

2002 ANNUAL REPORT



Strategic Habitat Plan Accomplishments

**Aquatic Habitat, Terrestrial Habitat, and Habitat and Access
Maintenance Sections**

**Wyoming Game and Fish Department
April 2003**



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Wyoming Game and Fish Department

Mission

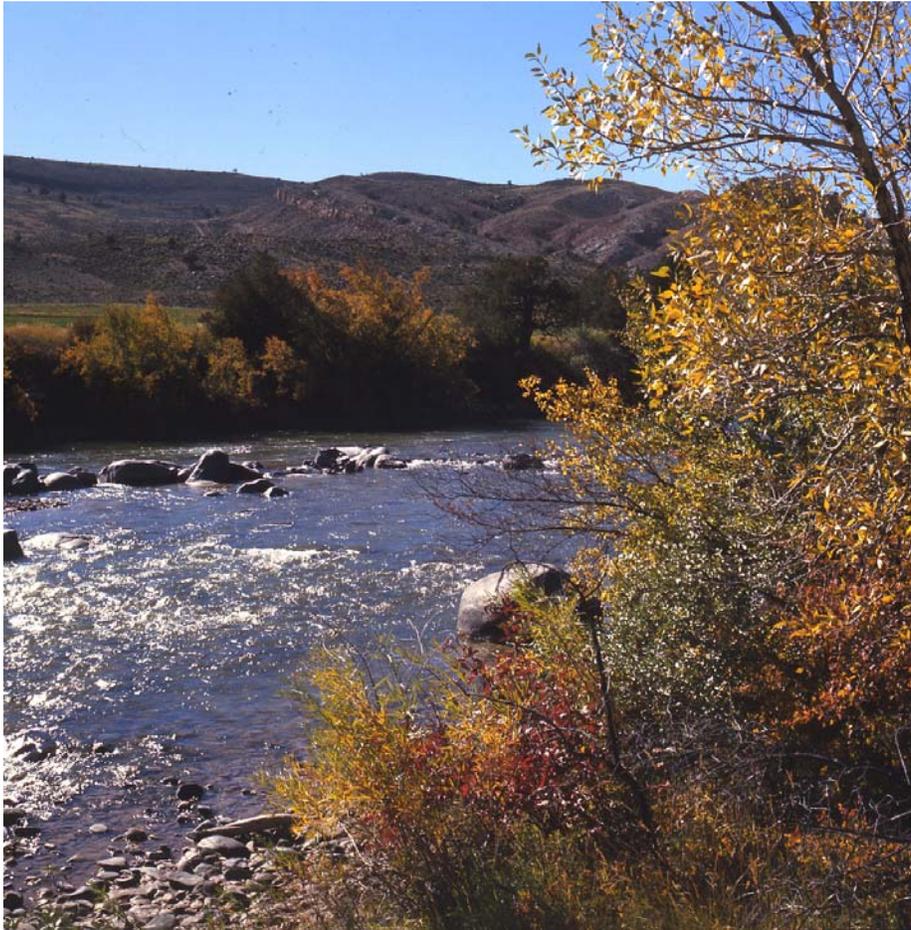
Restore and/or manage habitat to enhance and sustain wildlife populations in the future.

Vision

The Wyoming Game and Fish Department is the steward of Wyoming's wildlife, dedicated to the conservation of sustainable, functional ecosystems capable of supporting wildlife populations at least as healthy, abundant and diverse as they were at the dawn of the 21st century. We will take a holistic approach to habitat management, integrating various land uses while involving the general public, private landowners and land management agencies. Our lands will be managed to emphasize and maintain the wildlife habitat and public access values for which they were obtained.

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INTRODUCTION

Habitat issues may be the single greatest challenge facing the Wyoming Game and Fish Department in the 21st century. Many habitat types are imperiled or at-risk. Potential impacts to fish and wildlife habitats are expanding, with the two most noticeable being energy development and urban sprawl. The current drought has caused short-term impacts as well. At the same time, we are being asked to take a far more active role in the conservation of wildlife species, including many of which are considered to be at-risk. Conserving these species one species at a time is impractical. To effectively answer this challenge, there is a great need for the Department to be collaboratively involved in habitat-related decisions at a landscape level on public and private lands in Wyoming.

In recognition of this need, the Wyoming Game and Fish Commission adopted a strategic habitat plan in 2001. The plan is centered around three goals. These goals are:

1. Manage, preserve and restore habitat for long -term sustainable management of wildlife populations.
2. Increase wildlife based recreation through habitat enhancements that increase productivity of wildlife.
3. Increase or maintain wildlife habitat and associated recreation on Commission lands.

Each goal is accompanied by a number of objectives and strategies designed to achieve that goal. These goals and strategies were developed by an inter-divisional, inter-disciplinary team, and are designed to be implemented collaboratively across division lines. It is of paramount importance that habitat conservation in Wyoming be carried out on a landscape level, working collaboratively across organizational lines within and outside the Department, and across political and legal boundaries on the ground.

The implementation of this plan will require an effort unlike those of previous efforts. It will require a new way of approaching habitat conservation, an effort which is based on the land itself and the needs of all the wildlife and people who depend on it. It will require teamwork and a broader view of our responsibilities. Most of all, it will require a change in the way we think of habitat and habitat conservation. This plan requires a new level of thinking. It represents not a reorganization of the past, but a bold step into the future

The purpose of this 2002 annual report is to provide information and documentation to the Wyoming Game and Fish Commission and other interested parties about the activities of the Terrestrial Habitat, Aquatic Habitat, and the Habitat and Access Maintenance programs of the Department. The report includes steps taken toward implementing the strategic habitat plan as well as some of the on-the-ground accomplishments of field personnel within the three programs. We hope the report will acquaint the Commission, the general public, interested constituents, landowners, partners, and cooperators with habitat projects, activities, and functions locally and on a statewide basis. Without your cooperation, input, communication, and support, wildlife conservation in Wyoming would be impossible. We believe "habitat" and "open spaces" are the keys to maintaining wild and healthy populations of fish and wildlife. We greatly appreciate your assistance and support.

Please contact any of the personnel listed for additional information. Also, please feel free to share this report or request additional reports for anyone who may be interested in the Department's habitat efforts.

CASPER REGION

North Natrona Shrub Change Detection Project

The contractor, Digital Environmental Management Inc. (DEM), has provided eight different classifications that include water, bare soil, bentonite clay surfaces, irrigated and non-irrigated cropland, conifer, curlleaf mountain mahogany, and big sagebrush. The big sagebrush classification is broken down into three classes that include sparse crown closure (5-15% cover), moderately dense crown closure (15-25% cover) and dense crown closure (>25% cover). Further, we anticipate 31 classifications that include but are not limited to the following vegetative communities: herbaceous rangelands - sparse cover (<15% herbaceous cover), herbaceous rangelands – moderately dense (15-30% herbaceous cover), and herbaceous rangelands – dense cover (>30% herbaceous cover); riparian/moist grass; annual grasslands, cottonwood; cottonwood/willow; and aspen. Each classification will be ground-truthed and accuracy assessed to determine “user’s accuracy” and “producer’s accuracy”. The user’s accuracy quantifies how well the classification represents what is actually on the ground; whereas, the producer’s accuracy quantifies how well a particular vegetative community (class) can be mapped. During the field season, approximately six classifications were ground-truthed and accuracy assessed. Any discrepancies in the classification were documented and returned to DEM for modifications to that particular classification. Accuracy standards are specified in the contract for each vegetative community, and these standards must be attained prior to project completion scheduled for June 30, 2003.

This information will be utilized to document vegetative changes, specifically big sagebrush, over three decades, which may be responsible for the downward trends documented in pronghorn and mule deer populations. The information will also provide a basic landscape level wildlife habitat inventory of this herd unit and GIS-based databases to devise habitat improvement plans, strategies and programs for large-scale wildlife habitat restoration efforts.

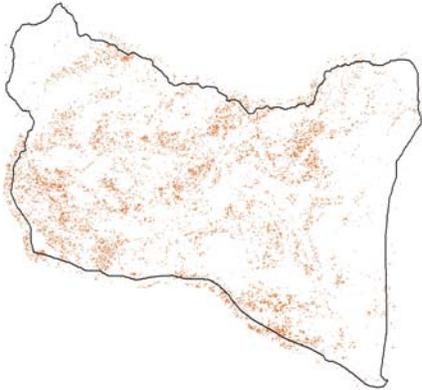


Figure 1. Sparse big sagebrush classification.

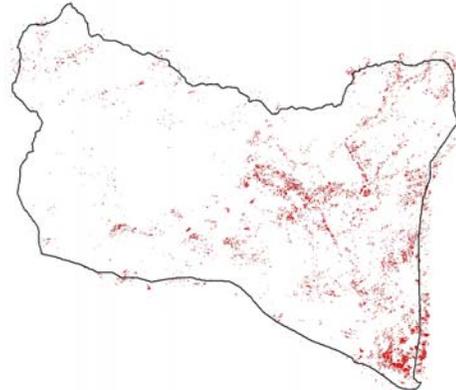


Figure 2. Moderately dense big sagebrush classification.

Figures 1-3 are examples of classifications that have not been accuracy assessed, therefore these classifications could be modified prior to project completion.

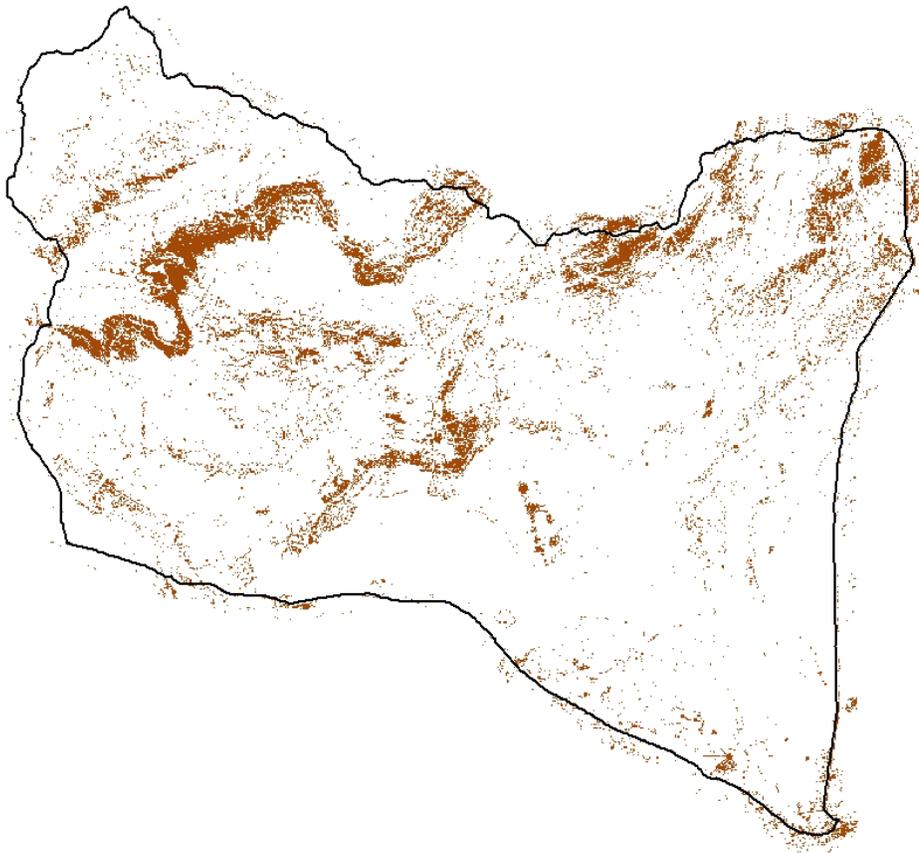


Figure 3. Bentonite clay classification within North Natrona herd unit.

HABITAT PROJECTS

Laramie Range Habitat Initiative Project

Casper Region and BASF Corporation personnel implemented a case study that involved the application of PLATEAU® herbicide within the true mountain mahogany habitat type. Study objectives were to determine what effect, if any, PLATEAU® herbicide may have on either established or regenerating true mountain mahogany, and what rate of herbicide application is most successful at controlling the spread of cheatgrass. PLATEAU® was applied at 6- and 12-ounce-per-acre rates on four 10-acre plots. Initial results, one full growing season post-application, indicate spotty cheatgrass control in the 6-ounce-per-acre rate (Figure 4), but total control in the 12-ounce-per-acre rate (Figure 5). We attribute the spotty control in the 6-ounce area to weather conditions, topography and the use of fixed-wing aircraft to apply the chemical. With fixed-wing aircraft, the pilot was not able to position the plane close enough to the ground for consistent chemical application. True mountain mahogany responded with stunted growth forms, rolled leaves, plants that appeared to be “set back” physiologically with slowed regeneration (Figure 6). No documented true mountain mahogany mortality was attributed to PLATEAU® herbicide. The growing conditions during 2001 and 2002 have been abnormally dry and warm, and these conditions coupled with the herbicide application may be responsible for the true mountain mahogany response documented. Plans are to

- ✓ Overall 82% decrease in true mountain mahogany production since 2000
- ✓ True mountain mahogany production has decreased 83% over the past two years at the Deer Creek site
- ✓ Utilization levels are considered severe at the Deer Creek site, averaging 52.4% actual use

monitor these sites on an annual basis for the next three to five years to document true mountain mahogany response and cheatgrass control.



Figure 4. Six-ounce application rate.



Figure 5. Twelve-ounce application rate.



Figure 6. True mountain mahogany response to Plateau® herbicide.

Bates Hole Habitat Inventory and Evaluation Area

The project objective is to improve the nutritional quality of big sagebrush on pronghorn winter ranges in those areas where other habitat improvement techniques are not feasible due to vegetative community conditions and costs.

Nitrogen fertilizer was applied at various rates to approximately 240 acres of big sagebrush in the Bates Hole area in need of improvement (Figures 7). The rates ranged from approximately 20 lbs per acre to 100 lbs per acre. The fertilizer used on the majority of the test plots consisted of ammonium nitrate (32-0-0), whereas the fertilizer applied on the one-acre test plot was 22-11-11 (total nitrogen, available phosphoric acid, and soluble potash). Unfortunately since application, abnormally dry growing seasons have occurred, and ocular (physiological) results indicate little, if any, change in big sagebrush condition. Big sagebrush leaders will be collected in the fall of 2003 for nutritional analyses.



Figure 7. Bates Hole big sagebrush fertilization enclosure.

⇒ 58 % decline in big sagebrush annual growth in one year

⇒ Overall 80% decrease in big sagebrush production since 1999

⇒ 64% decline in big sagebrush production at the Stinking Creek site, and a 79% decline at the Schnoor site

⇒ True mountain mahogany production decreased by 43% since 2001

⇒ Initiated a land cover classification project similar to the North Natrona project

Big sagebrush production in Bates Hole ranged from 0.15 inches at Upper Lone Tree Creek and Lower Lawn Creek to 0.41 inches at Bolton Creek. Overall production at six locations averaged 0.27 inches, which is the second worst production year recorded since 1993. Spring (April-June) precipitation is extremely important for big sagebrush production. In 2002, the Bates Creek weather station received 0.95 inches of precipitation during the April through June timeframe. The spring seasons of 1994 and 2001 are the only years during our monitoring efforts that have received less precipitation than 2002 (Figure 8).

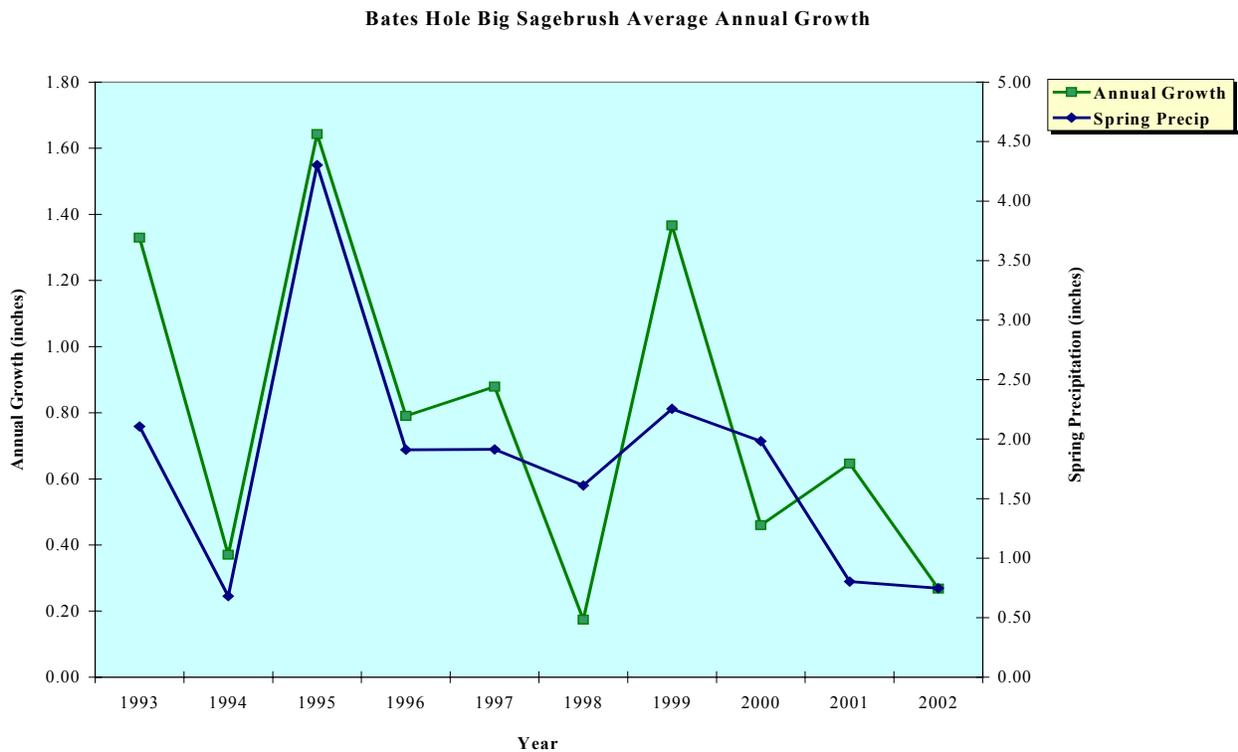


Figure 8. Big sagebrush annual growth response to spring precipitation.

Rattlesnake Hills Habitat Inventory and Evaluation Area

Big sagebrush production increased 100 percent during 2002 compared to 2001, but this increase is still well below levels reached during 1995 (Figure 9). The increased production may be attributed to about 2 inches of precipitation received during May, even though precipitation declined slightly during the April – June timeframe. Also, the Fales Rock weather station received 0.86 inches of precipitation in August, which may have contributed to the increase in big sagebrush production.

60% increase in big sagebrush annual growth at the Powerline site

Big sagebrush annual growth increased 128% at the McClanahan Lake site

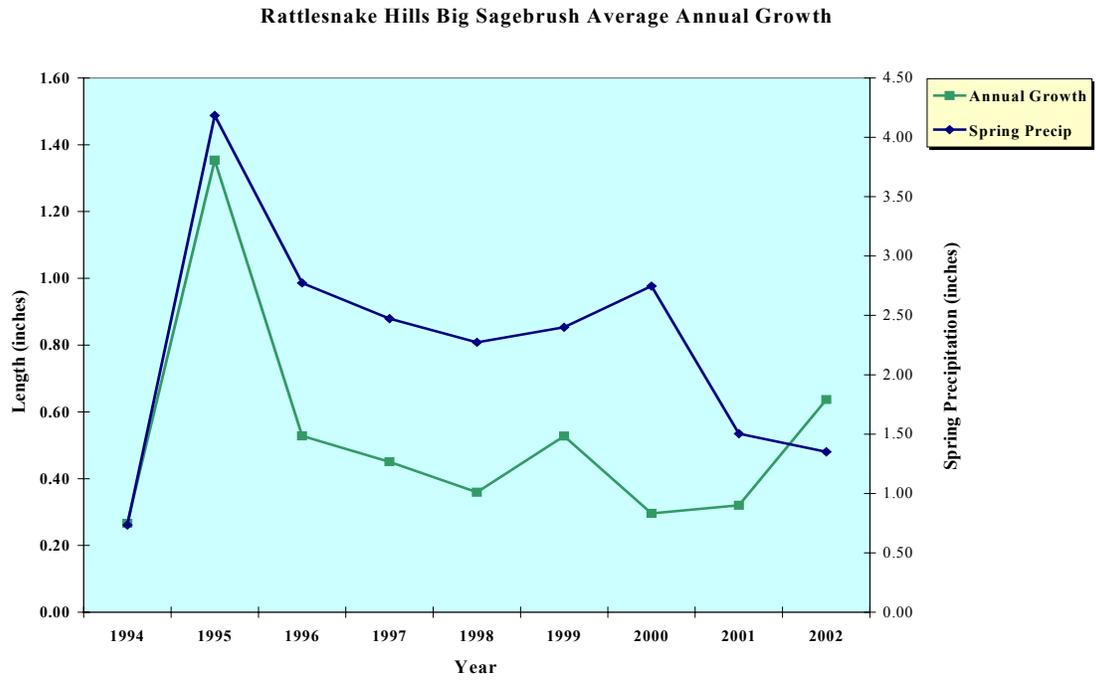


Figure 9. Big sagebrush production response to spring precipitation.



Big sagebrush community condition in the Rattlesnake Hills.

South Big Horns Habitat Evaluation Area

Curlleaf mountain mahogany production increased significantly over the last year, 0.19 inches in 2001 to 0.54 inches this year (Figure 10). But the potential of this community is still less than if the plants were younger, more vigorous, and not as severely hedged. Nonetheless, the small increase will be beneficial to wintering mule deer. A prescribed burn in fall 1996, is being monitored to evaluate curlleaf mountain mahogany re-establishment. However, there has been no curlleaf re-establishment to date.

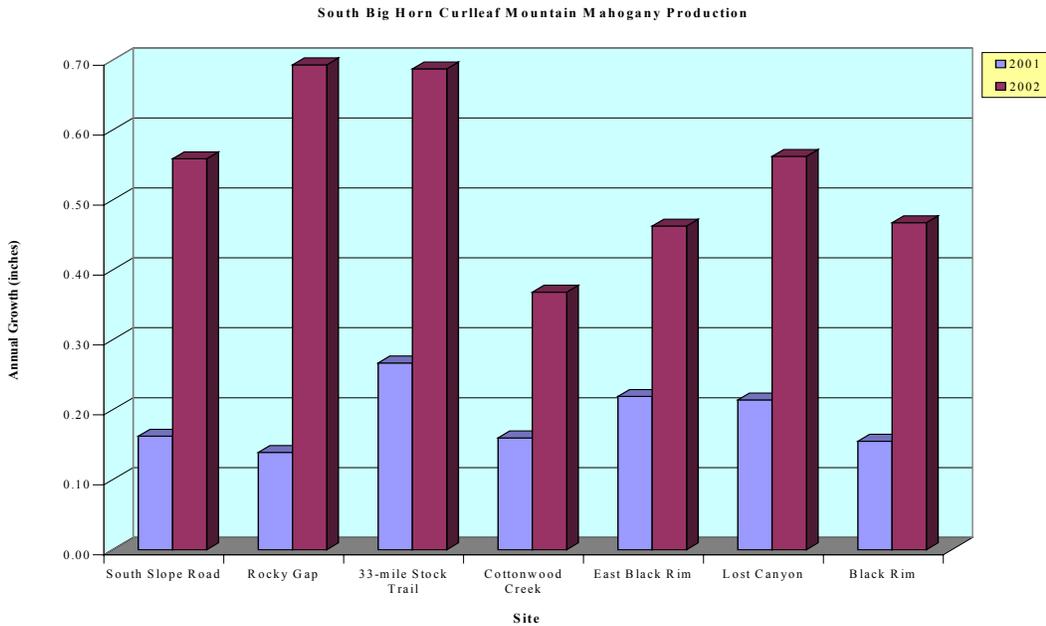


Figure 10. South Big Horn curlleaf mountain mahogany production.

✎ Overall 184% increase in annual growth of curlleaf mountain mahogany

✎ Documented a 109% increase at the East Black Rim site and a 256% increase at the South Slope site

✎ Curlleaf mountain mahogany annual growth ranged from 0.36 inches to 0.72 inches.

✎ Received 5.87 inches of precipitation during the July-September timeframe.



Curlleaf mountain mahogany shows no re-establishment following prescribed burn, six years post-treatment.



Curleaf mountain mahogany prescribed burn in the South Big Horns.

National Grassland Big Sagebrush Inventory

Big sagebrush production in the National Grassland project area increased 11 percent over 2001. This increase could be attributed to precipitation received during the July-September timeframe where about 4.86 inches was documented at the Frog Creek site, 3.44 inches at the 6 Mile Basin site and 5.24 inches at the Highway 85 site. Conversely, precipitation received at these sites during the spring (April-June) was 0.62 inches at Frog Creek, 1.75 inches at 6 Mile Basin and 0 inches at Highway 85. Figure 11 shows a 3 percent decline in big sagebrush annual growth at Frog Creek and a 33 percent decrease at 6 Mile Basin, but a 160 percent increase at the Highway 85 site. These data indicate that precipitation received during the summer (July-September) does influence big sagebrush annual growth, but not to the extent spring precipitation does.

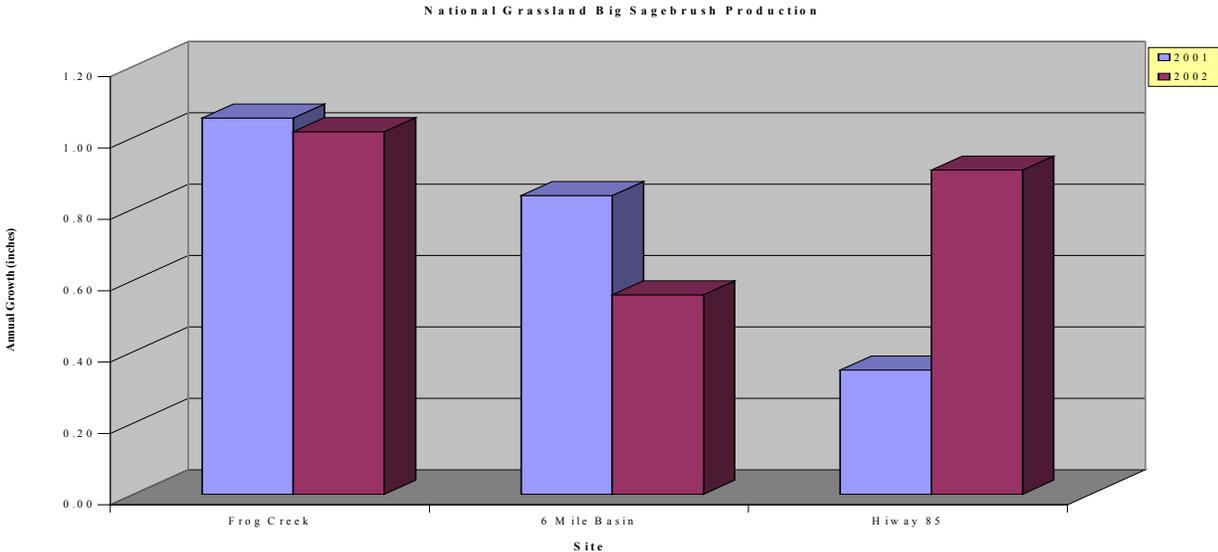


Figure 11. National Grassland big sagebrush production.

North Converse Big Sagebrush Inventory

A big sagebrush production monitoring transect was established during fall 2002 in the North Converse pronghorn herd unit to evaluate big sagebrush annual growth over time. In addition, this information will be used to evaluate herd unit objectives (populations) and provide additional data for the season-setting process. Production and utilization data will be used to help justify pronghorn hunting seasons. To assess the condition of the big sagebrush community in close proximity to this monitoring site. Initial results indicate big sagebrush annual growth averaged 0.28 inches for 2002.

Cardwell Fishing Access Area

The Cardwell Fishing Access became a reality in 2002. What was once a featureless and often waterless section of bottomland below the Pathfinder Reservoir now provides four miles of publicly accessible trout fishing (Figure 1).



Figure 1: Habitat work on the Cardwell Fishing Easement was completed in 2002 and is already providing a popular fishery for rainbow and brown trout.

Water had been diverted around the historic river bottom for hydroelectric production since 1958, leaving no water for fish between Pathfinder Dam and the point where the bypass pipe returned water to the channel above Alcova Reservoir. This past year the Bureau of Reclamation generously provided a base flow of 75 cfs. The Wyoming Fly Casters Club secured an easement at a cost of \$70,000 and then donated the easement to WGFD. The easement provides public access and excludes livestock grazing.

The WGFD excavated 3200 feet of river channel to accommodate the new base flow. Large rock was hauled to provide habitat for fish beyond what was available from the excavation of the channel. Runs, riffles, and pools were constructed to provide holding areas for fish and mimic a natural stream of the gradient offered in the Cardwell Access Area. WGFD personnel seeded native grasses and sedges adjacent to the stream, and the Fly Casters planted seedling trees. WGFD personnel also repaired the easement fence to reduce trespass livestock. A comfort station and parking lot were constructed to accommodate increased public use.

Anglers are already catching large rainbow and brown trout in the easement. These fish probably moved up from Alcova Reservoir, but 2,000 fingerling rainbow trout were stocked by WGFD as well. The fenced easement is also providing habitat for mule deer, ducks, and a family of beaver.

Besides the Fly Casters and WGFD, other funding for the project came from the USFWS Partners for Wildlife Program and the NRCS Wetland Reserve Program.

Bates Hole Administrative Report

Bates Hole (Figure 2) is a major environmental concern in the Casper Aquatic Region because its landscape is highly erosive. It contributes large amounts of sediment to the North Platte River. This sediment degrades habitat used by the valuable sport fisheries in that river. A basin report was written

in 2002 and summarized work completed to date including: Lawn Creek and Bolton Creek riparian greenlines and vegetation macroplot data, Little Red Creek vegetation macroplot data, the Coal Mountain prescribed burn, the Dead Horse wildfire vegetation data, and all habitat restoration efforts completed to date.

