation Inventory in 2009. This was the second year of this project which completed over 25,000 acres of inventory in 2008. The goals include collecting a better data set of current vegetation conditions in the context of Ecological Site Description (ESD) mapping. These data will be used to set vegetation objectives on allotments included in conservation plans as well as inform land managers of potential vegetation treatments that could be implemented to mitigate the loss of habitat from the Jonah gas field.

Blair Creek Forage Reserve (Goal 2) - Jill Miller

Blair Creek Forage Reserve was created on the BTNF in an area that was set aside from livestock grazing for the betterment of wildlife. Through funding partners WLCI and WGFD trust fund we were able to construct a six-mile boundary fence which created this area as its own management area at the south end of the Wind River Mountains. It can now be utilized with prior approval from BTNF on an annual basis to benefit an alternative area by resting livestock. The forage reserve is planned to be used for the 2010 and 2011 grazing seasons by the permittee from the adjacent allotment where the Chicken Creek prescribed burn was completed in 2009.

Vegetative Differences Among Shrub Habitats and Treatment Types in Western Wyoming, Part 2: Fire, Mechanical and Herbicide (Goal 2) - Jill Miller and Eric Maichak

In summer 2008 and 2009, BFH and terrestrial habitat personnel were assisted by BLM and USGS staff in post-treatment vegetation monitoring on 10 sites throughout the east-central slope of the Wyoming Range front, western Wyoming (Table 2). Previous treatments (prescribed fire, mechanical, ‘Spike’ herbicide) occurred from 1993 through 2008 in sagebrush (low, Wyoming big, mountain big) and mountain mahogany habitats. The goals of this effort were to 1) document and compare vegetation characteristics among habitat and treatment types and 2) assess potential long-term effects of treatments. We found that regardless of habitat, treatment type, or treatment age, production of grasses was generally greater from treatment (mean = 230.5 kg/ha) than control (mean = 144.3 kg/ha) plots (Figure 29). When we compiled line-point and respective grass production data from all sites and habitats (1998-20z0), forb richness was low to modestly correlated with annual production of grasses (Figures 30 and 31). Recent (< 5 years) as well as 10 to 15 year post-burn shrub densities were substantially lower than paired control sites, while densities on sites incurring mechanical and herbicide treatments were more similar to control sites over the same time frame. Basal cover of bare ground and litter was higher and lower, respectively, on sites treated with fire rather than control sites. All basal cover categories were similar between treated and control plots from mechanical and herbicide sites. Ultimately, we suggest that mechanical and herbicide rather than fire treatments can be implemented with greater control on sagebrush stand density and age/height composition, as well as basal cover, and therefore may have fewer presumed negative effects on sagebrush obligate species (e.g., sage grouse) and fewer post-treatment livestock grazing stipulations.

Table 2. Habitats, treatments, and dates of implementation on sites monitored for vegetation characteristics along the Wyoming Range front, western Wyoming, 2008 and 2009.

Site Location	Habitat Type	Treatment Type	Date Implemented
Cretaceous	WY big sage	Rx Fire	Autumn 1993
Cretaceous	Mahogany	Rx Fire	Autumn 1993
Brodie Draw	Mt. big sage	Rx Fire	Autumn 1999
Maki Creek (USFS)	Mt. big sage	Rx Fire	Autumn 2008
Ryegrass Ind.	Mt. big sage	Rx Fire	Autumn 2005
Bench Corral	Low sage	Pitting	Autumn 1994
Bench Corral	Low sage	Ripping	Autumn 1994
Bench Corral	WY big sage	Spike	Autumn 1994
Deer Hills	WY big sage	Spike	Autumn 1994
O’Neil Ind	WY big sage	Spike	Autumn 1994

