

*2010 ANNUAL REPORT*  
*Strategic Habitat Plan*  
*Accomplishments*



Aquatic Habitat  
Terrestrial Habitat  
Habitat and Access Maintenance  
Lands Administration  
Information, Education and Publications Branches  
Wyoming Landscape Conservation Initiative

WYOMING GAME & FISH DEPARTMENT

APRIL 2011



# Wyoming Game and Fish Commission Approved 2010 Strategic Habitat Plan

## Habitat Vision

The Wyoming Game and Fish Department is the steward of all 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. The WGFD will promote a holistic approach to habitat management, integrating management and various land uses through collaborative efforts with the general public, conservation partners, private landowners and land management agencies. The WGFD will increase public awareness of the need for managing for quality wildlife habitat today to help ensure healthy and abundant wildlife populations in the future. Wyoming Game and Fish Commission lands will be managed to emphasize and maintain wildlife habitat and public access values for which they were obtained.

## Mission

Promote and maintain the availability of high quality habitat to sustain and enhance wildlife populations in the future.

## Goals

Goal 1. Conserve and manage wildlife habitats that are crucial for maintaining terrestrial and aquatic wildlife populations for the present and future.

Goal 2. Enhance, improve and manage priority wildlife habitats that have been degraded.

Goal 3. Increase wildlife-based recreation through habitat enhancements that maintain or increase productivity of wildlife.

Goal 4. Increase public awareness of wildlife habitat issues and the critical connection between healthy habitat and abundant wildlife populations.

Goal 5. Promote collaborative habitat management efforts with the general public, conservation partners, private landowners and land management agencies.

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# INTRODUCTION

Maintaining sustainable fish and wildlife populations in the face of complex and competing demands is one of the fundamental challenges facing the Wyoming Game and Fish Commission (WGFC) and the Wyoming Game and Fish Department (WGFD). Biologists, conservationists, land managers and private landowners have long recognized that habitat is one of the keys to answering the challenge. However, except for ownership and management of WGFC-held lands, the WGFC has no statutory authority for protecting, restoring or enhancing wildlife habitat. Since the management of wildlife is inseparable from the habitat that sustains it, we must work in concert with private landowners and public land managers, conservation organizations, elected officials, local, state, and federal governmental agencies and the public. These partnerships are crucial to maintaining abundant wildlife now and into the future.

The list of habitat-related issues that influence Wyoming's wildlife populations seems to grow every year. Maintaining functional, productive and connected habitats on a landscape scale in the face of energy development, drought, traditional agricultural uses and human development has been an ongoing theme. Add climate-induced changes to vegetative communities and cascading changes in suitability for resident and invasive species and the importance of achieving habitat gains or even maintaining functional conditions becomes ever more apparent.

The department has positioned itself to address habitat issues by assigning habitat-related duties to personnel in multiple Divisions and regions and developing, in 2001, its first Strategic Habitat Plan (SHP). The SHP was updated and revised and accepted by the WGFC in 2009 (see inside cover). The mission of the revised SHP is to "Promote and maintain the availability of high quality habitat to sustain and enhance wildlife populations in the future." This plan focuses on a range of landscape scales with an emphasis on the processes that underlie high quality habitat. By this perspective, it promotes approaches and priorities to conserve and enhance all wildlife species and is consistent with the parallel planning effort encompassed by the State Wildlife Action Plan.

Our goals can be simply and generally summarized as: maintaining high quality existing habitats (goal 1), addressing issues on degraded habitats (goal 2), remembering the value of local enhancements for fish and wildlife populations (goal 3), communicating effectively with the public on habitat issues (goal 4) and working effectively with myriad partners (goal 5). An important component of this SHP and department habitat efforts is the recognition of wildlife habitats that are "crucial" for wildlife under goal 1 and those habitats that have been degraded and have potential for "enhancement" under goal 2. Crucial priority areas for maintaining habitat values and enhancement priority areas for addressing habitat issues were identified when the SHP was revised in 2009.

This is the eight annual report to the commission, elected officials, governmental agencies, the public and our conservation partners since the first SHP report in 2001. The purpose of this report is to highlight the 2010 activities and SHP accomplishments of the Terrestrial Habitat, Aquatic Habitat, and Habitat and Access Maintenance programs of the WGFD as well as associated portions of the Lands Administration, Water Management, Customer Outreach and Publication Branch, Conservation Education and Information, and the Wyoming Landscape Conservation Initiative (WLCI). It is structured to reflect accomplishments and work activities as they relate to achieving SHP goals which are referenced in project titles throughout the report.

The entire 2010 SHP along with priority areas and objectives can be viewed on the WGFD website at <http://gf.state.wy.us/habitat/StrategicPlan/index.asp>. This will guide our efforts and direct funds over the next several years. For additional information please contact any of the personnel listed above. Also, feel free to share this report with anyone who may be interested in the department and Commission's habitat efforts.

# PROJECT EXPENDITURES AND ACCOMPLISHMENTS

Habitat program performance in terms of approximate statewide expenditures and on-the-ground accomplishments for calendar year 2010 are summarized in the following sections.

## A. Habitat Program Expenditures

I. Approximate WGFD trust, fish passage, and non-recurring funds (figures rounded to the nearest \$1,000) expended for on-the-ground projects primarily for implementation of SHP goals and management of WGFC managed lands during calendar year 2010 (These figures do not include personnel salaries, supplies, materials, equipment used for routine WGFD maintenance and operation functions and WGFC property tax and lease payments):

**Department Funds Expended on SHP Goals: \$ 3,540,000\***

\*In the 2009 SHP Accomplishment Report this was inadvertently shown as \$649,000. It should have been \$3,649,000.

II. Non-department funds expended implementing SHP goals in calendar year 2010 from or in collaboration with various sources including, but not limited to: a) Wyoming Wildlife and Natural Resources Trust Fund; b) USDA Farm Bill federal government funds; c) Other federal government funding programs; d) Other state and local government funding sources; e) Nongovernmental organizations; f) Wyoming Wildlife Heritage Foundation including funds through the Wyoming Governors Big Game License Coalition; g) Private landowners contribution (including in-kind); h) Corporations and businesses; and i) Private donors:

**Non-department Funds Expended on SHP Goals: \$ 30,106,000**

(A partial list of major funding partners and approximate amounts contributed by each source wherein department personnel were heavily involved with planning, on-the-ground implementation and/or oversight or verification of expenditures on the ground during 2010 is presented at the end of the introductory material).

**III. GRAND TOTAL FOR SHP GOALS: \$ 33,646,000**

(These figures do not include personnel salaries, supplies, materials, and equipment used for routine WGFD maintenance and operation functions and WGFC property taxes or lease payment expenditures).

In other words, the department was able to utilize and/or oversee funding from outside sources amounting to approximately **\$9.00** for each department dollar expended for on-the-ground fish and wildlife habitat activities. This outside funding is a critical element for implementing the SHP and conserving our wildlife resources in collaboration with the many dedicated partners throughout the State.

Overall, personnel directly involved in implementing SHP goals oversaw spending of approximately **\$7,826,000** of WGFD regular maintenance and operating funds, State Wildlife Grants (SWG) from US Fish and Wildlife Service (USFWS) and department trust fund monies. This figure includes wages, benefits, equipment operation expenses, supplies and on-the-ground improvement material expenses allocated as follows: approximately **50%** for personnel, which includes habitat inventories, monitoring, project contact oversight, project design and implementation and promoting collaborative habitat management efforts with the general public, conservation partners, private landowners and land management agencies. Without the dedication and passion of field personnel none of these habitat projects would happen. The remainder of the funding was allocated as follows: **4%** for vehicles and heavy equipment and **46%** for materials and supplies.

Personnel overseeing the WGFD Customer Outreach and Publication Branch, Conservation Education and Information Program efforts relative to directly implementing SHP goal 4 during 2010 spent approximately

12.5 % of their time on these activities totaling approximately \$116,000 of regular WGFD maintenance and operating funds. Information and education are critical for maintaining current and long-term future, social, political and financial future support for wildlife habitat program related efforts.

Lastly, personnel within the Lands Administration Branch conduct annual WGFC property rights monitoring, oversee payment of WGFC property taxes in each County and lease payments to State Office of Lands Investment and others. Approximately \$400,000 were paid to Wyoming counties in 2010 and includes taxes on all WGFC facilities and lands such as fish hatcheries, game warden stations, regional offices, elk feed grounds and wildlife habitat management areas. The department also pays annual leases fees to the Office of State Lands and Investments each year on State Lands associated with WGFC managed lands areas and public fishing areas.

**B. On-the Ground Accomplishments**

On-the-ground habitat accomplishments, collaborative habitat efforts, and information and education efforts directed toward habitat during calendar year 2010 are summarized below:

<b>Activity</b>	<b>Accomplishment</b>
Extension services to private landowners and number of contacts resulting in wildlife habitat enhancement	317 direct extension contacts resulting in 153 projects
Other (non-private landowner) project development efforts	69 projects
Technical assistance requests	454 addressed
Major Information and Education efforts (formal presentations, articles, booths, radio, television and hosting workshops)	238 habitat focused and 64 secondarily habitat focus
WGFC Managed Lands - Overseeing maintenance and land management activities	413,000 acres of WGFC lands; 36 Wildlife Management Areas; 184 Public Access Areas; 95 wetlands; 140 miles of ditch and drains; 2,000 acres farmland; 250 acres of food plots; > 1,000 miles fence; 1,100 miles of road 388 parking areas; 45 boat ramps; 25 docks; 196 outhouses; and 6,000 signs.
WGFC Managed Lands intensive livestock/forage reserve/meadow rejuvenation and grazing administered	77,755 acres on 10 areas (Red Canyon and Wick Meadows, Red Rim, Grizzly, Chain Lakes, Renner, Yellowtail, Ocean Lake, Sand Creek and Sunshine)
WGFC Managed Lands significant fence maintenance	882 miles
WGFC Managed Lands significant irrigation	3,056 acres
WGFC Managed Lands significant noxious weed control	252 acres
WGFC Managed Lands water control structures installed	8 installed
WGFC Managed Lands contract farming leases administered	1,966 acres
WGFC Managed Lands meadow mowing management	60 acres
Field cooperative research project assistance	8 projects
Conservation easements	55,772 acres enrolled as easements; 11 being actively pursued
Acquisitions	1 acquired totaling 80 acres
Hunting and Fishing Public Use Access Obtained	2 acquired on about 5 miles of stream

<b>Activity</b>	<b>Accomplishment</b>
Detailed stream assessments	6 streams totaling 24,698 ft.
Riparian habitat assessments	5 assessment on 56.5 miles of streams
Watershed stream assessments	17 assessments on 51.4 miles
Upland habitat inventories on a landscape evaluation scale	3,538,184 acres
Upland habitat inventories on an intensive evaluation scale	305,912 acres
Livestock grazing management planning and assistance	25 plans on 690,222 acres
Wildlife habitat stewardship plans	3 plans on 22,231 acres
Fish screens installed	2 installed
Stream bank enhancement	6 projects totaling 12,110 feet
Instream structures (revetments, barbs, diversions, screens, sills, jetties, etc.)	141 installed
Fish passage structures and miles of stream opened	9 installed opening 270 upstream miles for fish
Detailed stream channel project monitoring	4 stream channels on 9,440 feet
Detailed riparian management monitoring	21 sites on 2,880 feet of stream
Photo monitoring of stream segments	19 sites on 19 miles of stream
Stream habitat monitoring sites	94
Prescribed burns (uplands and CRP enhancement) mainly in aspen, conifer, wooded draw, mixed mountain shrub and sagebrush grassland communities	18,756 acres
Trees and/or shrubs planted	11,604 planted
Herbicide vegetation treatments to control noxious or invasive weeds primarily including cheatgrass, prickly pear, Russian olive and salt cedar	21,772 acres
Mowing, chopping, and Lawson aerator treatments mainly in sagebrush and grassland communities and on meadows	3,081 acres
Mechanical tree removal mainly conifer removal from aspen stands, juniper, Russian olive and salt cedar removal	5,254 acres
Upland grass, forb and food plot seeding	3,209 acres
Rangeland Fertilization	600 acres
Riparian habitat protection, enhancement, and management	12 projects totaling 1,027 acres
BLM RMP or USFS Cooperator Status	5 major planning efforts
Beaver transplanted for riparian habitat improvement	27
Fish tracking or entrainment investigations	6 projects
Water wells drilled	6
Water guzzlers or water tanks installed	30
Water pipelines installed	62,432 feet
Spring developments	4
Water well converted to solar pumps	2
Fences installed to manage treatments, facilitate livestock management or modified to address wildlife movements	90.8 miles
Wetland development or major renovations	10 projects totaling 102 acres
USDA Farm Bill Program Contract Involvement	435 program contracts
Number of Funding Sources/Contracts/Grants Administered	140

<b>Activity</b>	<b>Accomplishment</b>
Funding Applications Prepared for Other Entities	25
Vegetation/Habitat treatment Monitoring Sites	122 sites
WGFC property right monitoring	125,000 acres
Unique items included aspen delivery for beaver dams and food source, forage reserve grazing use to rest treated areas, irrigation drain photo assessments, grazing use exchanges, buried irrigation pipeline, electric fence for livestock grazing, major dike construction and deer highway underpasses.	13 items

We believe habitat is one of the keys to maintaining wild and healthy populations of aquatic and terrestrial wildlife. Without the support and partnerships of private landowners, public land managers, conservation groups and the public these habitat management and enhancement projects would not be possible. We greatly appreciate your assistance and support and look forward to working with you to ‘Conserve Wildlife and Serve People’ in the years ahead.

For additional information please contact any of the personnel listed above. Also, feel free to share this report with anyone who may be interested in the department and Commission’s habitat efforts.

The report can also be viewed on the WGFD website at: <http://gf.state.wy.us/habitat/AnnualRpts/index.asp>.

## **A Huge Thank You**

**The following is a partial list of major funding partners and approximate amounts that the department received and/or that department personnel were heavily involved with in the oversight or verification of expenditures during 2010. This is not a complete list, nor does it reflect all partner contributions and we apologize for anyone who may have been inadvertently missed.**

<b>Funding Partner</b>	<b>Approximate Amount for 2010 (rounded to nearest \$100)</b>
Federal USDA Farm Bill Program Funds (NRCS and FSA)	\$ 9,385,000
Pinedale Anticline Project Office (BLM)	\$ 6,046,000
Jonah Interagency Office (BLM)	\$ 5,000,000
Wyoming Wildlife and Natural Resources Trust Board	\$ 4,592,200
National Fish and Wildlife Federation	\$ 1,098,500
US Fish and Wildlife Service - Landowner Incentive Program	\$ 973,500
Private Landowners	\$ 757,500
Doris Duke Charitable Foundation	\$ 500,000
Wyoming Landscape Conservation Initiative	\$ 250,000
Wildlife Heritage Foundation of Wyoming Grants including Wyoming Governor’s Big Game Coalition Funds	\$ 218,800
Bureau of Land Management	\$ 197,200
BP Amoco	\$ 116,000
Private Donors and Foundations	\$ 97,000
Rocky Mountain Elk Foundation	\$ 89,000
Bureau of Reclamation	\$ 77,800

<b>Funding Partner</b>	<b>Approximate Amount for 2010 (rounded to nearest \$100)</b>
Ted Turner Foundation	\$ 75,000
Trout Unlimited	\$ 63,100
Wyoming DEQ 319 Funds from EPA	\$ 62,100
Hot Springs County Weed and Pest District	\$ 56,800
Washakie County Weed and Pest District	\$ 42,200
Wyoming Water Development Commission	\$ 37,800
Mule Deer Foundation Including Chapters	\$ 33,100
Pheasants Forever Including Chapters	\$ 29,200
Pesticide Use Registration Fee	\$ 28,000
National Wild Turkey Federation	\$ 27,000
Bighorn County Weed and Pest District	\$ 25,100
City of Laramie	\$ 25,000
National Park Service	\$ 20,000
Teton County Conservation District	\$ 18,400
US Fish and Wildlife Service – Private Lands Program	\$ 18,100
The Nature Conservancy	\$ 16,200
Ducks Unlimited	\$ 16,000
Wyoming Governor – Sensitive Species Fund	\$ 15,800
US Forest Service	\$ 13,700
Laramie Rivers Conservation District	\$ 10,000
El Paso Foundation	\$ 10,000
Albany County	\$ 10,000
Park County Weed and Pest District	\$ 8,400
Rocky Mountain Bird Observatory	\$ 6,000
Bureau of Indian Affairs	\$ 5,000
Wyoming Flycasters	\$ 5,000
Wyoming Wild Sheep Foundation	\$ 5,000
Laramie Economic Development Corporation	\$ 5,000
Encana	\$ 4,000
Platte County Resource District	\$ 4,000
Bighorn County Road and Bridge	\$ 3,000
Devon Energy	\$ 2,500
Shoshone Conservation District	\$ 2,300
Wyoming Department of Transportation	\$ 1,800
Big Horn County Conservation District	\$ 800
Wyoming Wildlife Federation	\$ 500
South Dakota Game, Fish and Parks	\$ 300
<b>Grand Total</b>	<b>\$30,105,400</b>

# STATEWIDE

## TERRESTRIAL HABITAT PROGRAM

In 2010, this program consisted of 8 regional terrestrial habitat biologists (THBs) 4 habitat extension biologist (HEBs) working in Natural Resources Conservation Services (NRCS) District Offices, the program manager, assistant manager and administrative assistant.