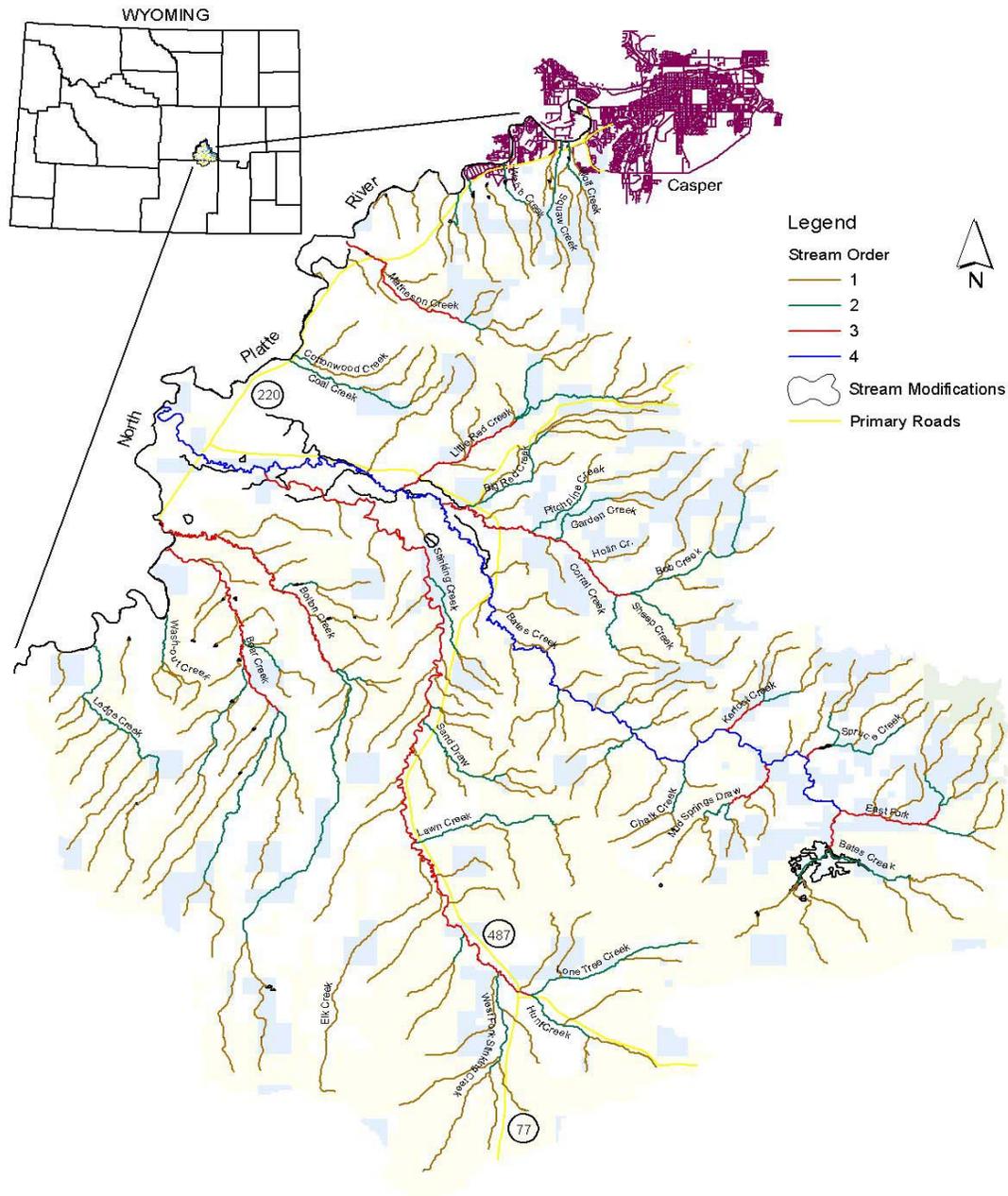


Figure 2. Bates Hole is a highly erosive watershed where the Casper aquatic habitat biologist has worked intensely due to: 1) the deleterious effects of high sediment loads to the valuable sport fishery in the North Platte River above Casper and 2) other wildlife habitat concerns in Bates Hole. A report summarizing work to date in Bates Hole was completed in 2002.

Habitat Extension Services Projects

Habitat extension services were continued with the addition of Tracy Pinter as the habitat extension biologist in Newcastle. Approximately 40 landowners have been given assistance in preliminary or final projects. Several additional landowners were provided literature and program information.

Riparian Restoration Projects

This year 6 existing riparian restoration projects were completed, and 5 others were written, and funded totaling 484 acres along 9 streams in Weston County. Each project was funded through the Habitat Grant program, Continuous CRP, and the Weston County Natural Resource District (WCNRD). These projects required the installation of fences to exclude livestock grazing for a 10 or 15-year period, and tree and/or shrub plantings to re-establish woody vegetation. Water developments were also included where livestock access to water had been lost due to fencing. Six more riparian restoration projects are in the planning stages on various streams in Weston, Crook, and Campbell Counties.



Pre-project photo of Beaver Creek Riparian Habitat Improvement in southeast Weston County

Wetland Development and Enhancement Projects

A 13-acre wetland was constructed this year in Weston County with the cooperation of the NRCS, USFWS, Ducks Unlimited (DU), and WCNRD. Most of this wetland will be less than 4 feet deep and is surrounded by a sagebrush flat, which should be attractive to nesting and brood-rearing waterfowl. Weston County was chosen as a pilot for the NRCS new technical provider program for engineering assistance contracted through the WCNRD, which will deal with the backlog of wetland developments and enhancements in the county. Ten wetland projects are in various stages of planning and should be ready for construction next year.

◆ Contacted 40 landowners, several others provided technical assistance and information

◆ Did 484 acres of riparian restoration along nine streams

◆ Funded five Habitat Grants

◆ Created a 13-acre wetland

◆ Over 32,800 acres incorporated into ranch-wide management plans

◆ Cooperative management plan with NRCS, USFS, WGFD, and Inyan Kara Grazing Association



Donna #1 Reservoir construction construction



Donna #1 Reservoir soon after

Upland Habitat Enhancement Projects

Over 32,800 acres were incorporated into ranch-wide management plans through grazing management assistance given to producers. Cross fencing and livestock/wildlife watering facilities were planned and implemented with NRCS funds. A cooperative management plan was developed with the NRCS, USFS, WGFD, and the Inyan Kara Grazing Association on a ranch in northern Weston County.

A water distribution project was implemented this year in northern Campbell County using BLM and WGFD funds. The project provided over 6 miles of new pipeline and eight watering facilities throughout the ranch to improve range condition, provide water for livestock and wildlife, and reduce grazing pressure along the Little Powder River. Though the habitat extension program has been slow in being utilized in Campbell County, a few projects are in the planning stages, including a couple wetland enhancement projects and a ranch wide project using the NRCS' Farm Bill WHIP.

A cooperative project between the WCNRD, NRCS, and WGFD to evaluate the effectiveness of different treatments on sagebrush growth and range condition was implemented in the spring, and will be monitored for the next three years. The treatments included three different mow heights, and one or two passes of the WGFD's Dixie Harrow (Figure 12). Evaluation includes measuring leader growth and collecting samples for protein analysis from plants within test plots and the control plot.



Figure 12. Spring sagebrush treatment project using a Dixie Harrow

MISCELLANEOUS

Workshops and In-service Training

- Roy Roath Grazing Management/Nutritional Workshop
- The Wildlife Society Meeting – Wyoming Chapter
- The 7 Habits of Highly Effective People
- BLM Standards for Survival Training
- Rangeland and Pastureland Weed Control Workshop
- Natrona County GIS Users Group
- Fire training courses S-130 and S-190
- Arduous pack test for Red Card certification

Habitat Protection

- Assisted WGFD Casper District Biologist in preparing comments concerning BLM Camel Hump Allotment grazing renewal document.
- Assisted WGFD Casper District Biologist in preparing comments concerning BLM Rattlesnake Grazing Association Allotment grazing renewal document.
- Assisted WGFD Casper District Biologist in preparing comments concerning BLM Eagle Ridge Allotment grazing renewal document.
- Assisted WGFD Casper District Biologist in preparing comments concerning BLM Marton Allotment grazing renewal document.
- Assisted WGFD Casper District Biologist in preparing comments concerning BLM Harlan Allotment grazing renewal document.
- Completed five environmental reviews.

Presentations

- Restoration Strategic Planning Meeting – San Diego
- Wildlife Legacy Trust

◆ Volunteered at the Wyoming Hunting and Fishing Heritage Exposition

◆ Served on Department-wide meeting Planning Committee

◆ 12 landowner contacts; provided technical assistance and information

◆ Member of Pronghorn Working Group

◆ Lone Tree breaks prescribed burn – assisted BLM in 300-acre burn

◆ Poison Spring riparian protection and off-site water development – finalized grant application and established monitoring protocols

◆ Canyon Creek habitat assessment; Miracle Mile spawning sites

CODY REGION

HABITAT PROJECTS

North Fork Vegetation and Fuels Management Project

The North Fork of the Shoshone River, identified as the top priority for management efforts by both the Shoshone National Forest and the Wyoming Game and Fish Department, became the target for a large planning effort to address a multitude of resource concerns. The area of concern includes the portion of the North Fork of the Shoshone watershed from the Shoshone National Forest boundary west of Cody to the Yellowstone National Park boundary. In 2002, the Shoshone National Forest held three public meetings to initiate a collaborative process with the public to identify the issues, concerns and prioritized



Conifer encroachment in aspen stand

management actions to address those concerns. At these meetings, Department personnel provided educational presentations identifying habitat issues and treatment options to enhance, protect, or restore wildlife habitat in the North Fork. The major issue threatening the integrity of the North Fork watershed is an advanced stage of succession in nearly every habitat type found within the corridor. Lack of disturbance has harmed both aspen stands and the deciduous tree and shrub communities associated with the



Beetle-killed Douglas fir

riparian areas are suffering from increased competition from the encroachment of conifers that has been allowed by the lack of any type of disturbance. In the absence of fire or other disturbances, sagebrush communities that are important for wintering elk, deer, and bighorn



Forest Service and WGFD personnel discuss riparian management on the North Fork.

✓ Vegetation management plan initiated on one watershed

✓ Over 2,700 acres of mechanical treatment

✓ Monitored 300-acre prescribed burn

sheep are being lost to expanding encroachment of Douglas fir, limber pine, and juniper. Most of the forested habitat within the corridor consists of over-mature stands of Douglas fir at the end of the successional process. There has been over 40% mortality in some Douglas-fir stands because of stress caused by stand age and drought, and beetle epidemic. The threat of catastrophic wildfire that would burn large acreages of timber stands and severely reduce habitat diversity is very high.

The Department is working closely with the Shoshone National Forest and the public to develop proposed actions that will address these concerns. Some of the proposed actions that would improve wildlife habitat include the following:



Junipers encroaching into sagebrush/grass habitat

- Create strategically placed fuel breaks to modify fire behavior and prevent catastrophic fire. The fuel breaks would be created through a combination of mechanical treatments and prescribed burns that would enhance vegetative diversity in old aged, monotypic stands of timber. A total of 2,200 acres of treatments is proposed.
- Mechanically treat or prescribe burn to reduce conifer encroachment in sagebrush communities on crucial winter ranges. These treatment areas would be small and mosaic in nature and would total over 300 acres.
- Mechanically treat riparian and aspen communities to enhance the deciduous component. Some of this would be accomplished by salvage logging or service contracts and would total about 250 acres.

Jim Mountain Bighorn Sheep Habitat Initiative Project

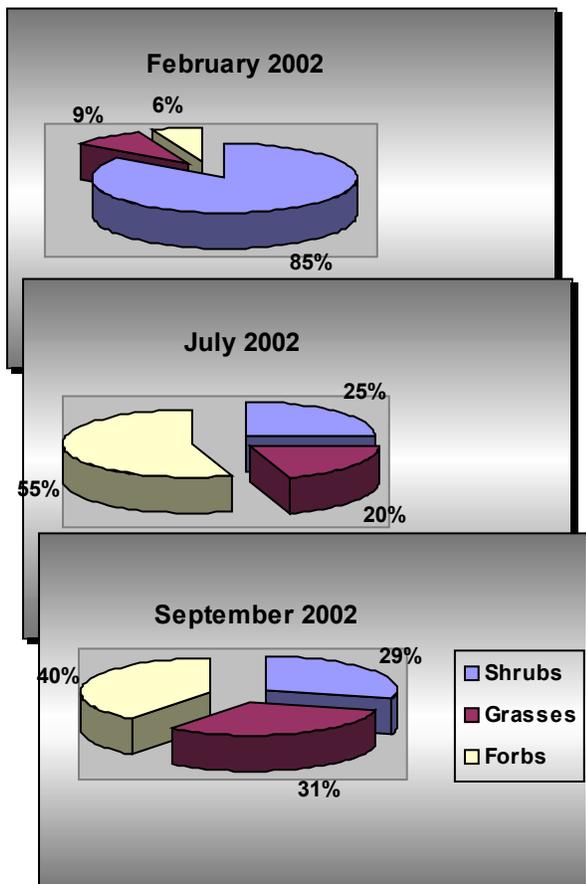
Department personnel monitored vegetative response on prescribed burns that were conducted in the Signal Peak area in the spring of 2000. Post-treatment monitoring showed an increase in bare ground and a reduction in herbaceous cover. But, with only two years of post fire recovery and poor precipitation during these years, these results were expected. Individual plants appeared more robust and had an extended “green” period. We expect herbaceous cover will increase over the next few



Signal Peak prescribed burn. Left: Pre-treatment, 1999. Right: Post-treatment, 2002

years to a level exceeding the pre-burn conditions. The objective of the burns was to increase the quantity and quality of forage, reduce conifer cover, and improve distribution of bighorn sheep. The area normally winters 175-250 bighorn sheep. The Shoshone National Forest conducted the burn utilizing funds contributed by the Foundation for North American Wild Sheep and WGFD. The 300-acre burn is the first treatment of a larger prescribed fire project that will eventually treat 2,000 acres.

Owl Creek/Meeteetse Mule Deer Habitat Evaluation and Improvement



Composition of Mule Deer Diets Analyzed from Fecal Collections

The Owl Creek/Meeteetse Mule Deer study completed its second year of field data collection amidst the third year of extreme drought. The effects of drought on plant vigor and composition affected our analysis of long-term trend as it relates to past land management practices. However, the extremely dry conditions afforded an opportunity to assess the effects of severe prolonged drought on mule deer habitat.

To determine any significant shift in mule deer diet composition over time, a total of 20 fecal samples were collected this year for comparison with fecal samples collected at the same sites 25 years ago. In addition, fecal samples from lactating does during lactation were collected to determine diet composition during this critical period of nutritional needs. Results of the analysis will indicate the general quality of mule deer diets in the area as well as the importance of individual forage species in relation to their availability.

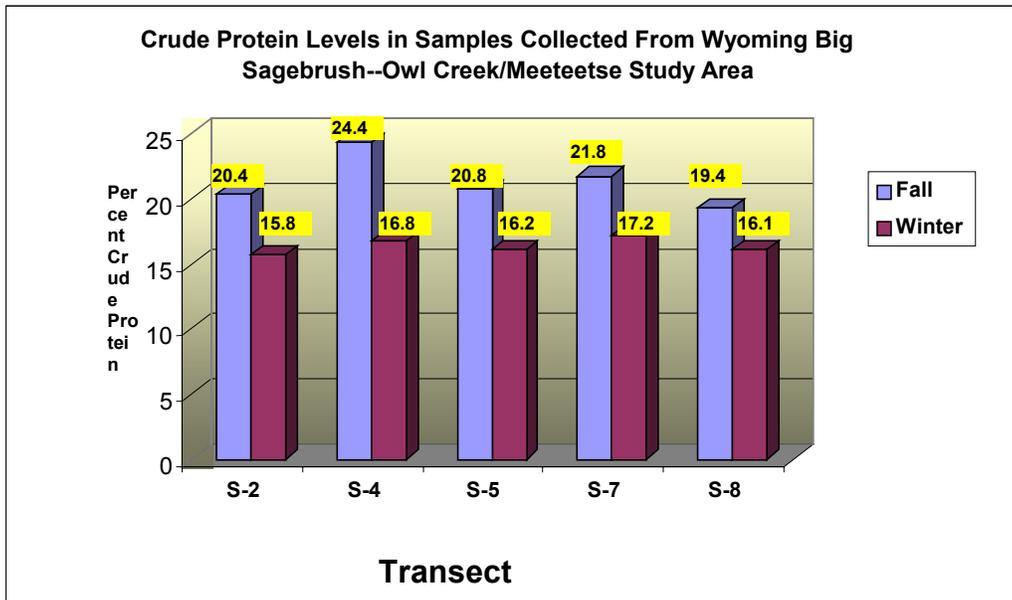
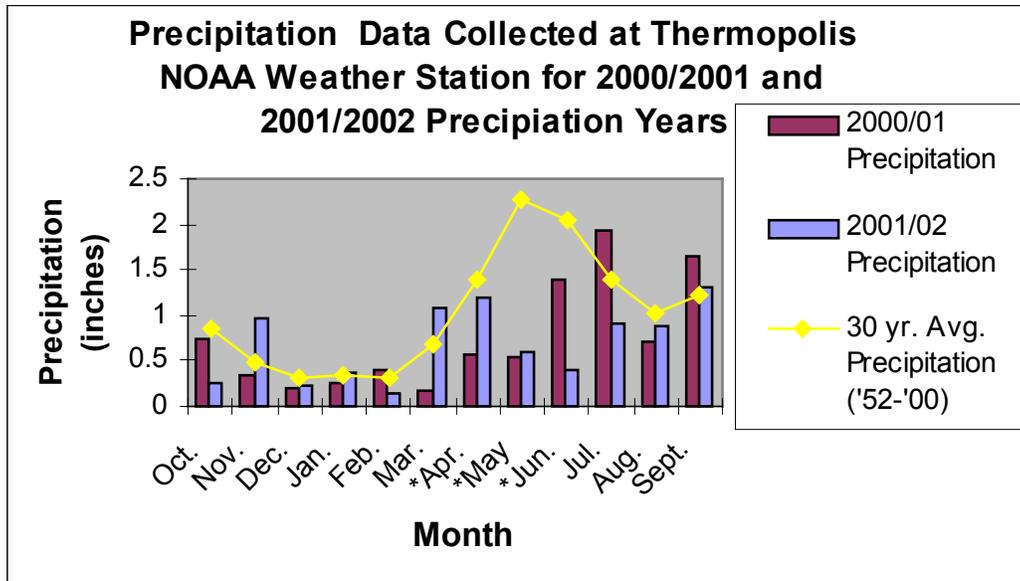
A total of 44 vegetation trend studies established 20-30 years ago were re-read. These data will be analyzed this winter to determine drought effects on production and plant composition. The 18 permanent sagebrush transects established in 2001

were re-read for current year production, shrub age class and condition and actual plant age. Comparing data between the two drought years showed a 156% increase in annual leader production, a direct relation to the increased March-May precipitation. However, more decadent or dead shrubs were observed this year than in 2001, possibly indicating drought stress.

Forage samples of sagebrush and other plants selected by deer were collected and nutritional content analyzed. Crude protein and digestibility were the primary nutritional parameters evaluated.

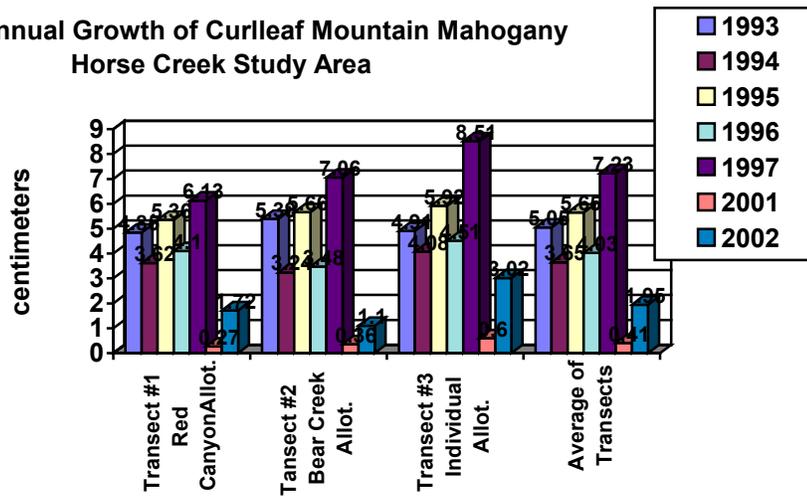
Horse Creek Study

Browse transects on three allotments in the Horse Creek Study Area on the west slope of the Bighorn Mountains were read this fall to determine average current annual leader growth of



curlleaf mountain mahogany. A summary of this data is shown in the graph below. The production in 2002 was slightly up from last year but still well below the five-year average from 1993 to 1997. Curlleaf mountain mahogany with its high protein content is a critical part of the diet of wintering deer on the west slope of the Bighorns.

**Current Annual Growth of Curleaf Mountain Mahogany
Horse Creek Study Area**



✓ Production of curleaf mountain mahogany less than 40% normal

Southwest Bighorn Aspen Enhancement

Department personnel worked closely with the Forest Service in designing treatments in aspen communities on the southwestern portion of the Bighorn National Forest. Most of the aspen stands in this area are at risk because of conifer encroachment and/or heavy browsing. Of the 844 acres of aspen communities in the project area, approximately 150 acres will be targeted for intensive treatments, which will include removal of competing conifers, prescribed fire, partial or complete removal of aspen overstory, and exclosure fences to allow regeneration. The remaining acres will be managed for maintenance of the stands by removing conifer encroachment. The aspen project is part of the larger Southwest Fuels Management Project proposed by the Bighorn National Forest. The project will include treatments in Ponderosa pine communities to maintain healthy, open stands, and mechanical, chemical (tebuthiuron) and prescribed fire treatments on approximately 20,500 acres of sagebrush communities. Department personnel will coordinate closely with the Forest Service as these projects are designed.

✓ Planned 150 acres of aspen treatments

91 Ranch Cooperative Grazing Management

A cooperative grazing management agreement was implemented on six pastures of the 91 Ranch allotment located on the southeast face of Carter Mountain southwest of Cody. Approximately 3,020 acres of the 91 Ranch deeded lands and 4,430 acres of public land were not used by cattle this winter to provide forage for wintering elk. The forage made available to elk was extremely critical this year because of severe shortage of forage in one of the worst drought-stricken areas of the state. The grazing management agreement was a cooperative effort between the 91 Ranch, BLM, RMEF and the WGFD.

✓ Over 7,000 acres of forage reserved for wintering elk



Prescribed burn on the Heart Mountain Allotment

Heart Mountain Brush Treatment

About 255 acres of sagebrush on the Heart Mountain allotment northeast of Cody were treated with a combination of prescribed fire and brush mowing. The objectives of the treatments were to provide vegetative and structural diversity, increase forage quantity and improve forage quality for wildlife and livestock. This project was part of an ongoing cooperative effort between the BLM, WGFD, RMEF, and permittees.

✓ Treated 255 acres of sagebrush

YU Bench Brush Control

Approximately 790 acres of sagebrush on the YU Bench east of Cody were mechanically treated with a mower. The treatment was designed to create a mosaic of successional stages and was planned to optimize sage grouse habitat. The project was the first in a larger effort that will treat 5,900 acres in a 23,000-acre project area on YU Bench. This is a cooperative effort between the BLM, WGFD and permittees.



Brush beating on YU Bench

✓ Treated 790 acres of sagebrush treated

South Fork Weed Management

The South Fork Weed Management effort completed its 10th year of battling the invasion of Dalmation toadflax in the South Fork of the Shoshone River. WGFD granted the South Fork Weed Management District \$5,000 in 2002 to cover costs of chemical and biological control. The herbicide *Plateau* has been used effectively, along with the bio-control agent *Mecinus janthinus*, in reducing Dalmation toadflax by 15-22% on affected private and public lands on the upper South Fork since 2000. An additional trust fund grant proposal was submitted for the 2003 season to fund revegetation efforts in areas where Dalmation toadflax has been controlled but native vegetation has diminished.

Landowner Extension—Upland Habitat Enhancement



Insulated ball-watering device installed to encourage grazing season-of-use change in 5-9" precipitation zone



Stock pond renovation project

Grazing management planning assistance was given to landowners that could affect over 100,000 acres of state, federal, and private land, if implemented. Over eighty livestock reservoirs have been cleaned in the 100,000-acre area, of which 10 were funded by WGFD. Off-site ball water facilities were placed at two of the locations to determine if they provide reliable winter water for implementing a recommended change in grazing season from late spring/summer to winter/early spring. Approximately 300 acres of dense (37% canopy cover) mountain big sagebrush was thinned on the west slope of the Bighorn Mountains with Spike to improve forage production and encourage growth of young, nutritious sagebrush. Installation of four wildlife guzzlers and development of one yearlong flowing spring was completed in 2002. The water sources were fenced to keep out livestock and will benefit pronghorn, mule deer, sage grouse, plains spadefoot toads, sage sparrows, and many other wildlife species.

Ranch management plans were initiated on 80,000 acres in Little Grass Creek, Prospect Creek, and Twenty-One Creek drainages on the east slope of the Absaroka Mountains. Technical advice was given on 20,000 acres of private property on the Red Raflet ranch south of Tensleep, Wyoming. The landowner plans on implementing many of the suggested practices without seeking financial assistance. One landowner was successfully discouraged from

implementing a sagebrush treatment project in an area on the Big Horn Mountains that has received extensive treatment in the past. The proposed project would have removed dense mountain big sagebrush from an area of about 250 acres that provides important cover and forage for sage grouse and mule deer.



Keg Springs wildlife guzzler

Landowner Extension—Riparian Habitat Enhancement

One Continuous Conservation Reserve Program (CCRP) riparian buffer was designed and completed in 2002 that protected 1.5 miles of riparian habitat on Owl Creek from excessive livestock grazing. An additional 8 CCRP projects have been designed, of which four have been funded and will be implemented spring 2003.

Funding has been requested for the other half early in 2003. In total, the eight projects will enhance 16 miles (about 500 acres) of riparian habitat through improved grazing management, off-site water development, shrub/tree plantings, chemical weed control, and grass/forb seeding. The extension biologist also provided technical advice and labor on one other project that used private funds to fence three miles of Spring Creek to enhance pheasant habitat and help repair damage caused by heavy cattle grazing.



Cottonwood regeneration on Kirby Creek when protected from cattle grazing. Notice grazed cottonwood plant in foreground that was not protected by the electric riparian fence

Landowner Extension—Wetland Development

Wetland creation and enhancement on 25 acres are in the design and planning stage. Wetland Reserve Program, Wildlife Habitat Incentive Program, and Ducks Unlimited will be the primary funding sources for these projects.

Luce Reservoir Habitat Improvement Project

The old water level control structure in Luce Reservoir extended several yards into the reservoir with the headgate accessible by a pier structure. This structure was very susceptible to ice and wave action so the reservoir had to be kept low during winter to prevent major damage. Deeper water would over-winter fish better.



Luce Reservoir water level control structure summer 2002



Luce Reservoir water level control structure failure fall 2002

To this end, a cooperative habitat grant was developed and the structure was replaced. The new structure has the headgate on the downstream side of the dike so ice action cannot affect it. In addition, a specially designed fish screen was added that prevents losses of trophy fall rainbow trout during regular irrigation, while not interfering with irrigation flows. Both the outlet and screen are working well.



Installation of the new water level control structure

✓ Completed one cooperative habitat grant with two landowners

✓ Replaced one water level control structure

✓ Protected a 55 surface acre reservoir full of trophy fall rainbow trout

✓ Installed a new style headgate on the downstream side of the dam thus allowing deeper winter water for fish health

✓ Installed a fish screen to eliminate fish loss to irrigation system

Sunlight Creek Watershed Evaluation

Eleven streams were surveyed in 2002 while collecting Wyoming Habitat Assessment Method (WHAM) data.



Galena Creek



Sunlight Creek



Fall Creek



Blackbird Creek



Gas Creek

Data collected included Rosgen type, gradient, stream width, bankfull width, substrate types, temperature, aquatic vegetation types, and macro-invertebrate numbers.



Spring Creek

Habitat Quality Index (HQI) sampling was completed on some streams to identify their potential. HQI includes additional evaluations of habitat types, habitat availability, residual pools, substrate, velocity, erosion, and invertebrate collection. Flow measurements and pebble counts were also taken on Sunlight Creek above and below major tributaries. Riparian and upland conditions were monitored. This data has been entered into a database and sample points have been plotted on GIS maps. All information will be summarized in a final report after the remainder of the area has been surveyed.

✓ Completed WHAM Level 1 evaluation on eleven streams.

✓ Completed HQI on streams with fisheries potential.

✓ Flows and substrates were sampled above and below large tributaries.



Measuring Flows on Sunlight Creek

Ten Sleep Creek and Wigwam Rearing Station Evaluation

Ten Sleep Creek water is passed through the brood pond at Wigwam Rearing Station so that the fish are subjected to the proper water temperatures and spawn within their normal time frame.

Unfortunately, the stream channel has changed and keeping enough water flowing to the hatchery is difficult. Also, some major changes are occurring within the stream channel that could easily result in property damage, not to mention damage to stream dynamics and function.

Step one of our improvement planning process included WGF survey engineers and obtaining an accurate survey of the stream. Plan view, stream profile, and cross-section maps are being developed for use in our planning process. This process will continue in 2003 with emphasis on stream rehabilitation and water supply for the Wigwam brood ponds.



Ten Sleep Creek splitting into two channels

✓ Investigated problems getting water to the Wigwam Brood ponds

✓ Did a physical survey of approximately 1.5 miles

✓ Plan view, stream profile and cross-section maps are being developed

Clark's Fork River Random Tree Placement

In March of 1998, seven random tree placements, consisting of 88 forty to sixty foot conifers attached to 176 four to five foot boulders, were installed in the Clark's Fork River. These structures, designed to simulate natural tree jams, were installed to provide a variety of micro-habitats within the structures for fish during high water flows, narrow the river channel, and collect silt above and below the structure, which in turn provides substrate for the establishment of willows. These structures were



Clark's Fork random tree placement (2002 Photo)

examined for maintenance needs in 2002 and all structures were found to be intact and working well. Only one broken bolt was found sticking out of a boulder thus allowing the cable between the boulder and tree to swing free. No trees had moved however, because the boulder was still wedging the tree into place. This bolt will be replaced in spring 2003.