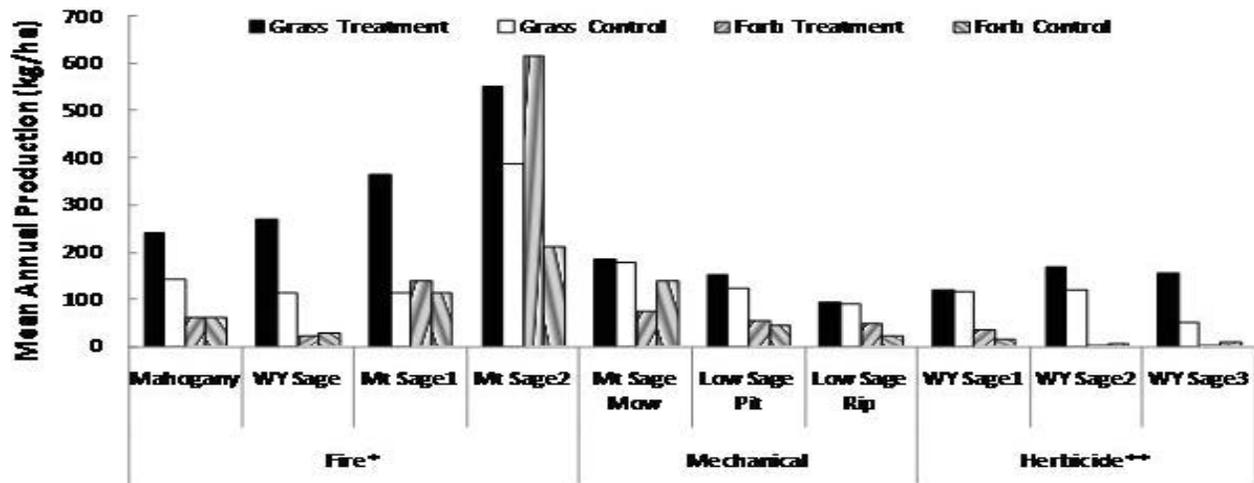
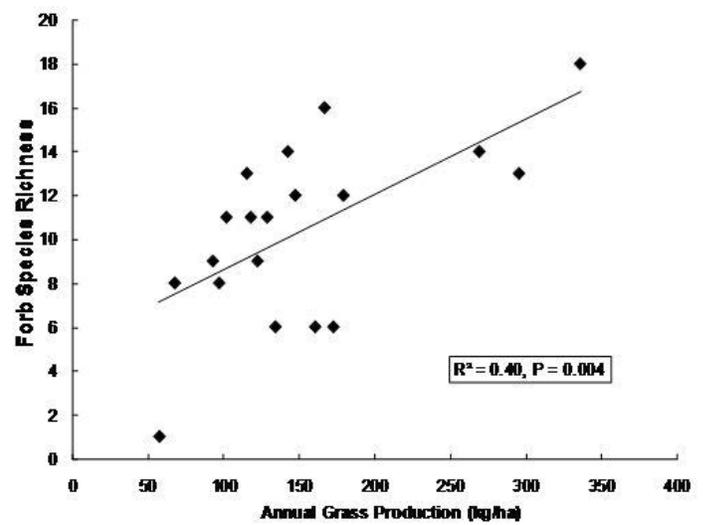
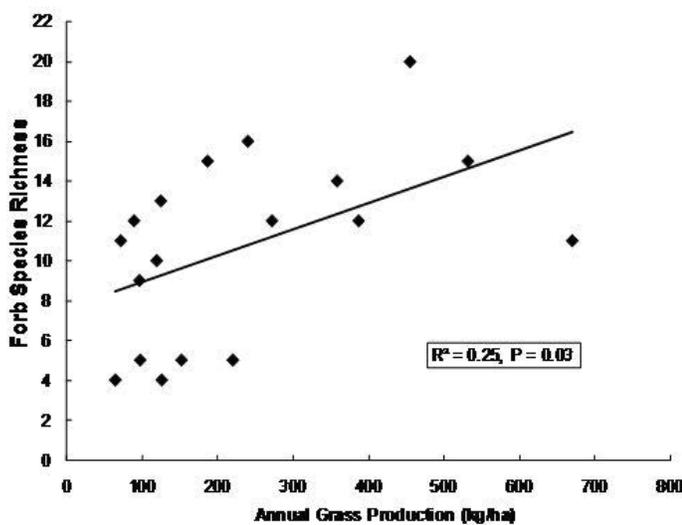


Figure 29. Mean annual production of grasses and forbs from treatment and paired control plots, western Wyoming, 2008 and 2009. * Mt. Sage1: Brodie Draw, Mt. Sage2: Maki Ck (USFS). ** WY Sage1: Bench Corral, WY Sage2: Deer Hills, WY Sage3: O’Neil Ind.



Figures 30 and 31. Species richness of forbs regressed over annual grass production from plots treated and untreated, western Wyoming, 1998-2009.

Fall Creek WHMA - Jill Miller

During 2009 the south facing slope of Fall Creek WHMA was inventoried for cheatgrass. GIS was utilized to accurately map 75 acres for treatment. The BLM and adjacent private landowner are beginning a phased cheatgrass control program and WGFD plans to include their lands as part of this cooperative program.

Black Butte Cattle Grazing - Jill Miller

In 2009, Black Butte elk feedground was utilized by O Bar Y Ranch to graze 300 yearling cattle for three weeks in late summer. The purpose of this was to alter the available forage available for elk and encourage elk to utilize areas other than the feedground during the hunting season. WGFD desires to increase harvest on this herd of elk. An attempt to alter and improve this approach will most likely be attempted in 2010.

Soda Lake WHMA Draft Horse Management - Jill Miller

SWGFD Pinedale regional personnel have worked together to cooperatively design an improved grazing management plan for Department owned draft horses that utilize Soda Lake WHMA every summer. A pasture rotation will be put into place once a well is drilled in the northwest pasture. Funding has been solicited and well construction is anticipated in 2010. Native grass and forb diversity and production should be enhanced by this management action as well as rest to the sensitive wetland area that has been receiving use from the horses.