Implementation of SHP goals and objectives are planned and incorporated into individual annual work schedules and performance goals. The SHP contains a broad umbrella of habitat management, maintenance and improvement actions for the entire department. It also directly relates to the department and Commission five year strategic plan.

During calendar year 2010, section personnel were heavily involved with planning, on-the-ground implementation and/or oversight or verification of expenditures on approximately 130 projects involving WGFD trust funds. Numerous partners were instrumental including Wyoming Wildlife Natural Resource Trust (WWNRT), NRCS, Farm Service Agency (FSA), numerous NGOs, local, county, state and federal agencies, conservation districts, weed and pest districts and private landowners. These habitat enhancements amounted to over \$11 million in total on-the-ground expenditures. The various partners and their contributions are highlighted in the regional sections of this report. Additional SHP implementation actions included habitat protection, inventory and assessment work, monitoring project function and habitat response, habitat education efforts, training and adjusting activities to address habitat related opportunities and/or needs that arise during the year. Lastly, Section personnel spend a tremendous amount of time planning, coordinating and developing funding applications for future habitat related actions and activities.

On a statewide basis, THB personnel coordinated efforts with other Wildlife Division personnel to address habitat portions of the season setting meetings. They also conducted, coordinated with and collated information collected by Wildlife Division personnel from over 200 established annual vegetation production and utilization transects. Another important task is collection of vegetation and habitat monitoring information on over 110 vegetation monitoring transects associated with past habitat enhancements. HEB's attended area Conservation District and NRCS meetings to promote wildlife habitat and USDA Farm Bill programs. Personnel also attend coordination meetings with federal land management agencies relative to wildlife habitat enhancement projects and larger federal projects that may affect wildlife habitat. They provided assistance at hunter check stations to collect tissues for chronic wasting disease analysis and other biological information from harvested animals and participated in sage-grouse and sharp-tailed grouse lek surveys. Most section personnel also serve on one or more department species working groups (moose, bighorn sheep, sage grouse, pronghorn and mule deer) and are routinely tasked to serve on various committees to address an issue or need with habitat implications.

Finally, in 2010, the department emphasized identifying and reducing obstacles to getting habitat enhancements on-the-shelf and ready for future implementation. In this spirit, funds were allocated to the Section for developing three projects: Star Valley Front to address aspen and associated vegetation community enhancements; South Pass Aspen to address aspen and willow enhancements; and Wetland Development engineering plans to create wetland habitat on private lands in SE Wyoming. Coordination with partners, grantees and potential contractors occurred so that these habitat efforts can be initiated in future years.

## INFORMATION, EDUCATION AND PUBLICATIONS BRANCHES

Goal 4 - The mission and purpose of Wyoming Wildlife magazine is the same today as it was in 1937 when Governor Leslie Miller offered this definition: "It was deemed advisable to issue from the department each month a bulletin containing material relating to department activities and wildlife and correlated activities of interest to the people of the state." Over the years, variations of the same mission and purpose were modified or expanded in the department's annual reports. Today, the mission of the magazine remains what it was for more than seventy years: to increase support for wildlife conservation in Wyoming.

Wyoming Wildlife News replaced a number of newsletters that covered various topics relating to wildlife and conservation. The mission of the News is to provide news and related articles about hunting, fishing, trapping and also increase support for wildlife conservation in Wyoming.

HABITAT RELATED ARTICLES (BY TITLE) AND AUTHORS CAN BE FOUND IN THE INDEX OF THE DECEMBER 2010 WYOMING WILDLIFE MAGAZINE.

### Habitat-related Articles - Wyoming Wildlife Magazine

- Carcajou
- Helping them all: Wyoming's SWAP
- Jeepers! Creepers!
- DOT diverts mule deer traffic
- USFWS won't list black-tailed prairie dog
- Another hundred million
- Blizzard!
- Snowshoe
- Forest survey shows losses to beetles
- Deer need habitat, not handouts
- Exotic mussels haven't invaded - yet
- The tundra connection
- The world on its head
- Schwabacher beavers
- Snake River cutthroats
- LaBarge landowner helps deer
- Drawing the line
- Water for waterfowl
- Chukar summer
- Research improves feeding strategies
- Leaves of grass
- Keeping their cool
- Jackson wetland improvements
- Russian olive
- Eating on the fly
- Sagebrush Huns
- Plants behaving badly
- Fish hawk
- Biologists help cutthroats
- Rocket bird
- Sand Pike
- Whitebark pine nut crop poor
- Survivors
- Golden
- Hunting for answers
- Commission policy on wind energy
- The first quarry
- The Lewis bird
- Wired
- Gunnison's sage grouse listing
- Wyoming Mule Deer Initiative

### Habitat-related Articles - Wyoming Wildlife News

#### *TITLE/ISSUE*

- "Invasive grass targeted in habitat project" - March/April
- "Fisheries biologists going native in Western Wyoming" - May/June
- "Healthy habitat supports robust trout population on Snake River - May/June
- "WGFD seeks comments on Wyoming's aquatic invasive species draft management plan" - July/August
- "Public access increases for 2010 hunting season" - Sept/Oct
- "Sportsmen weigh in on mule deer management" - Sept/Oct

- “New addition to Springer WHMA to provide more sportsman opportunity” - Sept/Oct
- “Sage grouse hunting amid concerns for the species” - Sept/Oct
- “Bump-Sullivan managed goose hunt open for business again”- Sept/Oct
- “Take advantage of walk-in area access during dove season” - Sept/Oct
- “Camping sites improved at Kerns WHMA” - Nov/Dec
- “Know the rules when hunting on state trust lands” - Nov/Dec

### **Habitat-related Articles - News Releases**

#### *TITLE/DATE*

- Feeding Deer - Bad Idea - January
- Underpasses Working Well for Migrating Deer - February
- Wildlife Faring Well This Winter - February
- Diamond H Ranch Conservation Easement - March
- Improvements Ongoing at Yellowtail WHMA - March
- Flushing Flow Aid North Platte River Trout - March
- Collecting Shed Antlers Prohibited . . . - April
- Volunteers Needed for Deer Mortality Surveys - April
- Game and Fish Implements new Elk Feeding Strategies - April
- Steve Kilpatrick Honored by University of Nebraska - June
- Potential Impacts of AIS to WY Waters - June
- First Bypass on Clear Creek Operational - June
- G&F Commission Approves Amendment to Wind Energy Recommendations - September
- Fewer Whitebark Pinecones Could Mean Increase Bear Conflicts This Fall - September
- More Water This Year Should Help Waterfowl Hunting - October
- G&F Biologist Honored by Conservation District - November
- Governor’s Big Game Task Force Taking Project Apps. - December
- Do Not Feed the Deer - December

The mission of the regional information and education specialists is to support the department and division missions by working cooperatively with department personnel to increase understanding and support for Wyoming’s wildlife resources and the department. The section provides media outreach and wildlife conservation education programs for students, teachers, and other citizens of Wyoming. There are seven positions within this section; however, throughout much of this past year, only six positions were filled and one position was vacated mid-year. The positions are stationed in WGF D regional offices around the state. Working closely with their respective aquatic and terrestrial habitat biologists, each specialist maintains and posts habitat related information under the “Habitat Counts” tab in the “Regional News” pages on the department’s website.

They also work closely with the Information and Publications personnel preparing information and programs for Wyoming Wildlife, Wyoming Wildlife News and other news release information. This section along with Cheyenne branch personnel produce news releases for local papers, radio and television stations. They conduct conservation education workshops and make numerous presentations to youth groups, classroom, civic and sportsmen’s groups.

On a statewide basis, the regional information and education specialists were involved in 134 efforts directed towards goal 4 and another 64 efforts with habitat as a component of the message. These efforts are further summarized on a regional basis as follows: 1) Casper – 14 habitat and 9 indirect habitat; 2) Cody – 22 habitat and 5 indirect habitat; 3) Green River – 34 habitat and 6 indirect habitat; 4) Jackson and Pinedale – 35 habitat and 19 indirect habitat; 5) Sheridan – 24 habitat and 21 indirect habitat and 6) Laramie – 5 direct habitat and 4 indirect habitat.

## **Examples Of 2010 Habitat Related Information And Education Efforts**

- January - Conducted two, 30-minute, live radio programs for KVOW/KTAK out of Riverton on Ocean Lake Christmas Trees for fish habitat, don't feed deer and how a person can protect/provide quality mule deer habitat, Burbot study in Lander Region and what the native burbot habitat requirements are.
- January - Coordinated on Nature Mapping and provided an interview and information for feature story in the Jackson Hole News & Guide about habitat fragmentation and the value of the program in county land use planning.
- February - Partnered with Murie Audubon for a "Walk and Talk" program to teach 45 elementary students about wildlife habitat needs.
- February - Field trip, instructed 37 junior/senior Powell High Students on the importance of habitat and winter range for South Fork Shoshone River valley big horn sheep and hunting opportunities.
- February - Gave habitat/wildlife conflict prevention presentations to Highland Park Elementary (54 students), Clearmont Elementary (46 students), Gillette Twin Spruce High Freshman (365 students - 5 classes), and Tongue River Elementary Winter Outdoor Lab in the Bighorns (52 students).
- February - Coordinated with UW researchers, GTNP and WGFD personnel on Teton bighorn sheep study and importance of habitat and migration corridors for a story to appear in Powder magazine and the JH News & Guide.
- March - Gave a presentation to 46 members of the Casper Kiwanis Club on habitat loss.
- March - Conducted an Early Childhood Project WILD/Project Learning Tree Workshop in Rawlins for 25 child care providers and teachers with 15 activities all beginning with the basic need for habitat for any and all wildlife.
- March - Completed 10 new interpretive signs on fish habitat, migratory bird habitat, illegal ling introduction and its effects on local fish habitats and invasive plant species (Russian olive and saltbush) potentially destroying the Killdeer Wetlands.
- April - Participated in watershed day activities at Meeteetse elementary by setting up the watershed demonstration trailer. The activities focused on erosion and watershed management.
- April - Two live spots for Riverton radio about impacts to sage grouse habitat from wind energy, habitat improvement work done in the N. Fork Popo Agie and Wind River for trout and sauger habitat improvement project in Bighorn River Drainage.
- May - Taught Wildlife Conservation to 22 students of all ages and highlighted local habitat improvement projects.
- May - Taught 15 elementary students from Baggs Elementary School about the importance of wetlands and how wetlands function, using activities from NatureScope and Project WILD.
- May - Taught 65 people about the importance of migratory birds and the troubles they face (limiting factors) en migrating each year, including loss or alteration of habitat. Used the Bird Hurdles Obstacle Course from Flying WILD in a snowstorm and people still "flew" the course and had fun. Part of the annual Bear River Festival.
- May - Gave watershed presentations to 130 students in Buffalo and more than 300 in Gillette utilizing the watershed education trailer.
- May - Provided information and photos to RMEF on brucellosis and Gros Ventre prescribed burn for Bugle magazine article.
- August - Distributed a news release on the Dead Indian Creek Yellowstone cutthroat trout restoration project.
- August - Taught a session on wildlife habitat assessment at the department's Youth Conservation Camp.
- August - Assisted in conducting a series four of public meetings on the Wyoming Range Mule Deer Initiative. Habitat was a primary focus of the meetings.
- September - Two live radio programs for Riverton Radio about why the fish habitat and fishing has improved in Torrey and Trail Lakes, reported healthy populations of Yellowstone Cutthroat Trout in the East Fork of the Wind River, radio tagging efforts in fish, and Trout Unlimited and Dubois Elementary School's "Adopt a Fish" Program.

- September - Coordinated with the Wildlife Conservation Society on a joint news release for pronghorn research being initiated on habitat needs and migration corridors, follow-up interview w/AP writer.
- October - Participated in the Wyoming Youth Congress event sponsored by the Teton Science School (TSS) in Jackson and assisted local fish managers with an electro-fishing demonstration and habitat discussion to students at the South Park WHMA.
- November - Distributed a news release on the importance of habitat.
- November - Wrote an article on the Bolton Creek habitat project for Wyoming Wildlife News
- December - Assisted with mule deer collaring project-photographed and expose featured full page in the Rock Spring Rocket Miner; able to convey habitat issues relating to the mule deer herd in the Bridger Valley.
- December - Provided news release and media interviews on wildlife in developed areas based on lack of available forage and how residents can reduce conflicts.

## **HABITAT AND ACCESS MAINTENANCE BRANCH**

The habitat and access maintenance program in 2010 consisted of 6 regional supervisors, 1 statewide supervisor, 7 crew leaders, 6 specialists, the branch manager, the assistant branch manager and 5 temporary positions stationed across the state.

The branch is responsible for the management of department managed lands that include 36 Wildlife Habitat Management Areas (WHMAs), 184 Public Access areas and 22 feedgrounds. In addition, there is a statewide crew which assists with habitat development projects. The WHMAs are managed for specific wildlife habitat purposes and are included within the SHP. The branch incorporates specific objectives and strategies from the SHP into regional work schedules.

As part of the SHP, the branch manages and maintains approximately 413,000 acres, 95 wetlands, 140 miles of ditches/drains, 3,500 acres of irrigated meadows, 2,000 acres of farmland, 250 acres of food plots and over 1,000 miles of fence for wildlife habitat purposes. To assist hunters and fisherman, another 1,100 miles of road, 388 parking areas, 45 boat ramps, 25 docks, 196 outhouses and over 6,000 signs are maintained.

During 2010, the branch also worked on other habitat development projects including sagebrush rejuvenation, guzzler developments, meadow improvements, wetland developments and riparian projects. This included the involvement and administration of 9 projects involving WGFDT Trust Fund and 7 projects involving the WWNRT. These projects will provide almost \$735,000 on-the-ground project expenditures. The habitat development projects are highlighted in the regional sections of this report.

## **LANDS ADMINISTRATION BRANCH**

The Lands Administration Branch functioned throughout 2010 with two permanent employees and included a change in supervision. During the year, Lands Administration personnel worked on addressing Commission objectives involving property rights functions for habitat conservation, permanent public access, and property rights monitoring. During the past year, branch personnel worked on a variety of habitat related projects around the state pursuant to the goals and objectives of department regulations, Commission policies, the SHP, and other administrative directives.

### **Ocean Lake Acquisition (Goal 1) - Dave Hunt**

Lands Administration secured 80 acres adjacent to the Ocean Lake WHMA. The property has been incorporated into the WHMA and is being managed for wildlife and public hunting and fishing opportunities. This project is consistent with the department's acquisition priority for fee title acquisition of land located in proximity to existing Commission-owned land.