✓ Monitored maintenance needs on random tree placements

✓ One bolt was found needing repair after four years

Fish Passage and Screening Evaluation

The Big Horn Basin is farmed extensively and irrigation systems are common. Many of these systems originate in the Bighorn or Shoshone Rivers and include a dam that diverts water into major irrigation water supply canals. The larger diversions act as fish passage barriers, which limit spawning by migrating fish and natural disbursement of fish populations. In addition, these large structures along with many smaller headgate and ditch systems divert fish from the river and out onto irrigated fields. Both adult and juvenile fish are lost from the population in this manner.



Lower Hanover is a typical diversion dam found within the Big Horn Basin

✓ Initiated fish passage investigations for eight irrigation diversions



Mormon Dam with energy dissipaters

In spring 2002, a tour of several dams was completed with a fish passage expert from the Bureau of Reclamation. Since each dam site is slightly different, several potential fish passage ideas were discussed. Following this tour, irrigation districts were contacted for information that will help decide which, if any, system would be most beneficial at each site. Although irrigation districts expressed some concern, most agree that fish passage would be good if it can be done without major changes to their systems.

Bitter Creek Fish Passage

A trust fund proposal was written for installation of a fish ramp. The ramp is designed with different gradients on each side. Strong swimming species, such as trout, can pass over one side of the structure and weaker swimming fish, such as sauger and mountain sucker, can use the longer and gentler gradient on the other side.



Bitter Creek fish barrier at high flow

✓ Submitted a trust fund proposal for a fish passage ramp on Bitter Creek

Watershed Management Education



The watershed trailer being set up for demonstration including a stream, riparian vegetation, a wetland, steep hillsides, a paved parking lot, and more

Over 100 adults and children attended the demonstration at the Worland Outdoor show and approximately 25 conservation district personnel got involved in the demonstration at the annual Conservation District 3 meeting.



Nothing like a little sand and water to get a young person excited to learn about watershed management

One of our more valuable aquatic educational tools, the watershed trailer, was used to demonstrate how watersheds work or don't work in some cases.

Demonstrations included information on the benefits of upland and riparian vegetation, stream dynamics, fish habitat, water percolation, water tables, grazing management, irrigation management, subdivisions, natural and accelerated erosion, gradients, importance of meanders, in-stream structures, where to fish, water safety, and more.



Discussing watershed management with the public at the Worland Outdoor Show

✓ Demonstrated natural watershed dynamics with the watershed trailer

✓ Demonstrated effects that man can have on watershed function

✓ Talked with and gathered input from over 125 people concerning watershed health and management

✓ Provided hands on encouragement for our young people to get excited about watershed management

Yellowstone Cutthroat Reintroduction Investigations for The Greybull Basin

Conservation and Restoration Act (CARA) personnel undertook a study to determine the feasibility of Yellowstone cutthroat trout (YSC) reintroduction and population rehabilitation in tributaries of the Greybull River. The study included 12 streams, about 85 stream miles, with objectives to identify streams containing brook trout (BKT), determine population status of both BKT and YSC, measure habitat variables using WHAM and HQI methodologies, and explore possibilities of BKT removal and management for pure YSC. In addition, potential limiting factors above natural fish barriers in eight streams were investigated. Comparisons were then made with streams lacking barriers. Five undocumented barriers to upstream fish migration were documented.



Waterfall fish passage barrier on Little Rose Creek



Using a Surber sampler to sample invertebrates in Little Rawhide Creek

cover, stream bank stability, macro invertebrate abundance, water velocity, and stream width.



Installing a temperature logger in the Middle Fork of the Wood River

Data collected included the abundance of pools, stream channel gradient, macro invertebrate abundance, riparian and upland vegetation characteristics, barriers to upstream fish migration, the presence of springs, and the presence of fish. This provided an understanding of current status for each stream.

The HQI model was used to determine habitat availability and predict potential fish biomass. Parameters included critical period stream flow, annual stream flow variation, water temperature, nitrate, fish

Temperature data loggers were installed to determine if temperatures might be a limiting factor for YSC above barriers. Ten temperature loggers were placed in six streams, four of which have barriers. Multiple loggers were distributed throughout larger drainages. This information should provide valuable daily and seasonal data to show temperature related limiting factors to YSC survival.

Study results should allow decisions for the protection or expansion of pure YSC in the Greybull River drainage.

✓ Evaluated 12 streams within the Greybull Watershed.

✓ Identified streams containing Yellowstone cutthroat trout and brook trout.

✓ Collected WHAM and HQI data.

✓ Documented fish barriers.

✓ Collected macro-invertebrate samples.

✓ Installed temperature loggers to develop temperature history.

WILDLIFE HABITAT MANAGEMENT AREAS (WHMA)

Yellowtail WHMA

Department personnel developed a new five-year farm lease agreement with substantial changes to optimize wildlife habitat. The new lease is a share crop agreement with 15% of all grain crop, or 52 total acres, left unharvested in the field for food plots. In addition the farmers will irrigate over 200 acres of grass/legume nesting cover. Both food and quality nesting cover may be limiting in areas of the habitat area, so the changes convert to



Photo taken the spring following grazing treatment. Note amount and availability of green vegetation on the right

increases in productivity of upland bird and waterfowl populations. Winter grazing by livestock was used as a tool to improve habitat along the Shoshone River riparian area. Approximately 300 cattle were allowed to graze two quarter-mile wide pastures strategically located between the farm fields and the Shoshone River. The objective of the treatment was two-fold. Grazing stimulated wolffy grass plants and opened up dense and decadent shrub stands. The treatment areas should provide earlier successional stage areas with more succulent plants and higher insect populations that will provide higher quality brood rearing habitat for pheasants and turkeys. In addition, the grazed pastures provide a fuel break with reduced fuels to prevent catastrophic fires from spreading throughout the riparian area.

Renner WHMA

The Area Improvement Project Agreement for the farming/grazing lease consisted of purchasing and burying pipeline for the irrigation delivery system on the Renner irrigated meadows. The old deliver system was aging aluminum surface pipe and approximately 40% of the well water was being lost through leaky joints before reaching the fields. The improved system will allow for more efficient use of water and better irrigation.



Grazing treatment and complete re-growth on the Lower Mountain Pasture, Renner WHMA

✓ Developed a five-year farm lease

✓ Over 200 acres of permanent cover reserved for upland birds and waterfowl

✓ Over 50 acres of grain crops reserved for food plots

✓ Grazing used as a tool to rejuvenate decadent vegetation and create fuel breaks

✓ 6,000 feet of pipeline buried

✓ Six grazing pastures monitored

✓ Forage improved for elk by intensively managed livestock grazing

MISCELLANEOUS

Research and Publications

Two research project final reports entitled “ Evaluation of Electric Fence Designs on Big Game Movements and Livestock Containment” and “Seasonal Use of Different Aged Wyoming Big Sagebrush Treatments by Obligate Wildlife Species” were completed by the habitat extension biologist in 2002. A formal publication on the fence research was submitted to the Wildlife Society Bulletin and an updated WGFD Habitat Extension Bulletin on fencing is near completion. Three habitat extension newsletters and a farm bill outline for use by WGFD employees were produced with the help of Habitat Extension Biologists from other regions.



Electric fence research to determine effects on ungulate movements

conducted through the Wyoming Cooperative Fish and Wildlife Research Unit by a University research scientist and will focus on human safety, bison containment, and implementing electric highway right-of-way fence.

Information/Education

Four formal presentations attended by 275 individuals were given during 2002 and include: Gallagher national meeting fence presentation, Commission meeting fence presentation, Wyoming Wildlife Society fence presentation, and a presentation on Ted Turner’s Snowcrest Ranch in Montana pertaining to bison containment. Other presentations were given at the WGFD Habitat Section meeting and the Bighorn Basin CRM coordination meeting pertaining to 2002 farm bill programs.

Other information and education efforts include:

- Provided a Greybull River presentation to the Meeteetse Conservation Board.
- Provided a presentation to the Conservation District’s District 3 annual meeting along with other presentations on fisheries management and instream flow.
- Weeder CRM in the Classroom
- Kirby Creek CRM
- Kirby Creek field day- Construct and monitor fenced riparian area to compare beaver influenced habitat with and without cattle grazing
- Field trip with Worland 3rd graders to “duck swamp” habitat area
- Elk habitat presentation to Paintrock Hunter Mentor Program
- Range education program given to Northwest Community College students
- Range education program given to Powell High School students

- Article written for Wyoming Wildlife News
- TV interview on K2 News to explain drought effects
- Wyoming Hunting and Fishing Heritage Expo – Biologist Association and Habitat booth's
- Tensleep fence modification project
- Issues pertaining to taxation of agricultural land enrolled in conservation programs
- The Habitat Extension Biologist is a member of several different committees including: EQIP steering committees in Bighorn and Washakie counties, State BLM fence policy committee, Kirby Creek CRM technical advisory committee, CCRP prioritization committee, Heart Mountain grass bank funding committee

Landowner Contacts

Region personnel made 54 private landowner contacts in 2002, of which 30 resulted in site visits and follow up project planning and design. Of those 30, 23 requested assistance in obtaining funds for implementing the proposed projects. Four projects were awarded funding through the Habitat Grant program before the program was temporarily cancelled. The majority of the remaining 19 have received or will likely receive funds through USDA farm bill WHIP, WRP, EQIP or CRP programs

Habitat Grants, Information and Project Review

- Habitat grants, trust fund proposals, Continuous CRP proposals, and RMEF proposals were reviewed, submitted to the regional team, and ranked for submission.
- Line Creek - Provided input on bank stabilization possibilities via telephone. Forwarded copies of file and Internet information along with several brochures to landowners.
- Trapper Creek – Provided an on-site visit at the request of WGFD instream flow and fisheries personnel. Irrigation practices, stream flows, stream dynamics, riparian zones, cottonwood regeneration, and grazing were discussed with the landowner.
- Spring Creek - Provided an on-site evaluation and input concerning culvert design for a new the subdivision access road.

Meetings Attended:

- Regional team meetings were attended with the aquatic habitat, terrestrial habitat, habitat extension, and Habitat and Access Maintenance personnel each chairing the meeting when it was their turn.
- Attended the Shoshone Forest/WGFD fisheries coordination meeting.
- Attended the Cody region interagency meeting between two BLM offices, the Shoshone Forest, Big Horn Forest, NRCS, and WGFD.
- Met with Mike Welker concerning habitat needs, potential projects, and his suggestions for the Big Horn Basin, prior to his moving on to a new job in another state.

Training Attended:

Several training workshops, professional meetings, and Department coordination meetings were attended this year. These included:

- Sagebrush identification at the Wyoming Plant Conservation Conference
- Rosen Level 1 training in Pinedale
- Great Plains Fisheries Workers workshop in Nebraska
- Roy Roth range management workshop in Lander
- Stress management seminar in Casper
- Contract employee supervision seminar
- UW writing workshop in Laramie
- Instream flow presentation to Trout Unlimited in Cody

- Department-wide meeting in Casper
- Aquatic habitat workshop in southwest Wyoming
- Aquatic habitat section meeting in Laramie
- Joint aquatic and terrestrial habitat section meeting in Lander
- Department videos concerning vehicular operation, sexual harassment were viewed with and discussed with contract employee

Other:

- Strategic Plan Implementation - All regional personnel along with other agencies including the BLM (Cody and Worland), USFS (Shoshone and Big Horn Forests) and NRCS (Cody) were queried about habitat priorities. Priorities were developed for aquatic and terrestrial systems and presented to the Cody Regional Team. Priorities were then combined into regional priorities.
- Contacted Search and Rescue concerning human remains reported by a Texas couple. Assisted with scene documentation and retrieval.
- Toured the North Fork of the Shoshone River with the USFS and TU to evaluate potential uses of boulders stockpiled during highway construction. Possible projects include instream fish habitat structures, barriers in campgrounds, and barriers along the highway to prevent expanded habitat damage from vehicles pulling off to watch bears.

GREEN RIVER

HABITAT PROJECTS

Green River Region Habitat Evaluation and Sagebrush Shrub-Steppe Inventory

Considerable time was allocated to the development of a proposal to complete a habitat evaluation and inventory of the Green River region (Figure 1). A GIS-based land cover/vegetation cover/habitat type inventory derived from remote sensory procedure is desired to assess current conditions and evaluate trends over the past 30 years to help guide future wildlife and wildlife habitat management activities in the area. GIS technologies allow resource managers and biologists to analyze data and address specific problems at both small and large spatial scales in less time and in a more cost-effective manner. Habitat types in the area range from alpine to salt-desert shrub community types and support a variety of wildlife species and potentially conflicting land uses. The inventory and change detection information will provide a basis for developing habitat treatment, restoration, rehabilitation, and mitigation projects and information for land managers, landowners, land users, and the public. The data is needed to guide future land use planning and will be invaluable in providing input into the BLM Kemmerer and Green River RMP revisions, county land use plans, and oil and gas developments. Change detection information will provide data on extent of loss and/or alteration of habitats and the degree and speed of recovery from past manipulations, treatments, perturbations, and/or man-made activities.

The project is scheduled to begin later next year. Final completion of the evaluation and inventory for the entire region is not expected for several years. Funding for much of the first two years has been received from the USFWS Sagebrush/Shrub-Steppe Ecosystems Grant program. Additional funds are being solicited from the WGFD trust fund program, federal land management agencies, and locally operating oil and gas companies.

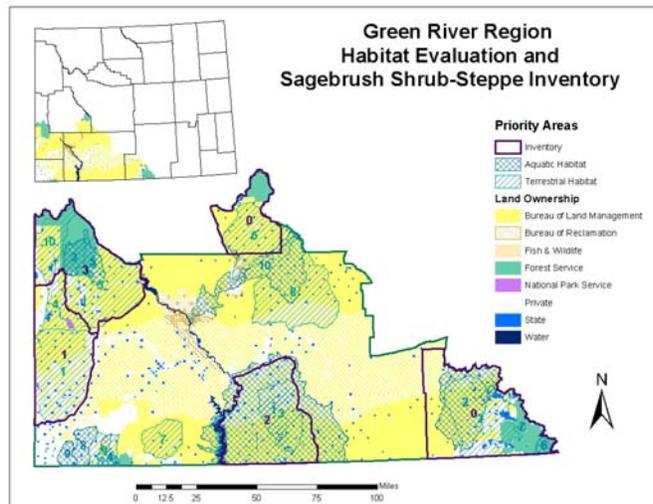


Figure 1. Green River Region Habitat Evaluation and Inventory. Map delineates inventory priority areas. Those with priority 0 are areas already under evaluation and inventory in other plans (Sublette County and Southeast Wyoming Cumulative Impacts Analysis).

✓ Developed proposal to begin habitat evaluation and inventory

✓ Received \$79,125 in funding from USFWS Sagebrush/Shrub-Steppe Ecosystems Grant program

✓ Initial classification to be completed by March 31, 2004

✓ Final classification to be completed in approximately 850,000 acre priority areas

Little Mountain Watershed Enhancement Project

Implementation of restoration activities in the Red Creek Watershed began in the fall of 1995 as a result of change in ownership of the Red Creek Ranch. The new owner purchased the ranch in 1994 and has proven his commitment to restoring the ecological integrity of the BLM Red Creek grazing allotment (about 98% of the entire Red Creek Watershed) by deferring livestock grazing from the allotment since 1994. The rancher has vowed that the health of the land and native wildlife populations are his primary management goals for the watershed, and his livestock operation, once implemented, would conform to meeting the needs of the land and wildlife. A habitat trust fund grant was awarded to the BLM Rock Springs field office to complete prescribed burn treatments in the middle section of the Red Creek Watershed in 2002. During the months of May and October, BLM fire management crews utilized a heli-torch to prescribe burn a mosaic pattern in about 3,000 acres of late seral sagebrush-grassland, early stages of juniper encroached sagebrush-grassland, successional advanced mixed mountain shrub habitats, and incidental portions of riparian habitat where upland vegetation encroachment existed along small first order tributaries. The project focused on the Upper Hazel and June Creek watersheds that drain the north slope of Tepee Mountain.

A basin habitat administrative report was completed for the Sage Creek Watershed, which included WHAM inventory levels I and II, and level III monitoring of habitat restoration activities. The Sage Creek watershed includes the Trout Creek, Camp Creek, Gooseberry Creek, and Spring Creek drainages.

✓ Treated 3,000 acres of sagebrush, juniper, mountain shrub, and riparian vegetation with prescribed fire in the Red Creek watershed

✓ Completed report for Sage Creek Watershed WHAM Levels I, II, and III (128 square mile area)

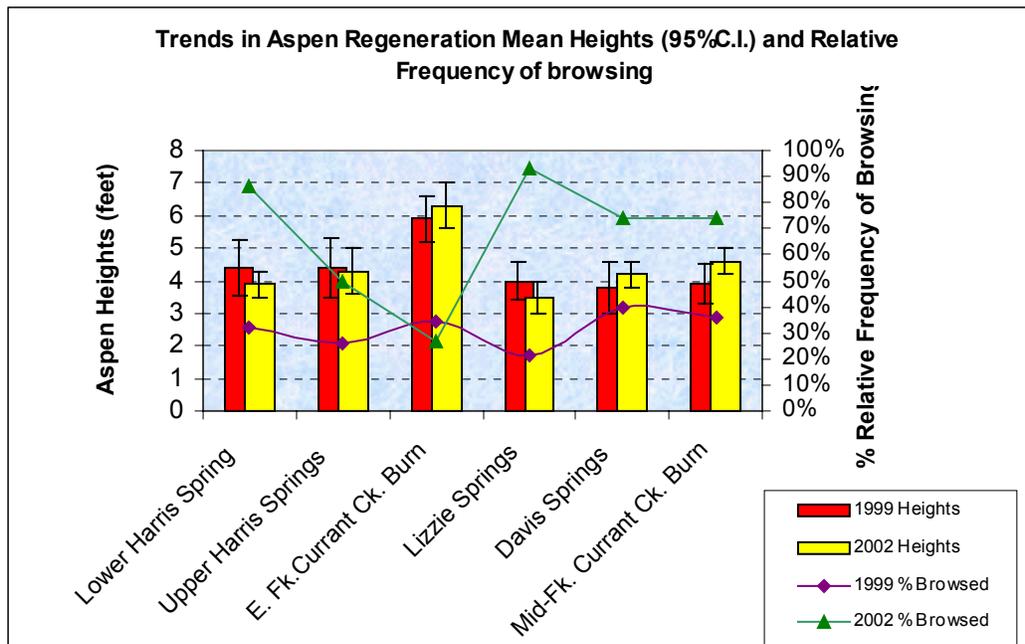


Figure 2. Mean heights of aspen regeneration and percent relative frequency of browsing sampled from sites in the Little Mountain watershed enhancement.

Aspen regeneration trend monitoring was conducted at sites on Little Mountain and the west slope of Pine Mountain that were treated with prescribed fire between 1992 and 1996. Trends in the mean height of young aspen trees in response to fire treatment ungulate browsing were sampled at six distinct aspen stands during 1999 and again in 2002.

Information regarding aspen sucker heights and the level of browsing is being collected to evaluate whether or not excessive browsing is suppressing aspen growth and preventing trees from developing into healthy mature stands. Data results in Figure 2 show a slight increase in mean aspen heights at three sites, and a decrease in mean heights at the other three sites between 1999 and 2002. The percent relative frequency of browsing increased significantly at five of the six sites between 1999 and 2002. Livestock grazing was deferred from all sample locations except the two Harris Spring sites, and big game, primarily elk, utilized all the sample locations between 1999 and 2002. The current trend data indicate wild ungulate browsing is limiting the height of aspen regeneration and may negatively effect the re-establishment of healthy aspen stands.

A lightning strike ignited the Pepper wildfire in conifer stands at the head of Trout Creek near the summit of Little Mountain during late July 2002. This fire consumed about 1,100 acres of pure conifer and conifer encroached aspen, located mostly in East Fork Trout Creek before being contained by BLM fire crews in early August. Ironically, the fire burned an area that has been delineated since 1990 for prescribed fire treatment to revert successional advanced subalpine fir stands back into healthy aspen habitat. The fire was intense, burned quickly, and produced large amounts of ash (Figure 3). However, because the fire moved quickly, heat from the fire apparently did not penetrate the soil deep enough in many locations to damage aspen roots and sprouting aspen suckers were observed in the burn during September (Figure 4).



Figure 3. Aftermath of Pepper wildfire. Note normal coloring of sub-surface soils in foreground pit.

✓ Conducted aspen regeneration trend monitoring for the Little Mountain watersheds

✓ Pepper wildfire burns approx. 1,100 acres of conifer/conifer encroached aspen in a previously delineated treatment area, and initial vegetative response appears favorable



Figure 4. Aspen suckers resprouting less than two months following the Pepper wildfire during a severe drought year.

Ongoing willow community trend monitoring was conducted during 2002 in the Jane's Meadow area of Currant Creek. During 1996, a one acre exclosure was constructed in the meadow to evaluate willow community response to improved livestock grazing management. Season-long cattle grazing of riparian zones was converted to spring season rest-rotation cattle grazing. Figure 5 shows the mean willow heights and percent relative frequency of browsed willows measured between 1998 and 2002. Figure 6 depicts the estimated number of ungulate use days/acre by species calculated from fecal pellet groups sampled both inside and outside the exclosure. Mean willow heights have gradually increased inside the exclosure since 1998, while mean heights outside the exclosure have remained nearly the same during the same four-year period. Willow browsing has increased between 1998 and 2002, which suggests a significant increase in willow use by big game because cattle have not grazed the area since 1999.

✓ Completed willow community trend monitoring for Upper Currant Creek

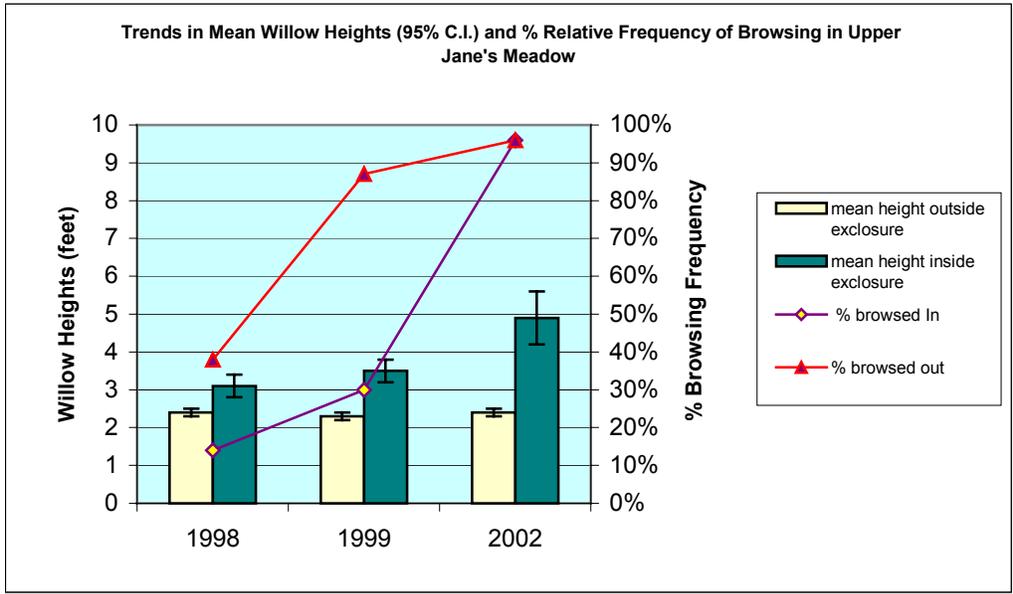


Figure 5. Trends in Jane's Meadow mean willow heights and % relative frequency of browsing between 1998 and 2002.

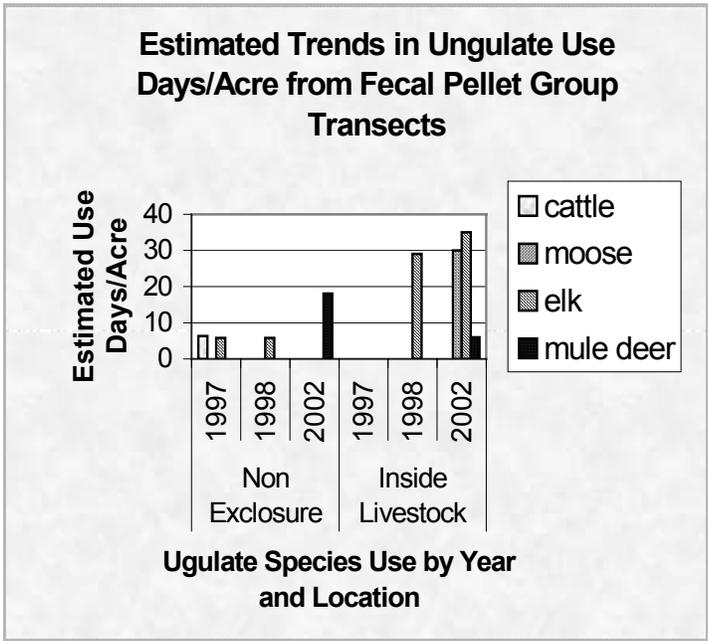


Figure 6. Ungulate use days/acre for Jane's Meadow estimated from fecal pellet groups sampled between 1997 and 2002.

Al Thoman CCRP

Forty acres and four miles of Twin Creek were enrolled in the Continuous Conservation Reserve Program (CCRP) for 10 years on the Al Thoman ranch in Nugget Canyon both north and south of Highway 30. The north section was not fenced pending negotiations with WGFD regarding a ten-year lease of the private lands for West Green River elk and Wyoming Range mule deer herd winter habitat. The south section (an old canal from the 1950s) was fenced in December 2002 with a four-strand barbed-wire fence, with two water breaks for livestock watering, during the brief fall cattle trailing use of the south pasture. The fence did not impede mule deer migration to the southern portion of their winter range (Figure 7). Willows will be planted in both the north and south sections during spring 2003 to facilitate woody shrub growth and stream bank stabilization. Sixty antelope hunter access days were granted for 1,160 acres of private lands as a result of the CCRP enrollment and successful application with WGFD. This project will result in enhanced habitat for mule deer, elk, moose, beaver, waterbirds, passerines, Bonneville cutthroat trout, and leatherside chubs.



Figure 7. Al Thoman CRP. June 2002 photograph of south Twin Creek looking east from bridge (left). January 2003 photograph of fence at mule deer crossing point (right).

2002 Commissary Ridge Fire

The 2002 Commissary Ridge Fire started on August 29, 2002 southwest of Bony Canyon as a result of a lightning strike. Prior to containment on September 3, 2002, the fire burned to the northwest resulting in about 3,550 burned acres (Figures 8). Much of the fire along Commissary Ridge burned conifer encroached aspen stands.



Figure 8. Commissary Ridge Fire 2002. BLM, Kemmerer Field Office file photographs.

✓ Enrolled 40 acres and four miles of Twin Creek in CCRP both north and south of Highway 30

✓ Fence for south section completed in fall 2002

✓ Willow plantings scheduled for spring 2003

✓ Negotiations ongoing for WGFD lease of 430 acres north of highway

✓ Wildfire burned 3,550 acres of conifer encroached aspens, mountain shrubs, and sagebrush on Commissary Ridge

✓ Will result in increased forage production and improved overall watershed function in addition to providing habitat for a variety of wildlife species

As the fire moved down the east slope of the ridge, it burned mixed mountain shrub (serviceberry and snowberry) and sagebrush communities. A number of second homes and recreational cabins on private land in the area required considerable effort be put into control of the wildfire, thus losing an opportunity to treat additional wildlife habitat. Preliminary surveys indicate the fire left a mosaic of burned and unburned patches within its perimeter. With appropriate livestock rest, the burn should promote regeneration of the aspen stands, mixed mountain shrub, and sagebrush communities. This will result in increased forage production, improved overall watershed function, and will provide habitat for a variety of wildlife species. BLM personnel from the Kemmerer field office will monitor recovery.

Corral Creek Beaver Transplant

Habitat crews live trapped a pair of beaver that were creating problems with a native fish restoration barrier on Indian Creek in the LaBarge Creek Drainage and transplanted the beaver to private lands along Upper Corral Creek in the Ham's Fork Drainage. The private landowner on Corral Creek was concerned about fisheries on his property partly due to abandoned beaver ponds where suitable beaver habitat was available. He requested beaver be transplanted to his lands. The landowner reports that the transplanted beaver successfully reinforced existing relict dams and expanded the pond complex by constructing additional dams during the late summer and fall of 2002.

Fontenelle Mowing – Moxa Arch Mitigation.

BLM personnel from the Kemmerer field office treated about 790 acres of big sagebrush by mowing three patches (220 to 340 acres in size) at either 4-6" or 8-10" mowed height (Figure 9) during October 2002. The treatment was part of the Moxa Arch Pronghorn Habitat and Livestock Forage Mitigation Plan. A Projects Implementation Plan that was completed in October 1997 to mitigate gas well development in the Moxa Arch field. The area encompasses 118,000 acres of crucial winter range for pronghorn in the West Green River and Carter Lease herds. Previous treatments as part of this plan have included the herbicide Spike at Seven Mile Gulch (1999), Cow Hollow (1997), and Hampton (1999) and mowing at Dodge Rim (1998), Hampton (1998), Seven Mile Gulch (1998), Zeiglers Wash (1997), North Zeiglers Flat (2001), and Cow Hollow (1997).

