

JACKSON REGION

HABITAT PROJECTS

Buffalo Valley Elk Parturition and Winter/Transitional Habitat Selection

Assistance was provided for a research study being conducted by Drew Henry, Master of Science candidate, Iowa State University. Mr. Henry's research is a continuation of the research project completed by Andrea Barbknecht, also from Iowa State University. This is a collaborative effort stemming from management needs identified by the WGFD, BTNF, National Elk Refuge (NEF) and Grand Teton National Park. The project area is within important elk transitional, winter and parturition ranges in the Buffalo Valley, approximately 30 miles north of Jackson.

The BTNF and WGFD have implemented multiple habitat enhancement treatments in the Buffalo Valley area over the past 20 years. An average of 30% (3,400 elk), of the Jackson Elk Herd Unit (JEHU) do not utilize supplemental winter feed on the NEF or three neighboring state operated elk feedgrounds. This is one of the highest percentages of "winter free-ranging" elk among all herd units within the feedground complex of northwest Wyoming. Certain segments of the JEHU appear to have established fidelity to native winter ranges versus supplemental feeding sites.

Quantification of ecological variables such as elk response to habitat enhancements, habitat-disease relationships, habitat selection, home range size, migration routes, seasonal use patterns, and response are lacking. This additional information is essential in selecting appropriate alternatives for the future management of wintering elk and associated disease transmission risks.

The objective of the second phase are:

- 1) Determine winter habitat selection by elk with respect to improved habitat, native habitat, and supplemental feed in the Buffalo Valley.
- 2) Identify migration routes, winter home ranges and fidelity, and potential spatial contact with domestic livestock.
- 3) Examine habitat and snow characteristics at the transect locations for comparison of habitat quality between improved and unimproved native habitat and effects of winter conditions.

To address these objectives, a total of 76 female elk have been captured via net gunning during the winters 2005-2006 and 2006-2007 (Figure 1). Of the 76 cows captured, 53 were determined to be pregnant and outfitted with vaginal implant transmitters to define abortion and parturition sites. Individuals were also fitted with GPS/VHF radio collars to assess habitat selection as well as movement/migration patterns. Twenty-five transects were established in treated and untreated areas where snow and forage parameters were measured. Using the above information, Mr. Henry will examine forage availability and winter habitat selection by the marked elk.

All GPS collars dropped on March 10, 2008. Eleven (11) of the GPS collars contain at least two full winter's worth of data. Of these 11 collars, 45% wintered at least one year somewhere other than the Buffalo Valley, including the Dubois and Cody areas. This high degree of movement between winter ranges in successive years will have important implications for disease control with respect to feedgrounds. Mr. Henry is continuing to investigate winter range fidelity with respect to the 40 elk collared with standard VHF collars, as well. He plans on completing his thesis during the spring of 2009.

- Wetland delineation was conducted for permitting a two-mile enhancement project on Spring Creek south of Jackson.
- A twelve hundred foot enhancement project on Fish Creek near Wilson was delayed until 2009 to meet permit requirements.
- Reference reach data were collected from sixteen hundred feet of streams in the Teton River watershed.
- Approximately 1,265 acres of the Lower Gros Ventre was treated with fire.
- 105,574 acres were evaluated within the focus area of the Jackson Moose Herd Unit.