## **N**orth Platte River – Miles Land and Livestock (Goal 1) - Kerry Olson

Lands Administration had been working with The Conservation Fund (TCF) on the acquisition of 380 acres of private lands along the North Platte River (Figure 1). Negotiations began several years ago and initially involved acquisition of a public fishing easement by the Commission. TCF has purchased the property with financial assistance from the Commission and will eventually turn the property over to the BLM.



Figure 1. North Platte River - Miles Property.

## **S**ommers and Grindstone Conservation and Public Access Easements (Goal 1) - Kerry Olson and WLCI

The department helped to facilitate the acquisition of conservation easements on approximately 19,000 acres of high value wildlife habitat (Figure 2). The conservation easements are now held by the Wyoming Stock Growers Agricultural Land Trust. The project also included transfer of some mineral rights and a permanent public fishing easement along the Green River to the department. Lands Administration assisted in grant acquisitions and in developing various documents and reports for the project. Several non-traditional funding partners were recruited to participate including the Doris Duke Foundation, the National Fish and Wildlife Foundation, the Ted Turner Foundation, and others.



Figure 2. Sommers – Grindstone Conservation and Fishing Easements.

## **C**onservation Easements (Goal 1) - Kerry Olson and Butch Parks

While no conservation easements were finalized during the year, Lands Administration currently has seven projects in various stages of completion. Five current projects involve greater sage-grouse core areas, and three involve private lands in the Black Hills of northeastern Wyoming. Regional personnel continue to provide support and assistance with conservation easement projects. Details of all completed projects will be included in the next annual report.

Lands Administration also provided information and met with landowners for several conservation easement projects throughout the state. For example, Lands Administration attended meetings with local personnel, landowners and federal agencies for easement projects in the Smiths Fork Basin Conservation Easement and Public Access Opportunities:

- Regional personnel completed prescreening process potential conservation easement and access opportunities along the Smiths Fork River at the Hobble Creek confluence and near Cokeville on lower Pine Creek. Three landowners have expressed a strong interest in exploring these opportunities. Habitat and Access Evaluation Process (HAEP) forms were drafted and circulated to other regional personnel for their properties. Prescreening evaluations were also initiated for several other landowners in the Lower Bear River basin. Habitat for numerous species will be permanently protected and important public access will be secured if these opportunities come to fruition.

Other meetings were attended with private non-profit land trust organizations and other partners for projects in the Sheridan, Casper and Cody areas. Lands personnel remain committed to communicating conservation easement topics and opportunities with landowners, local personnel, and others.

Department efforts in acquiring high quality conservation easements continue to be aided by a supportive Commission and department administration. Landowner contacts by department biologists continue to assist easement efforts at local levels. Landowner confidence in the department's easement program also seems to be growing. In addition, the ability of the Commission to acquire conservation easements continues to be supported by the Farm and Ranch Lands Protection Program administered by the NRCS, the WWNRT, and other partners.

### **Other Lands Projects (Goal 1) - Kerry Olson and Butch Parks**

Lands Administration completed various other projects during the year including acquisition of two warden stations (Cody and Pinedale), disposal of the old Pinedale warden station, highway right of way coordination (North Platte River Hartnett, Thorne Williams Wildlife Research Center), assistance with the Bitter Creek fish by-pass, exchange of easement rights at the Windmill Public Fishing Area, the Boulder Rearing facility weather station, and others.

## **WYOMING LANDSCAPE CONSERVATION INITIATIVE**

In 2010, the Wyoming Landscape Conservation Initiative (WLCI), working with partners, was instrumental in the continuing development of the WLCI, a long-term science based effort to assess and enhance aquatic and terrestrial habitats at a landscape scale in Southwest Wyoming, while facilitating responsible development through local collaboration and partnerships. Numerous coordination meetings, field trips, and work sessions occurred (over 16 Local Project Development Team (LPDT) and Executive Committee meetings alone) to help develop projects and identify LPDT priorities. The WLCI coordination team members met with NGOs, permittees, landowners, other agencies and entities to coordinate WLCI activities. Beginning in late 2009, WLCI started an effort to address a Conservation Action Plan (CAP) that will incorporate the LPDTs areas of concern and the issues involved with those areas. All of the LPDTs have identified large areas with priorities they want to address (Figure 3). The WLCI Coordination Team is reviewing those areas and discussing them with local managers to reduce the size to reflect what could truly be accomplished within five years. The CAP should serve as a guide to all involved with WLCI to address ecological functions throughout the WLCI area. This is a shift away from shelf ready projects to projects that are more encompassing and occur at a landscape level. The WLCI helped fund 31 projects in 2010; a number of these projects are multi-year projects that began prior to 2010. The WLCI-USFWS Partners Projects funded eight projects in 2010.

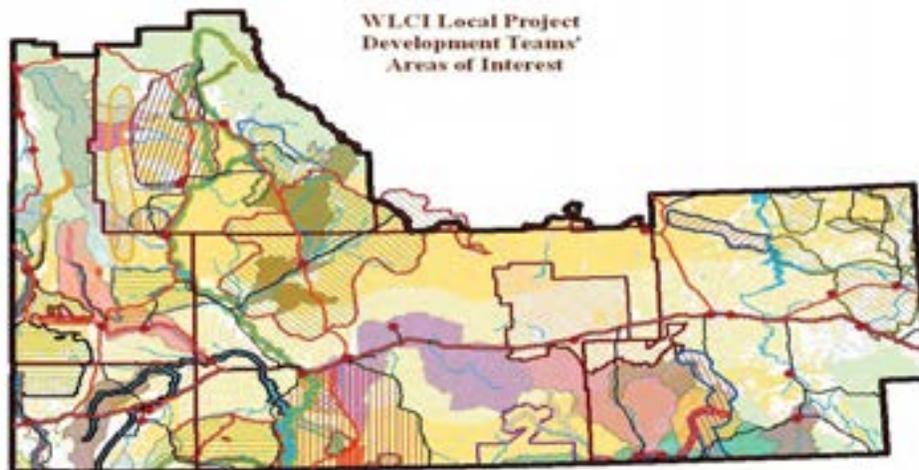
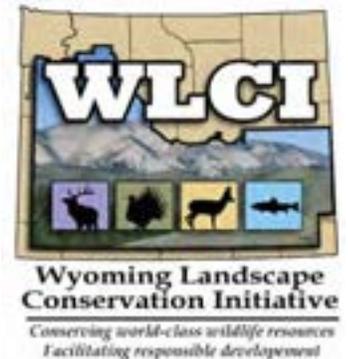


Figure 3. WLCI Local Project Development Teams' Areas of Interest.

Projects within a specific WGFD region are described in the regional sections of this report. One WLCI area-wide project continued in 2010:

### **Wyoming Native Plant Development (Goal 2)**

This project is intended to provide a source of native seed and plant material and to develop and maintain a supply of native plants seed, vegetative propagules, and native seed reserves to assist in providing native plant material and seed for restoration projects. Several sagebrush obligates and key habitat including crucial habitat for deer, elk, pronghorn antelope, greater sage-grouse and a number of non-game, sagebrush obligate species would benefit from this project. Seven different collections were made during FY10 collection season. A storage shed to temporarily house the collected seeds was built as part of the project.

## **AQUATIC HABITAT PROGRAM**

The aquatic habitat program in 2010 consisted of 6 regional aquatic habitat biologists (AHABs), a statewide fish passage coordinator, aquatic habitat supervisor, aquatic habitat program manager, water management supervisor and the water management instream flow biologist for a total of 11 permanent full time employees. Two At Will Contract Employees (AWEC's) worked for the section: one in Cody assisted the fish passage coordinator primarily collecting and compiling information about passage obstructions across the state; and one in Kemmerer worked on Bear River drainage projects. The Kemmerer AWEC left in November and that position is currently advertised to be filled in the Casper region. Finally, two seasonal biologist technicians assisted in the Laramie and Jackson regions. The flexibility and work assistance provided by hiring seasonal and AWEC employees continues to be a tremendous help in getting habitat benefits on the ground.

The Casper aquatic habitat biologist position was lost to the agency during the state government hiring freeze in 2009 and 2010. The Cody AHAB position was reclassified into a fish passage coordinator in recognition of the importance of this work statewide. The program is now essentially down 2 positions with no permanent AHAB personnel in Casper or Cody. Without an ability to implement habitat projects in the Casper and Cody regions the fishery resources in those regions will suffer at the same time stretching fish management personnel as they take on additional duties.

During calendar year 2010, the aquatic habitat section was involved in 50 projects involving funding from the Game and Fish trust fund, dedicated G&F fish passage funds, the WWNRT, the USFWS, and Landowner Incentive Program (LIP) funding. These projects entail over \$6.2 million in estimated total project cost and nearly \$2 million in department funding. The WWNRT are partners on 14 of those projects and many are highlighted in the regional sections of this report. In addition, regional AHABs worked on SHP actions not directly related to funded projects. These actions included habitat protection, inventory and assessment work, monitoring project function and habitat response, and habitat education efforts and training. Section personnel spend a tremendous amount of time planning, coordinating and developing project funding applications throughout the year for future habitat related actions and activities.

In 2009, the department emphasized identifying and reducing obstacles to getting projects on the shelf and implemented. In this spirit, funds were allocated to Fish Division for developing two projects: Encampment River below Riverside channel restoration and Green River corridor Russian olive mapping and project development. Encampment River habitat inventory, assessment, and channel restoration design work was conducted in 2010 and channel restoration work is beginning in 2011. Also in 2010, the Teton Science Center conducted the Russian olive mapping and control projects were identified for further funding development and implementation in 2011. Both projects are described in more detail in the regional section of this report.

Again in 2010 funds were targeted toward two new planning efforts to develop habitat projects. This time, projects were identified on the Middle Popo Agie River through Lander and the Green River at Seedskaadee National

Refuge. Coordination with partners, grantees and potential contractors occurred so that these project development efforts can begin in 2011. It is anticipated that projects with our partners will be identified and developed in late 2011.

In addition to the fish passage efforts highlighted here in the statewide section of this report, other cooperative projects continued. Trout Unlimited received grant payments for projects involving the Franc's Fork Creek Road Crossing, Twin Creek BQ Diversion, and the Boulder Creek Ditch Screen. A new funding grant was signed with Trout Unlimited for the White's Water upstream passage and screening project on the Smiths Fork and a grant was provided to the Sheridan County Conservation District to continue efforts on several ongoing passage projects. Several fish passage designs were reviewed for department and non-department personnel. One of the larger projects scheduled for 2011 is the Upper Sunshine Diversion Dam.

Finally, the Aquatic Habitat Section used its annual meeting in fall 2010 as an opportunity to conduct a detailed stream channel assessment on the property of the YMCA Camp on Middle Clear Creek in the Sheridan Region. While training by reviewing the important field and data analysis techniques necessary for a full Rosgen channel assessment, the group developed information to help the property owner manage the stream to its full fishery habitat potential.

#### **I**nstream Flow Fishing Articles (Goal 4) - Tom Annear

Four educational articles were written that appeared in the department's Wildlife News publication. These articles were intended to direct readers to instream flow segments, make them aware of department actions in the instream flow program, and encourage support for instream flow water rights in general. Articles focused on Pine Creek, Jakeys Fork, Smiths Fork, and Coantag Creek.

#### **I**nstream Flow Water Rights (Goal 1) - Mike Robertson and Tom Annear

No applications for instream flow water rights were filed, though 4 filings will be made in early 2011 for streams in the Snake River drainage. Three new instream flow studies were initiated that focused on native Snake River cutthroat trout habitat in the Hoback and Little Greys river drainages.

Four new instream flow studies were conducted on streams within the WGFD Grizzly WHMA (Figure 4). Filings for those streams will occur in late 2011. The length of stream segments has not yet been determined and filings will be prepared in late 2011. All of the targeted stream miles were located on public lands owned by either the WGFC or USFS. The length of stream segments has not yet been determined.

Personnel supervised aquatic impact assessment and mitigation development studies that were done by a contractor hired by the Wyoming Water Development Commission on a proposed dam on West Battle Creek near Baggs. Field studies were completed in the 2010 field season and data analysis and recommendations will be completed in 2011.



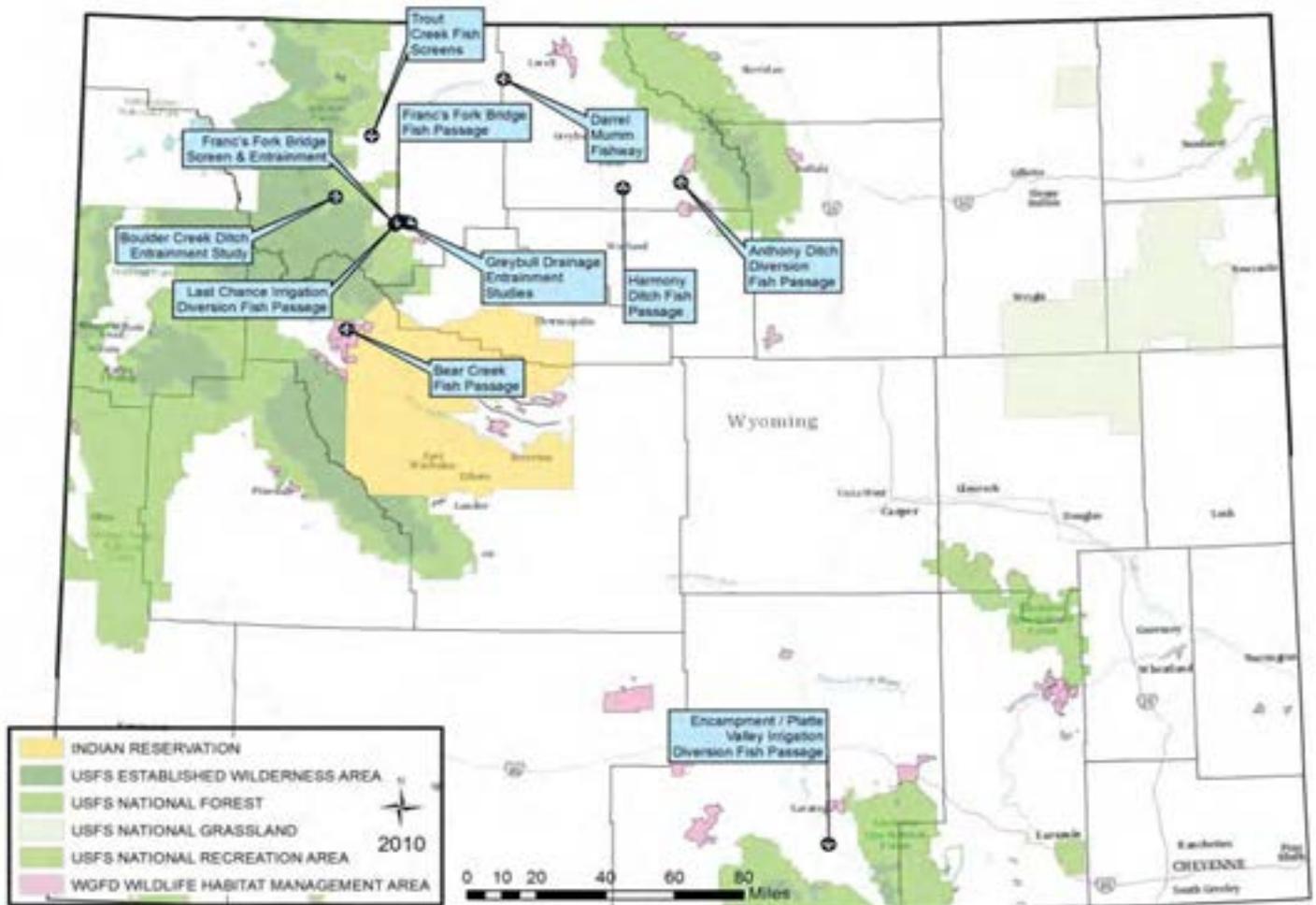
Figure 4. Instream flow studies were conducted on four streams flowing through the WGFD Grizzly Wildlife Habitat Management Area including Little Muddy Creek shown here. Field studies require collecting flow data at several different flow levels.