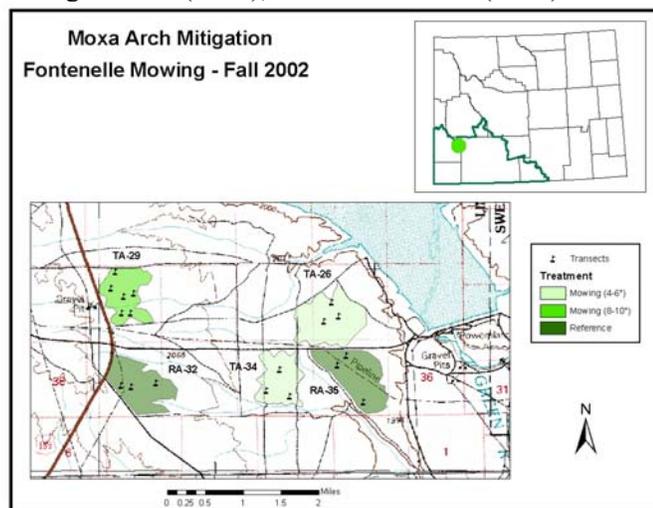


Figure 9. Fontenelle Mowing Treatments completed October 2002.

✓ Successfully live-trapped two nuisance beaver and transplanted them to suitable habitat on Corral Creek at the landowner's request

✓ Treated 230 acres at 8-10" mowed height

✓ Treated 560 acres at 4-6" mowed height

✓ Established 18 permanent transects in three treatment and two reference areas

✓ Identified eight species of shrub: *Artemisia spinescens* (bud sagebrush); *Artemisia tridentate* spp. *wyomingensis* (Wyoming big sagebrush);

Personnel from BLM and WGFD established 18 permanent transects and completed pre-treatment data collection of shrub line-intercept (percent cover and height) and belt-transect (density) data. Quadrats for herbaceous cover estimates were not completed due to the late initiation of the project; however, these will be added in future years. The transects are scheduled to be read at years 1, 2, 3 and 5 post-treatment, then at five-year intervals until convergence of treated and reference area sites are observed. The WGFD has recommended a comprehensive monitoring program be established for all treated areas following the same protocols developed for the Fontenelle Mowing project to evaluate both the short- and long-term effectiveness of the mitigation efforts.

Wyoming big sagebrush dominated the site followed by shadscale and green rabbitbrush (Table 1). Mean percent cover of Wyoming big sagebrush was 23% (95CI: 20%, 26%) live and 7% (5%, 9%) dead. All other species had percent cover values less than 1 percent. Mature and decadent plants of all species were also dominant (Figure 10) with very few seedlings and young plants of any species observed.

Table 1. Total pre-treatment number of plants per acre at Fontenelle Mowing site.

Taxa	N	Mean	SE	95% LL	95% UL
<i>Artemisia spinescens</i> (bud sagebrush)	18	16	16	0	50
<i>Artemisia tridentata</i> spp. <i>wyomingensis</i> (Wyoming big sagebrush)	18	7777	390	6954	8600
<i>Atriplex canescens</i> (four-wing saltbush)	18	4	4	0	13
<i>Atriplex confertifolia</i> (shadscale)	18	1016	123	758	1275
<i>Chrysothamnus viscidiflorus</i> (green rabbitbrush)	18	936	213	485	1386
<i>Grayia spinosa</i> (hopsage)	18	52	25	0	106
<i>Krascheninnikovia lanata</i> (winterfat)	18	278	126	12	544
<i>Tetradymia spinosa</i> (spiny horsebrush)	18	186	82	12	359

SE = standard error, 95% Confidence intervals: LL = lower limit; UL = upper limit.

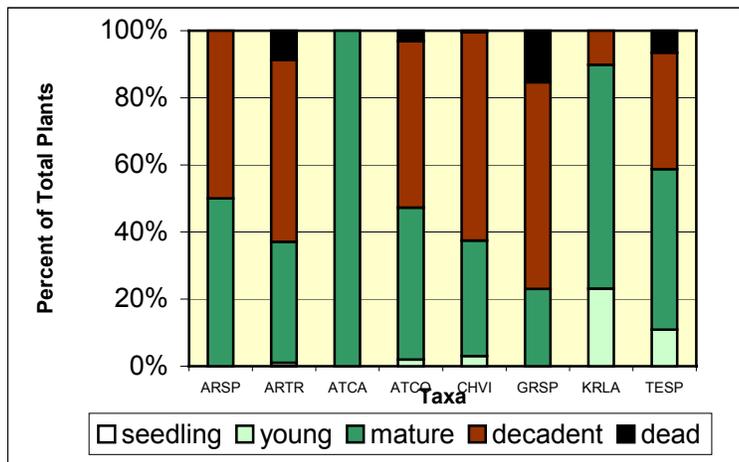


Figure 10. Percent of total plants by age class.

Atriplex canescens (four-wing saltbush); *Atriplex confertifolia* (shadscale); *Chrysothamnus viscidiflorus* (green rabbitbrush); *Grayia spinosa* (hopsage); *Krascheninnikovia lanata* (winterfat); and *Tetradymia spinosa* (spiny horsebrush)

✓ Wyoming big sagebrush dominated sites with 23% live and 7% dead cover

✓ Site dominated by mature and decadent plants of all shrub species

✓ Very few seedling and young plants observed

Littlefield Creek Beaver Habitat Enhancement

A habitat trust fund grant was awarded to the Rawlins BLM field office to airlift freshly cut aspen trees (Figure 11) to an existing beaver colony along the middle segment of Littlefield Creek to be used by the beaver as dam building material. The goal of the project was to encourage the beaver to build new dams downstream of their existing pond and inundate and stabilize an active head-cut that was working upstream and threatening habitat integrity for Colorado River cutthroat and other native fish. The beavers used the aspen material to create several ponds throughout the area of concern, which assisted in stabilization of the head-cut (Figure 12).

✓ Airlifted approximately 18,000 pounds of freshly cut aspen trees for beaver to expand pond complexes and stabilize a degraded reach of Littlefield Creek



Figure 11. Airlifting aspen materials to beaver on Littlefield Creek. (BLM Rawlins Field Office photo)



Figure 12. Beaver pond created in head-cut reach of Littlefield Creek with supplemental aspen material provided to beaver. (BLM Rawlins Field Office photo)

2002 Little Hornet Prescribed Burn

Personnel from the Kemmerer Ranger District, Bridger-Teton National Forest, burned 95 acres of slash piles and debris left from previous timber sales on Absaroka Ridge (Figures 13). An additional 300 acres of conifer encroached aspen stands were burned to promote stand regeneration. The burns were part of the Little Hornet vegetation treatment Environmental Assessment (June 1995). Logging of conifer encroached aspen stands was initiated in 1996 and completed in 2002. Future plans include additional burns of 340 and 900 acres on Absaroka Ridge. With appropriate livestock rest, the treatments should promote regeneration of the aspen stands. This will result in increased forage production and improved overall watershed function in addition to providing habitat for a variety of wildlife species. Treatments will be monitored through the Interagency Fire Effects Monitoring Program.



Figure 13. 2002 Little Hornet Prescribed Burn. The aspen areas in the foreground were burned a few days prior to the aerial ignition of the conifers shown in the photos. USDA Forest Service, Bridger-Teton National Forest, Kemmerer Ranger District file photographs.

Martin Ranch Mule Deer Demonstration Area Water Developments

Three water developments were completed in the Medicine Butte allotment (Red Canyon and Medicine Butte pastures) to facilitate implementation of the Medicine Butte Allotment Cooperative Management Plan (Figure 14). The proposed grazing system between four pastures had not been implemented due to a lack of water availability in all pastures. The completion of the water developments means the grazing system can be implemented in 2003. The grazing system will provide periodic hot season rest for riparian areas and periodic early growing season rest to maintain vigor in upland forage plants.

The Red Canyon creek water development included the construction of a spring box and fencing in Red Canyon Creek in Elephant's Head pasture for water collection. Also, a half-mile pipeline was built into Dry Canyon Pasture. Cattail Springs 1 and 2 water developments included fencing a natural spring source in Medicine Butte pasture and running two pipelines, one for 500' within the same pasture, and one for three-fourths mile into Red Canyon pasture. These water developments will be carefully monitored to ensure that the springs and associated riparian areas are not dewatered.

✓ Burned 95 acres of post timber sale slash and debris

✓ Burned 300 acres of conifer encroached aspen stands to promote stand regeneration

✓ Completed three water developments to facilitate four pasture grazing management systems



Figure 14. Red Canyon Creek (left) and Cattail Springs (right) Martin Ranch Water Developments. Photos taken during construction on October 24, 2002. Developments were completed later.

Martin Ranch WRP

A total of 168 acres along the Bear River were enrolled in the NRCS wetland reserve program (WRP) for 30 years (Figure 15). The area includes 90 acres of wetlands, 74 acres of uplands, and four acres of river channel. This area is divided into two pastures, a west river pasture and an east river pasture. The agricultural use plan for the pastures indicates that one pasture will receive no agricultural use, either haying or grazing, for the entire calendar year while the second can receive either haying or grazing each year between July 16 and December 31 with certain stipulations. Construction of dikes and spillways to complete eight ponds was completed during fall 2002. Total pond acreage at high water level will be 19 acres. The long-term objectives for the property are to restore wetland and riparian habitats, improve vigor and diversity of vegetation, improve water quality and quantity via vegetation filtering and water storage, and provide forage and cover for wildlife. In addition, hunting, fishing, and trapping are considered compatible uses allowed on the WRP easement area. Monitoring includes two photo points in both pastures with photos taken each year prior to the agricultural use period and grazing utilization cages (one upland and one riparian) which will be evaluated by an NRCS representative each year.

- ✓ Enrolled 168 acres of upland and wetland habitat along Bear River in WRP
- ✓ Construction of eight ponds and associated wetlands completed in fall 2002
- ✓ Created 19 acres of total pond acreage at high water level

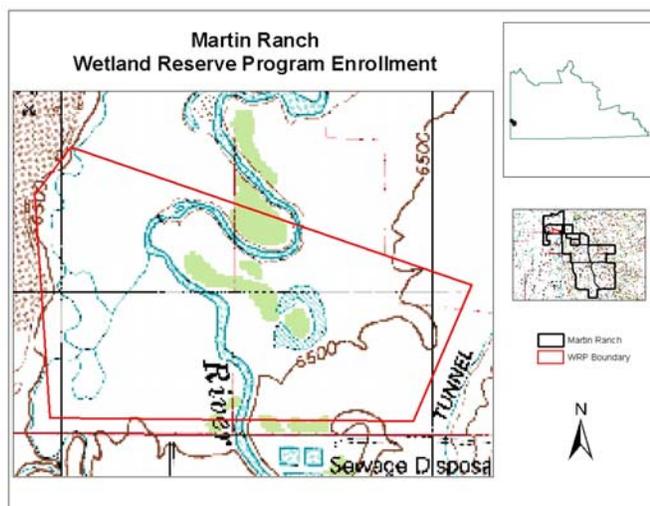


Figure 15. Martin Ranch WRP. A map of the dike, spillway, and pond locations was not available. Two ponds were constructed east of Bear River and six to the west of the river.

2002 Tunp Ridge Prescribed Burn

Personnel from the Kemmerer Ranger District, Bridger-Teton National Forest, burned 113 acres of slash piles in addition to broadcast burns of slash in previously logged sale units during September and October of 2002 on Tunp Ridge (Figure 16). Combined with burns completed in 2001, a total of 2,400 acres have been treated. Plans are to complete treatment of the remaining sale units during fall 2003. The burns follow guidelines set forth in the Tunp Ridge vegetation treatment environmental assessment (June 1997). Logging of 120 acres of conifer-encroached aspen stands was initiated in 1998 and completed in 2001. There are also future plans to aurally ignite conifer-encroached aspen pockets within 8,000 surrounding acres. With appropriate livestock rest, the treatments should promote regeneration of the aspen stands. This will result in increased forage production and improved overall watershed function in addition to providing habitat for a variety of wildlife species. Treatments will be monitored through the Interagency Fire Effects Monitoring Program.



Figure 16. Tunp Ridge Vegetation Treatment. Regeneration following initial timber sale harvest. Units with successful regeneration and little slash remaining received little subsequent prescribed burning.

Upper Ham's Fork WHAM – Level I Inventory

Habitat and fish management crews began a WHAM Level-I inventory of the Upper Ham's Fork watershed during 2001 and 2002. The project focus area includes watersheds associated with the Ham's Fork River and its tributary drainages upstream of the West Fork Ham's Fork confluence, which is largely located on the Kemmerer Ranger District. This area was identified as a priority for inventory because remnant populations of Colorado River cutthroat trout (CRC) were known to exist in some of the tributary streams in the watershed. But more detailed information regarding CRC population status and habitat conditions were needed in order to develop options for management strategies. Figure 17 shows the Upper Ham's Fork River watershed streams and identifies the sub-watersheds where WHAM level I inventories have been completed. During 2001, WHAM inventories

✓ Burned 113 acres of post timber sale slash and debris

✓ Treated 2,400 acres

✓ Future plans include burning of conifer encroached aspen pockets within 8,000 surrounding acres

✓ Completed WHAM Level-I inventories for four tributary watersheds within the Upper Ham's Fork River Drainage

were completed for the Devil's Hole Creek and Little Indian Creek Watersheds. The Indian Creek, Elk Creek, Shingle Mill Creek, and Unnamed Westside Tributaries 1-3 Watershed WHAM inventories were completed during 2002.

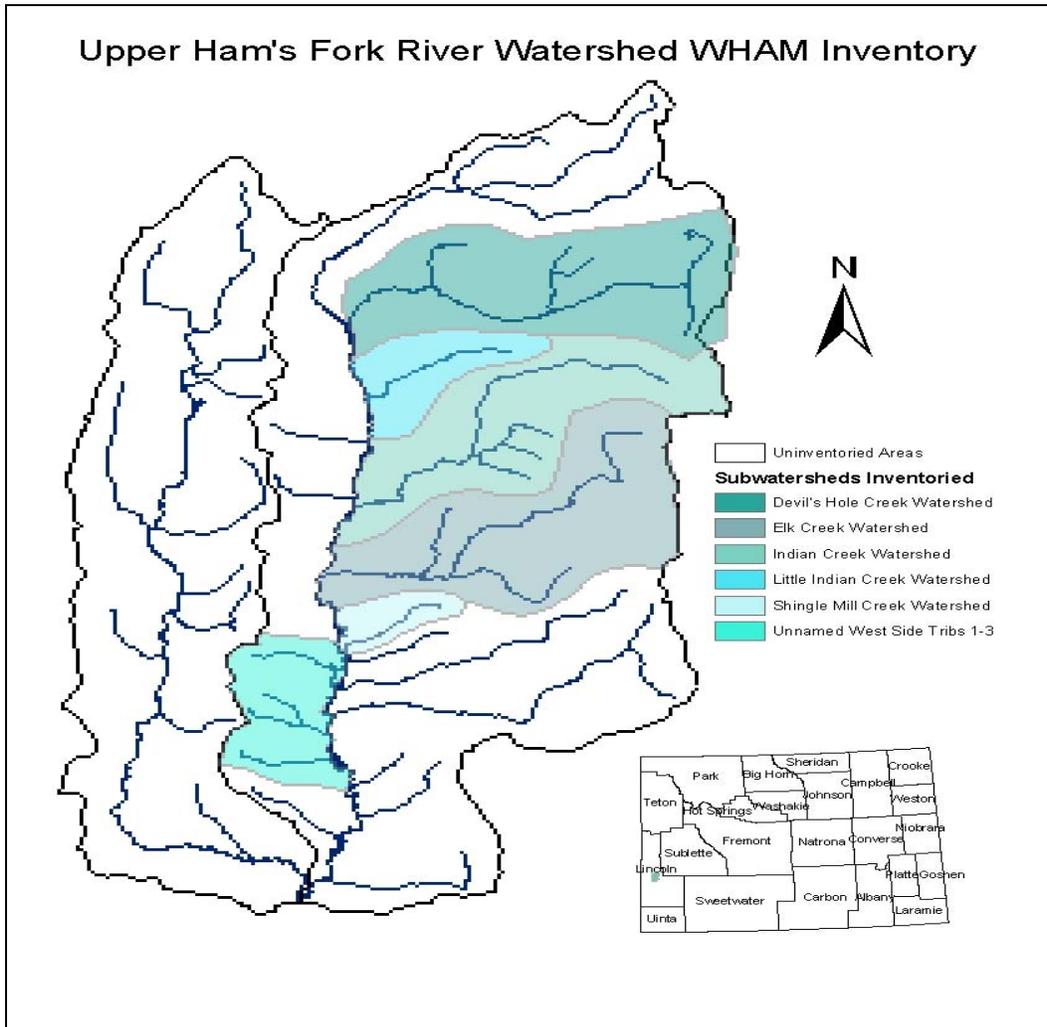


Figure 17. The Upper Ham's Fork River Watershed showing the tributary watersheds where WHAM Level-1 inventories have been completed.

WILDLIFE HABITAT MANAGEMENT AREAS

Red Rim/Grizzly WHMA

Emphasis in recent years has focused on grazing management strategies that promote restoration of healthy riparian vegetative communities for Separation Creek, Little Muddy Creek, Littlefield Creek, and Muddy Creek. Rest-rotation grazing, combined with fencing to create riparian pastures, has been implemented to promote riparian system integrity and improve habitat for several terrestrial and aquatic wildlife species. During 2000, the native fish species assemblage of mountain suckers, speckled dace, and Colorado River cutthroat was reintroduced into Littlefield Creek. Achieving and maintaining sound watershed conditions will be critical to ensure the success of this effort. Figure 18 shows the

improvement in elevated water tables and riparian vegetation between 1993 and 2002 that has resulted from intensified grazing management. Figure 19 depicts the rate of willow recovery at one of the monitoring stations on Upper Muddy Creek between 1998 and 2002 attributed to cattle grazing deferment.



Figure 18. Comparison of riparian habitat conditions on Upper Littlefield Creek in 1993 (top photo) and the same site in 2002 (bottom photo).



Figure 19. Riparian habitat monitoring site located in Upper Muddy Creek showing the recovery of suppressed willow growth between 1999 (top photo) and 2002 (bottom photo).

✓ Livestock grazing management on the Grizzly WHMA continued to emphasize riparian habitat restoration

Miscellaneous

Big Sandy Working Group

Participation continued with the Big Sandy Working Group during 2002. The group met several times during the year to develop grazing management strategies for improving livestock grazing along the Big Sandy River between the Farson/Eden Irrigation Project Area and the Green River confluence. BLM grazing allotment management plans (AMPs) were revised by the group in an effort to address restoration of riparian habitat. And the BLM is expected to release AMP environmental assessments for public review and NEPA compliance in early 2003.

Habitat personnel assisted the working group with collecting baseline riparian vegetation data at five sites along the river to begin monitoring condition trends resulting from grazing management practices. Grazing exclosures, permanent transects, and photo points were established at each site to evaluate trends in willow community health.

Cumberland/Uinta Coordinated Resource Management

Participation in the Cumberland/Uinta CRM began by attending the summer field tour on July 12, 2002. The tour included visits to proposed shrub treatment areas along Ryckman and Shurtleff Creeks, weed treatment sites in Salt Creek pasture, and water development sites in Bridger and Little Muddy pastures in addition to viewing changes in forage recovery with the implementation of a new grazing management plan. The fall and spring CRM meetings focused on weed control, results of use monitoring in key riparian areas, livestock management, range improvements, and all of the above in light of the current drought. Many operators have reduced livestock numbers. Plans for next year include reducing the time spent in each pasture by one week, which will shorten the time on the allotment by one month.

Projects completed in 2002 included: developing and fencing springs in the head of Chicken Creek and Road Hollow; fence maintenance/repair, cattle guard installation, and road crossing repairs; spring development on Thoman state section near Elk Mountain; cleaning out reservoirs at Warner and Little Muddy springs and Aspen Grove; installation of Muddy Creek drift fence; pipeline installation from Dutch Ann spring to a reservoir; pump replacements in Julian and Ryckman Creek wells; and fencing cottonwoods at the Jack Eaton Place. Many of these improvements were completed on private lands at the expense of the landowners and permittees.

The Red Eye Basin prescribed burn scheduled for fall 2002 was postponed one year due to drought conditions. This burn is targeted to stimulate regeneration of aspen stands, mixed mountain shrub communities, and grass forage production. The objective is to promote a more natural successional community characterized by a diversity of upland woody shrub species, including aspen, by targeting 11,000 acres for treatment in a 40-60% burned mosaic pattern over the project area.

Additional future range projects include fencing cottonwoods along Woodruff Narrows, upland water developments including the installation of storage tanks and several miles of pipeline down Muddy and Flat Iron ridges, continued survey and reconstruction of existing reservoirs, installation of the sheep/carter drift fence, and improving livestock management.

✓ Provided technical assistance to the Big Sandy Working Group establishing willow community trend monitoring at five sites

✓ Participated in Cumberland/Uinta CRM in grazing management and range improvement planning

JACKSON REGION

HABITAT PROJECTS

Brucellosis-Feedground-Habitat Program

The coordinated work schedules of habitat and brucellosis biologists continue to dovetail very well in the Region. In 2002, Brucellosis-Feedground-Habitat (BFH) program personnel worked with the Terrestrial Habitat Section to improve elk spring, winter, and fall-transitional ranges with habitat enhancement projects. Such projects involved inventory, project proposals, implementation, and follow-up monitoring. They were conducted through partnerships with The RMEF, Grand Teton National Park (GTNP), and the Bridger-Teton National Forest. Vegetation monitoring projects included shrub utilization by elk, aspen browsing transects, and winter range forage production. Elk distribution monitoring included an RMEF-sponsored grant which allowed for radio tracking and habitat selection of 20 elk from the Gros Ventre drainage.

Wolff Ridge Prescribed Burn

WGFD personnel assisted GTNP with implementing and monitoring a prescribed burn located approximately three miles south of Moran Junction. In addition to personnel assistance, a Trust Fund Grant was awarded to GTNP for project implementation.

Prescribed fire was used on approximately 50% of the 1,700 acre area in order to obtain objectives of 40-60% sagebrush cover removal, increase grass density by > 25%, increase aspen sucker density by > 30% two years post burn, and reduce conifer invasion by 60% within two years post burn. Additional vegetation plots were installed in sage grouse winter range to monitor mid- and long-term sagebrush/herbaceous response.



Wolff Ridge prescribed burn results.

✓ Brucellosis-Feedground-Habitat Program – combined efforts from two Divisions

✓ 1,700-acre Rx burn to enhance aspen, remove conifers, recycle sagebrush on big game range

Gros Ventre Elk Radio Telemetry and Habitat Selection

Twenty elk were fitted with radio collars in the Gros Ventre drainage during the winter of 2001-2002 to determine seasonal distributions, habitat selection, and migration routes. Numerous habitat enhancement projects have been implemented historically within the drainage. Elk dispersal was monitored monthly by aircraft after termination of feeding (April 14). Elk frequented historic treatment sites on spring ranges, then they dispersed in all directions with the onset of summer. Dispersals included Spread Creek, Wind River drainage, and Green River drainage. None of the elk migrated to the Teton Wilderness or Yellowstone National Park. The project will continue for two more years to evaluate use of habitat treatments on late fall, winter, and spring ranges.



Radio collared cow in Gros Ventre.

- ✓ Elk collared to determine seasonal and habitat type use

Monument Ridge Prescribed Burn

The Bridger-Teton Forest has proposed a prescribed burn for about 8,000 acres of sagebrush/grassland, mountain shrub, and aspen-conifer mix in the Monument Ridge area located approximately 25 miles southeast of Jackson. This area is elk and moose winter and transitional range. Several thousand mule deer also use the area as transitional range during spring and fall migrations. Goals are to regenerate several hundred acres of conifer.



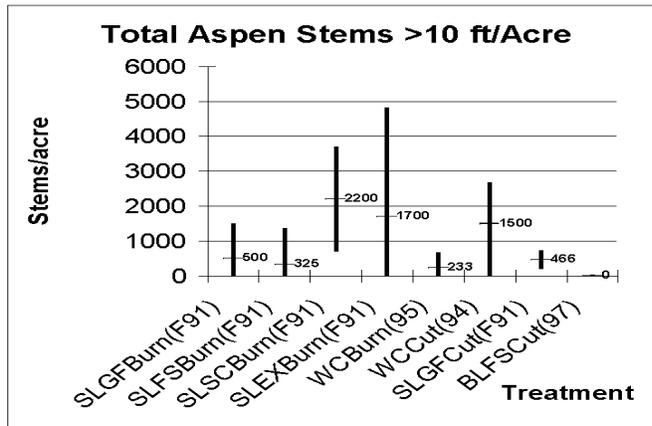
Conifer-encroached aspen on the proposed Monument Ridge prescribed burn site.

- ✓ Proposed an 8,000-acre Rx burn to enhance big game transitional and winter ranges

Aspen Response To Prescribed Fire, Mechanical Treatments, and Ungulate Herbivory.

Numerous habitat enhancement projects have been implemented to stimulate aspen regeneration. Treated clones are susceptible to extensive browsing from elk concentrated on adjacent supplemental feedgrounds, wintering moose, and livestock. Eight treatments were sampled to determine treatment response three to nine years post-treatment. A sampling design was tested for monitoring pre- and post-treatment stem densities (i.e. success of the project). The results of monitoring and sample design were presented, and peer reviewed, at a wildfire workshop on fire in Ft. Collins.

Total aspen sucker densities ranged from 3,480 – 29,688 stems/acre. Two nine-year-old and one seven-year-old treatments achieved > 1,000 stems > 10 ft in height /acre, which is the objective for successful clone reestablishment. Mean annual leader growth was 7.2 inches and ranged from 4.9 – 12.9 inches. Treated clones are all expected to reestablish successfully. Stem density, clone homogeneity, and plot size influenced sampling efficiency.



Mean and one standard deviation for stem densities of aspen suckers > 10 ft. in height at time of sampling.

Monitoring of 1970s Aspen Prescribed Burn Projects

A series of prescribed burns intended to regenerate aspen were conducted in the Jackson area during the early to mid 1970s. Four sites (Russold Hill, Breakneck Ridge, Burro Hill, and Uhl Draw) have been periodically monitored for successful aspen regeneration and numerous publications completed. Regional habitat personnel coordinated monitoring of these sites again in October, 2002. Dale Bartos, USFS aspen ecologist/researcher from Logan, Utah, participated in the original project designs and implementation. He also assisted with the 2002 monitoring.

Successful enhancement of treated aspen stands in northwest Wyoming is often difficult due to its preference as a browse species and high concentrations of wild ungulates. Maintenance and enhancement of aspen communities can be especially difficult when in close proximity to supplemental feeding grounds for elk. Long-term monitoring of historic aspen treatments provides managers with information important for designing successful treatments in the future.

Aspen was successfully regenerated on Russold Hill, Uhl Draw, and Burro Hill. Stem densities ranged from 2,300 to over 3,300 stems/acre on the three sites, which is well above the objective of 1,000 stems/acre 10 years post-treatment. Taller stems averaged 25 ft. in height.

Example of successfully regenerated aspen near Moran Junction



✓ Aspen stems reach objective of 10,000 stems/acre and 10 ft. tall

✓ Monitored 28-year-old aspen burn

✓ Aspen burned in the 1970s reach 25 ft. height and 3,000 stems/acre

Aspen communities treated with prescribed fire at the Breakneck site, located within the Gros Ventre drainage, were not able to successfully regenerate due to excessive browsing by elk. The Breakneck site is located near two elk feedgrounds and is within an area where elk naturally concentrate prior to the initiation of feeding. While numerous other aspen treatments near elk feedgrounds in northwest Wyoming have been successful, the failure of aspen regeneration on this site is primarily due to elk preferring it as a primary staging area prior to supplemental feeding. Sites with similar characteristics will be a red flag for future aspen enhancement projects.

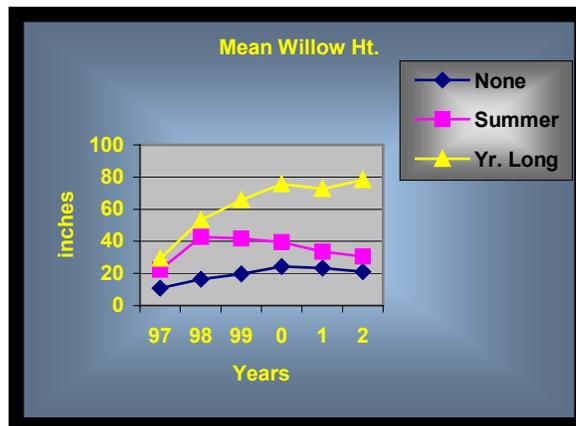


Example of unsuccessful aspen regeneration at the Breakneck site

✓ Excessive browsing precludes aspen regeneration at Breakneck site.

Grand Teton National Park 1997 Prescribed Burn Monitoring

In May 1997, about 4,000 acres of sagebrush, willows, and conifer encroached aspen were treated with prescribed fire within GTNP and the Bridger-Teton National Forest southwest of Moran Junction. Annual monitoring has been conducted to determine willow and aspen response as well as browsing levels. The monitoring design included three fence treatments; 1) no fencing – received both livestock and wildlife browsing, 2) summer fencing to preclude just livestock use, and 3) year-long fencing to preclude livestock and wildlife.



Willow heights with different fence treatments six years post burn

✓ Willow heights six years post-burn willow heights

The area is within elk, moose, and bison winter and transitional ranges. Cattle were allowed to utilize the area during the 1997 and 1998 grazing seasons only. The following willow heights have been achieved:



78” in the sites fenced year-long, 30” in the sites fenced only in the summer, and 21” in sites which received both livestock and wild ungulate use. Aspen sucker heights for the above treatments were 42, 23, and 19 inches, respectively. Aspen sucker densities for the above fence treatments six years post burn were 7,627, 6,102, and 2,881 stems/acre, respectively.