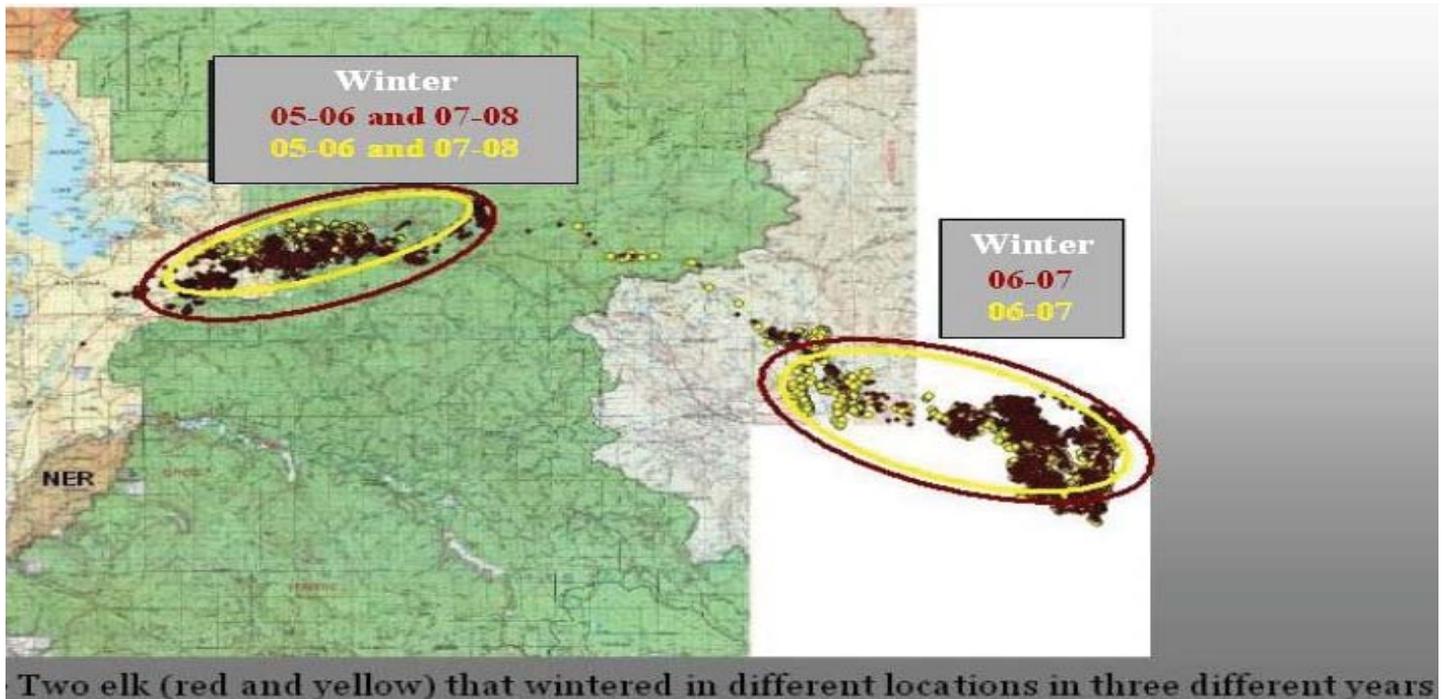


Figure 1. Wintering locations of two elk that were originally captured while wintering in the Buffalo Valley in February of 2006, but spent the following winter in an entirely different location, before returning for the subsequent winter.

Moose Habitat Inventory

The impetus behind conducting a moose habitat assessment and inventory were concerns that several of the moose herd units in Wyoming are experiencing poor calf recruitment and recent population declines. While the specific reason(s) 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 Herd Unit (HU) basis.

The primary objectives of the inventory assessment are:

- 1) Accelerate WGFD efforts to implement the 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 habitat management recommendations for important habitats within HUs.
- 4) Use the above prioritized list to submit and solicit funding for habitat enhancement project proposals.

The goal is to enhance habitat for moose and the myriad of other wildlife species that utilize these areas.

A Request For Proposal (RFP) was prepared and the Teton Science Schools (TSS), Conservation Research Section, was the successful bidder. During 2008, the TSS completed the habitat assessment for most of the Jackson Moose HU (approximately 95,000 acres) and provided a final draft report in December 2008. The inventory was also expanded to the Hoback and upper Green River areas. Habitat evaluation components included: 1) dominant overstory and understory species composition, 2) site potential evaluation, 3) digital photos hyper-linked to display in ArcMap, and 4) management recommendations by geographic area (Figure 2).

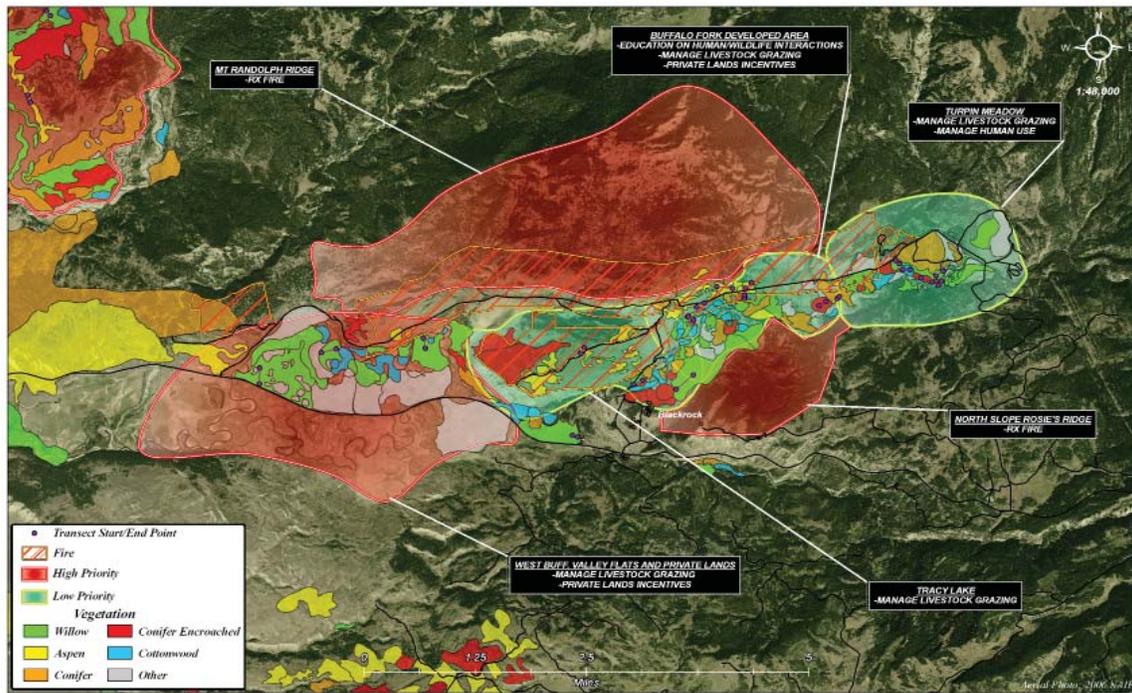


Figure 2. Example of the patch and landscape mapping provided by the Teton Science Schools for the Buffalo Valley area, 2008.