## Fremont Lake Water Management (Goal 1) - Tom Annear

Actions were taken to facilitate acquisition and change of use of a storage right in Fremont Lake for using the water to maintain or improve instream flow and fisheries in Pine Creek. The Board of Control considered this proposed action at meetings in August and November and held a public hearing in October. All input and considerations were favorable to this action.

## Statewide Fish Passage Habitat Program 2010

In 2010 several projects were initiated and developed for the Fish Passage program as depicted on the map. Individual projects are described below.



## Fish Passage Inventory (Goal 2) - Lew Stahl

Determining where fish are blocked from accessing important habitat is a key step in identifying and prioritizing potential projects. Inventory efforts have been ongoing for several years and involve gathering detailed structure information during on-site evaluations, entering data and linking photos and PDF files to the fish passage database, and refining data from outside sources. On-site data were collected at 59 points of diversion and included type of structure, structure dimensions, photographs, and characterization of passage potential or entrainment issues. The department's fish passage database now contains 845 records. Drainages surveyed included portions of the Enos Creek, Five Springs Creek, Francs Fork Creek, Gooseberry Creek, Greybull River, Grass Creek, Meeteetse Creek, Piney Creek, Rawhide Creek, Shell Creek, Tensleep Creek, and Timber Creek in the Cody Region and Elkhorn Creek, Little Bighorn River, Pass Creek, East Pass Creek, West Pass Creek, Red Gulch Creek, Smith Creek, Tongue River, Wolf Creek, and the Middle Fork, Red Fork and North Fork Powder River in the Sheridan region.

Additional site information was collected from a variety of sources. Natural barrier locations and photos were provided by department fisheries biologists, additional diversion dam data were obtained from the Bureau of Reclamation, the Army Corps of Engineer's National Inventory of Dams, and the State Engineer's Office. Culvert information from the Bighorn Forest, Medicine Bow/Route Forest, and the Shoshone Forest was added to our existing Teton Forest data (Figure 5). WGFD stream identification numbers were added to more than 80 points of diversions, originally obtained from other sources, to aid in data management. A draft report was written summarizing 2009 efforts including types of data collected, number of diversion locations documented, structures evaluated on-site, sources of data, detailed contact information, and where to access additional data beyond what is entered in the department's fish passage database.

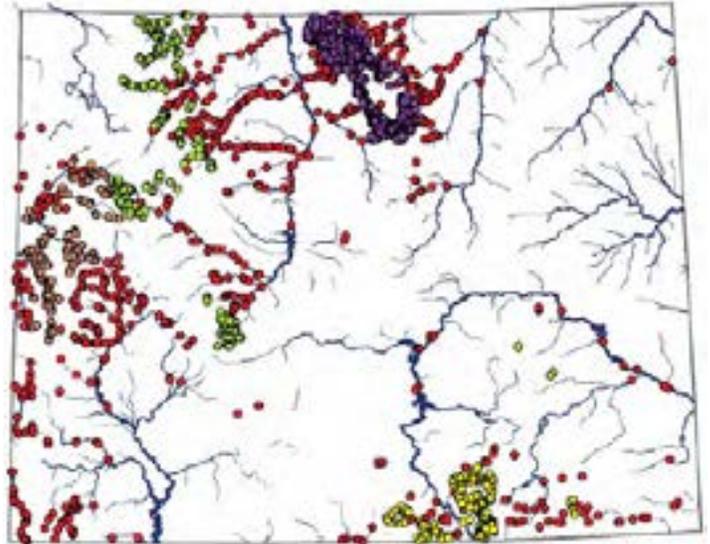


Figure 5. Points of diversion (red) and culverts from the Bighorn (purple), Shoshone (green), Teton (north zone – gray), and Medicine Bow/Rout National Forests (yellow). These represent a fraction of the barriers and diversions in the state.

### **B**ear Creek Fish Passage (Goal 2) - Lew Stahl

Bear Creek is a tributary to the East Fork Wind River in the Lander Region. Designs were finalized and construction of the Bear Creek fish passage project was initiated in October 2011 and continued until the December 1 Inberg/Roy WHMA winter closure. Remaining work will be completed after the 2011 irrigation season. This year an instream irrigation diversion was replaced with two low elevation dams with associated pools and riffles (Figure 6). These fish friendly structures will allow upstream passage of Yellowstone cutthroat trout, while providing adequate water supply to the elk meadows on the Spence Moriarity WMA. Low flow channels, constructed in each dam, concentrate water into deeper, narrow channels allowing fish movement during low stream flows. Pools and riffles developed below each dam reduce water energy, stabilize the creek, and improve fish habitat (Figure 7). Next year's efforts will include a new irrigation headgate with associated bedload sluice, a fish screen in the irrigation ditch, and a bypass pipe to return entrained fish back to the stream. Cooperators include the Wyoming State Land Board, WWNRT, and the USFWS.



Figure 6. Bear Creek's upstream diversion dam under construction showing the low elevation concrete dam backed up by boulders which will be grouted into place and concrete blankets used to keep concrete warm while curing.



Figure 7. Post construction view of Bear Creek's downstream dam showing boulders with grout covered in snow, low flow channel in the middle, and the associated downstream pool. Stream flows are still diverted around the construction site in this photo.

## **Darrel Mumm Fishway (Goal 2) - Lew Stahl**

The Darrel Mumm fishway is being constructed on Bitter Creek, a tributary to the Shoshone River, in the Cody Region. Designs were finalized and construction of the Darrell Mumm Fishway was initiated in late fall 2010. Cold weather conditions stopped the project but completion is expected in early spring of 2011. The fishway will allow upstream passage of fish currently blocked by a large concrete, box culvert carrying Sidon Canal irrigation water across Bitter Creek (Figure 8 and 9). Cooperators include the Sidon Canal Irrigation District who allowed attachment of the fishway to their existing infrastructure, and Mrs. Pat Mumm who provided a permanent easement in memory of her late husband. Project funding is provided by the WWNRT, USFWS, and WGFD.



Figure 8. Upstream fishway walls formed at the right edge and on top of the concrete box culvert crossing Bitter Creek. The downstream curve will lead to the rest of the fishway when completed.



Figure 9. Concrete pump truck delivering concrete to the tall walls immediately below the box culvert and forming the curve that turns the fishway into the uplands, where it will curve in a horseshoe shape, gradually decreasing in elevation until returning to the creek.

## **Greybull Drainage Entrainment Studies (Goal 2) - Lew Stahl**

Entrainment studies were undertaken between September 7 and October 5, 2010 on the Ashworth #3 Irrigation Ditch, taking water from Francs Fork Creek, and the Greybull/Pitchfork Irrigation Ditch, taking water from the Greybull River (Figure 10). The goal was to identify juvenile Yellowstone cutthroat trout numbers entrained into these irrigation ditches during their downstream migration. Numbers of fish netted were extrapolated to reflect the total number of entrained trout during the September through October time period. Although results could vary from year to year, these studies indicate that as many as 10,184 Yellowstone cutthroat trout were entrained from Francs Fork in the fall of 2010 and an estimated 1,163 Yellowstone cutthroat trout along with 680 long nosed dace were entrained from the Greybull River. The rest of the irrigation season was not sampled but there is no doubt that additional fish are lost then as well. Francs Fork and Greybull River trout are part of a core conservation metapopulation of Yellowstone cutthroat trout. This population is extremely important to the long term management of Yellowstone cutthroat trout, which have been suggested for T&E listing twice. Based on these entrainment studies, fish screens on these irrigation ditches are being considered.



Figure 10. Sampling net in the Ashworth No. 3 Ditch to evaluate Yellowstone cutthroat trout entrainment.

## Trout Creek Fish Screens (Goal 2) - Lew Stahl

Trout Creek is an important spawning trout tributary to the North Fork Shoshone River near Cody. Field evaluations were made on three different screens installed on Trout Creek irrigation ditches. The overshot self-rotating drum screen continued to work well after five years of operation, but has the down side of sediment build up in front of the screen. The horizontal traveling screen developed a few minor mechanical issues near the end of its first season of operation in 2009. The screen was removed and, because the screen is a prototype structure, Hydrolox engineers traveled to Cody to aid in improvement modifications (Figure 11). The screen was reinstalled in spring 2010 and worked flawlessly for the entire irrigation season (Figure 12). The horizontal, flat bottom, punch plate screen (Farmers Screen), operating for its first irrigation season, had plugging issues within 8 to 12 hours after each rainstorm in the upper watershed that washed burned wildfire debris into the stream. Several attempts were made to resolve the problem including replacing the screen plate with one having larger openings, modifying how water approached the screen, modifying how water channeled through the screen, and changing the volume of water flowing through the screen. Although rocks and vegetative detritus passed across and out of the screen without a problem, the screen could not adequately pass the lightweight, burned debris that was sucked down to the screen plate and plugged the openings. Screen designers don't know how to resolve the issue either, so replacement of this screen with another design is planned. The screen will be tried at a new location, once a suitable site is selected.



Figure 11. A Hydrolox engineer evaluates the horizontal traveling screen for potential modifications.



Figure 12. Reinstalling the traveling screen after modifications were complete.

## Harmony Ditch Fish Passage (Goal 2) - Lew Stahl

The Harmony Ditch and associated diversion structure are located on the Nowood River in the Cody Region. Consultant engineers were hired to develop final designs for replacement of the instream diversion structure and installation of a fish screen on the irrigation ditch. Fish passage at this site has been affected by irrigation diversions since 1890. Entrainment study data indicated that approximately 55,400 fish representing 16 cool water species were entrained into this irrigation system in 2007. Final designs are expected in the spring with construction anticipated in the fall of 2011. Current funding is provided by the USFWS and WGFD. Additional funds will be requested from the WWNRT.

## **Encampment / Platte Valley Irrigation Diversion Fish Passage (Goal 2) - Lew Stahl**

The Encampment / Platte Valley Diversion on the Encampment River in the Laramie Region blocks brown trout and other fish species from accessing diverse headwater habitats. Access agreements were developed with the Encampment / Platte Valley Irrigation District and with owners of the diversion site property. An engineering firm was hired and completed a topographic survey (Figure 13). A preliminary cost estimate for a fish bypass channel was developed to provide passage for hundreds of fish attempting to migrate upstream each year. Survey funding was provided by the department's Fish Passage Program and final designs are being pursued in 2011.



Figure 13. Fisheries biologist and consultant engineer evaluating the Encampment / Plate Valley Irrigation Diversion for potential installation of an upstream fish passage structure.

## **Anthony Ditch Diversion Fish Passage (Goal 2) - Lew Stahl**

Medicine Lodge Creek provides diverse trout habitat as it flows off the west face of the Bighorn Mountain Range in the Cody Region. An instream diversion, located within the Medicine Lodge WHMA and supplying private land irrigation water, is scheduled for replacement. The existing push-up rock and concrete structure is a barrier to fish passage (Figure 14). After an on-site review, suggestions were made for a new structure and associated ditch work that would improve irrigation efficiency, while also improving fish passage. A second structure outside the WHMA is at least a partial barrier and recommendations were provided for this site as well. The primary structure was removed but not replaced by the end of this year. The Cody Habitat and Access Supervisor is working with the landowner and will help coordinate structure replacement.



Figure 14. Irrigation diversion made of boulders, rock, and plastic. This fish barrier was removed and should be replaced with a more fish friendly structure in 2011.

## **Upper Sunshine Diversion Fish Passage (Goal 2) - Lew Stahl**

The Upper Sunshine Diversion is a major irrigation diversion on the Greybull River and is a barrier to Yellowstone cutthroat trout migration (Figure 15). Fish passage designs were reviewed and evaluations provided to engineers hired by the Wyoming Water Development Commission and the Greybull Valley Irrigation District concerning first draft plans for the Upper Sunshine Diversion Dam. Fish passage is being considered for inclusion in a larger dam replacement project that will provide more efficient irrigation flows and reduce cobble build up in the irrigation system. Passage at this site will provide habitat connectivity important to the Greybull River's core conservation metapopulation of Yellowstone cutthroat trout and would be extremely important to the long term management of Yellowstone cutthroat trout.

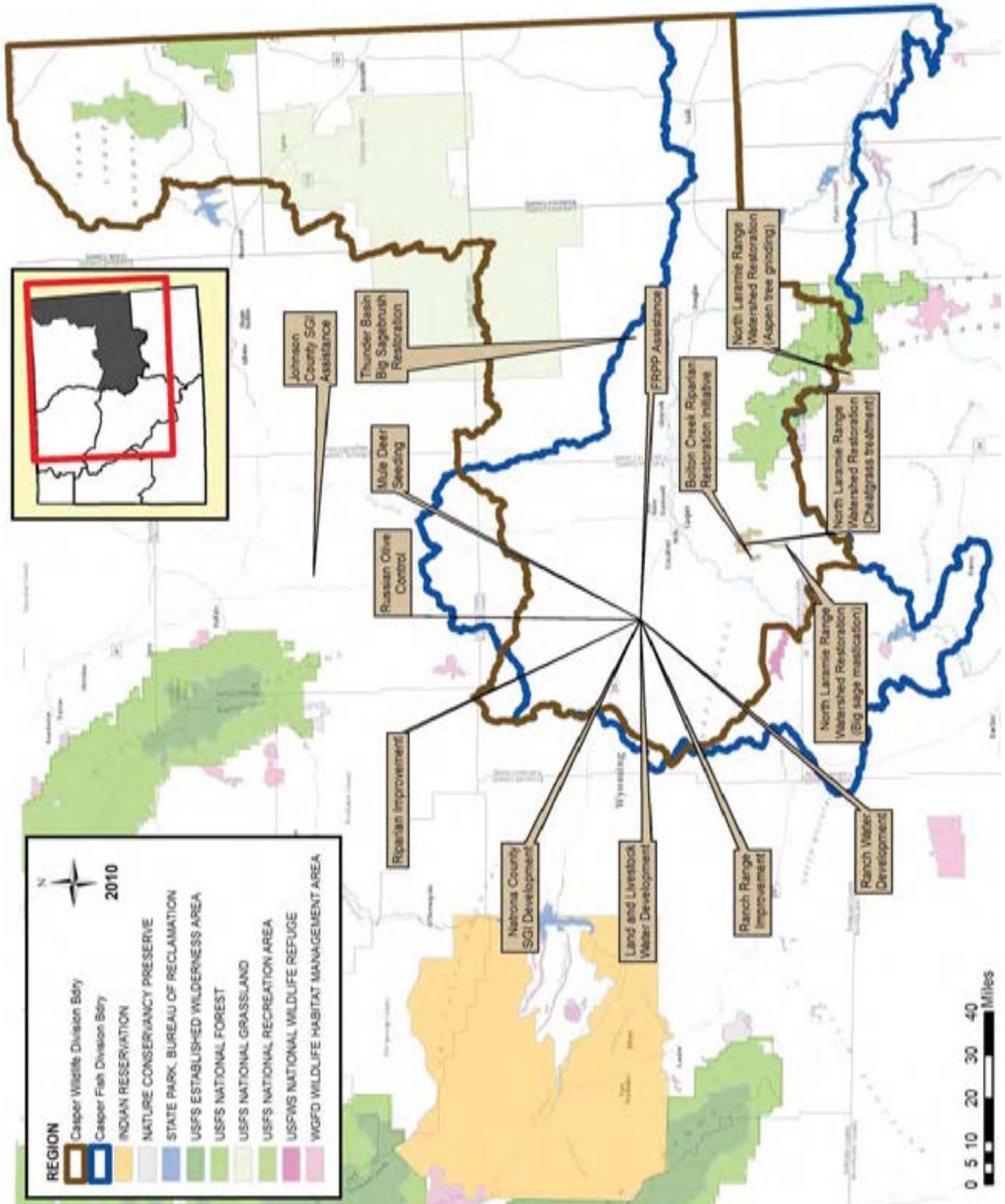


Figure 15. The Upper Sunshine Diversion Dam is tentatively scheduled for replacement in 2011. This structure is a barrier to upstream passage for Yellowstone cutthroat trout.

