

LARAMIE REGION

HABITAT PROJECTS

Summary of Laramie Region Mule Deer Habitat Monitoring and Management

The estimated 92,000 mule deer in the Laramie Region have been classified to five herd units (HUs): Goshen Rim, Laramie Peak, Sheep Mountain, Shirley Mountain and Platte Valley. For management purposes, these populations have been further divided into 22 hunt areas.

Intensive management of all seasonal mule deer habitats in this broad area is not possible with the current staffing and consequently work efforts have been directed to priority areas. Preliminary ocular examinations of mule deer seasonal habitats indicated that many crucial shrub winter ranges in the region were in poor condition and were the habitat type most likely to be effecting mule deer survival and productivity. Therefore, these habitats have become the focus of the majority of the mule deer related monitoring efforts in the Laramie Region. Mule deer shrub winter ranges in the Laramie Region are generally comprised of mountain big sagebrush, antelope bitterbrush, true mountain mahogany and skunkbush sumac with incidental occurrences of other forage species such as Saskatoon serviceberry and waxed current. These species can be found alone or in combination as dictated by environmental conditions such as soil type, elevation and aspect.

In 2000 a region wide mule deer winter range-monitoring program was begun. Currently thirty-five monitoring stations have been established on mule deer shrub winter ranges across the region. The monitoring stations are installed at sites that appear to represent the habitat types and conditions of the larger winter range complexes of the surrounding area. A wide variety of biological and physical baseline data is gathered at these stations and pertinent information shared with population managers to aid in herd management decisions. Short-term changes in these shrub communities are monitored with annual production and utilization surveys. Trend surveys, potentially involving all or the original survey techniques, are scheduled once a site has been in existence for over 5 years. These surveys will be used to determine how the communities are responding to recent climate conditions and population management.

Summer Range Evaluations

Laramie Region personnel conduct indirect assessments of the quality and quantity of summer and transition range forage conditions by examining fat deposition and overall body condition of mule deer observed at hunter check stations. Body condition scores in the Laramie Region, even during periods of low precipitation, have remained high enough to allay any fears that summer range conditions are affecting mule deer productivity or winter range survival.

Direct qualitative (ocular) evaluations of mule deer summer range conditions were initiated in 2004. These evaluations are designed to allow the observer an opportunity to locate obvious habitat degradation, and if necessary, initiate specific monitoring to provide the information needed to direct management changes. To date the Shirley Mountains, the southern end of the Laramie Range (south of Highway 34) and parts of the northern end of the Snowy Range have been examined.

In the Snowy Range, conifer succession appears to be occurring in many of the older parks and meadows. A case in point would be Stud Creek Meadows, which was a natural

- Multi-agency group established to address cheatgrass infestations 300 acres of cheatgrass treated.
- GIS cumulative impact tool developed.
- Project to improve aspen and meadows on 27,000 acres on Red Mountain.
- Plans developed to improve wildlife habitat on the 48,000 acre Carlin Ranch.
- Production and utilization at 23 of 55 shrub winter range transects Drought has caused production to decrease and utilization to increase.
- Migration corridor plans for the Douglas Creek bighorn sheep herd.
- 300 acres RX burn on the Springer WHMA.
- Past habitat structures in Hog Park Ck and East Fork Encampment River are slated for maintenance.

opening for decades and is now a stand of 10 to 15 year old lodgepole pine. Sawmill and Stanley Parks are also experiencing conifer encroachment, but at a slower pace. Loss of soil moisture as a result of drought and/or soil compaction caused by livestock grazing may be providing the conditions needed for conifer establishment in these historic forest openings. Any loss of these important habitats would have a significant effect on a variety of wildlife species, including mule deer, and consequently successional changes should be closely monitored and when possible, actions taken to reverse the trend.

Many of the parks, meadows and riparian systems observed in the 2005 examinations were being impacted by cattle grazing. The effects of livestock grazing were often compounded by additional impacts from elk and moose. Trailing and heavy use of willows and herbaceous vegetation was apparent in many drainages. Increases in the number of elk and moose need to be factored into the AUM calculations of the Forest Service to avoid further damaging vegetation in these forest openings. This years findings will be discussed with appropriate Forest Service officials to determine if management changes can be implemented to decrease the impacts of ungulate use and successional changes on these montane parks and meadows.

Another striking change observed during summer range evaluations was the increasing spread of bark beetle infestations. Beetle infestations were found primarily in limber and lodgepole pine stands and were occurring in all mountain ranges in the region. Many infestations are extensive enough to create some of the more beneficial effects to understory vegetation found in the aftermath of prescribed and natural fires (e.g. increased production of understory herbaceous vegetation as a result of reduced competition for nutrients, moisture and sunlight). Beetle infestations are natural processes that create forest openings without the anthropogenic damage normally associated with logging or the invasive control tactics needed during prescribed and natural burns. As aggressive fire control programs, instituted by the federal land management agencies, continue to eliminate the beneficial effects once realized from natural fire, it may become necessary to consider natural events such as beetle infestations as an acceptable substitute to burning.