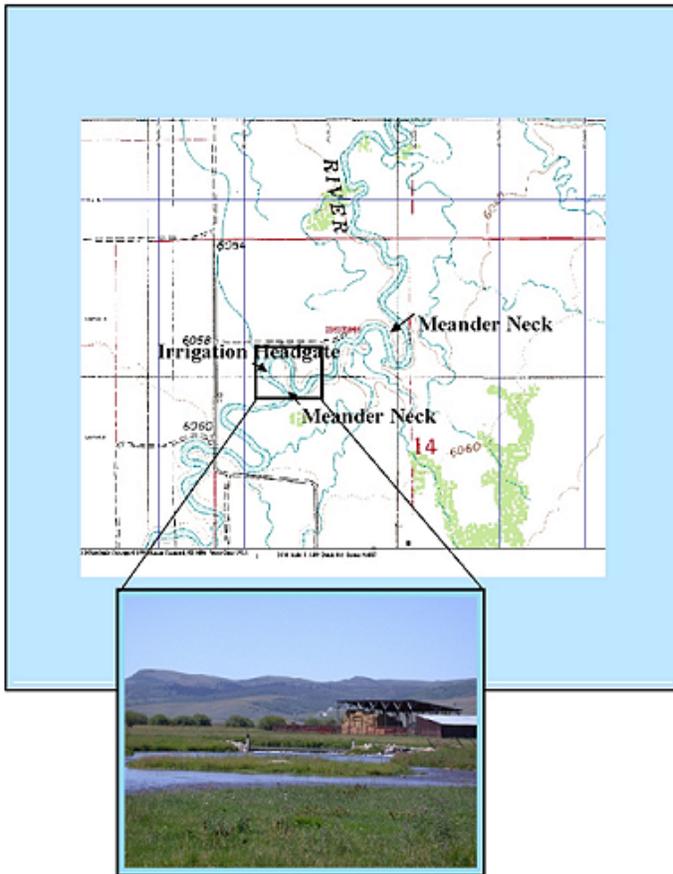
✓ Aspen heights and densities by fence treatment

Hansen Silt Removal Project

Finished the Hansen Silt Removal Project. Spring Creek is a tributary to the Snake River and provides spawning habitat to native and sport fish. The pond on the Mead/ Hansen property acts as a silt catchment basin for Spring Creek. The pond has recently filled with sediment, eliminating spawning gravels and increasing aquatic vegetation in areas below and above the pond. The largest contributing factor to the degradation is the lack of flushing flows from the Snake River; but since the river has been levied to resist flooding of private property, flushing flows are not possible. Therefore silt was removed and placed in adjacent pasture. Now, the pond can continue to function and collect silt.

Clark's Barn /Salt River Enhancement Project

The Clark's Barn Project is the first phase of an ongoing watershed project for the Salt River. WGFD is striving with cooperators, interest groups, land managers and landowners to promote watershed function and ecosystem integrity by enhancing the quality and diversity of both aquatic and riparian habitats.



Map and photo of Clark's Barn/Salt River Enhancement Project Area

In addition, meanders within the area are in danger of being abandoned by the river. If the Salt River changes structure, there could be devastating effects up and down stream from the Clark's Barn area. The meanders, eroded banks, and instream habitat have the potential for enhancement with a modified irrigation system, grazing management, and instream structures.

- ✓ Inventoried 62 miles of stream for the Little Greys Watershed Assessment Survey
- ✓ Conducted instream and riparian habitats surveys on Cottonwood Creek in GTNP
- ✓ Presented an aquatic habitat class for the Teton Science School during Waterfest
- ✓ Participated in Salt River Coordinated Resource Management
- ✓ Attended Trout Unlimited and Jackson One-Fly Meetings
- ✓ Received Rosgen Wildland Hydrology training

This proposed project would modify two irrigation headgates and install five instream structures. Irrigation headgates will be modified to work more efficiently and decrease the number of fish losses to diversions. Instream structures will be installed to more effectively protect and supply headgates, thereby alleviating the regular channel disturbance when diversions are rebuilt. Also, the instream structures will preserve and enhance the configuration of the river. Finally, fencing, vegetation rehabilitation, and grazing management will be employed to improve riparian vegetation.

Snake River Spring Creeks Enhancement Project

The Snake River fishery is maintained by recruitment of fish from the spring creeks, which contain the majority of spawning areas for native Snake River Cutthroat trout. Past river and land management practices have changed the structure and function of these important instream habitats. Currently, these spring creeks have widened and become inundated with silt and aquatic vegetation, and stream velocities have decreased. In addition natural succession has changed the stream bank plant communities from willow and cottonwood riparian vegetation to Douglas fir and other conifers. The largest contributing factor to the instream habitat degradation is the lack of flushing flows from the Snake River. Since the river has been levied to resist flooding of private property, flushing flows are not possible. Hence, spawning habitat for native and sport fish has, and will, decrease.



A cooperative effort with fisheries and wildlife managers, private landowners, Wyoming Wildlife Heritage Foundation, Teton County NRCS, GTNP, conservation groups, and other agencies has been initiated. The objectives are to enhance aquatic and riparian habitats to maximum ecological potential, provide sufficient habitat and habitat diversity to increase Snake River cutthroat trout populations, and supply a quality fishery for anglers on the Snake River. Dredging of spring creeks and modifying channels, irrigation, and grazing will be the tools employed for this project

Photo of Crane Creek, one of the Snake River spring creeks

✓ Participated in USFW training on Principles and Techniques for Electro-Fishing

✓ Attended aspen habitat and restoration training

Miscellaneous

- ✓ Coordination with US Forest Service, National Wildlife Foundation, Rocky Mountain Elk Foundation, and grazing permittee on future management of the Blackrock-Spread Creek Allotment.
- ✓ Coordination with Foundation for North American Wild Sheep, Grand Teton National Park, US Forest Service, Teton Co. Idaho Land Trust, WGFD personnel on future bighorn sheep management of the Targhee Herd Unit.
- ✓ Coordination with key landowners on conservation easement opportunities.
- ✓ Assisted with the development of the interagency publication, “Wyoming Guidelines for Managing Sagebrush Communities with Emphasis on Fire Management”.
- ✓ Authored and presented a paper on “Aspen Response to Prescribed Fire, Mechanical Treatments, and Ungulate Herbivory” at a symposium on fire and fuels in Ft. Collins Co.
- ✓ Attended the International Moose Conference in Norway.
- ✓ Assisted with perpetration of the following workshops
 - North American Moose Conference
 - Western States Elk and Mule Deer Conference
 - Sagebrush Ecology and Management workshop
- ✓ Assisted the Veterinary Services Section with disease surveillance and management as part of the Brucellosis-Feedground-Habitat Program.

LANDER REGION

LIAISON, COORDINATION, AND EXTENSION SERVICES SERVICES AND MISCELLANEOUS.

This year three landowners/managers were assisted with wildlife habitat enhancement, development or maintenance projects. These were small pond developments and brush planting projects that involved sharing knowledge and literature but no WGFD funds were expended.

Attended annual coordination meetings with USFS, BLM, USFWS, NRCS and The Nature Conservancy. Information was shared concerning upcoming projects, policy changes, hunting and fishing seasons, wildlife populations and habitat needs. Department personnel served on four CRM committees and three technical committees.

One person was transferred from the Terrestrial Habitat Branch to the Habitat/Access Maintenance Branch to assist with management of the WHMAs.

Appropriate training sessions were attended by personnel as required to maintain professional proficiency.

Rongis Reservoir Wetland Enhancement.

Approximately 2.8 miles of fence was constructed around Rongis Reservoir to exclude livestock from this important water source. The reservoir provides water for sage grouse, pronghorn and mule deer primarily. Livestock will still be able to utilize water downstream from the reservoir. This was a BLM project and the WGFD provided \$10,000.00.



Fence to exclude livestock grazing

through the grant program to assist with the project. Due to problems with archeological clearances, etc. the project took three years to complete.

- ✓ 450 acres of aspen and shrub habitats were enhanced by controlled burning
- ✓ A lightning caused fire burned 14,000 acres on the south end of the Lander Front
- ✓ Constructed 2.8 miles of fence at Rongis Reservoir.
- ✓ Farming and haying contract awarded for the Spence/Moriarity WHMA
- ✓ Installed five grade controls in Separation Creek at the Red Rim/Daily WHMA
- ✓ Completed 68 level 1 WHAMS on the Sweetwater Watershed.

Mexican Creek Controlled Burn-

Personnel from the Lander BLM office burned about 250 acres at Mexican Creek in early spring of 2002. The area is very important to elk for winter survival and for calving in early spring. Burning in this area has been designed to: 1) improve forage conditions for elk, 2) stimulate aspen stands, and 3) rejuvenate antelope bitterbrush. Additional burning and mechanical treatment of aspen and sagebrush is scheduled for spring 2003.



Pre-burn site

Sinks Canyon Burn

USFS personnel burned about 200 acres of sagebrush and grass habitat in Sinks Canyon to rejuvenate bitterbrush and big sagebrush plant communities. This is year-long and winter range for bighorn sheep and mule deer.



March burn on USFS land

Green Mountain Common Allotment-

The Green Mountain Common Allotment is an area of 517,000 acres located south and east of Atlantic City, Wyoming. There are 19 grazing leases associated with this BLM allotment. Cattle and sheep are allowed to graze in the allotment with a total grazing preference of 47,279 AUMs, of which 11,451 are sheep AUMs. Wild horses are present, and the area receives year-long and winter use by elk, pronghorn and mule deer. Sage grouse are a key species with leks, crucial nesting, and wintering areas present within the allotment. Overuse by livestock, drought and other factors have severely degraded many riparian areas. As per past agreement with the lessees, a minimum of four inches of stubble height would be left on riparian sites following grazing. As shown in the above photo, this goal was not reached. Upland sites are in better condition with most areas receiving light to moderate use. Upland sites must be watched closely, however, as water developments will be used in an attempt to more evenly distribute livestock grazing over the area. If proper grazing strategies are not implemented, the upland forage quality and quantity will be adversely affected. The grazing season was reduced this year due to lack of forage caused by drought and mismanagement of grazing. WGFD personnel must continue to work with BLM personnel, local landowners, lessees, other interested organizations, and the public to present the needs of the various wildlife species that use the area and to encourage improved stewardship of the land and vegetative resources.

Table Mountain Mule Deer Winter Range

Table Mountain is about 12 miles southeast of Lander. It encompasses 30,000 plus acres of crucial mule deer winter range. This area typically winters 600 to 800 animals; however, past data shows as many as 1,200 deer wintering there depending on the severity of the weather. The key shrub is the antelope bitterbrush/sagebrush community. Occasionally, skunkbush sumac, chokecherry, serviceberry, and willow are present. Mule deer winter range is gradually being fragmented by housing all along the Lander front, which increases the winter range value of the



Heavy use on bitterbrush

Table Mountain area and the need to protect and enhance it. In general, the browse community is even-aged older plants. Time will be spent next year working with the BLM and private landowners to initiate management that will enhance the shrub community. The potential for conservation easements on private lands will also be explored.

Pass Creek Wildfire

A lightning-caused wildfire burned about 14,000 acres of range and timberland in the Pass Creek/Ed Young Mountain area during late August. The fire burned a mosaic pattern through a wide variety of habitat types. Of particular interest was the regeneration of bitterbrush. This burn was late in the growing season during a drought year. However, bitterbrush re-sprouting was observed within two months following the fire. Time will be spent next year working with USFS and BLM personnel to monitor the recovery of the area and to continue planning additional prescribed fires along the Lander Front. Overall the wildfire should improve habitat, especially aspen and browse plant communities.



Some parts of the Pass Creek wildfire in late August 2002 burned very hot. (USFS photo)

Sauger Habitat and Life History Upstream from Boysen Reservoir'

A study entitled "Factors Affecting the Distribution and Life History of Sauger (*Stizostedion canadense*) in the Wind River Drainage Upstream from Boysen Reservoir, Wyoming" was conducted by Craig Amadio with the Coop Unit. Goals of the project were to: 1) Describe the distributions of pool and run mesohabitats in representative river reaches across the watershed at base flow and measure habitat features potentially important to sauger (SAR) in each habitat unit, 2) Describe the distributions of juvenile and adult sauger in pools and runs within representative river reaches at base flow and their abundance relative to habitat features, 3) Describe the length structure and body condition of the sauger population in the upper Wind River watershed, 4) Describe the diet of sauger during summer and fall in the upper Wind River watershed to determine the extent of native and exotic prey items, 5) Determine how watershed-scale features and habitat features in pools and runs affect the spatial distribution, length structure, body condition, and diet of juvenile and adult sauger in the upper Wind River drainage, and 6) Describe the conservation and management implications of the information obtained regarding sauger and habitat in the upper Wind River watershed.

In addition, about 25 SAR per stream were collected from the Little Popo Agie, Popo Agie, Little Wind, and Wind rivers to assess genetic purity through electrophoretic analysis. Of the many hundreds of SAR collected during the study, no morphologic indications of hybridization were noted.

Fieldwork and data collection went extremely well throughout the summer and fall and should lead to successful completion of the study goals. The extent of SAR distribution within the

drainage was well defined, at least during the season of sampling. Features used to quantify habitat proved to be very predictive in determining presence or absence of SAR and should be very useful for future protection and management of the species within the Wind River drainage. Observations made on other native species (NRH, RCS, FHC, BBT, STC, CCF, SDS, CKC, and LKC) while assisting with SAR collection was very useful in gaining a better understanding of the distribution and relative abundance of these species as well.

Many more hours were used on this study than anticipated in the FY03 work schedule but it resulted in the successful completion of goals and objectives for the study. In addition, it allowed for a considerable expansion in knowledge of fish communities and habitat within an area where such information has been lacking in the past due to predominance of private land and Indian reservation issues. Phase II of the study has been proposed for 2003-2004.



Typical sauger habitat, slow deep pool with a silty bottom.

Sweetwater Aquatic Habitat and Fisheries Watershed Survey

Sixty-eight Level 1 WHAM surveys were completed in the Sweetwater Watershed in conjunction with fish population survey done by the Lander Fisheries Management Crew. The preliminary data entries and summaries are completed. Over 45 different streams were investigated in the Sweetwater Watershed. Many stream sections were dry that had not been dry in the last 70 years of record. Much time was spent pre-planning the sample sites only to find the stream dry. Some area within the Sweetwater Watershed was found where the habitat was in good condition. These few areas had active livestock management or the livestock were removed from the allotment before the impacts of the drought. Such areas will be able to restock as soon as the drought is over.

The BLM, in their efforts to implement some management changes within the drainage, tried to survey the various publics for management direction. Unfortunately, they encountered opposition

during the initial stages of their efforts to gather public opinion regarding desired management direction, and their plans are currently on hold.

Red Rim WHMA, Separation Creek Grade Controls

Five grade controls were installed in Separation Creek to raise the ground water level, which should improve the riparian area by storing more water for willows. This work was done using a combination of PVC sheet-piling and rock riprap. These structures were installed in May 2002 after spring runoff, so no additional water was captured this year. This is test project to study the durability of the vinyl sheet piling and to determine the maximum height that the base level can be raised using this product.



Looking downstream on PVC and rock grade control in Separation Creek.

Spence/Moriarity WHMA Meadow Irrigation



“21” meadow irrigation

The farming/haying lease was awarded to a local operator. The lease was amended to allow cutting of the Firehouse meadow to stimulate regrowth and remove old growth and litter accumulation. This will help make the forage more palatable to wildlife. The plan is to rotate cutting one of four fields each year for this purpose (Firehouse, Bear Creek, Pea Patch, and Thunderhead). These meadows are on Bear Creek west of the Thunderhead Ranch and are irrigated and left standing for wintering wildlife, primarily elk. If wildlife use becomes great enough that there is little or no forage left after the winter period, cutting of these meadows will be suspended. Pipelines and irrigation systems were maintained and repaired as needed. A flash flood resulted in about two miles of the Wiggins Fork delivery ditch being filled with debris, rock/gravel and dirt, which required emergency cleaning of the ditch and rebuilding of a portion of it.

Whiskey Basin WHMA Meadow Irrigation

The Whiskey Basin meadow was irrigated by CM Ranch as part of the grazing exchange agreement on BLM Ridge. NRCS was contacted to discuss upgrading the Whiskey Basin meadow irrigation delivery system. Plans are being formulated, but nothing has been received as of the end of 2002.

Ocean Lake WHMA Grazing Lease

A grazing lease began in January 2002 and continued through February 2002 on the Dudley Smith/Snyder area. This area consists of 479 acres of old farm fields and permanent cover/wetland areas, which are irrigated and left for permanent wildlife cover. A total of 264 AUM's were used during the grazing period. The grazing is used as a method of removing old growth and accumulated plant litter that is beginning to suppress annual plant growth.

Red Canyon WHMA Pipeline project

Gated pipe, pipelines, and a new diverter box were installed to assist irrigation on a portion of the upper meadows.



Red Canyon pipeline

LARAMIE REGION

HABITAT PROJECTS

Habitat Monitoring Stations

Fifteen additional monitoring stations were established during this segment, the majority being set on pronghorn range. A total of 45 stations are now in place throughout the region (Figure 1). The stations are being used to gather composition, utilization, age class and condition information for shrubs on crucial winter ranges for the priority pronghorn and mule deer herd units in the region. The data being accumulated will be used to help guide land and wildlife population management decisions. Most notable from this year's results was the dramatic decline in shrub production, which exceeded the poor production witnessed in 2001. Shrub production in all herd units being monitored declined between 25 and 100 percent from 2001 to 2002. The drought is largely to blame, however, overall vigor in most stands had already been lost to wide spread overutilization and old age.

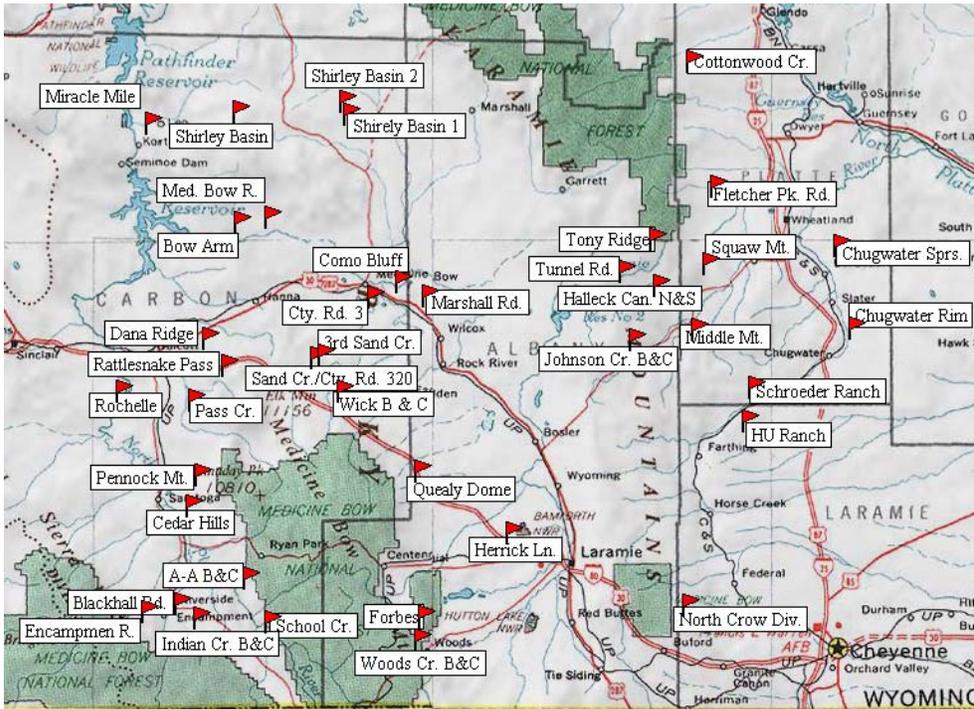


Figure 1. Locations of Laramie Region habitat monitoring stations.

Snowy Range Habitat Treatment Partnership

This large, multi watershed, three agency mule deer winter range treatment program is still being delayed in the NEPA process. The program has been in the planning stages for five years, the last three of which have been devoted to developing an umbrella NEPA document that can be tiered from when planning individual treatment projects. Change in lead personnel kept the NEPA document from being completed in 2002; however, the new project leader feels completion is likely in 2003. This program is designed to recreate an appropriate 30-year burn cycle in the mule deer shrub winter ranges on

- ✓ Fifteen additional monitoring stations established
- ✓ Cumulative impacts analysis initiated, June 2001
- ✓ Regional aquatic and terrestrial habitat priorities established
- ✓ Watershed analysis completed on Chugwater and Rock Creeks
- ✓ Contacted 61 landowners
- ✓ Livestock grazing management on 52,000 acres
- ✓ Burned 1,100 acres with 14,000 acres being planned.
- ✓ Developed one spring and installed 20 guzzlers
- ✓ Planted 14,000 trees and shrubs
- ✓ Managed 17 miles/500 acres of riparian habitat

Snowy Range. Treatments will be planned and conducted with cooperation from the BLM, U.S. Forest Service and the Game and Fish Department.

Southeast Wyoming Cumulative Impacts Analysis

This project involves developing a GIS based record of the impacts that have occurred to the major winter range shrub communities of the Laramie Region and the eastern quarter of the Green River Region over the past 30 years. The project is a joint venture, initiated by WGFD and supported by the BLM, USFS and NRCS. The project is being contracted through the Wyoming Geographic Information Science Center and the Wyoming Cooperative Fish and Wildlife Research Unit (Coop). Work began on June 1, 2002, with a research associate from the Coop conducting vegetative characterizations of the various shrub communities in the study area. This work will provide a ground truth for the remote sensor to assist in his identification of shrub stands from satellite images. The satellite image interpretation will not only be used in habitat mapping, but will also be used to identify areas within the stands that have been impacted by natural and man caused disturbances. The research associate is visiting the land management agencies to collect hard copy and digitized impact information from their records. The GIS product that results from this research will be used by the wildlife and land management agencies as a primary planning tool in development of projects proposed in the important shrub communities of southeast Wyoming.

Terrestrial and Aquatic Habitat Priorities

The Strategic Habitat Plan developed in 2001 called for the identification of priority habitat areas within each region. In the Laramie Region the crucial winter ranges of the Platte Valley, Shirley Mountain and Sheep Mountain mule deer herds and the Medicine Bow Pronghorn herd were ranked priority number one and two, respectively. Ranking was based on the importance of the herd and concerns for the condition of the herd and its habitat. Iron Mountain, Laramie Peak and Goshen Rim mule deer crucial range were listed as priority three, receiving a lower ranking primarily because of the WGFD's general inability to manage the herds due to the preponderance of private lands within the areas. Finally, Conservation Reserve Program (CRP) lands in Goshen, Platte, and Laramie counties were ranked fourth based on the importance of these lands to the survival of upland birds, deer, pronghorn, and other species and the role CRP plays in providing public access. This prioritization will help direct work schedules and will figure into funding approval for habitat developments proposed in the future.

Aquatic priorities identified in the Laramie Region were narrowed to three watersheds: 1) Eastern Plains Watershed, which included the Lower Laramie River, Lower North Laramie, Chugwater Creek, Horse Creek and Lodgepole Creek; 2) the Upper North Platte River Watershed, and 3) the Sage Creek Watershed.

In the Eastern Plains Watershed, native fishes and their habitats are priorities. Streams in the watershed have the highest densities of native fishes, and also some of the highest densities of fishes of concern, among streams in the Missouri River drainage of Wyoming. Fishes of concern in the watershed and their native species status (NSS ranking) are: the suckermouth minnow (NSS1), hornyhead chub (NSS1), the orangethroat darter (NSS1), the plains topminnow, (NSS2), and the common shiner, (NSS3). Pole Mountain in the Medicine Bow-Routt National Forest contains the headwaters of the Horse Creek and Lodgepole Creek watersheds. Communities of concern are the aspen/willow communities associated with beaver pond complexes, the stream channels, and brook trout and

- ✓ Completed 70 acres of wetland development
- ✓ 40,000 acres of wildfire in areas that needed regeneration
- ✓ Watershed assessments completed on Big Ck. And the Middle Fork of Lodgepole Cr.
- ✓ WER completed on six projects including USFS Plan Revision and Rawlins BLM, RMP.
- ✓ Gates (barriers) installed in two bat caves.
- ✓ Cheatgrass control conducted on Johnson Cr. WHMA
- ✓ The Goshen County WHMAs were reenrolled in the Weed Management CRM.
- ✓ Planted 35 acres to permanent cover

amphibian populations. The Pole Mountain area provides important functions of capturing, storing, filtering, and releasing precipitation to streams on the Eastern Plains of Wyoming.

The upper North Platte River Watershed encompasses that portion of the North Platte River watershed upstream of the river's confluence with Sage Creek. The long-term maintenance of rainbow and brown trout populations is a primary concern for the region. Also of concern is conservation of the entire fish community and long-term conservation of watershed conditions to maintain habitat suitable to continue to support trout populations at levels seen over the last 20-25 years. Features such as undammed mainstem and major tributaries, maintenance of hydrology (volume and timing), conservation of spawning habitat, and conservation of migration corridors, are issues of importance. Conservation of habitat conditions in tributary watersheds that will perpetuate trout movements, spawning, hatching success, and recruitment to the North Platte River is important. Nuisance, pathogenic, and exotic species are a continuing concern.

In the third priority, the Sage Creek Watershed, rainbow and brown trout are of primary concern, particularly downstream in the North Platte River. Sage Creek has a naturally high sediment load due to highly erosive soils and an arid climate in much of the watershed. It has been identified by several studies as the most significant contributor of sediment to the upper North Platte River and is on the 303(d) list. Sediment loads and turbidity potentially decrease the habitat quality for sport fish in the North Platte River and Seminoe Reservoir, in the Casper Region.

Chugwater and Rock Creek Watershed/Habitat Analysis (DEQ 303d listed, impaired stream)

The habitat extension biologist worked as part of a watershed analysis team, reviewing terrestrial and aquatic habitat conditions within each watershed. Included were on site visits, review of water quality data, landowner technical assistance, and review of proposed on-the-ground projects to be implemented in 2003.

Farm Bill 2003 Planning (Laramie, Goshen, Platte, Niobrara Counties)

Input was provided to the counties in southeast Wyoming on Farm Bill wildlife programs for 2003. WHIP county working plans were a particular focus.

Habitat Extension and Habitat Enhancement

- 61 landowner contacts
- Livestock Grazing Management - 52,000 acres
- Prescribed Burns – Richeau Hills – Southwest of Laramie - 1,000 acres of true mountain mahogany burned, 6,000 acres planned.
Objective – Regenerate over mature mule deer winter range shrubs

- ✓ Completed 22 I&E efforts including bulletins, brochures, presentations, videos, and career fairs
- ✓ Developed five WGFD trust fund project proposals
- ✓ Held memberships in four intra-department committees or groups

Table Mountain WHMA – 15 miles south of Torrington- 35 acres burned and reseeded to create nesting and hiding cover for pheasants
Burns/Buxton – 2300 acres of true mountain mahogany and mixed mountain shrubs northeast of Laramie planned for 2003. Objective – Regenerate over mature mule deer winter range shrubs
Pennock Mountain – coop project with U.S. Forest Service and BLM, 9 miles east of Saratoga - 3500 acres of mixed mountain shrubs - planned for spring 2003. Objective – Regenerate over mature mule deer winter range shrubs
WestBarrett Ridge/Upper Bear Gulch – coop project with USFS, BLM and private landowner. 15 miles east of Encampment – 3000 acres of mixed mountain shrubs. Objective – Regenerate over-mature mule deer winter range shrubs

- Water Developments –1 spring development w/ 2 tire tanks installed
2 spring developments planned
20 guzzlers installed, 2 planned (Figure 2)



Figure 2. Pronghorn at guzzler.

- Woody Cover – 14,000 trees/shrubs planted
- Riparian Habitat Management – 17 miles/500 acres - management changed with fencing, (timing, duration, intensity)
- Wetland Development – 70 acres completed (numerous projects completed that have been planned for 4+ years, 12 additional acres planned)

Hensel and Reese Mountain Wildfires



Figure 3. Reese Mountain Fire (Split Rock Mountain framed by smoke).

Although the Hensel and Reese Mountain fires (Figure 3) overlapped areas previously determined as needing fire to: 1) regenerate forage and cover vegetation for various wildlife species and 2) open timber encroached rock outcrops needed by bighorn sheep. The two fires combined to burn approximately 40,000 acres, a task that would have taken decades to plan and implement as prescribed burns.

Big Creek Watershed Assessment

A WHAM-1 assessment was initiated in the Big Creek watershed, a tributary to the North Platte River. In general, the stream channel was stable, cobble-dominated, wide and shallow (probably influenced by tie-drives), and the decadence of alder was note-worthy (Figure 4). Pool development work on private land (A-Bar-A Ranch) markedly increased pool density and pool depths.

The beginning stages of a potential graduate student research project were initiated with Dr. Wayne Hubert at the Wyoming Cooperative Fish and Wildlife Research Unit. The project will examine spawning migrations and spawning habitat of rainbow trout.

Middle Fork Lodgepole Creek Watershed Assessment

A WHAM-1 assessment was initiated at the Middle Fork Lodgepole Creek watershed on Pole Mountain in the Medicine Bow-Routt National Forest.

A more in-depth study has already begun to take shape, prompted by the WHAM-1 assessment. The study is currently in the planning stages between WGFD, USFS, and Wyoming Geographic Information Science Center. The project will examine the relationships between vegetation dynamics and beaver dynamics.