## **Boulder Creek Ditch Entrainment Study (Goal 2) - Lew Stahl**

Fish passage funds were granted to Trout Unlimited to aid in site investigation and potential screen installation in the Boulder Creek Irrigation Ditch, which takes water from the South Fork of the Shoshone River. A topographic survey was completed by a contract engineering firm in preparation for design plans. To evaluate the magnitude of fish loss at this site prior to committing to screen installation, a WGFD volunteer, later hired by TU, was signed up to undertake the study, provided necessary equipment including nets, and aided with study design. Preliminary data indicate low numbers of fish entrained, especially Yellowstone cutthroat trout, but water usage this year may have been less than normal due to management changes. TU is writing a final report should be available after the first of the year.

# CASPER REGION



## CASPER REGION HIGHLIGHTS

- Mechanically treated 290 acres of conifer invaded aspen stands
- Mechanically treated 589 acres of basin big sagebrush
- Chemically treated 6,564 acres of cheatgrass
- 650 acre prescribed fire near Muddy Mountain
- 5,961 acres of cheatgrass control in the Thunder Basin Area north of Douglas
- Assistance with SGI grazing plans on approximately 125,000 acres

### **North Laramie Range Watershed Restoration – Phase 2010 (Goal 2) - Keith Schoup**

During 2010, we mechanically treated 270 acres of conifer invaded aspen stands (Figure 1), and 589 acres of basin big sagebrush (Figure 2). Plateau® herbicide for cheatgrass control was applied in late August, which resulted in 6,564 acres treated. Grants have been executed with 6 landowners and the funding is obligated for this project. In addition, funding from the WGFD for US Forest Service environmental assessments to satisfy NEPA requirements on federal lands associated with the project is in progress.



Figure 1. Mechanically treating conifer invaded aspen stands with BOSS Reclamation rubber tired grinder, Barko 937.



Figure 2. Basin big sagebrush mulching results within the Stinking Creek floodplain.

### **Shook Ranch Range Improvement (Goal 2) - Brian Jensen**

In the fall of 2010, 40-60% of the dense mountain big sagebrush in a 3,800 acre pasture was burned (Figures 3 and 4). Approximately 650 acres were blackened in a burn conducted by the BLM. There are plans to burn additional timbered acres and develop springs for livestock and wildlife use in future years.



Figure 3. Fall 2010 mountain big sagebrush prescribed burn.



Figure 4. Mosaic burn pattern following 1st day of treatment.

## **Bolton Creek Riparian Restoration Initiative (Goal 2) - Keith Schoup**

This project was initiated in 2010. It is designed to restore connectivity between Bolton Creek and its floodplain, attenuate sediment and flood energy following extreme precipitation events, reduce bank erosion and vertical channel adjustment, reduce fine sediment inputs into the North Platte River and raise the water table allowing for expansion of riparian vegetation. During 2010, we aerially deposited approximately 82,000 pounds of aspen trees into existing beaver dam complexes. This was accomplished using 20 hours of helicopter flight time over a one week period. Field observations on November 5, 2010 showed beaver have used the deposited aspen trees to create three dams; one reconstruction and two newly created dams (Figures 5 and 6). Other dam building activity is occurring along Bolton Creek, but we can confidently say these three dams were created using the aspen trees.



Figure 5. Bolton Creek flowing through breached beaver dam.



Figure 6. Pond created following reconstruction of breached beaver dam.

## **Sage-Grouse Initiative (SGI) Inventories and Plan Development (Goal 2) - Brian Jensen**

Resource inventories on 6 ranches totaling approximately 130,000 acres in Natrona and Johnson Counties were completed and are being used to guide future management decisions. The goal is to develop land management plans that benefit livestock, sage grouse, and other wildlife.

## **Thunder Basin Big Sagebrush Restoration Project (Goal 2) - Brian Jensen**

In the fall of 2010, 5,961 acres were chemically treated on five different properties to control cheatgrass invasion. (Figure 7). The project aims to reduce competition with desirable, perennial vegetation and eventually improve the overall range condition. Additional work and grazing management planning is ongoing. To date, approximately 35,000 acres have been treated for cheatgrass in the Thunder Basin.



Figure 7. Contractors apply Plateau herbicide using fixed-wing aircraft to control cheatgrass.

## **Chain Lakes WHMA grazing - Matt Pollock**

In 2007, WGFD habitat and wildlife biologists identified areas in the Bureau of Land Management's (BLM) Powder Rim grazing allotment (Powder Mountain #10519) as crucial habitats in need of deferment from grazing. WGFD entered into a five-year agreement with the Ladder Livestock Company, LLC to defer grazing of up to 900 AUMs for the entire year on the Powder Rim allotment in exchange for winter grazing of sheep on the Chain Lakes WHMA. While the grasses on the Powder Rim allotment responded well to the deferred grazing, habitat biologists planned a shrub treatment in 2010. To help ensure success of the shrub treatments, WGFD biologists determined the allotment warranted another year of deferment. The value of the deferred grazing in 2010 equaled \$24,000.

### **Russian Olive Control Workshop Natrona (Goal ) - Brian Jensen**

In the summer of 2010, producers and resource professionals were invited to participate in a Russian olive control demonstration northwest of Casper where contractor demonstrations were performed, follow-up treatments were discussed, and cost-share programs were explained (Figure 8). In addition, an informational brochure was developed and disseminated.



Figure 8. Participants listen to presenters discussing post-treatment weed control and cost-share programs following contractor demonstrations.



## CODY REGION HIGHLIGHTS

- 3,372 acres of Russian olive, tamarisk, and noxious weed mechanical and chemical control completed on 8 drainages in the Big Horn Basin
- 2,975 cottonwood and willow cuttings, plus 890 native bare root and potted trees and shrubs planted on 6 different streams to replace Russian olive and tamarisk
- 154 acres of new CCRP riparian buffer protection installed in 2010
- 677 acres of mechanical treatments to remove conifers
- 700 acres of prescribed fire treatments to remove conifers
- 4 new wetlands created constituting approximately 27 surface acres of wetland in Big Horn County
- 3 dam structures completed to divert Kirby Creek from its current incised course into historic channels
- 1,944 acres conserved under a conservation easement
- 59 irrigation diversions evaluated for fish passage and 80 diversion locations refined
- 5 fish passage projects initiated, plus 3 entrainment studies complete

### **M**oss Ranch Conservation Easement (Goal 1) - Jerry Altermatt

The terrestrial habitat biologist worked with NRCS, TNC and the Moss Ranch to secure a conservation easement on a portion of the Moss Ranch located on the west slope of the Bighorn Mountains east of Lovell (Figure 1). The NRCS's Grassland Reserve Program provided \$874,800 to fund the 1,944 acre easement. An additional 5,200 acres of the ranch will be placed under easement in 2011. The ranch contains crucial habitat for elk, mule deer, and bighorn sheep and has streams containing Yellowstone cutthroat trout.



Figure 1. The Moss Ranch.

### **B**ig 6 Grazing and Vegetation Management EIS (Goal 1) - Jerry Altermatt

The Bighorn National Forest (BNF) prepared an Environmental Impact Statement (EIS) to determine reauthorization of domestic livestock grazing on 43 allotments in six geographic areas on the Forest. The NEPA analysis included proposed fuel management activities within a portion of those allotments. WGFD personnel met with BNF range, fire and wildlife specialists throughout the planning process to provide input and express concerns on a variety of issues including wild/domestic sheep interactions, habitat enhancements, and special winter range designations on a portion of one allotment. Official comments were submitted for the draft EIS.

## **Timber Creek Passage and Riparian Improvement (Goal 2) – Jason Burckhardt**

A multi-culvert road crossing over Timber Creek (Figure 2) was replaced with a 23 foot wide, bottomless arch culvert (Figure 3) and 1.5 miles of riparian fence was installed on private ranch land. The new culvert not only removed a barrier to Yellowstone cutthroat trout but stream flows no longer flood the roadway during high flows. The fence will enhance riparian vegetation and stream stability and provide additional food and cover for both terrestrial wildlife and cutthroat trout. Partners include the private landowners, East Yellowstone Chapter of TU, TU Water Project, TU Embrace a Stream Program, WWNRT, Shoshone National Forest, and the USFWS.



Figure 2. Timber Creek road crossing culverts replaced in 2010 to eliminate a barrier to Yellowstone cutthroat trout.



Figure 3. Timber Creek bottomless arch culvert installed in 2010 to provide fish passage, better stream dynamics, and prevent road flooding.

## **Bighorn Basin Resource Management Plan (Goal 1) - Jerry Altermatt**

The terrestrial habitat biologist served as one of the WGFD's leads on the Bighorn Basin Resource Management Plan (RMP) revision. The BLM is revising land management plans for the old Grass Creek, Washakie and Cody Resource Areas. Under the new reorganization of the BLM a Wind River District was formed comprising of the Cody, Worland and Lander Field Offices. The Cody and Worland Field Offices are combining their RMP revision efforts to produce one plan (Bighorn Basin RMP) being analyzed with one EIS but with two NEPA decisions. WGFD personnel attended multi-day workshops and numerous other meetings with the BLM and other cooperating agencies to develop a preliminary draft EIS. The terrestrial habitat biologist also attended several field trips to discuss resource issues with the public (Figure 4). The BLM is expected to release the draft EIS in the spring of 2011.



Figure 4. BLM Resource Management Plan field trip to the Carter Mountain area.

## **Yellowtail Area Coordinated Resource Management (Goal 2) - Jerry Altermatt**

The Yellowtail Area Coordinated Resource Management (CRM) team continued to manage invasive plants on agency and private lands in the Lower Shoshone and Bighorn River bottom lands. The CRM consists of the four landowners on the Yellowtail WHMA, (National Park Service (NPS), WGFD, BLM, and Bureau of Reclamation), neighboring private landowners, the Bighorn County Weed and Pest, NRCS, and other interested parties. The terrestrial habitat biologist serves as chairman of the CRM and has been responsible for writing

and submitting grant applications for the project, including WWNRT, National Fish and Wildlife Foundation, and NWTf.

The following activities were accomplished on the CRM area in 2010:

- **Conducted mechanical treatments on Russian olive and saltcedar using mulching machines.** Swaggert Enterprises, Ritter OR, was contracted to mechanically treat 245 acres of BLM lands within the Yellowtail WHMA and adjacent private lands on the Shoshone River riparian. The contractor used a Timbco Steep-slope Hydro-buncher with a Birdseye vertical-shaft mastication head (Figure 5).



Figure 5. Timbco Hydro-buncher with mastication head.

- **Utilized goats and cattle in prescribed grazing treatments.** Boer goats were used on the Bighorn River between April and September to control invasive plants in a continuing program that was initiated in 2004. Two areas totaling approximately 400 acres received the grazing treatment with 1,000 goats. The primary objective is to target Russian olive, salt cedar and Russian knapweed. In January, 230 head of cattle were used as part of a winter grazing program initiated in 2002. Cattle are confined with electric fence to small pastures strategically located throughout the Shoshone River bottom. Pastures are designed to be no wider than  $\frac{1}{4}$  -  $\frac{1}{2}$  mile and stretch from the river to dry upland habitat. The primary objectives of the grazing program are to reduce the risk of wildfire by removing fine fuels prior to the spring wildfire threat, rejuvenate grass/forb communities, and create areas of higher quality brood-rearing habitat for upland birds. Ice jams and flooding of the Shoshone River precluded the use of all but one of the planned grazing pastures.

- **Conducted chemical treatments on noxious weeds using vehicle and backpack sprayers.** BLM fire crews applied herbicide to tamarisk and Russian olive resprouts on 215 acres that were mechanically treated in early 2010. Field Services, LLC from Cody was contracted to apply herbicide to tamarisk and Russian olive re-sprouts on 30 acres mechanically treated in 2010 and 320 acres of previous years' mechanical treatments (Figure 6). Big Horn County Weed and Pest District chemically treated approximately 170 acres of Russian knapweed, tamarisk and whitetop.



Figure 6. Field Services spraying Russian olive re-sprouts.

- **Continued education and public outreach efforts.**

The "CRM in the Classroom" program is an integrated, interdisciplinary program in which teachers and students participate in collaborative decision-making groups that are working on natural resource issues throughout the state. Lovell High School (LHS) entered into the program in 2005 and affiliated with the Yellowtail Area CRM. During the project period 30 LHS students were involved in the following CRM projects and activities:

- \* Russian knapweed seed viability study. Students collected knapweed seeds from goat pellets and attempted to germinate them in the lab to determine seed viability.
- \* Permanent vegetative trend study. Students annually read four rooted nested frequency transects to determine vegetative trend in areas grazed by cattle in the winter.
- \* Chemical/mechanical treatment effectiveness monitoring. Students established and read transects to determine the percent mortality of chemically treated Russian olive and salt cedar including a six-trial study of different herbicide and application method combinations.

• **Planted shrubs and trees.** A waterjet stinger was used to plant over 200 cottonwood and willow cuttings in areas previously treated to remove Russian olive using volunteer labor from the CRM. Over 100 bare-root buffaloberry seedlings were planted by CRM volunteers, WGFD personnel and members of Pheasants Forever (Figure 7). Buffaloberry has been identified as a good native alternative to Russian olive as it provides similar cover and forage value without being invasive. Survival rates of buffaloberry plantings are being monitored, and, if successful, larger plantings will be planned for the future.



Figure 7. Planting buffaloberry into an area treated to remove Russian olive.

• **Continued biocontrol of salt cedar.**

The salt cedar biocontrol program in the Yellowtail CRM using the insect (*Diorhabda elongata*) continues to be monitored by the Agricultural Research Station (ARS). Insect populations in 2010 are still low after a dramatic decrease for unknown reasons in 2009.

• **Monitoring.** Vegetative responses in mechanical/chemical treatments are documented with photopoints and, in some cases, with belt or circular plot transects to collect Russian olive and tamarisk density and percent mortality data. Herbaceous response in areas where dense Russian olive canopy has been removed has been remarkable (Figures 8 - 10).



Figure 8. Before treatment.



Figure 9. Immediately following treatment.



Figure 10. Three years after Russian olive removal.

### **Sage Creek Weed Management Area (Goal 2) - Jerry Altermatt**

A new Weed Management Area (WMA) was initiated to address Russian olive and tamarisk infestations on private lands in the Sage Creek watershed north of Lovell, WY. The Sage Creek WMA is an offshoot of the successful Yellowtail Area CRM. The project is being funded by the WWNRT, Big Horn County Weed and Pest District and private landowners. Treatments were planned on several private lands and work will begin in late winter 2011.

### **Gooseberry Watershed Enhancement (Goal 2) - Amy Anderson**

This is an ongoing project in the 500,000-acre Gooseberry drainage to restore and enhance 2,000 acres of riparian habitat and stream form and function.

In the winter of 2010 a gyro track implement was used on one previously untreated private property totaling 50 acres, and 41.5 acres of state owned land. Follow up treatments were conducted by Washakie County Weed and Pest in the summer of 2010. The total cost for projects implemented in calendar year 2010 was \$117,140. The total project cost for the entire watershed thus far is \$1,354,234.

In May 2010, 1,175 willow cuttings were planted on acres enrolled in Continuous Conservation Reserve Program (CCRP) and on private property on Gooseberry Creek using the waterjet stinger.

There are 7 active CCRP contracts on Gooseberry Creek that require follow-up. Trees and willow cuttings were planted on four of these in the spring of 2010. Height structure and dense hiding cover are currently lacking in many areas of Gooseberry Creek, and continued restoration post- Russian olive and tamarisk control are needed on these properties.

NRCS Agricultural Management Assistance (AMA) funding has been the primary funding source thus far. Other funding sources include Farm Service Agency CCRP, WWNRT, NRCS EQIP, Washakie County and Hot Springs County Weed and Pest Districts, WGFD, BLM, Washakie County Conservation District, WGBGLC, State Lands, and private landowners.