Specific vegetation monitoring included:

- 1) data collected on representative sites (UTMs and photos taken at each site);
- 2) three dominant under and overstory species identified for each habitat type;
- 3) habitat community types identified;
- 4) Keigley's Live-Dead Index data collected;
- 5) Browse utilization levels;
- 6) % canopy of herbaceous and shrub/tree species.

A summary of the monitoring results include:

- Vegetation condition was measured on 52 transects;
- Percent of stems browsed was measured on 14 species of shrubs;
- The mean percent of stems browsed for willow species ranged from 43-55%;
- The mean percent of stems browsed for upland shrubs ranged from 26 to 80%;
- Percent of stems browsed for most species was approximately 50%;
- 915 pellet groups were counted on the 52 transects;
- Moose were found on 28 of 52 (53%) transects;
- The density of pellet groups was higher in aspen (mean = 18.1pg/100m²) than willow communities (mean = 9.0pg/100m²);
- No difference was observed in bare ground, grass, and forb coverage between aspen and willow communities ($t < 1.75$, $p > 0.05$);
- Higher basal vegetation ($t = -2.87$, $p = 0.006$) and shrub coverage ($t = -3.32$, $p = 0.002$) were observed in the willow community;
- The aspen community was higher only in litter coverage ($t = 3.61$, $p = 0.008$);
- Keigley's live-dead index was measured on 5 species of shrubs: Booth's willow, Drummond's willow, Geyer willow, Coyote willow, and aspen. Results indicated that the vast majority of habitat in the Jackson moose herd unit is intensely browsed. LD measurements and browsing pressure percentages indicated that dominant shrub species are being precluded from growing through the browse zone and/or growing to full height potential as a result of current and historic browsing levels.

A total of 105,574 acres were evaluated within the focus area of the Jackson Moose Herd Unit. A total of 403 moose habitat patches were mapped based on dominant vegetation type. Specific vegetative data was collected on a total of 52 representative sites within these patches.

Long term implications resulting from the LD index readings include: diminishing habitat structure, the prevention of individual plants from reaching full growth potential, reduced seed and fruit production, and ultimately changes in species composition (Keigley pers. comm.).

Based on these results, management recommendations were provided for a total of 91,488 acres within the focus areas and included prescriptions for prescribed burns, mechanical thinning, prescribed grazing, educational programs for private landowners, the evaluation of the impacts of motorized recreational vehicles on moose behavior, and changes in water management practices. The implementation of these prescriptions for habitat improvements is intended to increase both the quality and quantity of available moose habitat in the Jackson Moose Herd Unit.

Spring Creek Channel Enhancement

Spring Creeks along the Snake River are integral to providing natural recruitment of Snake River cutthroat trout and maintaining the Snake River fishery. Water and land management practices have changed the structure and function of these important stream habitats. Levees have been constructed to protect floodplain properties and hence natural flushing flows into the spring creeks no longer occur. The spring creeks have become shallow, wide, and inundated with silt and aquatic vegetation. Water velocities have decreased. In addition, plant succession in the riparian vegetation community has progressed from willow and cottonwood to Douglas fir and other conifers. To address these issues, partnerships were formed between fisheries and wildlife managers, private landowners, the Wildlife Heritage Foundation of Wyoming, the Teton County Conservation District, the Wyoming Wildlife and Natural Resource Trust, and conservation groups.

The Spring Creek Channel Enhancement Project involves planting riparian vegetation, constructing instream structures and mechanically dredging accumulations of sediment within the stream channel of Spring Creek. Funding was approved in fiscal year 2007. During the interim between planning this project and securing funding, the upstream neighbors implemented a similar project and completed construction during the summer of 2008. The Spring Creek Channel Enhancement Project was intentionally delayed until the upstream construction work was completed. This approach avoids the risk of losing new spawning gravel to excessive fine sediment intrusion.

The landowners and the WGFD representative monitored the work upstream. Based on the changes upstream, the original 2006 project plan was modified to narrow the stream width more extensively, requiring more fill and a wetland delineation. A contractor completed the wetland delineation on December 23, 2008. Weather and snow pack conditions dictate that the next available window for project implementation is fall of 2009.

The funding from the landowners (\$12,444) and the Teton Conservation District (\$23,400) are secured until project implementation. The Wyoming Wildlife and Natural Resource Trust funding is secured until June 2010 (\$30,400). The WGFD Trust Fund money for FY07 (\$13,690) will be spent on spawning gravel before June 2009. Additional WGFD Trust Fund money from FY08 (\$25,000) will be granted upon project implementation in December 2009.