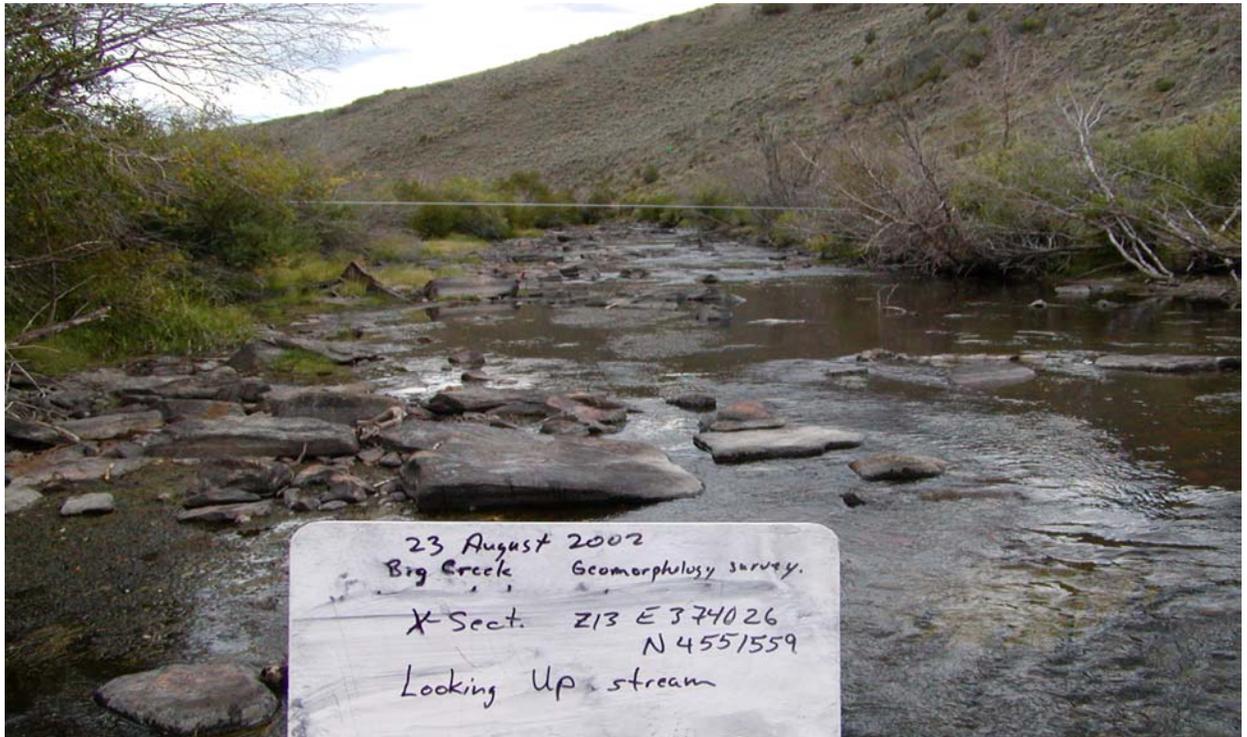


Figure 4. Big Creek cross section profile station, BLM land, Carbon County, Wyoming. Note the number of dead alders visible in the picture and the wide, shallow channel shape.

Habitat Protection

Wildlife Environmental Reviews were completed on several projects. The primary ones were:

- ❖ South Fork of Cedar Creek: review of a 3-mile stream channel restoration project and “letter of concurrence” to the U.S. Army Corps of Engineers.
- ❖ Little Laramie River: review of a 0.5-mile stream channel restoration project and “letter of concurrence” to the U.S. Army Corps of Engineers, and on-site extension service.
- ❖ North Sybille Creek, Highway 34 re-construction: commenting on construction plans.
- ❖ Medicine Bow National Forest Plan: commenting on the draft EIS.
- ❖ Bureau of Land Management, Rawlins Resource Area, Resource Management Plan: commenting on draft Management Situation Analysis – the aquatic habitat biologist was assigned as WGFD’s “lead field contact” on the Plan.
- ❖ Seminoe to Cheyenne powerline replacement: commenting on reconstruction plans.

Bat Cave Site #71 Gate Construction

The site was identified as important and significant bat habitat at risk and was selected for protection by the WGFD and the Wyoming Bat Working Group. The site serves as both a night roost and winter hibernacula for several bat species, big brown bat, fringed myotis, little brown bat, long-eared myotis, Townsend’s big-eared bat, and the Western small-footed myotis, all of which are WGFD Species of Special Concern. Two gates were installed 40 feet inside the cave, one a permanent closure and the other a locked access point controlled by the BLM. All of the materials were supplied by BLM, and the project was a cooperative effort between WGFD and BLM.

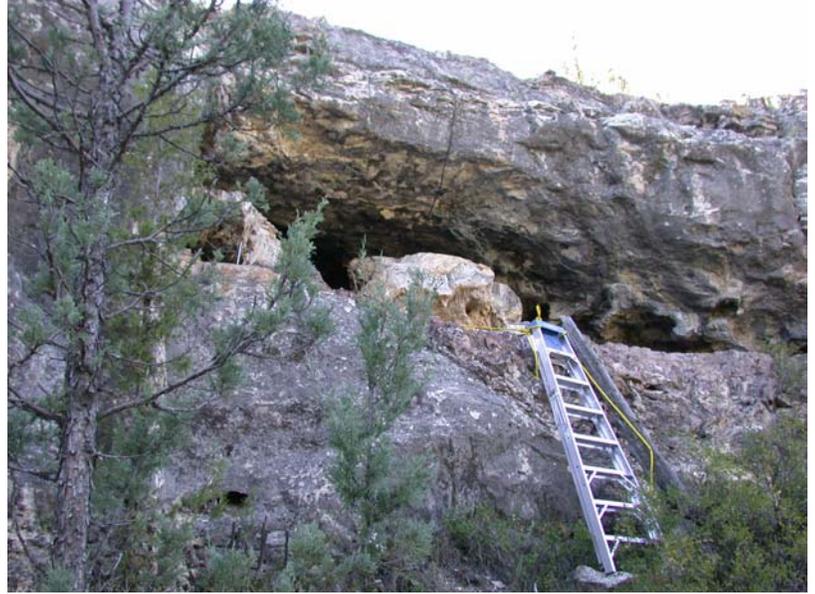


Figure 5. Front view of the main gate of cave site 71 and the opening to cave site number 122.

Bat Cave Site #122 Gate Construction

The site was identified as important and significant bat habitat at risk and was selected for protection by the WGFD and the Wyoming Bat Working Group. The cave is the only site currently known that is both a Maternity (200+) and a Hibernacula for Townsend's big-eared bat. It is arguably the most important site in Wyoming. Other Species of Special Concern, the big brown bat and the Western small-footed myotis can also utilize the site during winter. Two gates were installed at two separate openings. The larger gate was installed within a thirty-foot wide by six-foot tall opening. It has a locked access point for research. The smaller gate is six-foot wide by three-foot tall and is a permanent closure. The Army National Guard provided all of the materials. The project was a cooperative effort between WGFD and the Army National Guard.

WILDLIFE HABITAT MANAGEMENT AREAS

Goshen County Coordinated Resource Weed Management Project.

A contract was renewed with the Goshen County Weed and Pest to utilize an integrated pest management (IPM) approach to weed management on Springer, Bump Sullivan, Mac's 40 Acres, Table Mountain, and Rawhide. The (IPM) approach utilizes education/communication, biological, cultural, mechanical, and chemical methods to manage, control, and eradicate the noxious weeds on Department lands. An additional grant of \$5,000 for weed control was obtained for use on WGFD lands from the National Fish and Wildlife Foundation. The Goshen County Coordinated Resource Weed Management Project was also the recipient of the 2002 Wyoming Stock Growers Association Environmental Stewardship Award.



Figure 6. Helicopter application of herbicide to control cheatgrass on the Johnson Creek WHMA

Johnson Creek Cheatgrass Control

Plateau herbicide was applied on 450 acres of the Johnson Creek WHMA to control cheatgrass that had essentially overtaken the area following a wildfire in 2001 (Figure 6). The control has resulted in a significant decrease in the cheatgrass infestation.

Table Mountain Dense Nesting Cover Planting

A second attempt was made to plant permanent cover on a 35-acre pasture east of the old office site. Personnel from the Downer Bird Farm burned the site to clear the area of debris and dead vegetation. A contractor then applied herbicide to kill existing, undesirable vegetation prior to planting the area to a mix of grass and forb cover species. The planting was completed early to take advantage of spring moisture; however, the drought conditions from the previous year continued through the spring and summer of 2002, and it appears the few seeds that germinated died in the dry soil. An earlier planting (1999) also failed due to a lack of moisture. Replanting the site will not be attempted again until the drought is fully broken.

MISCELLANEOUS

Information and Education Efforts

- Informational/Education presentations given to over 250 individuals @ 10 events (Legacy Trust, UW College of Ag, outdoor classrooms, landowner tour)
- Co-authored Mule Deer Extension Bulletin #29
- CRP enhancement brochure (Disking and Interseeding Legumes) Draft completed

- Habitat Extension Newsletters (released quarterly, 4 issues)
- 4H Wildlife Habitat Evaluation Program – 10 youths
- WGFD video – drought effects on upland game birds, TV news spot
- Chronic wasting disease information to landowners, sportsmen
- Career fairs – One at University of Wyoming and two at Colorado State University

Training

- Biannual fire training and pack test
- Sagebrush Conference
- Wildland Shrub Symposium
- Wildlife Society Meeting
- Roath Plant Nutrition Workshop
- Franklin Covey's 4 Roles of Leadership
- Wildland Hydrology's Fluvial Geomorphology Course

Membership in Intragency Groups

- Biologist Exam Committee
- Hiring /Screening Committee
- Mule Deer Working Group
- Strategic Habitat Plan Implementation Group
- Fish Division Mission Statement Committee

Project Proposals for FY 2004 Fund

- Southeast Wyoming Cumulative Impacts Analysis (budget expansion)
- Burns/Buxton Burn
- Pennock Mountain Burn
- Movement of Spawning Size Rainbow Trout in Big Creek
- Southeast Wyoming CRP/WIA Water Developments

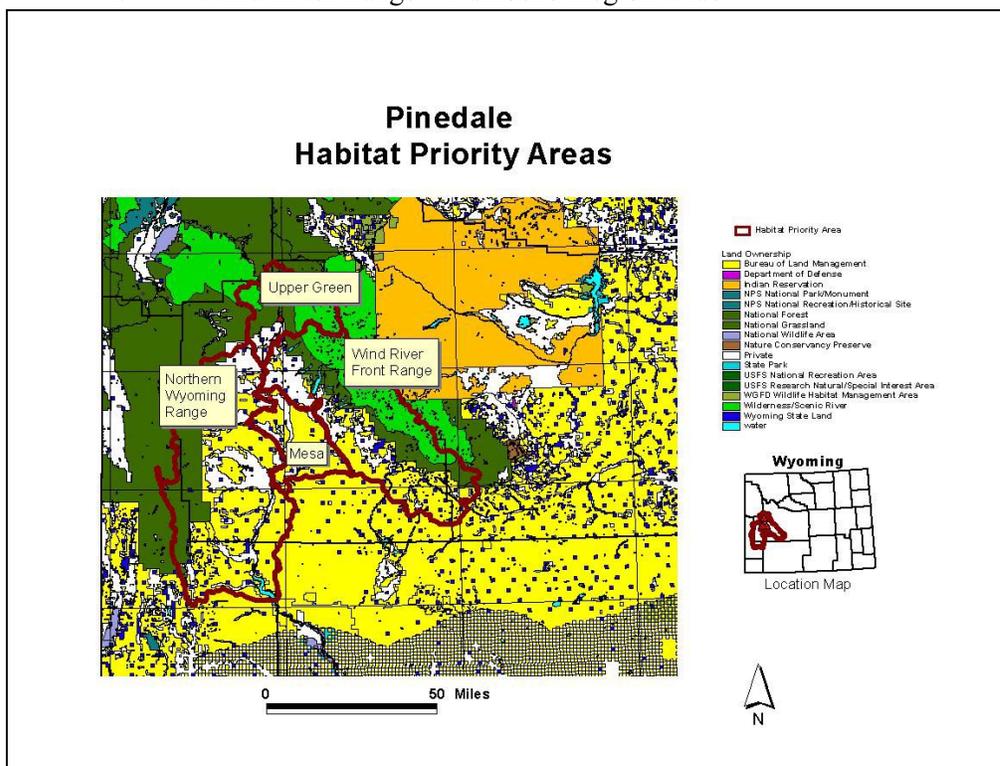
PINEDALE REGION

HABITAT PROJECTS

Strategic Habitat Planning

Habitat personnel led efforts to begin implementation of the WGFD's Strategic Habitat Plan (SHP). The Terrestrial and Aquatic Habitat Program Managers and Deputy Director were featured at a Jackson / Pinedale region team meeting to present the SHP to all regional personnel in August. Habitat personnel developed preliminary regional priority areas, which were reviewed, discussed, and ranked at a follow up region team meeting in September. This resulted in the identification of four large areas in the Pinedale Region, which encompass both wildlife and fish division priorities. The map below illustrates the priority areas identified in the Pinedale Region. These areas were ranked along with other areas in the Jackson part of the larger region as follows:

1. Northern Wyoming Range – Number 1 Region-wide
2. Mesa – Number 3 Region-wide
3. Upper Green River - Number 4 Region-wide
4. Wind River Range – Number 5 Region-wide



✓ Approximately 2,871,965 acres and four areas prioritized for addressing management needs

Fish division further defined six specific watersheds and two important river corridors with special habitat concerns. Regional fish division personnel ranked these areas as follows:

1. LaBarge Creek Watershed
2. Lower Bear River Watershed
3. Cottonwood Creek Watershed
4. Horse Creek Watershed

5. New Fork River Corridor
6. Upper Green River Tributaries
7. Green River Corridor
8. Irish Canyon and Scab Creek Watersheds

As a part of the objectives for the Strategic Habitat Plan, a proposal was written, submitted and approved for funding to utilize Landsat 7 Satellite Imagery to prepare a baseline vegetative layer for the county. The initial imagery analysis will target a base vegetative layer and examine changes due to development and habitat changes.

LaBarge Creek Cutthroat Trout Restoration, WHAM Inventory and Administrative Report

Level 1 WHAM inventories on the upper portion on USFS of LaBarge Creek proper were completed. A total of eight specific stream segments were described in this 27-mile long reach. Data was entered into the WHAM database. Numerous photos were taken and labeling and organizing these into a computer filing system was initiated.



Figure 1. Important habitat features represented in this typical section of LaBarge Creek include the LaBarge road which parallels the entire drainage, beaver dams, dense willow community, less timber on the southern aspect and high density conifers on the northern aspect.

Additional data and information included, or referenced, in the LaBarge Watershed Habitat Administrative Report was compiled, organized and reviewed. An example of this data is the Forest Service GAWS Level 1 surveys and report, which were reviewed and discussed with the FS fisheries biologist. Spreadsheet tables were developed to enter WHAM Level 2 greenline data, which requires further analysis for interpretation and reporting. A draft report was provided to the aquatic habitat manager and aquatic habitat biologist Supervisor in November. The final report will complement on-going WGFD efforts to restore native Colorado River Cutthroat (CRC) trout to 58 stream miles in this watershed with emphasis on the ecological health of the entire watershed and the habitat benefits for multiple wildlife species.

- ✓ Completed WHAM inventory on eight segments of LaBarge Creek proper on USFS land
- ✓ WHAM data entered into database
- ✓ LaBarge Watershed Report drafted

The HAMS crew assisted fish division with constructing six temporary fish barriers on various LaBarge creek tributaries. This project consisted of forming, pouring, and placing six concrete splash pads, then installing sheet piling barriers and riprap. This was a three-week project over two summer seasons.

Big Piney Area Habitat Projects

Brodie Draw Prescribed Burn Brucellosis/Feedground/Habitat (BFH) Crew

The Brodie Draw burn is located in the Ryegrass area west of Daniel and involves 5,765 BLM land and 640 acres State of Wyoming land supporting primarily a sagebrush/grassland community type. Two sage grouse leks have been identified in the area, and it has been designated transitional and winter range for mule deer. The area also regularly winters a small herd of elk and is frequented by antelope and moose. Project objectives included increasing grass and forb production, diversifying species composition, and improving shrub age class distribution. Cooperators included WGFD, BLM, and RMEF.

Approximately 2,200 acres of a 3,600-acre treatment area were burned in a mosaic pattern utilizing drip torches and a helitorch in October 1999. Project strategies of burning 40-60% of the treatment area were overachieved, and some questioned viability of sage grouse nesting habitat as a result. Despite WGFD personnel requests, ungulate habitat along the southerly exposure of Aspen Ridge was not treated, in order to treat more of the area west of Brodie Draw for livestock. However, the majority agreed the project produced a successful and beneficial mosaic.

Pretreatment vegetation monitoring involved establishing both a control and a treatment transect prior to the burn (BDB-1, BDB-C). However, the control transect was burned during treatment resulting in the establishment of a new control transect in 2000 (BDB-C). Line-point and shrub belt transects along with production clipping were methods used to monitor vegetation response in 1999, 2000, and 2002. Transects are scheduled to be examined again in 2004.

Table 1. Cover (%) and Production (kg/ha) of Brodie Draw transects from 1999, 2000, and 2002.

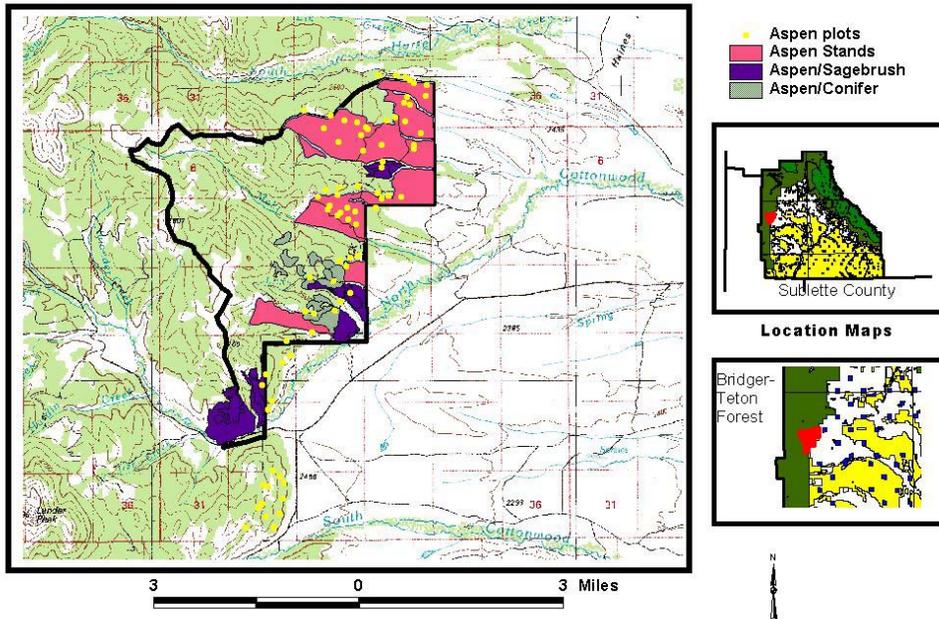
BDB199S (Pretreatment)			BDB100S (Post-treatment)			BDB102S (PT)		
	<u>Cover (%)</u>	<u>Production (kg/ha)</u>		<u>Cover (%)</u>	<u>Production (kg/ha)</u>		<u>Cover (%)</u>	<u>Production (kg/ha)</u>
Forb	39	162.6	Forb	16.6	127.4	Forb	24	399.9
Grass	47.8	213.1	Grass	29	118.6	Grass	45.6	358.1
Shrub	45.8	NA	Shrub	0.8	NA	Shrub	4.6	NA
BDBC99S (1st Control)			BDBC00S (New Control)			BDBC02S		
	<u>Cover (%)</u>	<u>Production (kg/ha)</u>		<u>Cover (%)</u>	<u>Production (kg/ha)</u>		<u>Cover (%)</u>	<u>Production (kg/ha)</u>
Forb	50.2	146.1	Forb	28.4	85.7	Forb	25.2	194.5
Grass	48.4	219.7	Grass	43.4	117.6	Grass	40	128.5
Shrub	57.2	NA	Shrub	60	NA	Shrub	51	NA

Maki Creek EA (BFH Crew)

This project document, currently in review, stemmed from the Cottonwood Plan Implementation Study, an interdisciplinary approach to identify opportunities to improve resource conditions according to the Forest Plan on 48,500 acres of the North and South Cottonwood Creek

drainages. The Plan has been broken down into smaller watersheds to facilitate implementation. Maki Creek, the first subdivision of the Cottonwood Project to be reviewed, involves various methods of timber harvest and prescribed fire treatments on important elk and mule deer transitional ranges, elk parturition range, and heavily conifer-encroached stands of aspen. Preliminary aspen community typing at 91 sites, conducted by the Piney BFH biologist, revealed 84% of seral aspen stands were in the conifer-climax habitat types. These aspen communities risk eventual conifer domination and the loss of multiple resource values associated with stable aspen communities.

Maki Creek Project Area

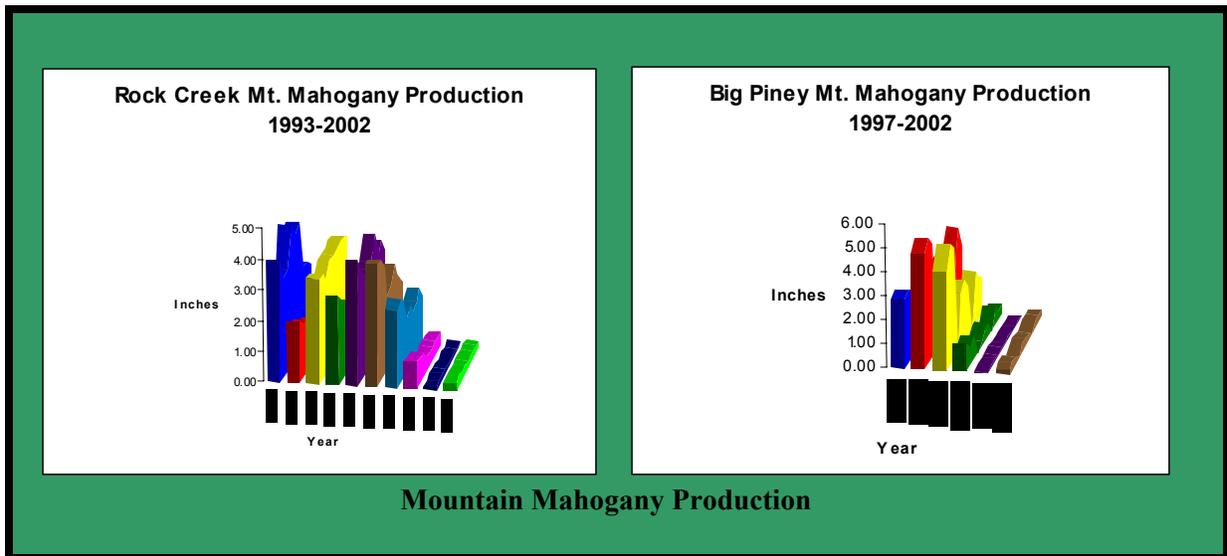


Mountain Mahogany Transects

Production and utilization data was collected again on mountain mahogany transects located near Big Piney and on Rock Creek Ridge near Kemmerer. Due to drought conditions, transects continue to exhibit very poor production. Both production and utilization are more difficult to measure during drought periods because most of the stem lengths were less than 0.2 inches.

2001 Mountain Mahogany Production					
<u>Big Piney Area</u>					
Site Name	Transect 1	Production (inches)			Average
		Transect 2	Transect 3		
Wildcat Canyon	0.09	0.04	0.11	0.08	
Bird Draw	0.15	0.12	0.02	0.10	
Saddle Ridge	0.00	0.06	0.03	0.03	
AVERAGE			0.07 inches		
<u>Rock Creek Ridge</u>					
Site Name	Transect 1	Production (inches)			Average
		Transect 2	Transect 3		
S. Fk Leeds Cr.	0.20	0.11	0.21	0.17	
Nugget Canyon	0.19	0.09	0.10	0.13	
N. Fk. Leeds Cr.	0.12	0.17	0.17	0.15	
AVERAGE			0.15 inches		

2002 Mountain Mahogany Production					
<u>Big Piney Area</u>					
Site Name	Transect 1	Production (inches)			Average
		Transect 2	Transect 3		
Wildcat Canyon	0.23	0.27	0.284	0.26	
Bird Draw	0.23	0.26	0.21	0.23	
Saddle Ridge	0.268	0.31	0.296	0.29	
AVERAGE			0.26 inches		
<u>Rock Creek Ridge</u>					
Site Name	Transect 1	Production (inches)			Average
		Transect 2	Transect 3		
S. Fk Leeds Cr.	0.24	0.269	0.264	0.26	
Nugget Canyon	0.277	0.319	0.273	0.29	
N. Fk. Leeds Cr.	0.254	0.276	0.313	0.28	
AVERAGE			0.28 inches		



1993-2001 Mountain Mahogany Utilization

Mountain mahogany utilization in the same areas in the Wyoming Range deer herd unit has been collected since 1993. Some problems were experienced in data collection due to the lack of adequate annual leader growth. In general, greater use was observed on leaders which were older than one year. This puts added pressure on plants which are already old and decedant. Continued use on old plants will result in loss of stems (which has already been observed) and loss of plants as well.

Wyoming Range Deer Herd
Mountain Mahogany Utilization 1993-2000

Transect	<u>Utilization by Year (%)</u>								
	5/93	5/94	5/95	5/96	5/97	5/98	5/99	5/00	5/01*
KEMMERER – ROCK CREEK RIDGE									
Rock Creek #1	83.1	30.8	56.8	39.1	59.8	81.8	70.7	54.7	27
Rock Creek #2	NA	10.2	46.5	24.8	83.1	67.5	13.0	31.0	26
Rock Creek #3	NA	41.7	81.0	76.0	86.4	84.6	74.7	55.7	NA*
BIG PINEY-LABARGE AREA									
Saddle Ridge	NA	NA	NA	NA	NA	42.8	56.3	43.7	NA*
Wildcat Canyon	NA	NA	NA	NA	NA	73.0	34.7	28.3	NA*
Bird Draw	NA	NA	NA	NA	NA	81.1	79.7	83.5	NA*

*NA – These transects exhibited almost no production and utilization had such high variance that a mean production was determined to be relatively meaningless. For instance production on Saddle Ridge for October and May respectively was 0 and 0 for Transect 1; 0.62 and 0 for Transect No. 2 and 0.03 and 0.01 for Transect No. 3.

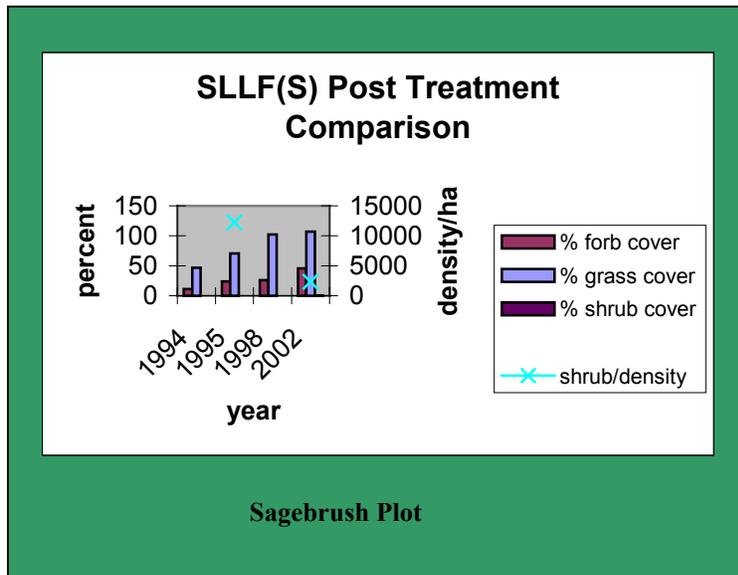
Pinedale Area Habitat Projects

Upper Green River Elk Herd Unit (BFH Crew)

Two macroplot sites (SLLF02S, SLLF02A) were monitored during the 2002 field season. Both of these monitoring sites have experienced some type of disturbance by prescribed fire in the past. Four new macroplot sites (GRGR102A, GRGR202S, SLLS402S, SLLS502S) were established in areas awaiting prescribed burn implementation for 2002-2003. Data collected from these macroplots include one or several of the following characteristics: basal and aerial percent cover, shrub density and age structure, species diversity, and production. The table below (Macroplot Transect Summary – 2002) is a summary of these common characteristics that were collected from the macroplot transects.

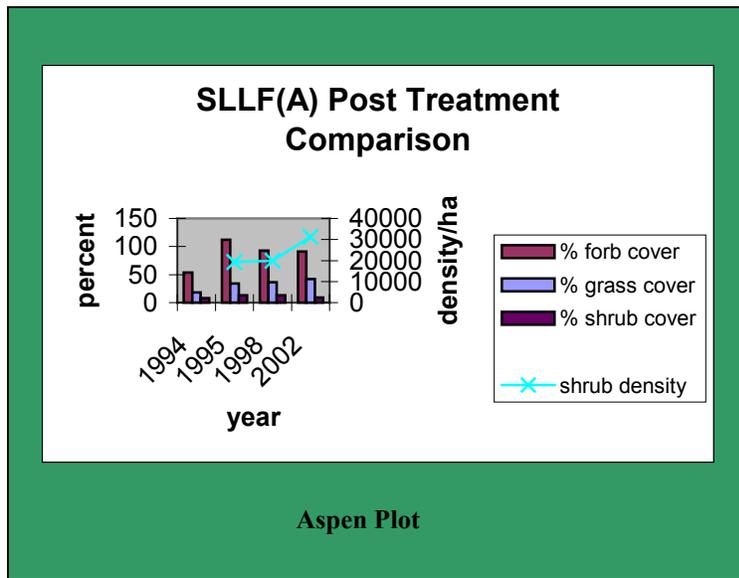
Macroplot Transect Summary – 2002

Macroplot Site	%forb cover (aerial)	%grass cover (aerial)	%shrub cover (aerial)	shrub density/ha	herb. prod. (kg/ha)	treatment-yr.
SLLF02S (Sagebrush)	46	107	>1	2320	484	burn-1993
SLLF02A (Aspen)	91	42	9	31200	393	burn-1993
<u>New Sites</u>						
GRGR102A	68	83	9	18320	433	planned
GRGR202S	49	82	27	33360	424	planned
SLLS402S	20	55	50	20720	360	planned
SLLS502A	38	67	51	26880	334	planned



✓ Two vegetation plots read

✓ Four vegetation plots established



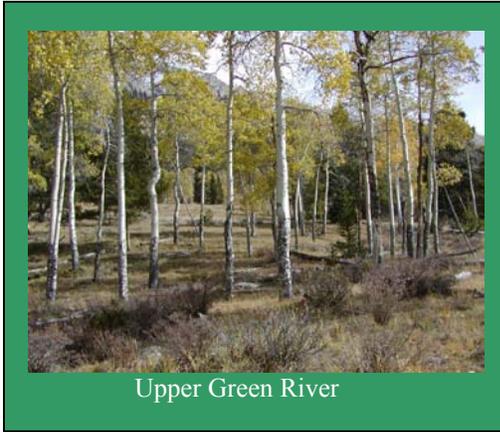
Basal cover generally increased for bare ground and litter and decreased for plant cover. The increase in bare ground and the decrease in plant cover could be attributed to the effects of three years of drought in the area. With less moisture in the ground the plants that are producing would most likely be smaller than average. Production of grasses decreased in the burned shrub area. The production of grasses and forbs also decreased in the aspen. This decrease in production could be due in part to cattle grazing in combination with the effects of a prolonged drought. As expected, the treated shrub community has a low shrub density. This shrub density is expected to increase over time.