Beetle infestation may also serve to mitigate another serious problem occurring on many areas of mule deer habitat. Thousands of acres of aspens in the Laramie Region are being lost to conifer encroachment, primarily as a result of fire suppression. The use of prescribed or prescribed natural ignition fire is generally not an acceptable means of recovering these stands as most of the larger communities occur at the edge of very large contiguous areas of conifer forest. Controlling an aspen burn in a clone that is immediately adjacent or intermixed with a large conifer stand is too difficult and dangerous and consequently many of these stands are being encroached out of existence. Beetle infestations could provide a means to “surgically” remove encroaching conifer without disturbing the aspen stand, allowing it to recover through natural regeneration. Insect infestations are generally maligned as indicators of poor forest health, however, it may be more appropriate to view infestations and their aftermath as just another natural successional process, no more esthetically offensive than burns or clear cuts and as beneficial to mule deer and other wildlife, and much less harmful to the land.

Winter Range Monitoring and Conditions

Historic and current over use of the forage shrubs by wild ungulates continues to be the primary cause for low production and poor health in many mule deer crucial shrub winter ranges in the Laramie Region. Drought continues to be a compounding factor or the direct cause for some of the loss in winter range shrub production and subsequent high use levels. Over use is not confined to particular habitat types, but is occurring in all winter range forage types and appears to simply be a function of high ungulate numbers as opposed to differential selection for topographic areas or particular forage species. The clubbed appearance of plants found on heavily used mule deer winter ranges indicates that numbers in those areas have been high for many years.

- Sediment loading from the Salt River watershed is being addressed with better land management practices.
- Laramie River Stream restoration in the greenbelt area being discussed with City of Laramie.
- WHAM surveys completed on upper Crow Creek in the Pole Mtn. area.
- Horneyhead chub (SGCN 1 species) documented in the Laramie River on the Laramie Peak WHMA.

Often a key indicator of declining habitat condition is a long-term decrease in fawn production. These data have not been compiled for the Laramie Region, however, it has been noted that mule deer population recovery throughout the Region following the somewhat harsh winter of 1992/93 has been extremely slow and in some cases is still taking place. The indication from this trend is that winter range fawn mortality has been high and/or birth rates low despite the fact that the area has been in a prolonged period of mild winters.

Although livestock occasionally contribute to the browse removal in these large shrub stands, fecal analysis has not shown shrub use by domestic animals to be a significant factor in overall utilization. Elk, and occasionally pronghorn, appear to be significant forage competitors on certain areas of mule deer winter range. In 2005 fecal samples were taken at select monitoring stations where it appeared other wild ungulates could be competing for forage on mule deer winter range. The results of this analysis was not available at the time of this report.

The only effective method to recover condition in these large shrub stands is to provide rest for the plants by reducing utilization and that can only be accomplished by reducing the size or changing the distribution of the herds. The Bureau of Land Management and the U.S Forest Service are using the poor condition in many of the sagebrush and mixed mountain shrub communities to justify vegetation treatments. However, the primary objective for the treatments often appears to be the attainment of federally mandated fuel reduction targets purported to be necessary to protect private property at the wildland/urban interface. Vegetation treatments can be beneficial in areas where plant regeneration is needed to overcome decadence in over mature stands, however, in many cases the declining condition of the vegetation to be treated is a function of over use by big game and removing any segment of the forage base only tends to exacerbate the existing problem. One of the most common shrubs on mule deer winter range is mountain big sagebrush, occurring alone or in combination with antelope bitterbrush. Fire kills mountain big sagebrush and releases understory herbaceous vegetation, which tend to out compete sagebrush seedlings. The result is the creation of a grassland area that will potentially benefit species such as elk, but may not return to the mixed mountain shrub stand needed by deer for decades. During that time the deer herd is forced to put even heavier pressure on the remaining habitat or use marginal areas adjacent to the primary winter range. If the wintering herd is not able to find adequate forage in the surrounding area it will be forced to seek other winter range or starve. When considering treatments in mule deer winter range, managers need to ensure that they are not trying to use fire to correct a problem that is being created by over population of wild ungulates. Before a decision to treat is made, managers need to know that adequate forage will remain to support the existing herd. If the treatment justification is faulty or if the loss of forage is going to create unacceptable increases in use on remaining plants or a harmful decrease in winter range forage availability, the proposal should be rejected.

Some areas of over use involve relatively small segments of a herd which may have migrated onto a winter range from a broad area of summer range. Targeting the segment of the herd that needs to be reduced may be difficult or impossible if they are still with a larger herd on summer and transition range. One strategy for concentrating hunting pressure on these small herd segments would be to extend hunting seasons late enough to be able to remove animals once they have reached the winter range.

CWD is now found throughout the Laramie Region and may begin to effect mule deer productivity in some areas. It appears to be having a significant dampening effect on production in much of the Laramie Range. CWD may be the reason that habitat conditions in the Laramie Range are relatively good. The disease appears to have reduced mule deer numbers here to within some range of carrying capacity.