### **Nowood River Riparian Enhancement Project (Goal 2) - Amy Anderson**

In November of 2007 a project was initiated to improve riparian areas within the Nowood River Watershed by removal of Russian olive and tamarisk. To date, a total of 2,708 acres have had a mechanical treatment and a follow-up chemical treatment. The primary funding source is USDA AMA funds. Additional funding was acquired through WWNRT in the amount of \$115,000.

Approximately 96.2 acres were mechanically and chemically treated in 2010. Many of the landowners on the Nowood have chosen to complete the work themselves rather than hire contractors. In doing so, they have taken full ownership and will likely put forth efforts to maintain the work they have completed.

To date, total expenditures has been is: \$705,578. Cooperators include: NRCS, WGFD, WWNRT, Washakie County Conservation District, Big Horn County Conservation District, Washakie County and Big Horn County Weed and Pest, and private landowners.

### **Greybull River Watershed Enhancement (Goal 2) - Amy Anderson**

The Greybull River Russian olive and tamarisk control began in 2008. About 747 acres of Russian olive and tamarisk were treated in 2010. The WWNRT approved a grant of \$300,000 to assist landowners. Total expenditures are \$399,900, excluding individual landowner efforts and in-kind contributions. NRCS AMA and WRP have been the major funding sources along with WWNRT.

## **K**irby Creek Watershed Habitat Enhancement (Goal 2) - Amy Anderson

The Kirby Creek CRM group is continuing to plan and implement projects that focus on restoring ecological functions within the watershed. Existing CCRP projects on Kirby Creek are showing a tremendous vegetative response and are providing quality habitat for beaver, mule deer, sage grouse, and migratory songbirds (Figures 11 and 12).

In 2010, 800 willow cuttings were planted on two CCRP areas using the waterjet stinger, and even into September survival was very high. There are currently 9 active CCRP contracts on Kirby Creek. The 2 newest CCRP projects on Kirby Creek are currently underway. They were partially funded through the WGFD WyWHIP incentive program.



Figure 11. Kirby Creek before CCRP in May 2008.



Figure 12. Kirby Creek two years after CCRP installation in August 2010.

Kirby Creek Watershed activities have focused on removal of grazing pressure on riparian areas, extensive water development, removal of invasive Russian olive and salt cedar, and experimental weed control of white-top. In-stream structures have been installed to slow water velocity and decrease the massive erosion events that are occurring at Stan's Folly along Kirby Creek. Cooperators for all projects on Kirby Creek include WGFD, BLM, NRCS, DEQ, Wyoming Water Development, Hot Springs County Weed and Pest, Washakie and Hot Springs County Conservation Districts, and private landowners. Total cost for projects in this drainage thus far is \$1,941,207. The primary funding sources for Kirby Creek include DEQ 319 funds, Continuous CRP, WWNRT, Hot Springs County Weed and Pest, WGFD, NRCS-EQIP, WWDC, Private Grazing Lands Initiative, and private landowners.

## **B**ig Horn Basin Landcover Mapping (Goal 2) - Jerry Altermatt

A project contracted with Wyoming Geographic Information Science Center (WyGIS) to map habitat types using satellite imagery continued into a fifth year. Satellite imagery for the entire Bighorn Basin has been acquired and the Bighorn Basin has been divided into five geographic priority areas for completion of mapping. The first priority area, 2,420,262 acres of the Absaroka Front east of the Shoshone National Forest, was completed and a final map and report was released in March 2010. WyGIS field scientists, assisted by WGFD personnel collected 169 samples of vegetative cover data during the 2010 field season to provide data for the completion of priority areas two and three. It has been funded by WGFD trust fund, BLM, Big Horn Basin Sage-grouse Local Working Group, WGBGLC and SWG.

## **Black Mountain Sagebrush Restoration (Goal 2) - Jerry Altermatt**

**B**In November 2009, 4,000 sagebrush seedlings were planted within the 50,000 acre Black Mountain wildfire southeast of Worland. The wildfire burned large areas of Wyoming big sagebrush that served as pronghorn and mule deer winter range as well as breeding, nesting and winter range for sage-grouse. The objective is to establish seed sources within the burn by creating group plantings of sagebrush in select areas. Ten-inch tublings were planted in groups of approximately 80 plants and enclosed by 8 square foot cages to exclude browsing by livestock and wildlife. In half of the group plantings, weed barrier was used to reduce competition from cheatgrass. Sugar was spread on the remaining group plantings to inhibit cheatgrass growth by reducing the nitrogen/carbon balance. In 2010, plant survival was evaluated at each cage site. Both sugar and weed barrier treatments effectively reduced or eliminated cheatgrass competition around sagebrush seedlings, but weed barrier treatments allowed far more soil moisture retention and produced plants with more vigor (Figure 13 and Figure 14). Survival rate at weed barrier sites was 95%, while survival rate at sugar treatment sites was 81%. Funding was sought from the Sage-grouse Local Working Group and WGFD trust fund to plant an additional 4,000 seedlings in 2011.



Figure 13. Sagebrush seedlings with sugar treatments.



Figure 14. Sagebrush seedlings with weed barrier.

## **Shoshone/Clark's Fork Watershed Enhancement (Goal 2) - Amy Anderson and Jerry Altermatt**

**S**The Shoshone/Clark's Fork Russian olive and tamarisk control was initiated in the fall of 2008. The group's focus is primarily on removing Russian olive and tamarisk on riparian areas and adjacent uplands of these two river systems. The interest within the watershed has increased exponentially since that time, and it will continue to do so as more areas get cleared. WWNRT contributed \$300,000 and a group of very active landowners formed a CRM and took over the administration of these grant funds. To date, 968 acres have been treated using NRCS AMA and WRP funds, WWNRT funds, and private landowner contributions. The total cost thus far is \$208,830 for the Shoshone/Clark's Fork Project. NRCS AMA and WRP have been the major funding sources along with WWNRT.

## **Enos Creek Conifer Control (Goal 2) - Amy Anderson**

**E**The Enos Creek conifer control was initiated in late 2008 by the BLM Worland Field Office. Within the Enos Creek drainage, juniper and limber pine were encroaching into the riparian corridor, as well as into the upland deep soiled range sites that would normally contain big sagebrush stands. Nearly all of the big sagebrush stands in the drainage exhibit active juniper encroachment typical of the Bighorn Basin. In the summer of 2010, a BLM fuels crew worked using chainsaws and a timber-axe implement mounted on a skid steer to clear 677 acres of juniper, limber pine, and decadent sagebrush plants from the riparian area and the secondary terrace along Enos Creek. The WWNRT contributed \$100,000 to this effort, and a NRCS WHIP contract was initiated to assist with follow-up riparian enhancement practices such as small check dams to improve hydrology. WGFD fisheries personnel stocked Enos Creek in 5 of the last 10 years.

## Production/Utilization Surveys (Goal 2) - Jerry Altermatt

Regional wildlife personnel collected production utilization data at nine sagebrush transects during 2010 (Figure 15).

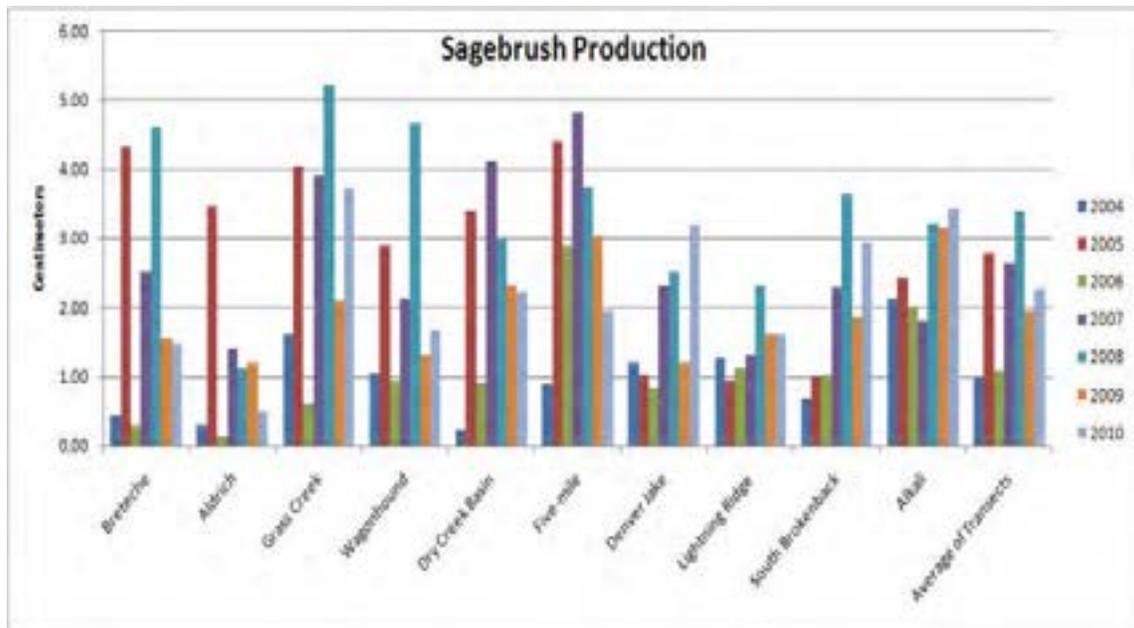


Figure 15. Annual production of sagebrush at ten locations in the Cody Region.

Generally, production at transects on the west slope of the Bighorn Mountains were slightly above a 7-year average, while those on the face of the Absaroka Mountains were slightly below. Utilization at all transects in spring 2010 was below the 35% threshold for over-utilization (Figure 16). Light utilization may indicate that populations are in balance with the amount of winter forage, but may also reflect the fact that the Cody Region has experienced mild winters with big game distributed more widely over winter ranges rather than concentrating animals on crucial winter ranges where utilization studies are located.

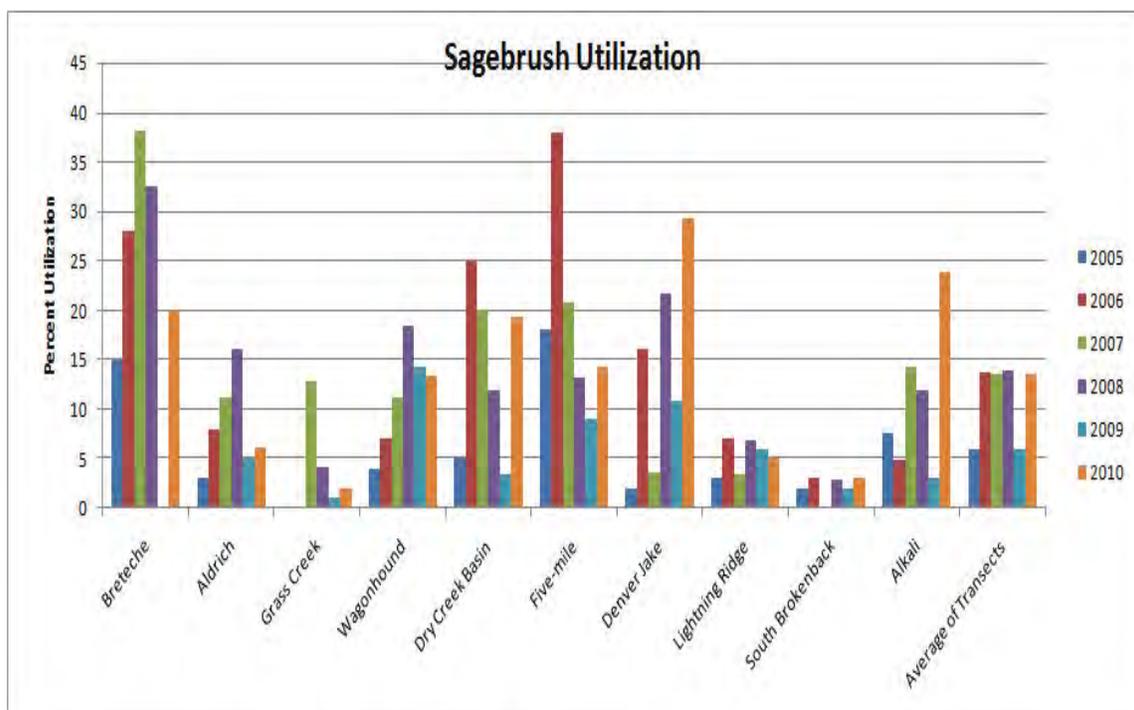


Figure 16. Utilization of sagebrush expressed as percent of that years annual leaders browsed at ten locations in the Cody Region.

Herbaceous production and utilization was measured at five sites on the Absaroka Front. Production was above average on all sites except for those in the eastern portion of the Clark’s Fork elk herd unit (Bald Ridge and Heart Mountain 1) (Figure 17). Utilization during winter continues to exceed upper limits in Sunlight Basin (Figure 18). Three new production utilization studies were established in Sunlight Basin to provide more data for an upcoming herd unit population objective review.

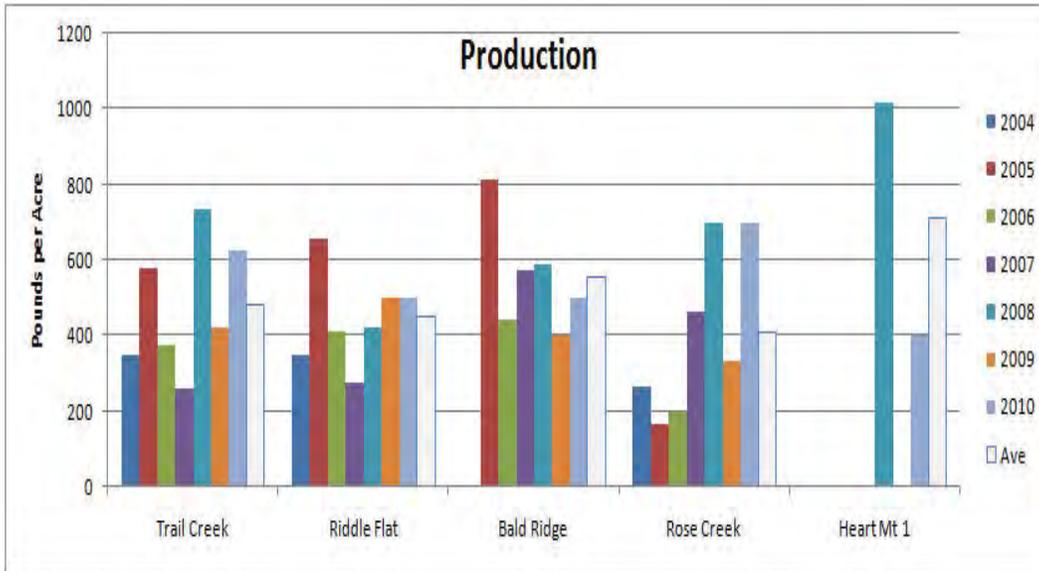


Figure 17. Annual production of herbaceous vegetation at five locations in the Cody Region.