Fish Creek - Snake River Ranch Channel Enhancement

Fish Creek is a Snake River tributary that provides important habitat and spawning areas for native Snake River cutthroat trout (SRC). The Snake River Ranch, WGFD, and Teton Conservation District selected a 1,200 foot reach of Fish Creek, located on the Snake River Ranch near Wilson, Wyoming, to improve habitat, stream function, and SRC spawning.

Currently there is little habitat diversity. Few pools, riffles, or areas of overhead cover exist. The channel substrate consists of medium to large cobbles and is embedded. The channel is also wide and shallow. Natural cottonwood root balls will be used as grade control structures and will help create and maintain trout refuge cover, feeding lanes, and spawning habitat. Through dredging and excavation, we will remove accumulated sediment to improve natural meanders and provide pool habitat. Spawning habitat will be provided at the tail-out or glide portion of the pool by adding gravel.

The project was to be implemented fall 2008 but permitting issues will delay this until fall 2009. During permitting, the Army Corps of Engineers reviewed project information for thirty days and then sent it to the Department of Environmental Quality (DEQ) for further review. Fish Creek is a Category 1 Water which prompted the DEQ to provide an additional thirty days for public comment. The resulting DEQ approval contained a standard turbidity condition that could not be met by the planned project. A temporary turbidity increase permit was required, entailing another 14 days of public review. This additional review exceeded the construction window.

Lower Gros Ventre Vegetation Treatments

The Jackson Interagency Habitat Initiative (JIHI) lower Gros Ventre vegetation treatment project (16,684 acres) was initiated in 2005. The following funding was secured in 2007 for prescribed fire treatment: RMEF (\$13,000), WyoFNAWS (\$3,000), and the WWNRT (\$50,000). Treatments were initiated in two of the burn units during November of 2007 and approximately 400 acres treated. These treatments were to black-line and secure burn unit boundaries for future interior ignitions.

Aerial heli-torch treatments were initiated in September and October of 2008, in two burn units. Managers focused on site-specific ignitions that would benefit bighorn sheep and elk. The result was a nice mosaic of burned and unburned areas (Figure 3). Managers also avoided burning large continuous patches of sagebrush to minimize negative impacts to greater sage grouse. Approximately 23% or 1,265 acres of the targeted area (5,600 acres) was treated with fire.

Managers will continue to burn the remaining units in the future and have initiated planning to expand treatments further up the Gros Ventre drainage. A habitat inventory conducted in 2007 covering 29,612 acres will be utilized by JIHI to prioritize treatment areas.

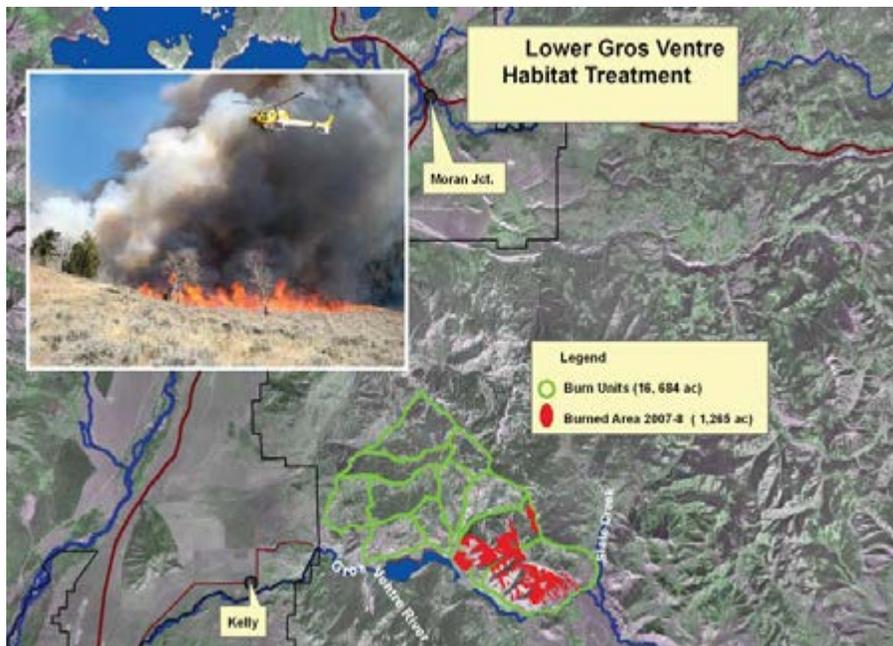


Figure 3. The lower Gros Ventre vegetation treatments are located near Turpin and Slate Creeks. Multiple burn units have been identified. Approximately 1,265 acres were burned in 2007-2008.

Reference Reach Assessment: West Side of the Tetons

Fifteen miles of West Teton Basin streams were inventoried in 2007 using the Wyoming Habitat Assessment Methodology (WHAM). This information was used to in 2008 establish reference reaches that exhibit a stable channel within a particular stream and valley type. Reaches are measured for pattern, profile, and dimension using Natural Channel Design methodology and that information then provides a valuable template for designing and applying restoration strategies. The Aquatic Habitat Section collected reference reach data during the course of their 2008 section meeting.