Natural population controls such as disease and harsh winters can be effective in controlling mule deer numbers, however, these events are not only unreliable but are also uncontrolled. Harvest remains the only proactive means of bringing herds into balance with their habitat. Convincing the public that increasing doe harvest to reduce population has not been an easy sell and more education is needed to inform our constituents of the need to maintain herds within the capability of the habitat. The first step is to formulate supportable population objectives that are based on range carrying capacity and follow that effort with the development of harvest

strategies that will allow managers to achieve those objectives. Once these scientifically based objectives and strategies have been developed, they can be taken to the public and supported based on sound range and wildlife management principals. Using so called social/political population objectives, while ignoring the vegetation and population data being collected by Department biologists will ensure that habitat conditions and mule deer fawn production continue to decline.

DISCUSSION BY HERD UNIT

Laramie Mountains HU

Laramie Mountains is the only HU with no monitoring stations showing reduced plant community health as a result of long-term heavy use and/or old age. The Laramie Range is the endemic area for chronic wasting disease and is experiencing an average 17.5% incidence of this fatal brain disease. The healthier condition of the shrub communities in this area may be the result of the negative effects chronic wasting disease has had on the productivity of the herd and the positive effects reduced herd numbers has had on plant utilization and subsequent condition of forage shrubs. The Laramie Mountain Herd Unit has been very slow to respond to efforts to increase the herd towards objective, despite the fact that mule deer habitat in the Laramie Range is in relatively good condition. Prescribed burns conducted by the Department have resulted in large increases in leader and protein production in true mountain mahogany on mule deer winter range in the Richeau Hills. These habitat improvements have resulted in a subsequent increase in mule deer use on the treated sites. The current population of this herd is estimated at 27,500 with an objective of 29,000. Fawn production since 1999 has been relatively stable, giving no indication that habitat conditions are effecting production negatively. Hunters and landowners have indicated that they would like the Department to increase the size of this herd. This is the only mule deer HU in the Laramie Region with habitat conditions that would justify continuing to increase mule deer numbers towards the objective. However, habitat conditions should be closely monitored as mule deer numbers increase to ensure that the population objective is realistic relative to the capability of the habitat.

Platte Valley HU

The Platte Valley HU is approximately 25% above the current population objective of 20,000 and appears to be above the carrying capacity of the winter range in many areas. The Platte Valley HU has the highest number of monitoring stations where long term heavy use has been found to be adversely effecting the structural characteristics of the plants and creating high levels of plant mortality and decadence. Problems of controlling this large deer herd have been exacerbated by seasonal migrations of mule deer from North Park, Colorado into the upper end of the Platte Valley in Wyoming. This migration often occurs before the Colorado mule deer hunting season, further reducing opportunities to control the herd before it moves into Wyoming. Areas of over use, however, are located throughout the Platte River Valley, extending as far north as Dana Ridge. Attempts to decrease the herd have met with differing opinions with certain segments of the public opposed to female harvest and others in favor. Fawn production has generally declined since 1999 and is approaching levels that could cause herd productivity to stagnate. This trend in declining fawn production may be a function of decreasing habitat condition. Recent mild open winters should have resulted in high birth rates, however, pregnant does on drought stressed and over utilized winter ranges may not be producing fawns or producing weak fawns that are unable to survive through their first year. The Department has cooperated with the Bureau of Land Management and U.S. Forest Service in planning and implementing several prescribed burns designed, in part, to improve mule deer habitat condition. These treatments, however, have only affected a relatively small area of this large HU.

The heavy use levels encountered on many of the mule deer winter ranges throughout the HU are evidence that numbers are too high. Reducing populations to the objective would be an advisable initial step. Further reductions may be necessary if winter range shrubs do not respond after the objective is achieved.

Shirley Mountains HU

Over use on mule deer winter range is occurring along the western and southern sides of the Shirley Mountains. Evidence of historic heavy use was found at the Medicine Bow River, Miracle Mile and Bow Arm monitoring stations. Recent surveys, however, show utilization levels are within suggested limits, which may be due to the fact that the Shirley Mountain herd is only slightly more than half of the suggested population objective. Mule deer numbers declined following the 1992/93 winter and have failed to rebound. Fawn production, which is at 67/100, is only marginally high enough to generate population increases. Landowners who control much of the hunting access have expressed strong resistance to harvesting females, however, based on current utilization surveys, it appears the reduction in the herd has been beneficial to the recovery of the shrub winter range and consequently promotion of a strong doe harvest is still advisable. The current population figure appears to be more in line with carrying capacity and may be a more appropriate population objective. Natural mortality has relieved managers of the need to face the controversies that could arise from trying to reduce the herd with large increases in permits or long season extensions. Managers should take advantage of this situation and begin to implement seasons that will maintain the herd at the current level while monitoring to see if reduced utilization results in a positive response in habitat condition and subsequent increase in fawn production.