Four new macroplot transects were established in proposed treatment areas that are awaiting prescribed fire implementation. The WGFD is working cooperatively with the Bridger-Teton National Forest to accomplish these prescribed burns. The goal of the planned prescribed burns is to set back plant succession and create a mosaic of diverse vegetation among vegetative communities and over the whole landscape. Specific objectives have been set for aspen sucker densities and other vegetation.

Macroplots GRGR102A and GRGR202S are located on a bench on Osborn Mountain above Green River Lakes. These macroplots were established as pre-treatment transects. This area is part of a proposal that is to be treated with prescribed fire in 2002-2003. The plan is to treat 8,000 acres of sagebrush/mixed shrub and aspen with prescribed fire in the Upper Green River drainage over a three-year period. The total project area includes 22,000 acres of sagebrush/shrubby cinquefoil, aspen, mixed conifer, and willow/sedge communities.

Macroplots SLLS402S and SLLS502A are located on Forest Service land above the Soda Lake WHMA. These macroplots were established as pre-treatment transects. This area is part of a proposal that is to be treated with mechanical cutting and prescribed fire in the spring/fall of 2003. The plan is to treat 2,000 acres of aspen, mixed conifer/aspen, and sagebrush with prescribed fire and mechanical cutting.

Aspen inventories were conducted in the Soda Lake and Green River Lakes areas using circular plots. This method of sampling is used for monitoring pre- and post-treatment stem densities in treated aspen stands. Data collection included UTM location of the witness post, establishment of a permanent photo point with photos taken in the four cardinal directions, and density information by height class. These are pre-treatment plots in areas awaiting prescribed fire implementation during 2002-2003.



Upper Green River



Soda Lake

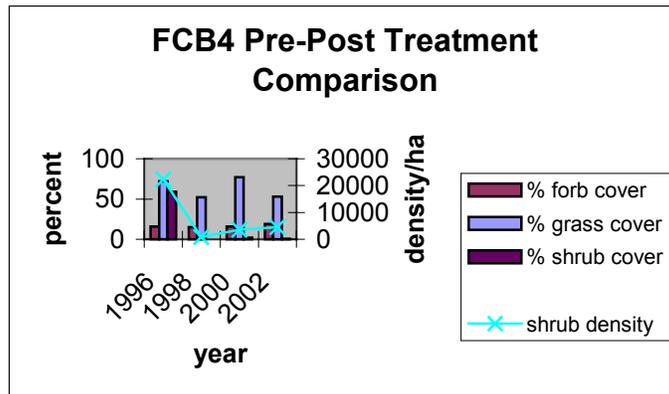
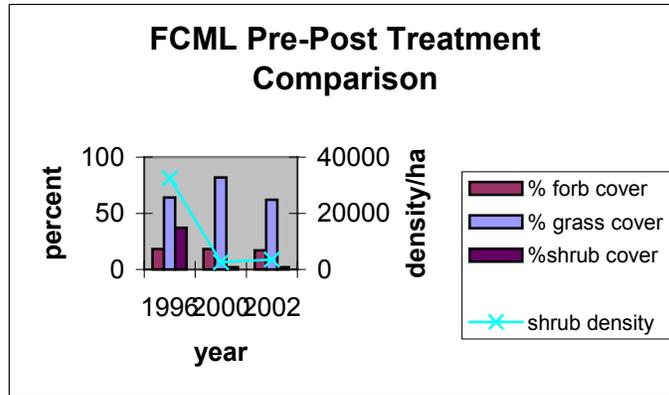
Pinedale Elk Herd Unit (BFH Crew)

Eight macroplot sites (FCMC02S, FCML02S, FCB402S, FCS602S, FCS702S, FCS802S, SCCC02S, SCC102S) were monitored during the 2002 field season. Many of these monitoring sites have experienced some type of disturbance by prescribed fire in the past with the others set up as “control” sites. Data collected from these macroplots include one or several of the following characteristics: basal and aerial percent cover, shrub density and age structure, species diversity, and production.



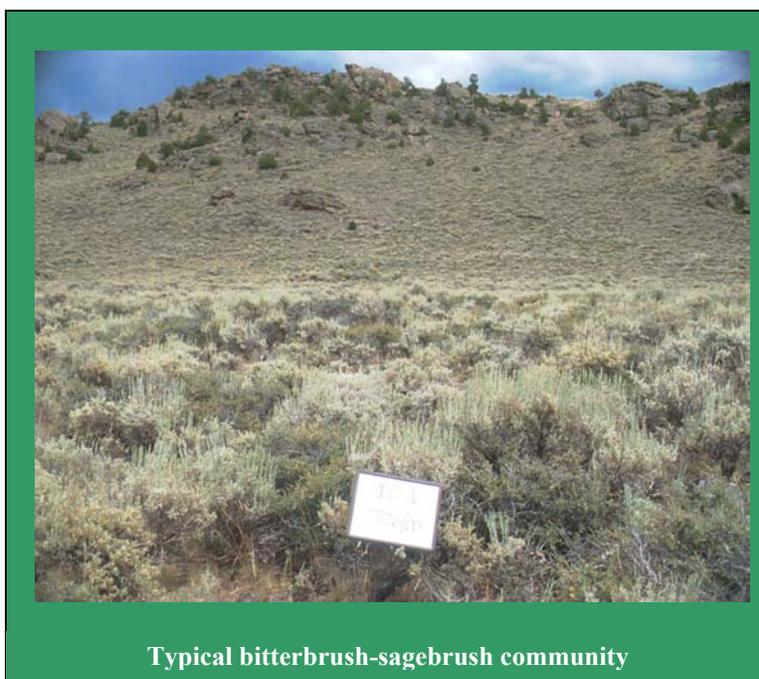
Vegetation Plot Near Burnt Lake in a Prescribed Burn

✓ Eight
vegetation
plots read



Bitterbrush Mapping

Bitterbrush mapping efforts continued with compilation of some of the data discussed below. Mapping acreages were compiled for the various 1:24,000 scale quad maps that were used. Areas where gaps were present were identified. This information will be utilized and combined in the upcoming satellite imagery project and the associated vegetation layers.



✓ 62,555 acres mapped

Lower Bear River Watershed Projects

Administrative: Project implementation in this watershed has hinged on the ability to rehire and maintain quality personnel in the project biologist position. Opportunities to implement projects as planned in 2002 became severely limited when the project biologist resigned in March. No qualified applicants were found so the position was not refilled. A trust fund proposal to fund this position through FY04 was not submitted due to the difficulties of retaining qualified long-term contract personnel, a lack of full, inter-divisional support to fund this position, and the recent hiring of a terrestrial habitat biologist in the Green River Region. However, progress was made toward implementation of several on-going projects as a result of the cumulative efforts of recent and past project biologists.

Raymond Canyon Watershed: A watershed boundary fence to control livestock grazing in this 6000-acre watershed was completed in summer 2001. This was partially funded by a WGFD riparian grant. However, in spring 2002, following lengthy discussions with the Smithsfork group and BLM regarding resting this watershed, a letter was sent to the BLM to encourage rest from scheduled livestock grazing as proposed by the BLM in the grant application. BLM finally decided that no scheduled livestock use (except trailing) would be permitted in 2002. Apparently this issue will remain an annual debate that will ultimately be decided by the BLM manager each spring until greenline objectives have been met in this watershed.



Figure 2. The Raymond Creek watershed provides habitat to Bear River Cutthroat trout, crucial winter and yearlong moose, elk, and mule deer range, as well as habitat to numerous other wildlife species.

The success of other projects proposed in this watershed is dependent on proper livestock grazing. Implementation of prescribed burns is a high priority with opportunities to benefit numerous wildlife species. Habitat personnel reviewed the BLM's "Raymond Mountain Prescribed Burn Assessment" and summarized internal comments to the BLM. Due to a combination of problems and concerns this project has been delayed until 2006.

An on-site meeting and discussion with an adjacent landowner (Lynn Roberts) on the west side of this project area was productive. Efforts to coordinate this opportunity with the BLM will continue.

Huff and Klein Creek Head Cut Control Projects: General Permits 82-02 were issued for these projects. Implementation was delayed in 2002 because of the vacancy in the project biologist position. The project will proceed when a rock source has been secured, and rock can be delivered to the project site.

Huff Creek and Little Muddy Creek Exclosures: Willow and cottonwood cuttings were planted in these exclosures with assistance from the regional fisheries biologist and seasonals.

Rock Creek Allotment Prescribed Burn: Habitat personnel coordinated with the Kemmerer BLM to develop opportunities to implement prescribed burns on the Rock Creek allotment. The proposed 17,000-acre burn is mostly on BLM and state land but will include portions of Fossil Butte Monument. Implementation is anticipated for the fall of 2004.

Habitat Grant Projects:

Evaluated the Jerry Kirk CCRP project on the Smiths Fork River with the landowner, NRCS, a USGS representative, and regional fisheries biologist. Regeneration of woody riparian vegetation appears to be advancing rapidly in the earliest (1999) CCRP. The original WGFD representative for this project was the habitat extension biologist from Green River. However, that responsibility has now shifted to the Pinedale aquatic habitat biologist.

The “Lowell Clark Howland Creek Riparian Fence” grant project was implemented by the sponsor in 2002. This project is located on state land within the BLM’s Sawmill Creek Allotment. However, initial results were less than acceptable. This project will be closely monitored in 2003.

Reviewed and discussed internally a BLM proposal to construct a buck and pole exclosure on Sawmill Creek. No WGFD funding proposal was submitted for FY04 for a variety of reasons. However, coordination with the BLM on this project will likely continue.

Inter Agency Coordination:

Discussed the results and potential follow up treatment plans on the Tunp Ridge Burn with the FS range specialist. Due to time constraints and other priorities, an FS proposal to treat more aspen in fall 2002 was delayed until fall 2003. The portion of this burn on BLM land was the first phase of a series of treatments planned within the Sawmill Allotment. The treatment schedule is expected to continue at approximately two-year intervals until the remaining three pastures in the Sawmill allotment are treated.

Comments were provided to the BLM on the draft Sawmill Allotment AMP.

Provided comments to habitat protection for the Forest Service EA proposing to reopen Lake Mountain Road

WILDLIFE HABITAT MANAGEMENT AREAS

Huston Public Fishing Access Area

This 30-acre acquisition allows for public hunting/fishing access and enhancement of riparian habitat. WGFD built public facilities on both WGFD and BLM lands through a Memorandum of Understanding. The facilities include a boat ramp, parking lot, CXT comfort station, and an access road, which included

installation of a structural arch across an irrigation ditch. Although the fence was contracted, the HAMS crew surveyed the fence line, constructed gates and water gaps, and surveyed and set habitat area boundary markers.

Following extensive coordination with the COE, a 404 permit was received in February for the fence sill. Bids for the rock haul and placement were released on April 15. To prevent the rock source from the Soda Lake WHMA from being permitted to a private contractor, a new, 10-year, free use permit was secured from the BLM. Construction of the fence sill (Figure 3) and maintenance work on the secondary channel stabilization project, initiated in April 2001, (Figure 4) was completed in early October.



Figure 3. This sill functions primarily as a barrier to livestock with secondary benefits to instream and riparian habitat.



Figure 4. Sill in secondary channel before (on left) and after (on right) reconstruction.

Extensive coordination between the aquatic habitat biologist, construction supervisor, and the consultant for Jerry Moore (a neighboring landowner) resulted in the contracted construction of 3,950 feet of pole-top fence for which WGFD is responsible. Moore contracted construction of an additional 3,497 feet of pole-top fence on his property. Also, 2,894 feet of old fence was removed from the Huston PFA while another 3,890 feet of old fence was removed from Moore's property.

The end result is that 75 acres, owned by WGFD and two other neighbors, has been excluded from grazing. An additional 120 acres of Moore's adjacent property will be managed under a grazing management plan designed to meet riparian and wildlife objectives following a three-year rest period. Because of the cooperative effort a net increase of only 663 feet of fence was needed to protect the access area and develop the riparian management pasture.

A riparian habitat improvement grant to Moore assisted him with development of the riparian pasture and construction of a 2.7-acre wetland pond within this pasture.

A draft plan to inventory and monitor riparian vegetation was prepared and presented to Moore's consultant and other cooperators. A woody riparian species inventory, initiated in spring 2002, is scheduled for completion in spring 2003.

Fall Creek WHMA Road Improvement Project

The Pinedale and statewide crews spent two weeks working with a BLM road crew upgrading 3.5 miles of existing road surface across the Fall Creek WHMA to facilitate hay truck access to the elk feedground and public access to the national forest. In all, four dump trucks, three backhoes, one loader and a D6 dozer worked on the road. Boulders were removed from the existing roadway, and about 2,306 cubic yards of gravel were hauled.

Horse Creek WHMA Elk Fence Construction Project

One-quarter mile of elk fence and one-half mile of stock fence were removed and three-fourths mile of new elk fence bordering private land was constructed. The Pinedale crew monitored the contractor for fence specification and compliance and constructed a 32-foot wide elk jump north of Big Horse Creek to facilitate elk movement from private land to the elk feedground.



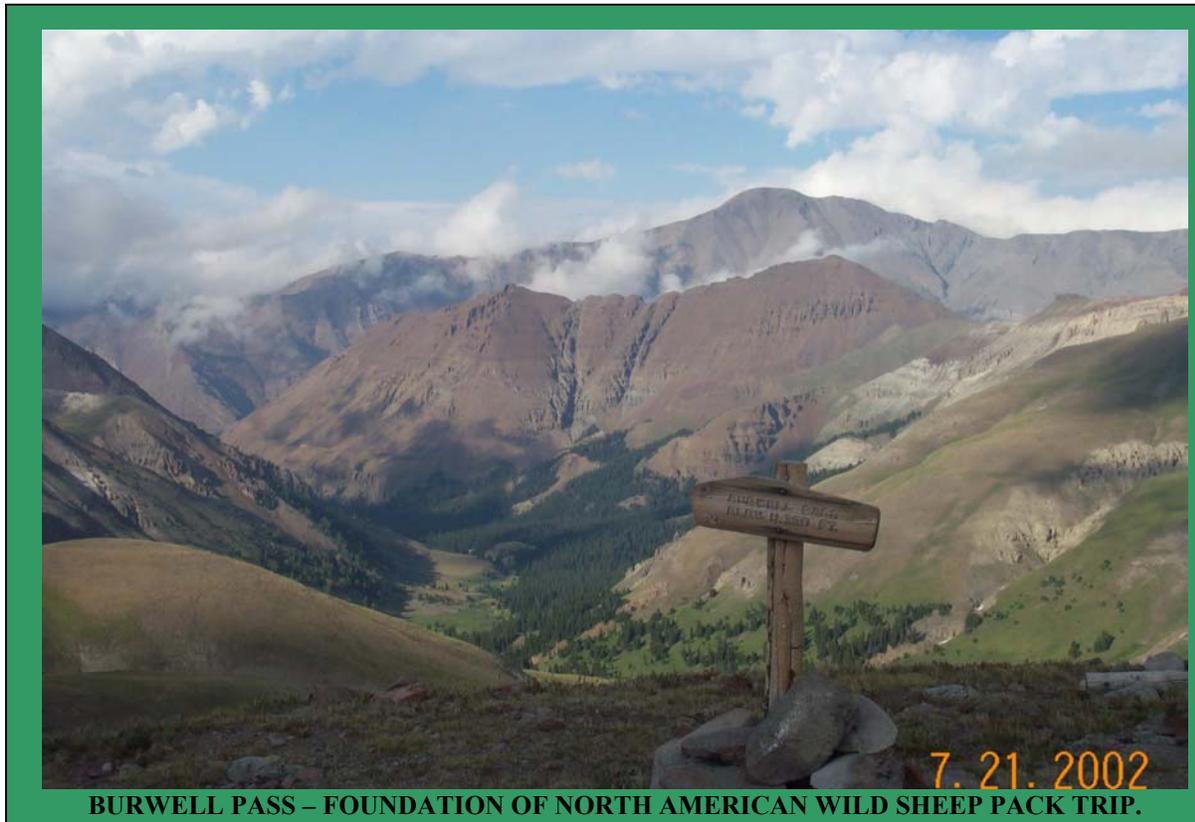
The recessed elk jump being constructed north of Big Horse Creek.

MISCELLANEOUS

Terrestrial Habitat Biologist

- Seasonal Range Maps – prepared for moose and deer in the Jackson/Pinedale Region
- Assistance to BLM for the planning of a prescribed burn in sage grouse habitat
- Assistance/Attendance - FNAWS Summer Pack Trip and Meeting (See photo below)
- WyRED – Presentation to youth on shrub identification and ecology.
- Assistance/Attendance with the Mule Deer Working Group and Sheep Working Group
- Worked on BLM Resource Management Plan Revision
- Performed a sheep and sheep habitat survey in the Upper Green
- Worked with the USFS/NPS Crew on Fire Severity Mapping on the Blind Trail Fire
- Reconnaissance with new BFH Biologists of project areas

- Worked at the Hunting and Fishing EXPO – Habitat Booth
- Wrote a Sublette County Imagery Proposa.
- Attended a Sagebrush Workshop in Elko, Nevada
- Presentation of Mechanical Treatments in Sagebrush Communities at The Wildlife Society Meeting
- Helped with the Moose and Deer/Elk Workshop Planning



Aquatic Habitat Biologist

Habitat Grant Projects:

-Inspected and approved FS sponsored maintenance work needed on the Green River fisheries enhancement projects completed in 1993

In Service Training:

- Spring workshop and “Writing Training Session”
- Summer workshop / tour of instream projects
- State-wide Department meeting, credit card training
- Annual CPR refresher course
- “Water Law” workshop / class
- Joint Habitat Branch meeting and nutrition workshop

Inter Agency Coordination:

-Participated in “Local Work Group” meetings regarding NRCS administered EQIP & WHIP projects
 -Provided comments to Habitat Protection on the Forest Service EA for the Wyoming Range Allotment Complex and coordinated with other Pinedale regional personnel during the commenting process

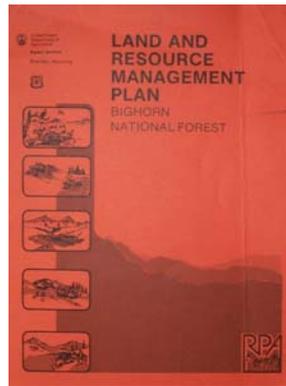
SHERIDAN REGION

HABITAT PROJECTS

Bighorn National Forest Land and Resource Management Plan Revision

One of the most important issues concerning wildlife and their habitats in the Sheridan Region has been the preparation of the revised U.S Forest Service (USFS) Bighorn National Forest Land and Resource Management Plan (Plan). Initial scoping was completed on January 31, 2001. Prior to the anticipated decision notice, scheduled for the winter of 2005, a concerted effort is underway to conduct research and compile scientific information to move ahead with a plan that's more sensitive to the needs of wildlife.

Using land-cover maps produced by the WGFD and other ecological inventories, research has been conducted to quantify the effects of forest fragmentation on birds and mammals found on the Bighorn National Forest (Forest). In addition, a watershed analysis was conducted to measure how roads and clear-cuts contribute to fragmentation. Researchers have also examined how bighorn sheep and elk habitats are affected by current Forest management activities.



Bighorn National Forest (BNF) planners have sought early involvement from WGFD biologists. This courtesy has allowed biologists to incorporate research findings in the development of meaningful standards and guidelines (S&Gs) for wildlife, thus improving the quality and thoroughness of the plan.

This year activities evolved around assisting and contributing to the USFS's interdisciplinary team's preparation of the "Goals and Objectives", "Forest-Wide Standards and Guidelines", "Management Area Standards and Guidelines", a draft of Chapter 1 of the EIS ("Purpose and Needs") and five "Preliminary Alternatives". In addition, habitat biologists:

- ✓ Worked with USFS biologists to generate and run models to predict and map elk security areas. This model delineated potential and actual security areas.
- ✓ Met with USFS biologist to discuss habitat needs and monitoring of willow and aspen resources for moose.
- ✓ Provided input relative to the need to provide and enhance fall transition habitats for mule deer and elk.
- ✓ Worked with USFS and Dr. Marion Klaus to develop and run a habitat suitability model for pine marten. She obtained a grant from the National Science Foundation to do the work. The spatial model is needed to assess the effects of upcoming alternatives in the Forest Plan on marten and their habitats.
- ✓ A PowerPoint presentation was prepared and delivered to the USFS BNF Planning Team and Forest Plan Steering Committee to sell them on the importance of wildlife security areas and the need for S&Gs.
- ✓ Edited and provided a GIS map showing new elk parturition areas.

✓ The USFS has allowed WGFD biologists to participate early in the Bighorn National Forest Plan revision process

✓ Habitat personnel spent two man-months this year to help the USFS with their Plan

✓ Early involvement and previous research have resulted in acceptance of a new elk security area concept. A model was developed to create a guideline to assure that elk hunting opportunities will be maintained on National Forest lands

✓ WGFD-sponsored research involving the effects of fragmentation on wild birds and mammals also being used to develop improved Plan S&Gs

Cole Canyon Creek Beaver Transplants

The Middle Fork of Cole Canyon Creek beaver transplant site in the Black Hills was monitored during fall. The release was completed in fall 2000 at the upper end of the watershed, which is currently dry. Time constraints precluded assessing the lower watershed segments, which have hopefully maintained perennial flows during the current drought.

Dead Swede Campground Stream Restoration Project on the South Tongue River

A tour was completed with Bighorn National Forest personnel to review Ms. Cheryl Harrelson's proposed stream channel restoration treatments on the South Tongue River at Dead Swede campground. Ms. Harrelson, who is a Consulting Hydrologist with Steady Stream Hydrology Inc., was contracted to design the restoration project by the Forest Service. Her design entailed a series of cross vein and J-hook structures, bank treatments with large woody debris, channel relocation to reduce the tight radius of curvature found at an actively eroding meander, and channel excavation to restore riffle to pool transitions. No concerns were identified with the proposed plans. Subsequently, the Forest Service began contracting the implementation of the restoration treatments, but was not able to complete the process by fall. Thus, implementation of the project was postponed until 2003.

Dayton Meadows In-stream Improvement Project on the upper Little Bighorn River

A job request form was submitted requesting assistance from WGFD Sheridan construction personnel to maintain extensive instream habitat improvements on the Little Big Horn River at Dayton Meadows on a reoccurring annual basis. The in-stream plunge pool structures at Dayton Meadows on the Little Bighorn River were visually inspected. Seals on many of the newer timber and older rehabilitated log plunge structures remain problematic. Additional maintenance, abandonment or removal, or rehabilitation will be necessary in future years.

Extension Services, Liaison and Coordination

This year, 23 landowners were assisted with maintaining, enhancing and/or developing their wildlife habitats. Of these, three resulted in agency-assisted habitat projects and/or plans. This second level of involvement includes helping landowners secure project funding, obtaining technical assistance for design needs, preparing management or operational plans, complying with federal and state laws and contracting construction work. The success of this program is due largely to cooperative partnerships between the NRCS, USFWS, and WGFD. Projects include:

- ✓ Working with Fidelity Exploration and Production Company to develop a habitat management plan for the 1,900-acre property they purchased on Prairie Dog Creek to dispose of coal-bed methane (CBM) water. The company wants to demonstrate a beneficial use of the water and hopes to enhance wildlife habitats too.
- ✓ Assisting the Padlock Ranch- Forks Unit in developing a wildlife plan to deal with CBM development occurring on their ranch. This ranch is approximately 150,000 acres in size, of which approximately one-half is located in Wyoming.
- ✓ Assisting the Outback Ranch and Kaycee game warden with developing grant applications for the WGFD and Water for Wildlife Foundation to install a solar pump to provide water for antelope and livestock.

- ✓ Provided assistance to 23 landowners with their wildlife habitat projects
- ✓ also assisted natural resource agencies, conservation groups, and mineral extraction companies
- ✓ Assisting CBM developers and consultants is a growing aspect of extension services in the Sheridan Region

Other significant activities include:

✓ Working with Pheasants Forever (PF), NRCS, and eight landowners in the Clear Creek drainage to discuss opportunities to collaborate on upland game bird habitat enhancements. The local PF committee has funding to accomplish habitat improvement projects. They would like to select a large block of landowners in hopes of being more effective with their time and money. Time was also spent working with PF to use funding to create a position in the NRCS to prepare and develop wildlife habitat enhancement projects. A strategy to leverage the funds was outlined and the proposal was presented to the conservation districts in Sheridan and Buffalo.

✓ Planning for the transplanting of 60 beaver to unoccupied habitats on the Bighorn National Forest. Relocation sites were determined by querying USFS, BLM, and WGFD biologists.

✓ Assisting numerous CBM consultants with mitigation strategies to minimize detrimental effects to wildlife. One consultant needed information for a CBM management plan for the Water Development Commission.

✓ Meeting with WGFD and BLM personnel to develop a program for landowners in the Fortification area to mitigate a portion of the effects from CBM. Of primary concern is the elk herd that resides there. The WGFD landcover classification system was used to predict security areas for elk and mule deer in the area. Hopefully, the BLM can protect security areas in and around these development areas to minimize the displacement of this unique elk herd.

✓ Assisting Dr. Roy Roath, a Colorado State University Range Extension Specialist, in providing recommendations to the Padlock Ranch on how they can improve their livestock-grazing program to benefit ecosystem health and wildlife habitats.



Before

A renovation is occurring on Muddy Creek. NRCS and WGFD personnel worked with a concerned landowner to correct the indiscretions of the previous owner. This stream canalization effort was undone by constructing two dams that returned the stream to its original sinuous course. It's now five-times longer. Livestock have been excluded, too, by enrolling these lands in the NRCS's riparian buffer strip program.

- ✓ Providing information to the NRCS regarding past data collected on a ranch located on the Little Tongue River.
- ✓ Assisting a landowner who wanted to transplant beaver into unoccupied habitats that formerly supported beaver. He identified Cross Creek and the East Fork Big Goose Creek as potential sites for beaver. He also requested information on plant materials that might be planted to improve riparian habitats and thus enhance the suitability of beaver habitats. Perpetuating endemic riparian plant communities via plantings or other management measures was recommended as the preferred approach. Additional inventory will be necessary to assess the suitability of the recommended watershed segments for beaver transplants.
- ✓ Providing WGFD riparian habitat grant and NRCS cost-share program information to a rancher on Rock Creek.
- ✓ Walking four-stream miles within the Country Club on Sand Creek to assess past improvement work and providing recommendations for additional stream work at the request of numerous cabin owners.
- ✓ Attended two public seminars on the Goose Creek watershed assessment and planning efforts, which are expected to evolve into locally led watershed planning efforts.



Before →

An incredible transformation occurred on Clear Creek after two years of livestock exclusion. The sand and gravel point bar (to the left) has re-vegetated. These plants will slow silt-laden runoff and force the water to deposit the soil material needed to restore stream banks. An NRCS cost-share program funded most of the project. A WGFD trust fund grant supplemented these dollars to get the job done.

Kendrick Dam Fish Passage and Screening Evaluation

A habitat trust fund proposal was approved to contract a concept-design study for two alternatives to establish passage of native cool-water fish species, e.g., sauger, channel catfish, shovelnose sturgeon, and screen the irrigation diversion at Kendrick Dam on Clear Creek. Then the site was visited to get an idea of dam height. The original alternatives included constructing a bypass channel around the dam or converting the dam to an off-channel structure while restoring Clear Creek around it. The latter alternative appeared infeasible. A bypass channel and vertical slot fish ladder appeared to be the only feasible alternatives to provide passage

past the dam, although other options may exist. A rotating drum screen or electric barrier may be the only feasible options to screen the diversion. It's conceivable that a bypass channel might be constructed to provide both upstream and downstream migration with only a trash rack needed to screen the diversion.



Kendrick Dam, which is about nine-foot high, on Clear Creek.

A meeting was held with the Pee Gee Ranch owner to explain our objectives and discuss some options to establish passage at the barrier and screen the diversion. The owner was skeptical the project could be completed in a fashion that would not limit the ranch's ability to irrigate. He indicated their irrigation operations typically begin in April and last until October. During dry years, which are most common, they remove all water that remains available within the channel. He indicated he would likely oppose any passage alternatives that would reduce or limit water availability for irrigation and any screening options that would require relatively frequent maintenance. Nevertheless, he did consent to a feasibility assessment for different alternatives. Some additional alternatives may be feasible, but these would likely involve multiple landowners and will need to be examined further.

The USFWS private lands coordinator was solicited for cost-share assistance with the feasibility and concept design study. He indicated cost share assistance was a strong possibility. We are now exploring our options with the hope we'll find additional opportunities for passage and screening that will address the needs of the ranch and the biotic community. Likewise, we're exploring additional cost-share scenarios to assess feasibility and get the concept-design phase off the ground.

Mule Deer Habitat Restoration and Monitoring Projects

Habitat Mapping and Monitoring of Mule Deer Habitats— Sagebrush type mapping accuracies, within the WGFD landcover classification coverage, continue to be a problem east of Kaycee, Wyoming. The spectral analyst, who used Landsat satellite data to map these habitats, provided three attempts at mapping this type. Each of these attempts produced eight new classes... some of which were accurate while others were not. It was hoped that by taking the best of each attempt, a more accurate map could be produced. Unfortunately, inaccuracies were somewhat uniform and consistent between the different attempts. Nevertheless, considerable time was spent in the field determining a fix. The image analyst also assisted with solving water and deciduous forest misclassifications.