Figure 4. Cross-section of South Boone Creek.

Data were collected on two reaches of South Boone Creek. The first reach was a gravel “C” channel progressing to a “D” channel within a flat bottom valley. The intent was to collect information on a “C” channel but it became apparent that reference reaches for C channel types in the West Teton Basin were rare. Alternatively, stable “B” channel types with gravel substrates were common. The second reference reach selected was a “B” channel within a U-shaped valley. Data from the two days of sampling were entered into a Rivermorph database and analyzed as dimensionless ratios. These ratios represent a natural “B” channel with a gravel substrate and within a U-shaped valley. Next, the ratios will be used to design future projects in impaired stream reaches of the same channel, substrate and valley types.

Teton Bighorn Sheep Research

Assistance was provided to Alyson Courtemanch, Master of Science Candidate, U.S. Geological Survey, Wyoming Cooperative Fish and Wildlife Research Unit, Department of Zoology and Physiology, University of Wyoming. Aly’s project is “Resource selection, seasonal distribution, movement and recruitment of bighorn sheep in the Teton Range of northwest Wyoming”. The project was initiated during the 2007-2008 winter and will continue through May 2010.

The Teton Range bighorn sheep herd resides year-round at high elevation in Grand Teton National Park and on the Bridger-Teton and Caribou-Targhee National Forests. Although the herd historically wintered at lower elevations in the Jackson Hole valley and Teton Basin, they now winter exclusively at high elevation along the Teton crest on windswept ridges and cliff areas. It is Wyoming’s smallest and most isolated native herd consisting of a remnant population of perhaps 100-150 sheep. The population’s future is tenuous owing to its small size, likely isolation and the combined effects of loss of historic winter ranges, habitat alteration due to fire suppression and threats posed by increasing recreation in and near important seasonal ranges.

Growing recognition of the tenuous status of the bighorn sheep population and the need for interagency cooperation in managing the herd and its habitat led to the formation of the Teton Range Bighorn Sheep Working Group (TRBSWG) in 1990. The group includes representatives from the WGFD, Bridger-Teton and Caribou-Targhee National Forests, and Grand Teton National Park as well as several individuals affiliated with non-governmental organizations with expertise in bighorn sheep ecology. In the mid 1990’s, the working group developed a strategic plan for managing bighorn sheep in the Teton Range and identified an objective of maintaining a population of at least 150 to 200 bighorn sheep over the long-term through coordinated management. The plan outlined a number of problems facing the herd and strategies for resolving them.

Substantial progress has been made to address the threats to the long-term survival of the herd by TRBSWG

members. Disease concerns were significantly reduced with retirement of the last remaining domestic sheep allotment in the Tetons in 2005. Since 2001, the park has implemented seasonal closures of sheep winter ranges to reduce disturbance impacts during this stressful period. Work on genetic concerns is ongoing. Uncertainties still remain regarding the current and historical distribution of the sheep herd, recent and historical impacts to sheep habitat, and whether bighorn sheep avoid areas of human activity. Specifically, the park is concerned about proposed expansion of developed recreation along the park boundary and potential impacts to bighorn sheep winter ranges and travel corridors. Consequently, there is a critical need to quantitatively assess the habitat selection patterns of this isolated sheep herd.

The primary objectives of this study are to:

1. Administer this research project, graduate student training, scientific publications, workshops, presentations, data sharing with agency partners, budgeting with University of Wyoming (UW), and annual reports to funding agencies;
2. Compile and map historic sheep distribution using historical data sources;
3. Document locations, characteristics, and use patterns for seasonal habitats and movement corridors;
4. Quantitatively assess the habitat selection patterns of the herd (in winter and summer);
5. Quantitatively assess avoidance of winter habitats by bighorn sheep due to human recreation (i.e. skiing);
6. Evaluate the effects of retiring domestic sheep allotments on the Teton Range bighorn sheep herd;
7. Determine lamb production and lamb survival to mid-summer for radio-collared adult female sheep; and
8. Provide community education on bighorn sheep and the project in the form of public presentations, written materials, local media, website, etc.

To accomplish the above objectives, 20 female bighorn sheep were captured mid-February 2008, and fitted with GPS/VHF collars (Figure 5). Pregnancy rates were good with 17/20 testing positive for pregnancy. Two of the non-pregnant ewes had not yet reached reproductive maturity. Blood samples were also taken for disease surveillances. Blood serological assays produced results showing no or very low previous exposure levels. From a disease point of view, these results suggest that this population is likely to have been isolated from mixing with other populations for a long time. Five of the 20 collared ewes perished by the late fall 2008. Four of the five mortalities were due to avalanches. The fifth mortality site will be investigated during the spring of 2009. View the following web site for project updates: <http://tetonsheepproject.blogspot.com>.



Figure 5. Bighorn sheep capture and GPS collar deployment in the Tetons, 2008.