Sheep Mountain HU

The Sheep Mountain herd is currently estimated at 10,600 animals with an objective of 15,000. Population managers report that concerns over the condition of the winter range is taking precedence over increasing the herd towards the objective. The two most heavily used areas in the Sheep Mountain HU, the Highway 230 corridor near Woods Landing and the 3rd Sand Creek area north of the town of Elk Mountain, are widely separated and are comprised of very dissimilar habitats. The mule deer habitat near Highway 230 is largely made up of a mix of mountain big sagebrush and antelope bitterbrush, while the 3rd Sand Creek area is a relatively monotypic stand of Wyoming big sagebrush. Department personnel have been cooperating with the U.S. Forest Service planning prescribed burns in the Fox Creek/Squirrel Creek area in an attempt to regenerate the aging shrub stands. The burns, however, will result in the elimination of the sagebrush community within the treated area, perhaps for decades, creating concerns that this long term loss of forage may displace deer into areas where they are not wanted, increase over use in the remaining areas, exacerbate forage shortages during a severe winter or some combination of all three scenarios. The most logical approach to the over use situation would be to reduce the number of deer on the over used segment of winter range, but it can be difficult to target the animals that winter in this area as many of these deer are dispersed across a large area of the Snowy Range during much of the hunting season. One option may be to design a harvest strategy that allows a late season hunt in the area where excessive use is occurring. Maintaining the population near the current levels and not attempting to achieve the objective would be advisable. Forage production in the area where prescribed burns have been conducted will be decreased for the foreseeable future, which may make increasing deer numbers very difficult and potentially very damaging to regenerating plants at the treatment sites. Managing the deer on 3rd Sand Creek is complicated by the fact the deer are sharing their winter range with portions of the Medicine Bow pronghorn herd. The Medicine Bow herd is well above carrying capacity in many areas and may be responsible for most of the sagebrush utilization on the mule deer winter range. Further observations of winter use should be conducted to determine whether pronghorn harvest could be used to improve the mule deer winter habitat.

Goshen Rim HU

The only observed over utilization on shrub winter range within the Goshen Rim HU was found at the Goshen Rim monitoring station (Figure 1). The Goshen Rim herd was projected to reach 19,500 animals in 2006, 6000 below the objective of 25,000. Landowners and sportsman are asking for more deer, however, habitat conditions do not indicate that population increases at this time can be justified. Access in this predominantly private land HU is becoming increasingly more restricted, limiting or negating opportunities for harvest and population management. The dominant shrub on most winter ranges in this HU is true mountain mahogany, often with significant inclusions of skunkbush sumac. True mountain mahogany loses productivity and nutrient value as it matures and according to the literature tends to become primarily a summer and transitional range

forage species with most browse use by mule deer confined to the leaf matter. This appears to be the situation in the Goshen Rim HU where leader production, forage nutrient value and plant use has been shown to be very low. Skunkbush sumac and other species that occur incidentally in and around the mahogany stands (e.g. rabbitbrush and silver sagebrush) appear to be the primary forage shrubs in many of these areas and probably should receive increased monitoring attention. Department led prescribed burns in mahogany communities have produced good results relative to leader production and nutrient outputs and appear to produce a short term recovery of the winter range potential of these stands. However, options for treatments in the Goshen Rim area are limited due to factors such as soils and the presence of cheatgrass. This herd is largely supported and dependent on agricultural crops. This relatively constant food source allows this population to maintain better fawn production and winter range survival. Fawn production since 1999, with the exception of a spike in 2003, appears to be declining and should be monitored as a potential indicator of a change in forage availability and habitat condition. Although population management opportunities are very limited in this HU, habitat conditions indicate a need to maintain this herd at or below the objective.

Sage Creek Watershed

Sage Creek is an aquatic habitat priority watershed and is listed on the Wyoming Department of Environmental Quality's 303(d) list. It is considered a significant contributor of sediment to the North Platte River. The Saratoga-Encampment-Rawlins Conservation District supervisor, Mr. Glen Leavengood, provided a tour of the habitat improvements that have been conducted in cooperation with the BLM and private landowners in the watershed to address the sediment problems. Grazing management, rebuilding irrigation structures, fencing, and spring developments were some of the best management practices that were implemented across the watershed. Visually, stream and riparian habitat appeared to be improving. Sage Creek in Section 1 has an incised channel that seems to be evolving from an F channel into a more stable C channel in some locations. The development of riparian vegetation, i.e. willows, is helping to stabilize streambanks. Additionally, beaver activity has increased within the watershed.

Production and Utilization Surveys

Again this year game wardens and population biologists assisted with collecting production and utilization information at approximately 23 of the Region's 55 pronghorn and mule deer shrub winter range monitoring stations. The remaining 32 transects were read by the regional habitat biologist. Once again persistent drought conditions resulted in a general decline in leader production and a corresponding increase in shrub utilization.