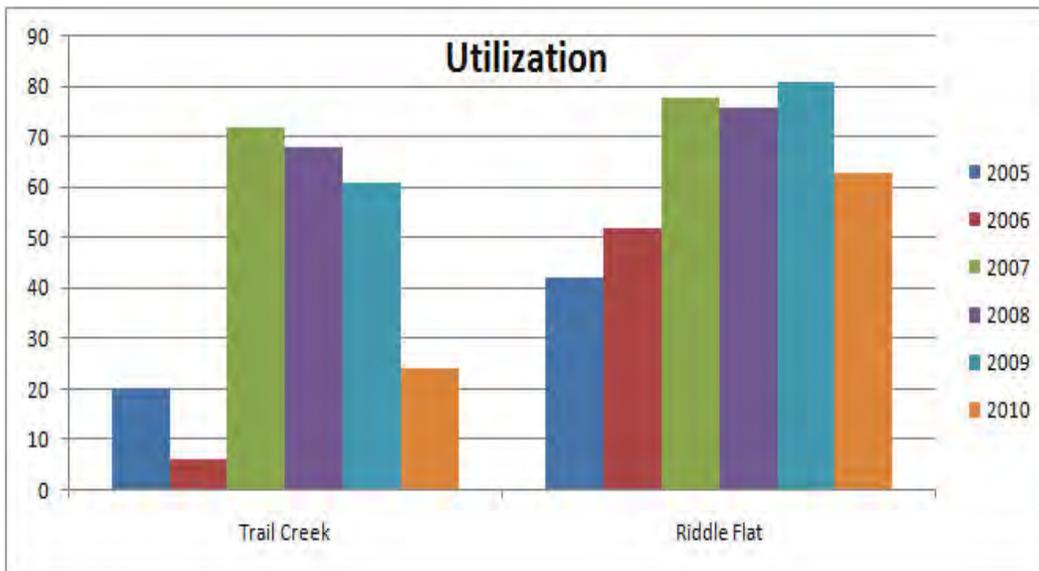


Figure 18. Utilization of herbaceous vegetation at two locations in Sunlight Basin.

## **Cottonwood/Grass Creek Watershed Improvement Project (Goal 2) - Amy Anderson**

In August of 2007 steps were taken to begin working actively on the tamarisk and Russian olive invasion on Cottonwood Creek. A CRM/Watershed Improvement District (WID) has been in place since 2005, and large tracts of the 270,000 acre watershed have been inventoried for noxious and invasive weed species through individual and Hot Springs County Weed and Pest efforts. A Weed Management Area has been in effect on Grass Creek since 2005, and is highly effective at finding and treating infestations of all weed species on the Grass Creek portion of the watershed.

To date, 856 acres of Cottonwood Creek have been treated mechanically with follow up chemical treatments. There are 2 active CCRP contracts on Cottonwood Creek, and a new CCRP contract that will be initiated on Grass Creek in 2011. All of these contracts will require tree and willow plantings in the spring of 2011.

There are also 4 active CCRP contracts within the Cottonwood/Grass Creek watershed that are protecting springs, while providing off-site water sources for livestock. These have shown great progress since their installation, as well as active use by mule deer, elk, and migratory birds (Figures 19 and 20).



Figure 19. Spring Gulch before CCRP in October 2007.



Figure 20. Spring Gulch CCRP 2 years after installation in September 2010.

In May of 2010, several work days were held to plant willow and cottonwood cuttings using the waterjet stinger. Over 700 willows were planted on 3 different properties using the waterjet stinger. Survival of the 2,000 willows planted since 2009 has been relatively low. There are several practices that will be initiated in 2011 to hopefully improve willow survival.

Currently, the largest funding source is the NRCS AMA Program followed by the WWNRT which has allocated \$225,000 to the project. TNC obtained an additional \$40,000 to assist with this effort, especially on BLM land bordering the area. Every landowner with property adjacent to Cottonwood Creek has initiated efforts to control tamarisk and Russian olive.

## **Big Horn River Oxbow Restoration (Goal 2) - Amy Anderson**

In 2008, the landowner initiated restoration of a wetland in an old oxbow of the Big Horn River. Initially, there were adjacent landowner concerns, but the NRCS engineer designed the wetland to avoid issues with adjacent landowners and the railroad right of way. There were serious Russian olive and tamarisk concerns on the property. The BLM owns a parcel directly on the river, and agreed to assist with some fencing, prescribed burning, and removed of Russian olives on their property. Work began in the spring and was completed in late fall 2010. The BLM burned the heavy build up of cattail and Canada thistle to help provide for greater depth. The landowner will begin to fill the wetland in early spring of 2011.

## **BLM/WGFD Cooperative Prescribed Burns (Goal 2) - Jerry Altermatt**

Approximately 550 acres of juniper communities were treated with prescribed fire in the Little Mountain area east of Lovell. The objectives of the treatments were to remove encroaching junipers from sagebrush communities within elk, mule deer and sage grouse habitat. The burns were conducted by the BLM Cody Field Office with assistance from WGFD. The burns were part of a larger effort that has treated over 3,000 acres in the Little Mountain area. Approximately 150 acres were treated with prescribed fire in the Breteche Creek watershed west of Cody, WY (Figure 21). The objective of the burn was to remove encroaching juniper, limber pine and Douglas fir, create younger age classes of sagebrush, and increase herbaceous forage on elk, mule deer and bighorn sheep winter ranges.



Figure 21. Prescribed fire to remove conifers from sagebrush and aspen communities on Breteche Creek.

## **Dorsey Creek Wetland Creation (Goal 2) - Amy Anderson**

Dorsey Creek is a tributary of the Greybull River and flows ephemeral through a very arid portion of the watershed. The vegetation consists mainly of Gardner's saltbush, greasewood, and a variety of grasses. The landowner hopes to develop his entire property for wildlife including 2 more wetlands. He has developed several food plots and plantings of trees and shrubs that are attractive to wildlife. The following photos show the area before and after the creation of 2 wetlands (Figure 22 and 23).



Figure 22. Dorsey Creek wetland project in March of 2008 prior to construction of 2 tiered wetlands.



Figure 23. Dorsey Creek wetland project in September of 2010 after construction and planting of adjacent food plots for waterfowl.

## **Renner Cheatgrass Control (Goal 6) - Jerry Altermatt**

Approximately 2,500 acres of cheatgrass dominated rangeland on the Renner WHMA was aerially sprayed with Plateau herbicide in 2009. The treatment included 1,500 acres treated with a six ounce rate of herbicide and 5 gallons of total volume per acre in the South pasture and 1,000 acres treated with a eight ounces of herbicide and 10 gallons of total volume per acre in the Lower Mountain pasture. Production and nested frequency studies were established in 2008 prior to treatment and were re-read in 2010. The frequency data indicates a 47% reduction in occurrence of cheatgrass following treatment. Occurrence of western wheatgrass increased 50% while bluegrass species decreased 30% (Figure 24). Production data indicates a 99.5% control of cheatgrass, which meets the objective of the project (Figure 25). The Lower Mountain pasture is important for wintering elk and the South pasture contains mule deer winter range and sage grouse breeding habitat.

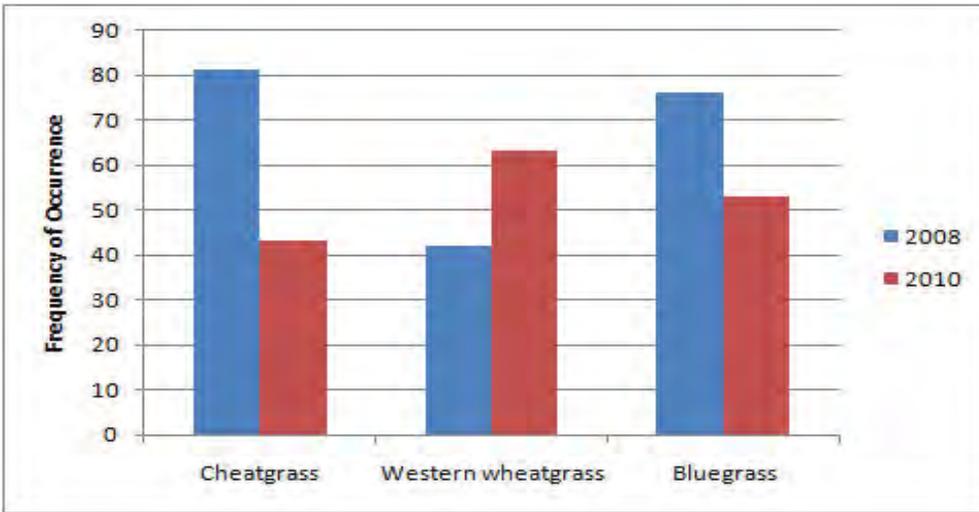


Figure 24. Data from nested frequency transects showing occurrence of three plant species before and after cheatgrass control.

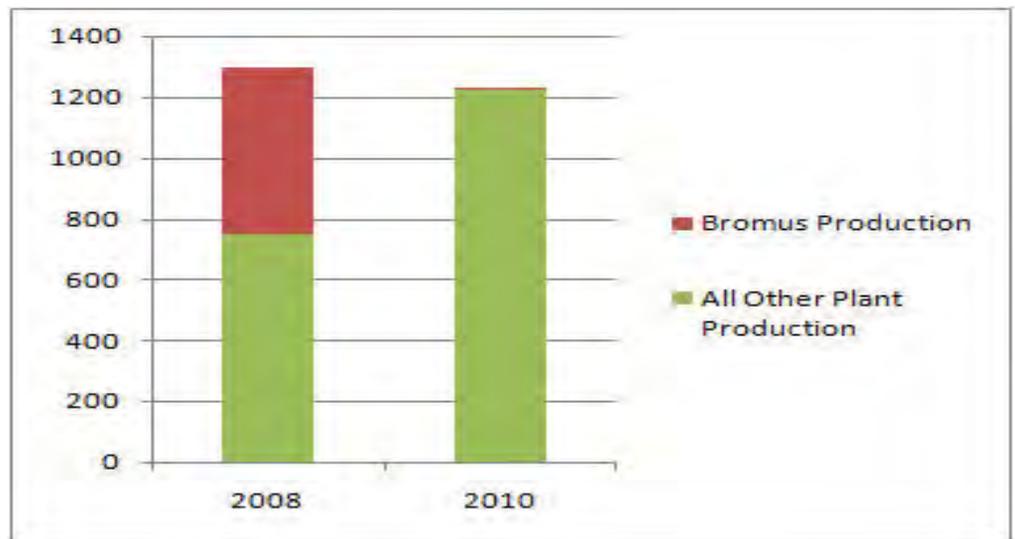


Figure 25. Data from production transects showing production of cheatgrass and other plants before and after cheatgrass control.

### Diamond Creek Wetland (Goal 3) - Steve Yekel

The Diamond Creek wetland was completed in November 2010. This involved replacing a washed out earthen dam with a steel piling/rock structure designed with a gate for future wetland maintenance (Figure 26). Approximately 2500 cubic yards of accumulated silt was also removed and placed at an upland barrow site.



Figure 26. New water level control structure installed to create a wetland and silt detention pond to protect the Diamond Creek Dike Pond.

Reseeding with native vegetation is scheduled for spring 2011. The goal was to rejuvenate the silt retention properties of this five acre wetland (Figure 27) to prolong the age of the downstream Diamond Creek dike pond, a Yellowstone cutthroat trout fishery. In addition, waterfowl nesting and loafing habitat will be restored. Funding partners include the U.S. Bureau of Reclamation, WVNRT and WGFD.



Figure 27. Five acre wetland and silt detention pond developed on Diamond Creek in 2010.

### Sunlight Basin WHMA Forage Utilization - Steve Ronne

Annual forage production and utilization information is collected on the Sunlight Basin WHMA (Figures 28-31)

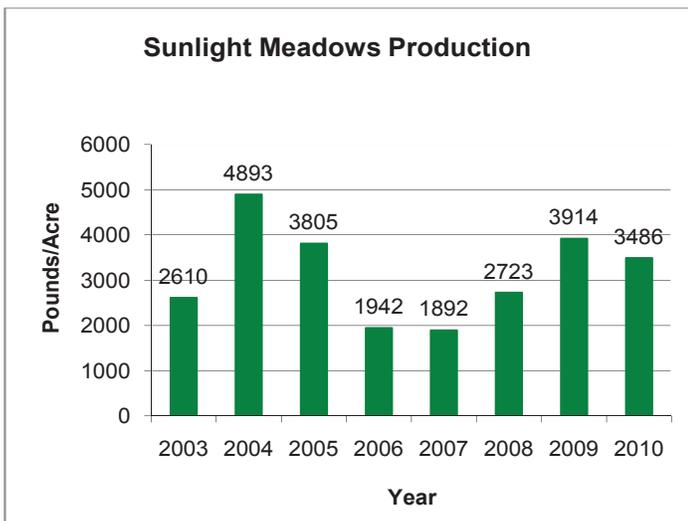


Figure 28. Sunlight Basin WHMA meadow production.

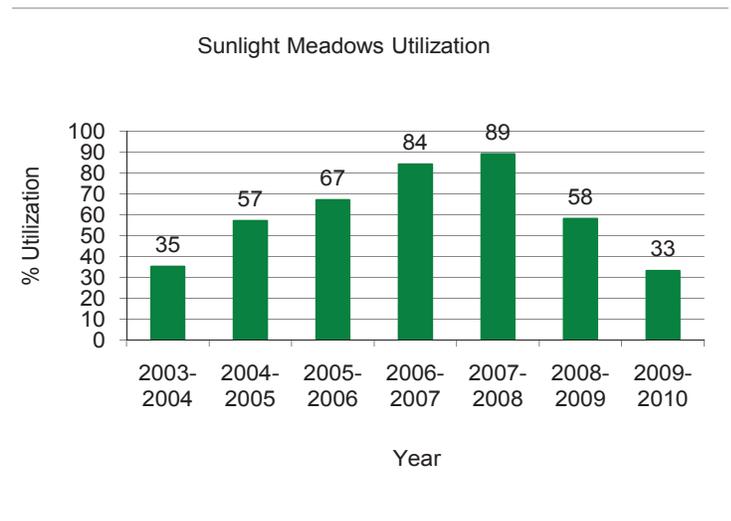


Figure 29. Sunlight Basin WHMA meadow utilization.

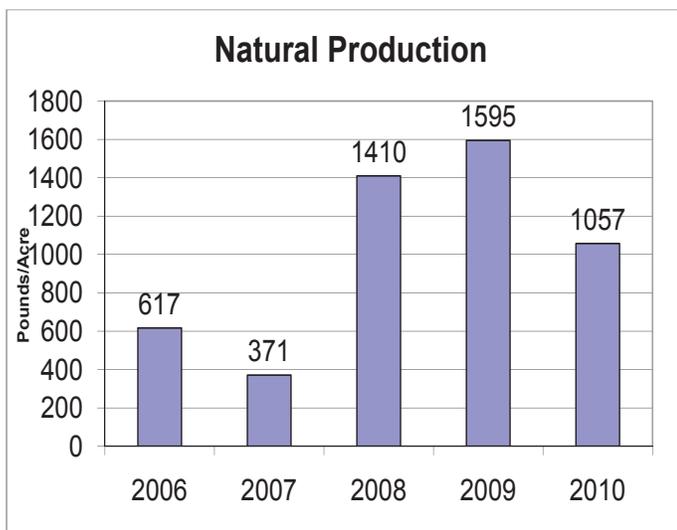


Figure 30. Sunlight Basin WHMA non-meadow production.

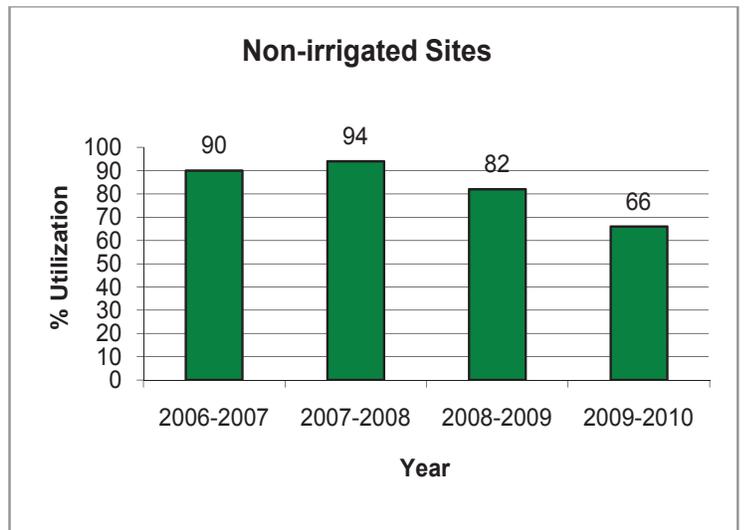


Figure 31. Sunlight Basin WHMA non-meadow utilization.