Jackson Moose Research – Phase II

Assistance was provided to Scott Becker, Master of Science Candidate, U.S. Geological Survey, Wyoming Cooperative Fish and Wildlife Research Unit, Department of Zoology and Physiology, University of Wyoming. He has completed Phase I of the Jackson moose research project; “Resource selection and population dynamics of Shira’s moose (*Alces alces shirasi*) in northwest Wyoming.” Becker found the moose wintering in the Buffalo Valley exhibit low reproductive potential illustrated by low twinning rates, reproductive pauses, and relatively low parturition rates. He felt these factors indicated the nutritional quality of available forage may be the most important determinant in limiting population growth over the past 20 years. Moose populations may have slowly declined in response to gradually declining habitat quality over this time period.

Phase II of this project, “Habitat condition, diet, and nutritional quality of available forage: implications for a declining moose population in northwest Wyoming”, has been initiated by Janess Vartanian, Master of Science Candidate, U.S. Geological Survey, Wyoming Cooperative Fish and Wildlife Research Unit, Department of Zoology and Physiology, University of Wyoming.

The primary objective of phase II is to characterize the condition and nutritional quality of seasonal habitats in the north Jackson Moose Herd Unit. An important secondary objective is to determine if moose demographic performance (i.e., survival and reproductive success) is reduced in areas of poor habitat condition or quality.

The specific objectives are as follows:

1. Characterize moose habitat condition (i.e., browsing intensity) in winter and summer;
2. Compare the nutritional quality of winter and summer browse, and evaluate the factors that influence forage quality (i.e., wildfires);
3. Evaluate the influence of habitat condition and forage quality on cow survival, pregnancy, parturition, and calf survival of collared moose from both phases of the study; and
4. Characterize the timing of moose calf mortality and develop indices of predator use and diet in order to increase our knowledge of the potential influence of wolf and bear predation on calf survival.

An additional 19 GPS collars were deployed via helicopter net-gunning in February 2008 (Figure 6). These collars will collect locations every hour June 1– November 15 (summer), every 3 hours December 15- April 31 (winter), and once a day during May and November 16-December 14 (migration).

Line transects (45 winter and 29 summer) were monitored via the Keigley method in winter 2007-2008 and summer 2008. They are also conducting monthly measures of % of stems browsed and diameter at browse point (DBP) to monitor potential change in intensity of use over the seasons and to assess biomass removed within the winter ranges. Ten biomass removal plots (15 m diameter), located at the Keigley transects, are also being monitored during winter. Snow depths and weights for snow/water equivalents are also being recorded at each transect location during winter. Collection of this data will extend annual monitoring of existing transects and enhance long-term trend data for habitat condition already being collected by WGFD in the Buffalo Valley.

Foraging moose are being observed and plant species identified after the moose leaves the area. Fecal samples are being collected and analyzed at the University of Washington Wildlife Habitat Nutrition Laboratory for forage selection. To assess the nutritional quality of browse identified from fecal analyses and direct observations, vegetation clippings will be analyzed at the Colorado State University Soil, Water and Plant Testing Laboratory for determination of % crude protein, crude fiber, acid detergent fiber, neutral detergent fiber, and in-vitro dry matter digestibility. To assess the mineral deficiencies found in moose blood in phase I they will evaluate both macro and micronutrient levels in collected vegetation.

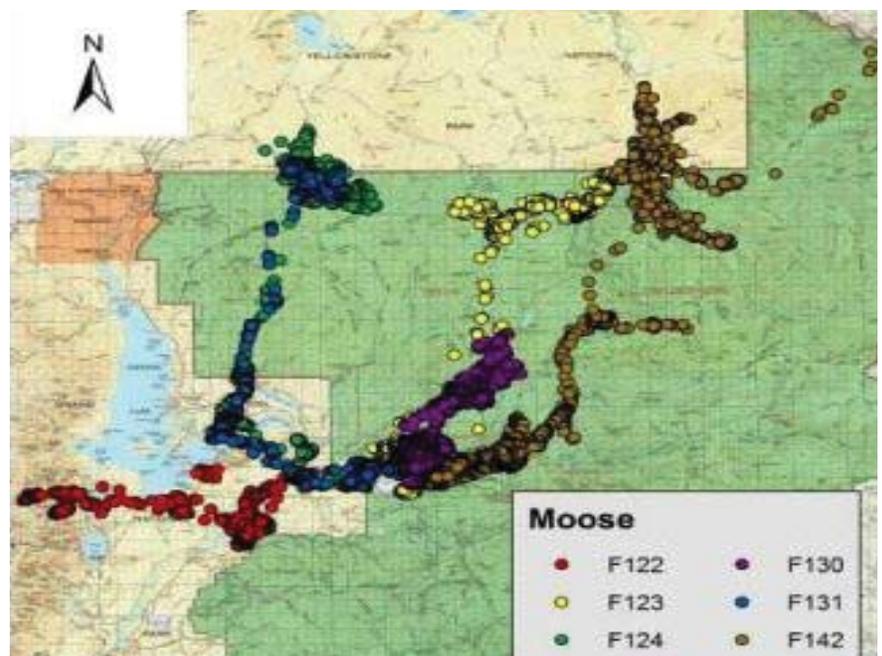


Figure 6. GPS locations associated with 6 collared moose from the Jackson moose research project.