Hog Park and East Fork Encampment Habitat Enhancement Structures

Medicine Bow-Routt National Forest Service and WGFD personnel evaluated past habitat enhancement projects in Hog Park Creek and East Fork Encampment River in early fall 2006. The USFS is proposing some maintenance on these projects. In

Hog Park Creek, streamflow is cutting around some of the rock structures and increased erosion is occurring (Figure 1). In the East Fork Encampment River, visible fenceposts and cables are creating a safety hazard. Also, little to no willow recruitment was observed in the project area of East Fork Encampment River, suggesting grazing management needs to be addressed. It is anticipated that maintenance work will be conducted within the next few years to address some of the issues.



Figure 1. Erosion in Hog Park Creek below Hog Park Reservoir associated with past instream enhancement project.

Large Scale Wildfires

Several large-scale wildfires (lightning or human-caused) burned in southeast Wyoming in Summer 2006, including the Chicago Mine Fire and Tracer Fire at Guernsey, and Halleck Canyon Fire and Trailer Fire west of Wheatland (Figure 2). These fires resulted in over 60,000 acres being blackened. Ponderosa pine / juniper stands were burned near Guernsey, and mixed mountain shrub habitats were blackened west of Wheatland. Assessments of these fires and rehabilitation recommendations were prepared for landowner and land management agencies.



Figure 2. Trailer Fire, 8,500 acre wildfire in August 2006

HABITAT EXTENSION SERVICES

Habitat Enhancements

In 2006, over 50 individual landowner contacts / field visits were made. Technical and cost share assistance was provided to private landowners who implemented projects including: guzzlers (Figure 3) noxious weed management, seedling tree plantings, CRP Dense Nesting Cover enhancements, livestock / wildlife water developments, cropland stubble management, prescribed burning in mountain shrub (Figure 4 and 5) and CRP grassland habitats, range inventories / rotational grazing system plans and brush mower treatments (Figure 6).



Figure 3. Guzzlers shipment arriving in Wheatland.



Figure 4. Prescribed fire in Richeau Hills, Spring 2006.



Figure 5. True mountain mahogany resprouting post-prescribed fire.



Figure 6. Brush mower treatments in mixed shrub habitats.

In 2006, continued extreme drought conditions, summer wildfires, change in federal Farm Bill programs and policy (i.e. CRP management), and lack of funding were all contributing factors affecting overall acres treated, number of projects implemented, and landowner interest and involvement in on-the-ground habitat enhancements.

The Habitat Extension Biologist assisted with statewide efforts to complete and distribute 10 educational roadside signs explaining the benefits of fire, wild and prescribed, to wildlife. Two of those signs were erected in the Laramie Range, describing the habitat benefits of the Reese Fire of 2002 (Figure 7).



Figure 7. Fire I&E Sign installed on Palmer Canyon Road west of Wheatland.

Laramie River Greenbelt Enhancement

Recently, \$18,000 was donated to WGFD to address aquatic habitat issues in the upper Laramie River. Several habitat concerns have been identified in the Laramie River through Laramie including bank erosion, low summer flows, and lack of deep pools and cover. The Laramie River through town supports a wild brown trout fishery and several native, non-game species including brassy minnow and common shiner. During recent spring run-off events, bank erosion has become increasingly evident and threatens portions of the greenbelt pathway (Figure 8). In 2006, discussions began with the City of Laramie to use the money to develop a channel stabilization and fish habitat enhancement project. WGFD personnel will continue to work closely with the city to develop this project and to seek additional funding sources for project implementation.