Subsequent to improving the accuracies of various landcover types, the tedious job of adding hundreds of control points to improve the positioning of these maps was completed. These seven maps had to be precisely located within the computerized geographic information system (GIS) prior to employing a process to mosaic them into one continuous map. These seven habitat maps were the result of five contracts with an image analyst since 1994. The composite map covers the entire WGFD Sheridan Region and a portion of the Cody Region - a 10-million acre area.

The image analyst also had a difficult time mapping old growth cottonwood forests. Since the old sparse cottonwood patches don't dominate the spectral reflectance of the area, it's very difficult to detect them from space-borne sensors. To improve the accuracy of the habitat map, the "green", or forest delineations, were extracted from 1:24,000 USGS maps. Photo interpreters created these maps in the 1960s. They delineated all forest patches. Unfortunately, however, they didn't separate deciduous from coniferous types. In order to classify these two primary types, a Landsat TM+ color infrared base map was produced for the Sheridan Region. The red coloration that's indicative of moist green vegetation (a product of color infrared film) allowed biologists to separate riparian zone cottonwoods from dry-site conifers. After the "green" cottonwoods were delineated, this classification was "burned" into the region-wide landcover map. The new class was termed "late-seral cottonwood forest".

Now that there's one large landcover map of the Sheridan Region, biologists can start creating computerized models to predict the quality of wildlife habitats. Before modeling can start, however, all ancillary raster data (maps) used in the model runs must have the same number of rows and columns and consist of identical cell sizes. To accomplish this, the computer must re-sample every map created since 1994 (when the GIS effort started in the Sheridan Region). These databases included temporal change detection maps, conifer crown closure, topographic files like elevation, slope and aspect and many others. This was the final phase of creating course-level ecological inventories for the WGFD Sheridan Region.



Agency biologists examined several aspen clear-cuts conducted by the USFS in the 1980s and early 1990s on the Bighorn National Forest. Browsing by mule deer, elk, and cattle has prevented some clones from regenerating while others are just being suppressed.

In order to monitor landscape changes and how they might affect mule deer and their habitats, biologists are continually updating GIS maps. For instance, wildfire boundary maps were obtained from the State Forestry Division. These delineations allowed habitat personnel to map the loss of sagebrush shrub steppe habitats. These data are incorporated into temporal change detection databases for analytical purposes and sagebrush habitats can be reclassified to a herbaceous type. In a similar process, USFS delineations of forest wildfires and clear-cuts are used to modify conifer cover maps.

Ponderosa Pine Forest Restoration Effort—A vegetative treatment group consisting of WGFD, BLM, USFS, and The Nature Conservancy (TNC) personnel are working together to devise strategies for restoring ponderosa pine communities to a more healthy condition. These managers recognize that ponderosa pine forests are dependent on frequent low-intensity fires. To accomplish this, prescribed fire needs to be substituted for historical fires. Evidence shows that despite repeated silvicultural cuttings since the early 1900s, thickets of understory conifers (ladder fuels), down woody fuels and litter fuels tend to increase in the absence of fires.

Ecosystem-based management options were discussed during individual meetings with the above groups. As it turned out, ponderosa pine forest restoration is also a priority for TNC. The TNC meeting evolved around their Fire Learning Network and how the program can assist land management agencies with this effort. The group also discussed how to get the public informed about the need to treat these and other fire-adapted plant communities.

To facilitate the TNC, USFS, and BLM planning processes, the WGFD produced landscape inventories. These inventories consisted of conifer types, their crown closure, and changes that have occurred over time.



The BLM and WGFD burn ponderosa pine forests on the Ed O. Taylor Big Game Winter Range each spring. Due to the drought and parched trees, burns were not implemented this year.

It's anticipated that prescribe burning ponderosa pine forests will greatly enhance spring and fall transitional habitats for mule deer. Forage yields are expected to increase approximately nine fold, while most of the increase should be highly nutritious forbs that improve milk production (thus fawn gains). These south slope forests often green up again after receiving fall moisture. Thus helping deer “cap-off” their fat reserves prior to the onset of winter.

Story Hatchery Ponderosa Pine Restoration and Fuel Break Creation—The USFS, State Forestry Division, Story Fire District and WGFD worked together to develop a plan for restoring over-stocked ponderosa pine forests while creating a firebreak on WGFD lands. Agency personnel also met with adjacent private property owners. We hoped these landowners would cooperate with agency personnel to treat the landscape, rather than stopping at political boundaries. State Forestry personnel created a Stewardship Plan for the hatchery property and adjacent lands. They also marked “cut” trees on WGFD lands. These activities are designed to protect hatchery structures from wildfires and to reduce the risk of large-scale bug kills.

Sage Grouse Habitat Restoration and Monitoring Projects

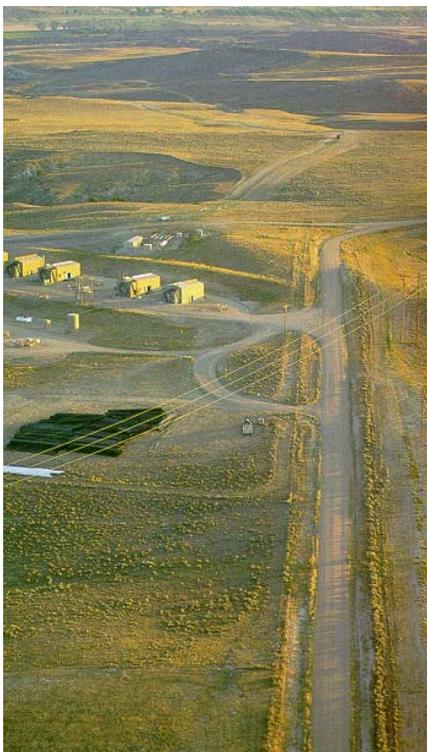
The trend in the sage grouse population for the Sheridan Region suggests about a 10-year cycle with periodic highs and lows. Of concern, however, is that each subsequent peak in the population is usually lower than the previous one. This suggests a steadily declining sage grouse population. Much of this decline is likely due to habitat degradation from agriculture activities and coal mines. Currently, however, there's a new threat to remaining sage grouse habitats in northeastern Wyoming. Coal-bed methane (CBM) development is continuing at an unprecedented scale and rate. BLM's Proposed Action includes drilling, completing, operating, and reclaiming almost 39,400 new CBM wells and constructing, operating and reclaiming various ancillary facilities needed to support the new wells. The Proposed Action will occur in a project area of almost 8,000,000 acres (mostly within the WGFD Sheridan Region). Drilling will continue for a minimum of ten years.

To address the above issues, research proposal grants have been submitted to several sources, including the WGFD and federal agencies. After resubmitting proposals for two years, the U.S. Department of Energy (DOE) and the Bureau of Land Management (BLM) allocated \$118,000 and \$10,000, respectively. These research dollars are intended to discover what landscape characteristics are selected by sage grouse and how the cumulative effects of CBM activities and developments impact and/or benefit sage grouse and their habitats. Possible effects include; less sagebrush, more noise and human activities, additional power-lines, better water availability, increases in water and air pollution, greater soil erosion and degradation and creation of riparian and wetland habitats.

To initiate research, meetings with Wyoming and Montana BLM personnel, University of

Montana researchers, WGFD biologists, consultants, energy companies and associations and others were attended to refine research objectives and strategies and locate supplemental funding alternatives. Research proposals were also coordinated with the statewide Sage Grouse Working Group.

WGFD habitat personnel also started their own analysis of sage grouse habitats. Using techniques outlined in the paper *Use of Remote Sensing Methods in Modeling Sage Grouse Winter Habitat* and other scientific publications; a GIS model was developed to map probable sage grouse winter ranges in the Sheridan Region. WGFD Wildlife Observation System locations of sage grouse will be used to assess the accuracy of model predictions. In addition, a GIS-based model allowed biologists to delineate and map suitable yearlong sage grouse habitats in the Sheridan Region. This expert-opinion model was based on the availability of sagebrush resources and texture analysis of different landscapes.



Coal-bed methane field in northeastern Wyoming.

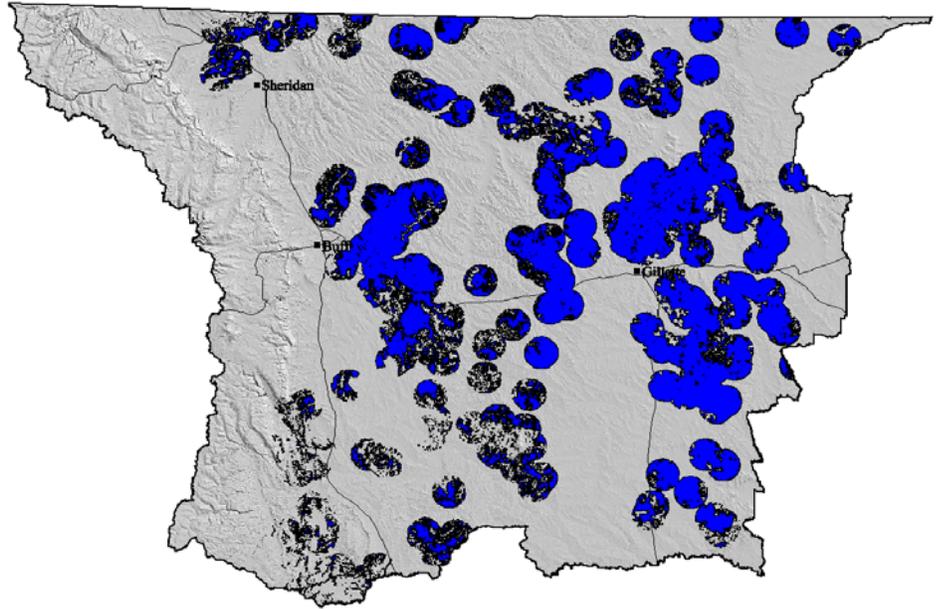


✓ The DOE and BLM provided \$128,000 to fund sage-grouse research to investigate the cumulative effects of CBM on the species and their habitats. Work will start this spring

✓ Habitat personnel developed GIS-based models that predict suitable winter and yearlong sage grouse habitats in the Sheridan Region

✓ Habitat personnel are using satellite images to see what changes are occurring on northeastern Wyoming landscapes. Images taken right after snowfall can be used to map emerging evergreen plants, like sagebrush, to track how human activities are affecting these habitats types

In order to monitor changes occurring on the landscape, a Landsat 7 satellite image was spectrally analyzed using specialized GIS software. The data making up the image were collected subsequent to a significant snowstorm event. It's anticipated that woody evergreen plants found above the snow, like conifers, sagebrush and curleaf mountain mahogany, can be more easily spectrally analyzed and mapped. For this project, biologists intend to monitor changes in sagebrush stands and densities. Sagebrush classes were partially ground-validated and classified this year.



A sage grouse predictive habitat model was developed to delineate where adequate sagebrush resources exist on suitable terrain in the WGFD Sheridan Region. The above map shows where these yearlong habitats exist within 3.1-miles of active sage grouse leks.

Powder River/Crazy Woman Creek Watershed Conservation

Plan—BLM, NRCS, landowners, CBM industry, and others were contacted to initiate efforts to conserve and enhance sage grouse habitats in the Powder and Crazy Woman watersheds. So far, landowners who manage approximately 100,000 acres have shown an interest in implementing conservation strategies. These landowners would like to explore options for managing their rangelands to benefit both livestock and wildlife, including sage grouse.

Various funding sources are being examined to provide the resources for implementing a collaborative effort between these groups. They include:

the Farm Security and Rural Investment Act of 2002 – Section 2401 Grassland Reserve Program, State Wildlife Grant for Shrub-Steep Program, WGFD Habitat Grant Program and Trust Fund, USFWS Landowner Incentive Program, USFWS Private Stewardship Grants Program, USFWS Partners for Wildlife Program, Water for Wildlife Foundation, North American Grouse Partnership and other private organizations and partnerships.



The extent and severity of leafy spurge invasion (yellow flowering plant) into sagebrush communities is being examined. As shown in the photo above, it's a very serious issue for conserving sage grouse habitats.

Other sage grouse related work includes meeting with landowners to suggest sage grouse habitat management and conservation strategies and locating and identifying grass-bank opportunities to provide management flexibility for implementing recommendations.

Shutts Flat Instream Improvement Project on the South Tongue River

Instream structures and bank revetments were inspected within the Shutts Flat improvement reach. All treatments appeared in stable condition. No improvement in riparian vegetation trend was evident. Riparian trend would best be characterized as stable or stagnant. There was no discernable increase in bank erosion. More intensive monitoring will be necessary to assess riparian trend and bank stability.

Upper Little Bighorn River Watershed Survey

Habitat surveys were completed in headwater segments of the Little Bighorn River using the Wyoming Habitat Assessment Methodology. Watershed segments assessed included Gold, Dayton Gulch, Wagon Box, and Duncum creeks and the Little Bighorn River above and a short distance below Dayton Meadows. Recording thermometers, which were programmed to record the minimum temperature during each 66-minute sampling interval and operate continuously for 364-days, were used to assess water temperatures within headwater tributaries. These tributaries are being considered for brook trout removal to facilitate Yellowstone cutthroat trout restoration. Harig and Fausch (2000) found narrow (≤ 6.6 ft bank-full width of pools), deep pool-limited (# of pools with residual depths ≥ 1 ft), and streams with mean July water temperatures below 51.8°F were less likely to support translocated greenback cutthroat trout populations. However, increasing stream width and abundance of deep pools alleviated the adverse effects of cold summer temperatures on recruitment until extreme cold began to limit fry survival (mean July temperatures $< \text{about } 45 \text{ to } 46$ °F). Temperature assessments suggested cold temperatures might limit cutthroat recruitment in two tributaries of the Little Bighorn River (Table 1). Gold Creek displayed better potential for restoration than the upper Little Bighorn River, which was a surprise because the two stream segments occur at similar elevations in adjacent sub-watersheds.

Table 1. Mean, minimum, and maximum water temperatures for two headwater tributaries of the Little Bighorn River in July 2002.

Stream	Elevation (ft)	Mean Temperature (°F)	Maximum Temperature (°F)	Minimum Temperature (°F)
Upper Little Bighorn River (n=1)	8,800	45.5	57.4	38.3
Gold Creek (n=1)	8,840	50.7	58.6	44.4

Channel assessments were completed at 300-foot reaches encompassing the temperature recording stations for the upper Little Bighorn River and Gold Creek. Residual pool depth and bankfull stream width of pools were recorded within each stream reach. These data along with probability estimates of cutthroat trout population status following the stream-scale habitat model from Harig and Fausch (2000) are presented in Table 2. The model was developed from stream-scale assessments rather than short-reach assessments. Variability in pool abundance and residual depth limit the practicality of extrapolating the bankfull width and quantity of deep pools for the larger stream segments. Hence, more extensive stream-scale assessments need to be considered for future application.

Table 2. Mean July water temperature, mean bankfull width of pools, number of deep pools, and probability estimates of cutthroat trout population status for two tributaries of the Little Bighorn River in 2002.

Stream	Mean July Water Temperature (°F)	Mean Bankfull Width of Pools (ft)	Number of Deep Pools (#)	Probability High Population (P)	Probability Low Population (P)	Probability Population Absent (P)
Upper Little Bighorn	45.5	8.5	5	.03	.26	.71
Gold Creek	50.7	10.8	1	.50	.43	.07

Literature Cited: Harig, A.L. and K. D. Fausch. 2000. *Factors influencing success of cutthroat trout translocations. Final Report to Colorado Division of Wildlife. Montrose, Colorado.*

West Weston Pond Grant Project

The BLM began constructing the three-acre reservoir via a contract last fall. The pipeline component of the project, funded by the BLM, should be completed next year. The USFS will construct the fence around the reservoir, which is expected to be completed next year. The WGFD habitat grant proposal for the project, which provided \$7,500 for the construction of the reservoir, was originally approved for funding in fiscal year 2000.

Riparian Management and Monitoring on the North and South Forks of the Tongue River

Segments of the North Tongue river were toured with Forest Service personnel and representatives from the National Interagency Riparian Team to discuss riparian management concerns.

Representatives of the team suggested constructing off-site water developments within riparian pastures to reduce bank shear by cattle, placing obstructions to divert angler traffic away from stream banks, and adopting more intensive riparian green-line and cross-section monitoring.



West Weston Pond during 2002 construction efforts.

WILDLIFE HABITAT MANAGEMENT AREAS

A major goal of the WGFD Habitat Sections is to increase or maintain wildlife habitat and associated recreation on WGFD lands. The principal objective is to provide for the long-term needs of wildlife by restoring and/or maintaining ecosystem functions and processes. WHMAs in the Sheridan Region include the Kerns, Amsden Creek, Bud Love, and Ed O. Taylor. The Sand Creek WHMA occurs in the Sheridan Aquatic Region. Specific projects and activities accomplished this year include:

- ✓ Preparing a WGFD Trust Fund project proposal to develop engineering designs for the rehabilitation of three reservoirs on the Bud Love WHMA.
- ✓ Creating a new base map of the Ed O. Taylor WHMA using new digital orthophotoquads.
- ✓ Working with USFS and WGFD to evaluate the possibility of using the Tongue Canyon Elk Pasture (part of the Amsden Creek WHMA) as a grass-bank to provide flexibility in accomplishing habitat enhancement projects on the Bighorn National Forest.
- ✓ Helping Sheridan College students map physical and biological inventories on the Amsden Creek and Ed O. Taylor WHMAs and enter the data into a GIS.
- ✓ Preparing a contract for the control of noxious vegetation on the Ed O. Taylor WHMA. Spraying occurred along the Middle Fork of the Powder River.

✓ Preparing plans and processing permits to allow prescribed burning on the Ed O. Taylor, Bud Love, and Kerns WHMAs. Although several trips were made to monitor conditions and snowmelt, the lack of suitable weather prevented the projects from occurring.

✓ Preparing a list of concerns and protection stipulations for oil and gas development on the Bud Love WHMA. An oil company wanted to lease State lands located in the core of crucial elk winter habitat. Leasing of our private lands was also discussed with the LU Ranch, who owns the other one-half of the mineral rights. The WGFD Director's Office and Governor ultimately put a stop to the lease proposal.

✓ Managing cattle grazing on the Sand Creek WHMA. Some 324 head were turned in on May

25, 2002 and removed on June 3, 2002. This amounted to about 97 animal unit months of actual use. The short duration, spring use strategy continues to show reasonable results in terms of limiting bank shear and erosion. Nevertheless, repeated spring use on an annual basis, which was originally desired as an attempt to limit annual brome grasses, might not be desirable on a continuous basis over the long run. Quantitative monitoring studies were never established, however. Trends in cheat grass abundance are not readily apparent from repeat photographs.

MISCELLANEOUS

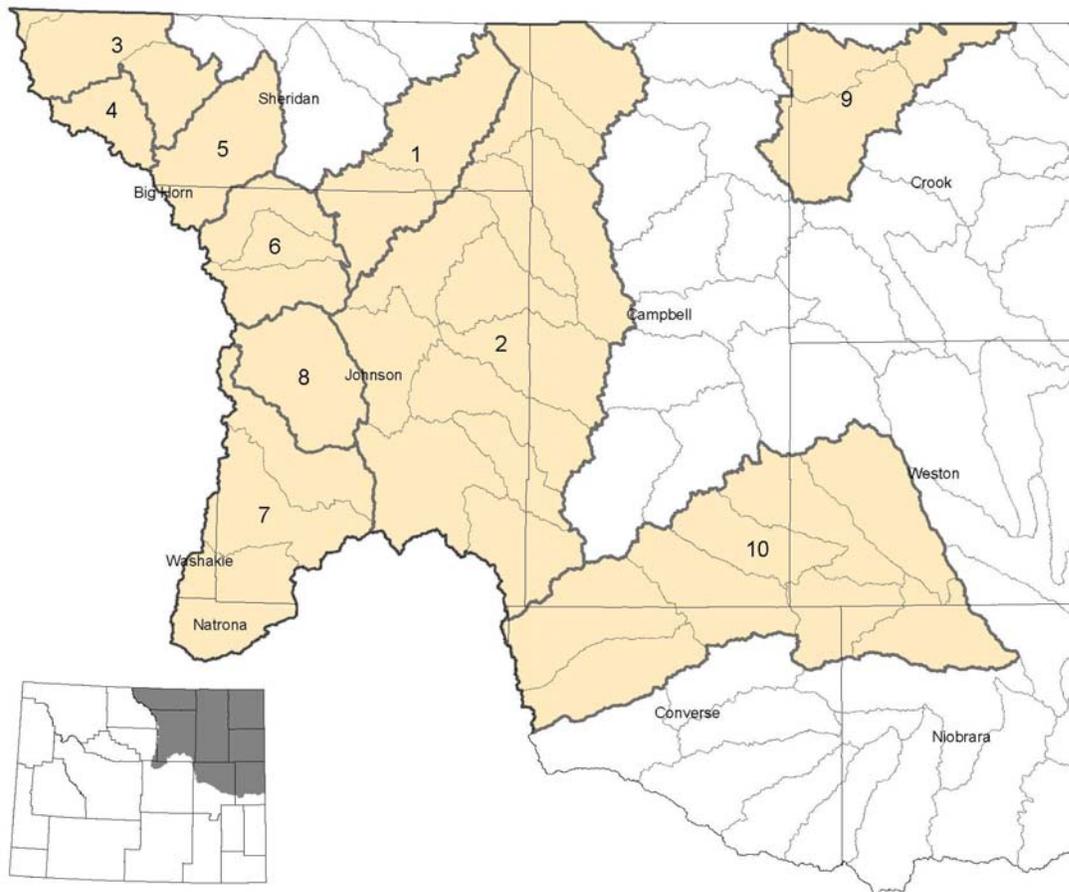
Aquatic Habitat Prioritization—Hydrologic Unit Code watershed delineations and the National Hydrography dataset were compiled for the region. In turn, these data were used to derive basin delineations that matched Sheridan Fisheries Management Crew defined management basins. The process resulted in modifications to the boundary of the Sheridan Aquatic Region that were subsequently accepted by Sheridan and Casper fisheries supervisors. Sheridan will manage and administer all of the Middle Fork Powder River collection basin and Casper will manage and administer all of the South Fork Powder River and Salt Creek collection basins. The ten regional priorities include all or portions of 33 fifth-order sub-basins. The region encompasses all or portions of 88 sub-basins.



A dozer was used to clear shrub growth along the Kerns WHMA elk fence. Follow-up control of noxious vegetation and re-sprouting shrubs was also necessary. This effort will relax concerns about prescribed burning as well as simplifying fence inspections and maintenance. One mile of additional fence line was cleared this year along the eastern boundary, which is adjacent to the X-X Ranch.



A total of 550 elk fence posts were replaced on the Kerns, Amsden, and Bud Love WHMAs this year by a private contractor.



Map of the Sheridan Aquatic Habitat Region divided into fifth-order sub-basins. Priority sub-basins are highlighted and ranked according to their priority. Counties are depicted for orientation.

Terrestrial Habitat Prioritization-- Regional biologists and game wardens identified nine priority habitats to implement the agency’s Strategic Habitat Plan. Priority areas include: high-elevation riparian and aspen communities, ponderosa pine communities used by mule deer for transitional habitats, curlleaf mountain mahogany, elk crucial winter habitats, wooded draws, sagebrush communities, Powder River breaks, and cottonwood/willow communities along the Powder River and its major tributaries.

Strategic Habitat Plan Implementation Committee

- ✓ Solicited and forwarded regional input on the training component of the plan (Aquatic).
- ✓ Commented on the information and education components of the plan (Aquatic).
- ✓ Commented on guidelines for grazing management sections of the plan (Aquatic).
- ✓ Participated in a joint terrestrial and aquatic habitat section meeting to standardize habitat prioritization efforts among regions and sections (Aquatic and Terrestrial).

Workshops and In-service Training

- ✓ Fish passage and screening tour with Bureau of Reclamation expert in Cody (Aquatic).
- ✓ Fire refresher course and pack test (Aquatic and Terrestrial).

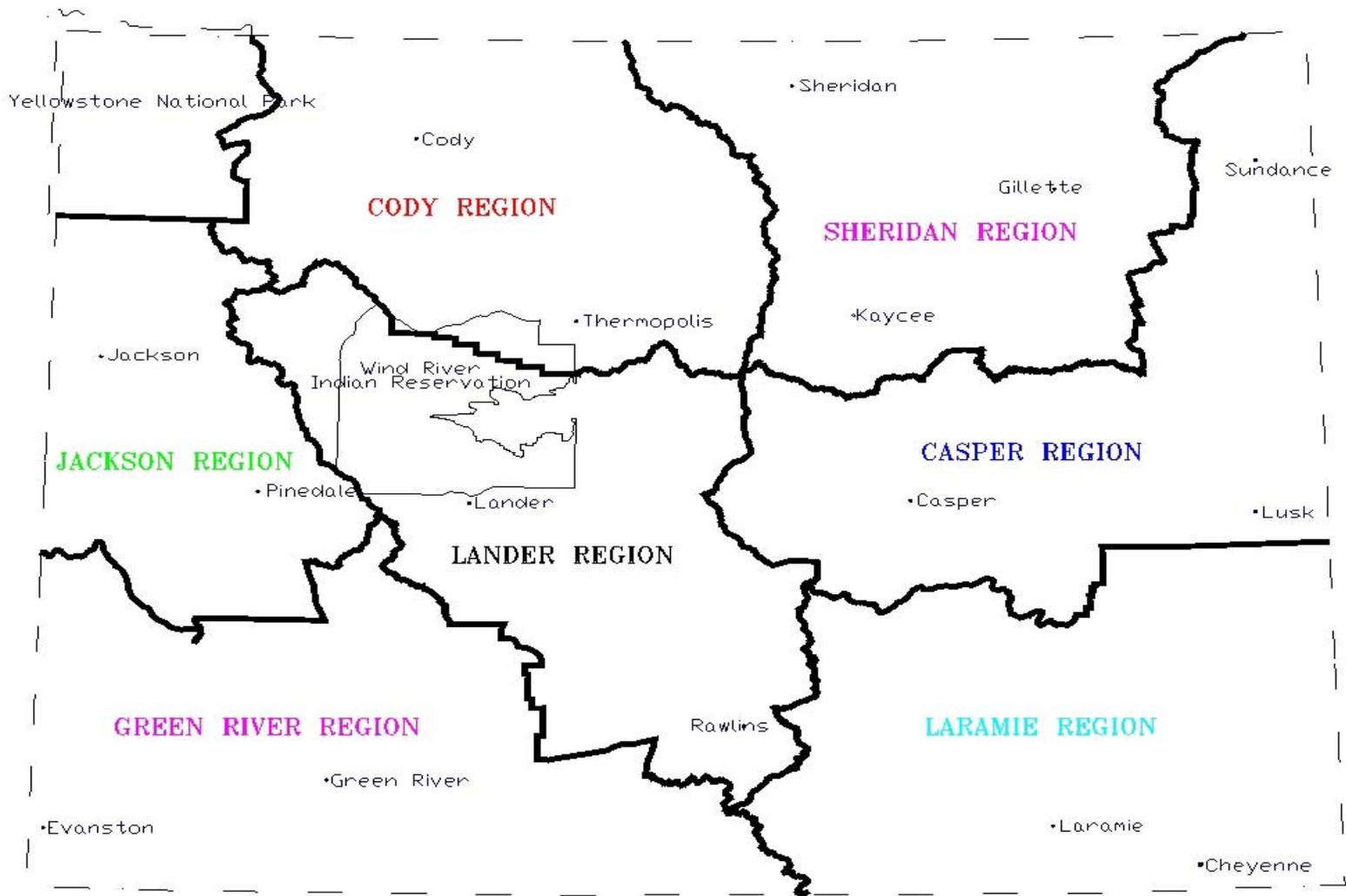
- ✓ Intermediate Fire Behavior training (Terrestrial).
- ✓ ArcView GIS Seminars (Aquatic).
- ✓ Wyoming Stock Growers Association water law seminar (Aquatic).
- ✓ Annual Aquatic Habitat Section tour (Aquatic).
- ✓ Rosgen Applied Fluvial Geomorphology course (Aquatic).
- ✓ Wyoming Section of the Society for Range Management meeting (Aquatic).
- ✓ Dr. Roy Roth seminar (Aquatic and Terrestrial).
- ✓ The Wyoming Chapter of The Wildlife Society Meeting (Terrestrial).
- ✓ Terrestrial Habitat Section Meeting (Terrestrial).
- ✓ WGFD training on remote sensing (Terrestrial).

Assistance with other Department Endeavors

- ✓ Gordon Creek population station on the Middle Fork Powder River (Aquatic).
- ✓ North Fork Clear Creek migration study above and below the new Highway 16 culvert (Aquatic).
- ✓ Hospital Gulch, Reinecke, and Ranch-A stations on Sand Creek (Aquatic).
- ✓ Sand Turn big game check station (Aquatic and Terrestrial).
- ✓ Attended TNC Bighorn Advisory Board Meeting to review conservation easements, conservation strategies, and programs. A presentation involving the potential effects of CBM on wildlife was provided to the group (Terrestrial).

Information and Education Efforts

- ✓ Provided a presentation to Sheridan HS concerning job opportunities in the WGFD (Terrestrial).
- ✓ Taught a class at Sheridan College involving habitat monitoring using advance technologies (Terrestrial).
- ✓ Lectured a UW class on habitat monitoring (Terrestrial).
- ✓ Assisted Bob Krumm with an article on the effects of CBM on wildlife for the Billings Gazette (Terrestrial).
- ✓ Worked with the Sheridan Press to prepare two articles on landscaping yards to benefit wildlife (Terrestrial).
- ✓ Prepared Wyoming Wildlife News article on the value of riparian habitats (Terrestrial).



WYOMING GAME AND FISH REGIONAL BOUNDARIES