Upper Crow Creek Spawning and Migration Project

Enhancing native cutthroat trout spawning and migration in Salt River tributaries is an ongoing watershed enhancement effort. The WGFD is striving with cooperators, interest groups, land managers, and landowners to promote watershed function and ecosystem integrity by enhancing the quality and diversity aquatic habitats in Salt River tributaries.

Crow Creek is a Salt River tributary that originates in Idaho and provides approximately 8 miles of important spawning and rearing habitat for Snake River cutthroat trout. Most of this key habitat occurs on privately held land and habitat improvements will enhance spawning, migration, rearing, and adult habitat. Modification and manipulation of the Crow Creek channel is needed to enhance trout migration and improve habitat diversity. There are few pools and riffles, little overhead cover, the stream bottom is inundated with sediment, and gravels are buried in silt. An enhancement project has been developed to provide sustainable pools, overhead cover, and spawning and migration routes for native Snake River cutthroat trout. These habitats are critical for maintaining wild populations of Snake River cutthroat trout.

Objectives:

- Maintain meander pattern to preserve stream structure;
- Maintain spawning and migration habitat for trout;
- Reduce sediment contribution of eroding banks;
- Enhance aquatic habitats to maximum ecological potential;
- Enhance riparian habitats to maximum ecological potential; and
- Provide sufficient habitat and habitat diversity to increase Snake River cutthroat trout populations.



Figure 7. Placement of tree revetment structure on upper Crow Creek.

A landowner near the Wyoming headwaters of Crow Creek funded and implemented the first phase of the project during the fall of 2008. Six tree revetments were placed along the stream bank to provide overhead cover (Figure 7). Washed gravels were added to areas for spawning habitat. Finally, fifteen pools were excavated (Figure 8). Additional work is scheduled for the late fall/winter 2009. Four cross vane structures are planned to stabilize this reach of Crow Creek. Revegetation is scheduled for spring 2010.



Figure 8. Tree revetment structure in a jackstraw formation.

Greys River Aspen Inventory

The Greys Ranger District of the BTNF and WGFD partnered to initiate a comprehensive aspen inventory throughout the entire Ranger District in 2008. Initial project funding (\$45,000) was granted to the B-T Forest from the WLCI. The goal of this project is to provide an accurate account of aspen distribution and condition status of aspen stands for future enhancement treatments in the Greys River Ranger District.

Project Objectives include:

1. Refine the currently documented distribution of aspen on the district;
2. Determine the locations and condition of aspen stands on the district;
3. Identify, in priority order, the stands drainages or portions of drainages that are in most need of treatment with respect to conditions in aspen stands; and
4. Provide the above aspen stand information in GIS format supported with a narrative report which will facilitate managers in the development and implementation of aspen enhancements on a Ranger District scale.

Each aspen stand was described according to community type, over and understory dominance, risk factors and treatment priority. Technicians mapped 629 aspen stands, in which 44 different community types were encountered (Figure 9). Of the total stands, 37% were classified as highest priority for treatment. The inventory is currently 50% complete and a preliminary report addressing the 2008 activities has been completed.

Initial WLCI funds (\$45,000) will not be sufficient to complete the systematic comprehensive aspen inventory. We estimate that an additional \$21,000 will be required for completion in 2009 and funds were solicited during the 2009 funding cycle.