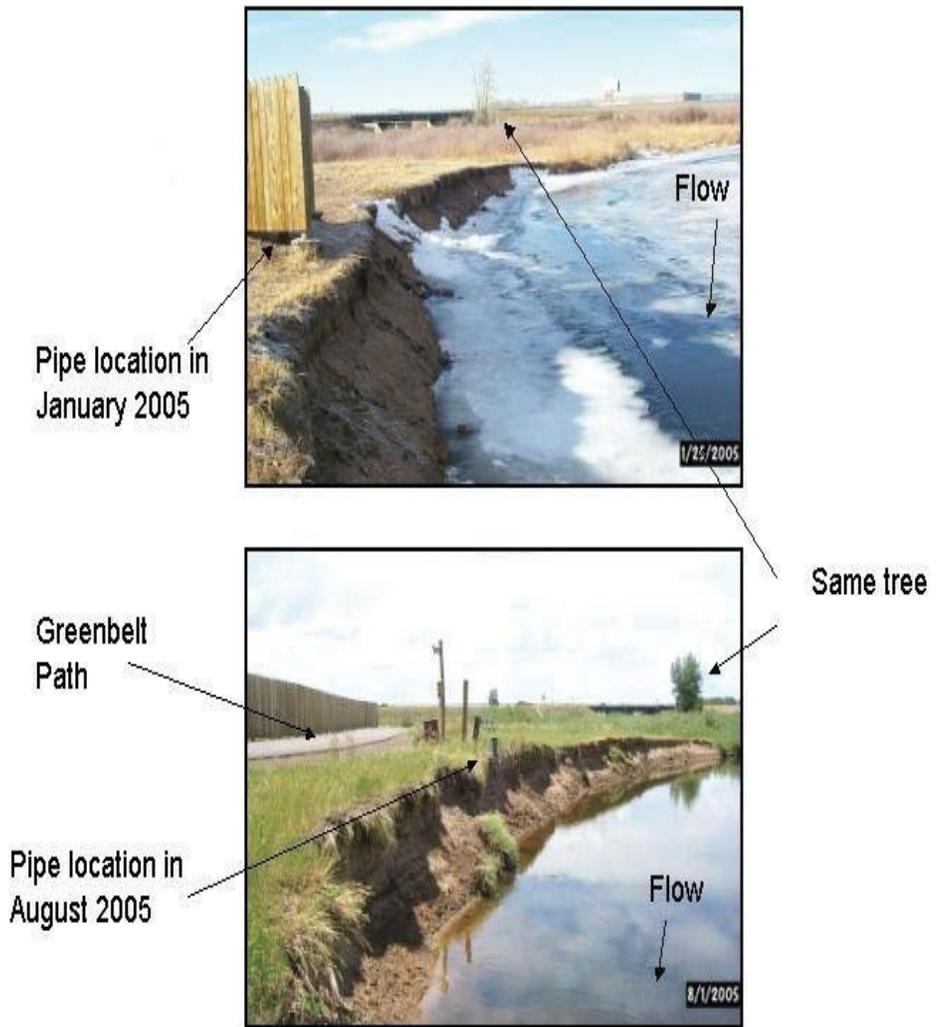


Figure 8. Before and after spring run-off bank erosion of Laramie River Greenbelt Area.

South French Creek Bighorn Sheep Migration Corridor

In 2006 initial investigations were begun to determine the feasibility of creating a migration corridor that would allow the Douglas Creek bighorn sheep herd to move from their current yearlong range along the North Platte River to alpine areas on and near Medicine Bow Peak. The plan will involve the use of silvicultural treatments to create forest openings between existing areas of rocky escape cover along a route that will skirt the north side of South French Creek (Figure 9).

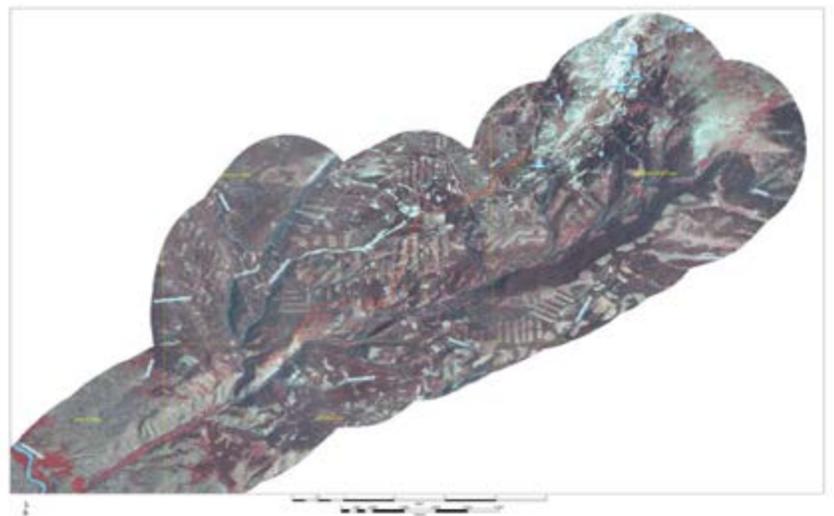


Figure 9. Proposed location of the South French Creek bighorn sheep migration corridor.

The Douglas Creek herd has been plagued with disease and consistently poor lamb production that researchers have tied to the lack of adequate forage quantity and quality.

The entire area being examined for corridor development is in various stages of regeneration following past timbering activities and consequently already contains the necessary road network to support the proposed logging operation. Numerous large rock piles are scattered at intervals throughout the proposed treatment area, providing the escape cover required by bighorns. USFS regulations allow the creation of this type of large opening when, as in this case, it can be shown that the activity will result in significant wildlife or natural resource benefits. A detailed proposal describing the project is being developed and will be submitted to the Saratoga Office of the USFS in late spring of 2007.

Watershed Habitat Assessment Method (WHAM) on Pole Mountain and Beaver Pond Surveys

WHAM Level-1 assessments and beaver pond surveys were continued in the Upper Crow Creek watershed in the Pole Mountain area of the Medicine Bow National Forest (Figure 10). With persisting drought conditions, the most active beaver pond habitat appeared to be downstream of the Cheyenne Stage II water release point in Middle Crow Creek, where there is a consistent flow of water. Above this point, drought impacts were apparent with abandoned beaver ponds and intermittent flow. Ungulate impacts were also observed including bank erosion, hummocking, and heavy willow utilization. An administrative report will be written in 2007 summarizing the WHAM Level-1 assessments conducted throughout the Pole Mountain Area. Opportunities to work with the USFS on habitat issues, including the exclosures in South Fork Middle Crow Creek will be addressed.



Figure 10. Beaver activity in the Middle Crow Creek watershed within the Pole Mountain Area.

Additionally, members of the Travelle Chapter of the Izaak Walton League of America collected beaver pond data in the South Branch North Fork Crow Creek. In 2007 they will repeat their survey of the North Branch of Middle Lodgepole Creek that they conducted in 2003.

Red Mountain Ranch Habitat improvement Program

The Red Mountain project is located in the foothills of the Snowy Range approximately 25 miles southwest of Laramie (Figure 11). It straddles the Colorado-Wyoming border and is managed by BLM offices from both states. Department personnel began working in the area in 2004 and joined with BLM, NRCS and conservation district representatives who initiated work in the allotment around the same time period. Department personnel have been involved in all aspects of the project, including document development and project planning. Habitat



Figure 11. Red Mountain reservoir dam construction as it nears completion.

treatments will include livestock management improvements, meadow restorations, water developments, sagebrush chopping and aspen rejuvenation. Although the various treatments are expected to benefit livestock, elk and mule deer, the primary focus is the recovery of a struggling sage grouse population. In 2006 Water for Wildlife and conservation district funds were used to conduct major repairs on the Red Mountain Reservoir. NRCS and conservation district installed pipe lines and six tire tanks to improve water distribution and reduce use on important meadow complexes. In 2006 proposals were submitted to the Sage Grouse Conservation Fund, Wyoming Game and Fish Trust Fund and the Wildlife and Natural Resource Trust Fund to acquire the money needed to conduct 150 acres of sagebrush chopping, fence three meadows away from livestock and remove encroaching limber pines from important sagebrush stands.

Carlin Ranch Habitat Improvement Program

One of the owners of the Carlin Ranch contacted Department personnel and expressed interest in using habitat treatments to improve his land for wildlife and livestock. The ranch is located six miles east and north of the town of Medicine Bow and encompasses approximately 75 square miles of important habitat for mule deer, pronghorn and sage grouse. Department personnel joined with conservation district and NRCS personnel to develop a ranch management plan that will focus on improving wildlife habitat by using water developments and fencing to improve the existing livestock grazing system.

Current drought conditions are complicating plans to conduct range rehabilitations and planting, however, some of the water developments and fencing designed to improve livestock distribution and reduce riparian grazing pressure are expected to be implemented in 2007.

Southeast Wyoming Shrubland Cumulative Impacts Analysis

The Southeast Wyoming Cumulative Impacts Analysis (SWCIA) was a two-year GIS based project completed in September of 2004. The primary focus of the project was to employ satellite image interpretation to identify current and historic impacts to important winter range shrublands. The information was to be used in evaluating the condition of existing shrublands and the effects newly proposed projects might have in areas where other natural and anthropogenic impacts had occurred. Unfortunately, many of the impacts could not be detected by examining the satellite images. The only other option for obtaining the necessary information was to conduct a search of the computer and hard copy files of the land management agencies. In July of 2005 a technician was hired and directed to contact the BLM, USFS and NRCS offices in the project area and locate and compile all available records and add this information to the original GIS. This process was completed in May of 2006. The technician had good success at the USFS and BLM offices and was able to compile a relatively comprehensive record of shrubland impacts dating back as far as the 1970s. However, private lands rights issues kept her from obtaining treatment records from the files of the NRCS.

A contract to maintain and manage the GIS has been established with the Wyoming Geographic Information Science Center (WyGISC). WyGISC personnel are in the process of completing a tool that will allow cooperating agencies to access the data using GIS to gain current impact information as well as input new project data.

Southeast Wyoming Cheatgrass Partnership

This multi agency working group was formed in 2004 and officially adopted the name Southeast Wyoming Cheatgrass Partnership early in 2005. Current membership includes representatives from the WGFD, USFS, BLM, University of Wyoming, Colorado State University, NRCS, Albany and Carbon Count Weed and Pest Districts, Wyoming Department of Agriculture and the Medicine Bow, Laramie Rivers and the Saratoga, Encampment and Rawlins conservation districts. The primary mission of the partnership is to locate, map and treat cheatgrass infestations in Laramie, Goshen, Platte, Albany and Carbon counties. In 2006 researchers from CSU became involved in Partnership activities and will begin conducting a variety of research and monitoring activities in conjunction with the treatments being conducted by the Partnership. The first Partnership treatments were conducted on USFS land in the fall of 2006. A 300-acre cheatgrass infestation was treated with ground applied plateau herbicide. The project was funded by WGFD, USFS and the Laramie Rivers

Conservation District.

Current prohibitions on aerial application of cheatgrass effective herbicides on USFS and BLM lands has meant that many infestations in steep, rocky terrain can not be treated because these areas are inaccessible to ground application equipment. The BLM is circulating an EIS needed to allow aerial cheatgrass control following comments expects the document to be ratified by the summer of 2007. The USFS is only in the initial stages of formulating a plan, but expects that the use of existing related documents will speed the development process. Until the federal agencies obtain the necessary authorizations for aerial application, much of the control efforts will fall to private landowners and the county weed and pest districts.