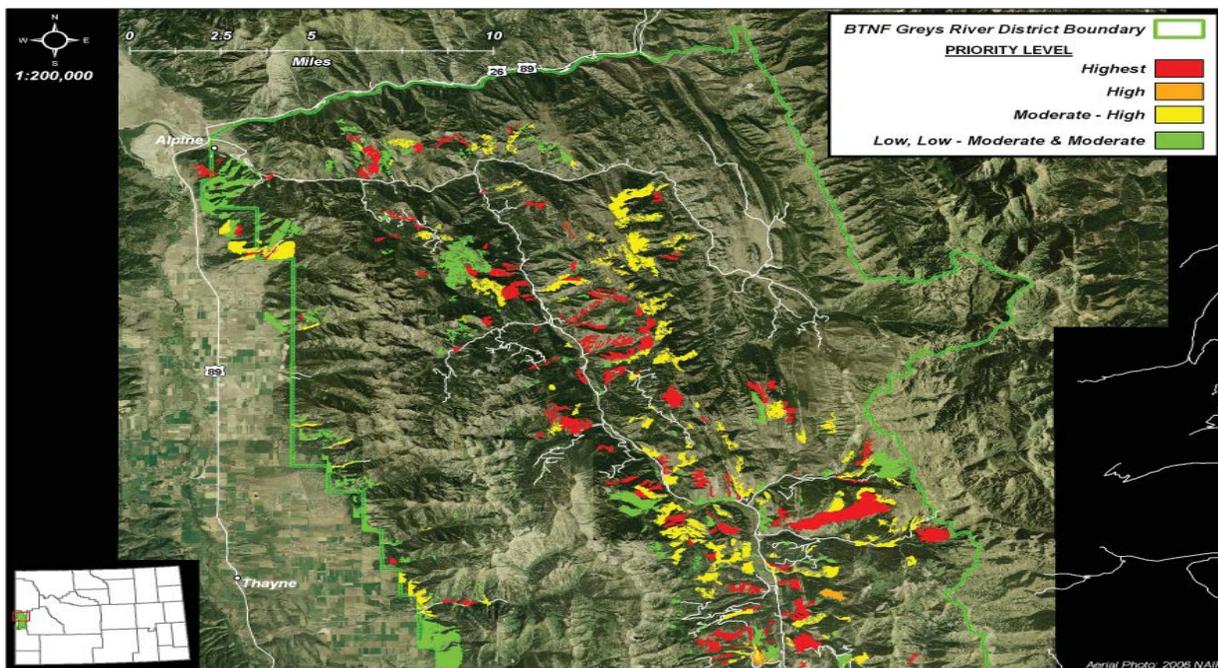


Figure 9. Illustration of aspen stand location and priority for treatment along the Greys and Salt Rivers, as identified by the Greys River aspen inventory, 2008.

Bradley Mountain Prescribed Burn Vegetation Treatment

The Greys River Ranger District of the BTNF, WGFD, WWNRT and other potential partners are proposing a prescribed burn on Bradley Mountain. The area consists of important elk and moose transition/winter range. This area is located just east of Alpine, Wyoming and along the eastern bank of the Greys River. The proposed treatment consists of 4,300 acres and managers expect to apply fire to approximately 20-40% of the area. Some portions will not carry a fire due to precipitous terrain, thin soils and sparse vegetation. Mechanical treatments may be used to supplement prescribed burning in some areas.

The burn was not implemented in 2008 due to a backlog of other habitat enhancement projects. Implementation is proposed for the spring/fall of 2009. Burn units were inventoried, habitat/cover type mapped and priority areas identified by WGFD and FS personnel (Figure 10).

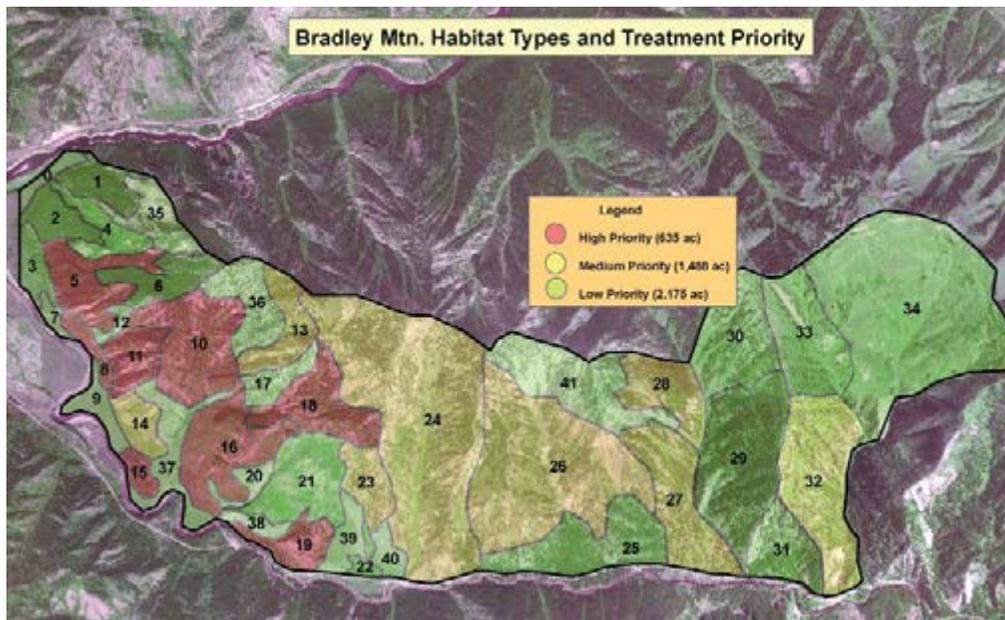


Figure 10. The Bradley Mountain project area is located just east of Alpine and is approximately 4,300 acres.

OTHER SIGNIFICANT ACCOMPLISHMENTS

- Over six miles of Murphy Creek in the Greys River watershed were inventoried using WHAM Level 1.
- Attended '88 Yellowstone Fires and Beyond Conference in Jackson.
- Inventoried, identified on a map, and coordinated fish passage issues on Spring Creek south of Jackson.
- Assisted in a habitat evaluation for Karns Meadow Wetland on Flat Creek. This project is proposed to address urban storm water.
- Coordinated and prepared Jackson Aquatic Priorities for the Strategic Habitat Plan with region, administration, and GIS section.
- Participated, with Jackson Region personnel, in the preparation of the Alpine Wetland and South Park WHMA Five Year Management Plan.