WILDLIFE HABITAT MANAGEMENT AREAS

Springer Prescribed Burns

Approximately 300 acres of decadent cover plantings were prescribe burned to increase plant productivity and vigor. The burns are part of the routine maintenance of these cultivated grass stands and are conducted annually on various areas of the WHMA to ensure that the fields continue to provide effective nesting, thermal and harvest cover. The burns generally take place between the first of January and the end of March, dependent on moisture conditions.

Hornyhead Chub Natural Barrier on Laramie Peak WHMA

With assistance from the Rawlins BLM fisheries crew, investigations of a natural barrier for the upstream distribution of hornyhead chub, SGCN 1, in the Laramie River on the Laramie Peak WHMA was initiated. A potential natural boulder barrier was identified within the narrow, steep canyon, but additional work is needed to confirm the upstream distribution of this species in the Laramie River for any future management activities on the WHMA (Figure 12). The Laramie River within the Laramie Peak WHMA is one of only two locations where hornyhead chub can be found in Wyoming. Hornyhead chub can also be found in portions of the North Laramie River in Platte County, but within the last two decades, no individuals have been surveyed in the lower portions of these streams. Surveys will be conducted in 2007 directly above the potential barrier in order to document the presence/absence of this species.



Figure 12. Potential natural barrier for hornyhead chub in the Laramie River on the Laramie Peak WHMA.

Johnson Creek WHMA

The Habitat Extension Biologist continued to monitor cheatgrass control post-herbicide application (August 2002) on the Johnson Creek WHMA with assistance from Rawlins BLM personnel. Cheatgrass control tapered off significantly in 2006, with the invasive plant beginning to re-invade treatment sites. Native perennial vegetation is well established throughout the treatment sites, but stand longevity is threatened by re-invasion of cheatgrass and continued extreme drought conditions.

Wick WHMA

2006 was the fourth year of improvements to the hay meadow irrigation system on the Wick WHMA. The irrigation system was improved with the completion of the water diversion structure for the 206-acre Oleson and Wick hay meadow and installation of six rock sill structures in the Tom's and Upper 18 meadow ditch systems. The snow pack and spring runoff during 2006 was sufficient to irrigate the entire 751-acre hay meadow system twice this year. The State Engineers Office irrigation-mapping technician recorded this irrigated acreage; therefore the water rights usage for the hay meadows has been recorded for compliance with the Tri-state agreement for Wyoming, Colorado and Nebraska on the North Platte River. The fourth year of the noxious weed control plan included the contract herbicide application on 110 acres of meadows, ditches, roads and upland sites with the release of 2350 insects for biological control in riparian areas along Wagonhound Creek and Foote Creek (Figure 13).



Figure 13. Wick WHMA, black sagebrush herbicide treatment 1 year post-application.



Figure 14. Prescribed grazing on Wick WHMA meadows with Sims Cattle Company.

The fourth year of using an experimental cattle-grazing treatment on the hay meadows was performed during June. The high intensity short duration grazing plan used 302 cow/calf pairs to treat the vegetation on 380 acres of grass hay meadows (Figure 14). The Sims Cattle Company provided the personnel, livestock, electric fences, monitoring and herding of the cattle 24 hours per day during the twenty-day grazing treatment. The cattle are contained with electric fencing on treatment paddocks of twenty to eighty acres in size. The grazing effectiveness is monitored against predetermined goals. When the vegetative treatment goal is reached the cattle and fences are moved from paddock to paddock. The grazing treatment focus is to remove ground litter, old growth, and specific noxious weeds and to stimulate higher quality regrowth of standing forage for big game, particularly elk.

The Upper 18 and Wick meadows were also improved by interseeding eighty acres with a cool season grass, legume and forbs mix. The goal of the interseeding is to improve forage quality and production for wintering elk, and reduce the potential of noxious weed invasion on the hay meadows.

Annual Aquatic Habitat Workshop

The Laramie Aquatic Habitat Biologist hosted the annual aquatic habitat summer workshop. Workshop activities included a warmwater stream assessment field day on Poison Spider Creek in the Casper Region. The group was broken into teams to collect data and provide feedback on the process. Participants also toured three locations along the Laramie River for a potential habitat improvement project. Areas toured included the Jelm PAA, Monolith PAA, and Laramie River greenbelt area. Habitat issues and concerns were addressed at each location and project ideas were discussed. On the final day, South Fork Middle Crow Creek in the Pole Mountain area was visited. Six riparian exclosures were installed in the early 1980s for wildlife mitigation for Cheyenne Stage II water development. A constant water flow of approximately 2 cfs is supplied to this stream. Two exclosures were removed in 2005, prior to the grazing season. The group observed and discussed conditions within intact exclosures, removed exclosures, water gaps, and upland aspen habitats (Figures 15 and 16).



Figure 15. South Fork Middle Crow Creek flowing through one of the intact exclosures.



Figure 16. A headcut within a water gap on South Fork Middle Crow Creek between a downstream intact exclosure and upstream removed exclosure. The headcut started prior to the removal of the upstream exclosure.