## **Sunlight Basin Bank Stabilization (WHMA) - Steve Ronne**

Approximately 1,000' of stream bank was terraced and top soil hauled off to prevent further bank collapse into Sunlight creek (Figure 32).



Figure 32. Stream bank stabilization at Sunlight Basin.

## **Yellowtail Bigfork Canal, Final Phase (WHMA) - Steve Ronne**

Work began in December to reconstruct the steep hillside portion of the bigfork canal and install a 48" pipeline to transport the water to the siphon. This canal provides all of the irrigation and pond filling water for ~640 acres of crops and cover fields, and three large ponds on the north side of the Shoshone river. Completion is expected by April, 2011.

## **Yellowtail WHMA Food Plots - Steve Ronne**

We planted 85 acres in sorghum and corn mix. Three acres were planted in clover mix, and over 130 acres of cover was irrigated. Seed was donated by Pheasants Forever and University of Wyoming seed lab in Powell. (Figure 33).



Figure 33. WGFD and volunteers Planting Buffalo Berry at Yellowtail.

## **Renner Russian Olive Removal (WHMA) - Steve Ronne**

Russian Olive trees were mechanically removed from Zeisman canyon utilizing a tracked excavator with a mulching head. Re-growth was chemically treated in the fall and will be monitored and treated in following years. This head-waters type project was conducted on BLM and WGFD fee title lands, in cooperation with Worland BLM. Funding has been provided by WWNRT and WGFD.

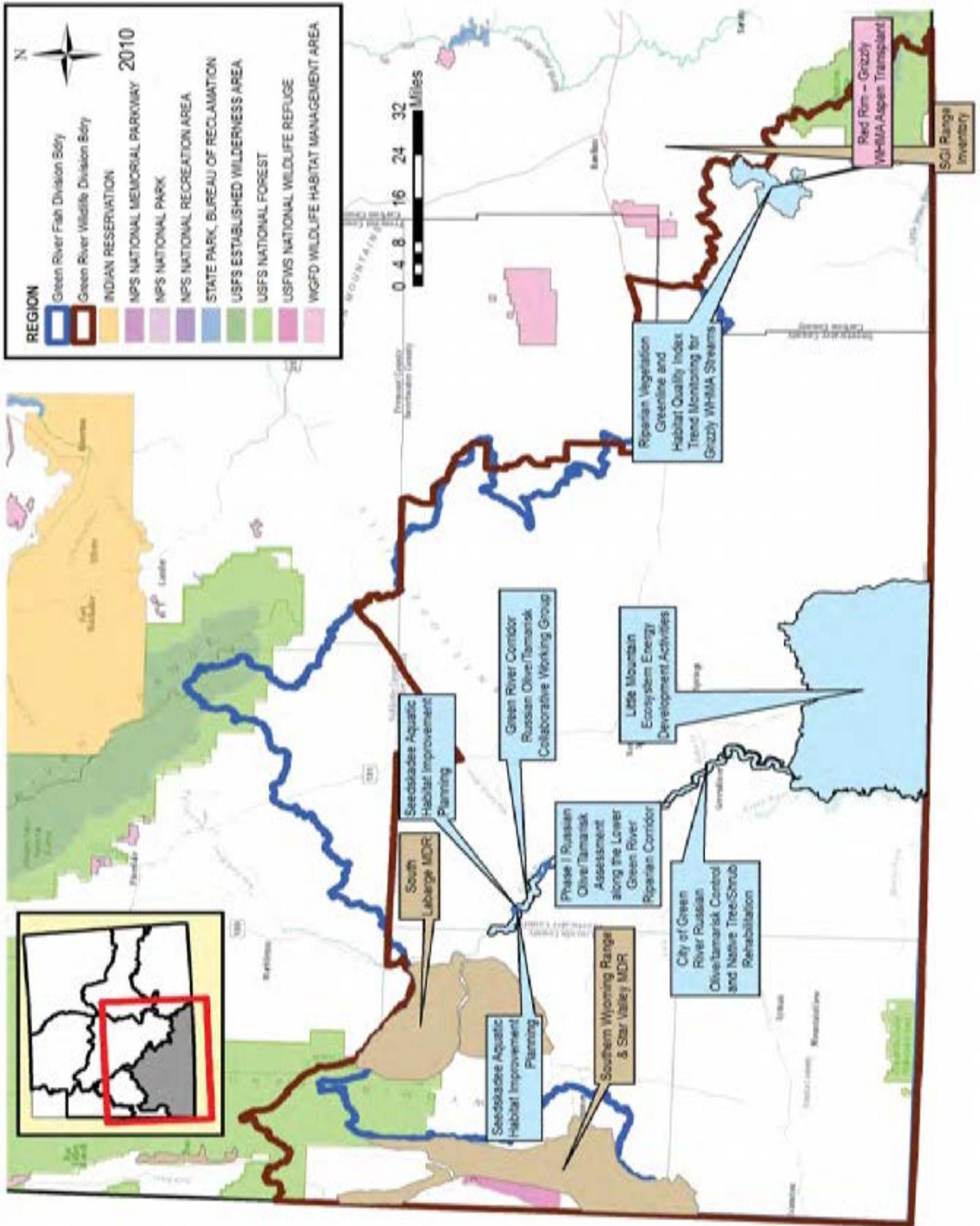
## **Medicine Lodge Boundary Fence (WHMA) - Steve Ronne**

One half mile of forest boundary fence was replaced with buck and pole fence in the Black Butte area. This fence replaces an old section of buck and pole fence in a high wildlife movement winter range area adjacent to a FS cattle grazing allotment (Figure 34).



Figure 34. Medicine Lodge Boundary fence.

# GREEN RIVER REGION



## GREEN RIVER REGION HIGHLIGHTS

- Little Mountain area habitat issues related to energy development identified for BLM land use planning process
- 44 stream miles and 28,556 acres of riparian habitat within the lower Green River corridor inventoried for invasive Russian olive and tamarisk
- Collaborative efforts begin to control Russian olive and tamarisk along the lower Green River riparian corridor
- Beaver habitat supplemented along upper Muddy Creek on the Grizzly WHMA

### **L**ittle Mountain Ecosystem Energy Development Activities (Goal 1) - Kevin Spence

The Little Mountain Ecosystem (LME) is recognized by department personnel as the area south of Rock Springs, east of Flaming Gorge Reservoir, west of Highway 430, and north of the Utah state line. The LME is rich in wildlife and habitat diversity, supports wildlife species assemblages unique in this area of Wyoming, maintains high demand for difficult to draw elk and mule deer licenses, is a very popular public recreational area, and has been the focus of aquatic/terrestrial habitat enhancement and ecosystem restoration efforts during the past 21 years. The LME is a relatively intact landscape with little human development, which has promoted sound ecosystem function and integrity. In recent years, there has been a significant interest in gas and wind energy development within the LME, creating a challenge to develop the landscape while protecting habitat function and ecosystem values.

Time was spent again during 2010 negotiating with BLM about how energy development activities would occur within the LME while still maintaining the wildlife habitat values and ecological integrity of this landscape. A January meeting with the Rock Springs BLM Field Office centered on energy development guidelines and assurances for compliance of the habitat oriented management objectives identified for the LME in the existing BLM land resource management plan. Several issues and ideas were discussed, however it is unclear what deliverable BLM actions resulted from this meeting.

During the fall months, a series of meetings were facilitated by the Governor's staff. These meetings were attended by BLM, private landowner, conservation group, energy development companies, county government, and department representatives. The purpose was to encourage affected interest groups to identify and discuss their issues related to energy development in the LME, which the Governor's Office intended to compile and present to the BLM for consideration as scoping issues for revision of the Green River RMP in early 2011. As a result of these meetings, several other multiple use issues beyond the scope of energy development were identified for BLM consideration during the resource management plan revision. Also, due to private landowner concerns, the group's focus area for identifying issues was reduced in size as the majority of private land/BLM checkerboard landownership area in the northern portion of the original LME boundary was omitted from the group discussions.

### **D**iamond H Conservation Easement (Goal 1) - Ron Lockwood

On December 31, 2009 a conservation easement was finalized on the Diamond H Ranch consisting of 3,100 acres. These lands are classified as crucial winter range and yearlong range for elk, mule deer, moose, sage grouse and pronghorn. This easement secured long-term protection of these habitats from sub-division and will ensure a viable livestock operation and wildlife habitat in the future. Wildlife and habitat stewardship planning continues with the private landowner and with BLM on the landowners BLM grazing allotments.

Organizations involved with this easement include: The Jonah Interagency Reclamation and Mitigation Office, Doris Duke Charitable Foundation, The Conservation Fund, WVNRT, WLCI, WGF, WGBGLC and RMEF. A portion of the money for the conservation easement was used to modify fences on the ranch from woven wire to 3 and four wire fences allowing for better movement of big game and a decrease in fence related mortalities.

Due in part to the success of this project numerous landowners in the region have expressed an interest in conservation easements. A number of these have been reviewed by the Green River regional team and are being evaluated by the Lands Administration Branch.

### **Other Conservation Easement Plans (Goal 1) - Ron Lockwood**

WGFD and WWNRT funding approval has been obtained for a conservation easement on approximately 3,000 acres. It is within core sage grouse habitat and supports crucial winter range for elk, antelope, moose and mule deer. Additionally, documented movement of pronghorn to northern summer ranges across this land have been identified as important features of this property. Cutthroat trout and numerous non-game birds and mammals, including Species Of Greatest Conservation Need (SGCN) identified in the WGFD’s “State Wildlife Action Plan” will benefit by protecting these habitats. In addition to the conservation easement additional access to adjacent public lands is being pursued to benefit anglers and hunters.

Initial discussions and negotiations for another conservation easement are being pursued on about 2,100 acres of private land in the western part of the Region. It is scheduled for presentation to the WGFD in executive session to actively support and pursue the easement. The area supports crucial winter range for mule deer, antelope, moose and elk and is within designated core sage grouse habitat.

### **Upper Muddy Creek Beaver Habitat Improvement (Goal 2) - Kevin Spence**

This was a cooperative effort between the Little Snake River Conservation District (LSRCD) and the department in an ongoing effort to restore sound riparian habitat function to Upper Muddy Creek by encouraging active beaver colonies and sustainable habitat. During September, the LSRCD hired a semi truck to haul several loads of fresh cut aspen trees to Muddy Creek (Figure 1) from a District mechanical aspen treatment at another location. A department crew then cut and hauled the smaller trunks/limbs from the tree tops to active beaver ponds on upper Muddy Creek located within a mile upstream of the Canary Grove confluence. Beaver utilized the aspen material that were either stacked at the pond’s edge near the beaver dams or set adrift in the pond as construction materials to reinforce and elevate their dams (Figure 2). Much of the existing willow habitat along Muddy Creek is in short supply and has small diameter stems, so the 2-10 inch diameter aspen provided beaver solid building material to enhance dam stability and longevity. Stable beaver dams that do not breach readily during run-off flows often promote consistently elevated water-tables that provide an optimal environment for recruitment and rapid growth of willows and other woody riparian species, which is the primary goal of temporarily supplementing these beaver with aspen trees.



Figure 1. Freshly cut aspen trees delivered to active beaver ponds on upper Muddy Creek.



Figure 2. Supplemental aspen material placed for beaver to use in reinforcing and elevating the dam.

### **Little Mountain Ecosystem Aspen Community Monitoring (Goal 2) - Kevin Spence**

Six aspen monitoring sites were surveyed within the Little Mountain Ecosystem during 2010 to further evaluate elk browsing effects on aspen regeneration. The locations of the monitoring sites include Aspen Mountain, Miller Mountain, the northwest face of Pine Mountain, south side of Pine Mountain, Dipping Springs on Little Mountain, and the upper West Fork of Currant Creek on Little Mountain. These aspen trend monitoring sites were selected to better represent the entire landscape encompassing the South Rock Springs Elk Herd Unit, so that browsing trend data can be used to assist with elk population management and harvest strategy decisions.

The Live-Dead (LD) Index was used for the trend surveys. The LD index measures and compares the height of initial growth point for the current year's terminal leader to the height of the tallest previous terminal leader branch that was killed as a result of browsing. A positive LD value indicates uninterrupted young tree growth and/or recovery from browsing, and suggests regeneration maintains the potential to grow to maturity and replace older aspen trees when they die. An LD value near zero indicates that browsing is suppressing growth of young aspen, and a negative LD value is an indicator of significant aspen decline and possible death of young trees. Results from the 2010 survey revealed negative LD index values at 4 of the 6 sites sampled indicating continued decline in aspen regeneration vigor and growth resulting from browsing. Please refer to the 2010 Fish Division Progress Report and the 2010 Wildlife Division Big Game Herd Unit Report for detailed survey results and discussions.

### **Seedskaadee National Wildlife Refuge Cottonwood Regeneration Monitoring (Goal 2) - Kevin Spence**

Three LD Index survey transects were re-read at Seedskaadee National Wildlife Refuge (NWR) to evaluate big game browsing effects on young cottonwood regeneration. The LD Index surveys were conducted cooperatively between USFWS personnel from Seedskaadee NWR and Green River region biologists. Data will assist with deer and moose population management and identification of harvest strategies that encourage unimpeded vertical growth of cottonwood regeneration along the lower Green River riparian corridor. Monitoring sites were located in cottonwood stands at lower Dodge Bottoms, Deer Island, and the Johnson Unit on refuge lands. LD index values improved slightly at the Johnson Unit and Deer Island monitoring sites, but declined significantly at the Dodge Bottoms site compared to values measured in 2009. However, during the 2010 survey, two of the monitoring sites exhibited negative LD values, and the other site supported only a slightly positive LD value. This suggests big game browsing continued to limit vertical growth and health of cottonwood regeneration at surveyed sites at Seedskaadee NWR in 2010. Please refer to the 2010 Fish Division Progress Report and the 2010 Wildlife Division Big Game Herd Unit Report for detailed survey results and discussions.

### **Walker Ranch Water Development and Spike Treatment (Goal 2) – Ron Lockwood**

This is a cooperative venture with the private landowner and BLM to utilize an existing water well, install a solar operated pump, pipelines and stock tanks with adjacent overflow areas to enhance livestock grazing management and promote additional green areas from the overflow to benefit sage grouse brood rearing habitat. Additionally approximately 500 acres of habitat will be evaluated for sagebrush thinning using a Spike treatment along with potential forb/grass seeding enhancement. The WGFD has provided \$7,500 to the Kemmerer BLM office to help conduct an assessment to meet NEPA approval on the federal lands. Additionally WVNRT awarded \$15,000 for purchase of the pump and pipeline.

### **Riparian Vegetation Greenline and Habitat Quality Index Trend Monitoring for Grizzly WHMA Streams (Goal 2) - Kevin Spence**

Six riparian vegetation greenline trend transects and five trout Habitat Quality Index trend transects were surveyed during 2010 at stations along Littlefield, Little Muddy, and Muddy creeks on the Grizzly WHMA. Data from these surveys are used to evaluate the existing riparian plant community species composition compared to the ecological potential for each site, and the condition trends of key stream habitat components for adult trout. Moreover, these trend data are also used to evaluate the effectiveness of livestock grazing management strategies applied in riparian areas on the Grizzly WHMA, and to ensure quality aquatic habitat conditions are achieved and maintained.

Greenline trend data between 2004 and 2010 showed positive improvement in both the ecological status and streambank stability rating based on riparian vegetation species composition at two survey sites in the lower Muddy Creek riparian pasture, the survey site in upper Littlefield riparian pasture, and the site in the lower Littlefield riparian pasture. The ecological status for the Little Muddy Creek site in the Dennison pasture remained unchanged between 2005 and 2010; however the streambank stability rating improved. The ecological status for the upper Littlefield headwaters spring site remained consistent between 2004 and 2010, but the streambank stability rating decreased during that same period. This decrease in streambank stability can likely be attributed

to a downed enclosure fence during 2009 allowing cattle to congregate at the Littlefield Creek headwaters spring for an extended period of time. Overall, the riparian vegetation greenline data suggests that grazing rest and limited early season grazing use of riparian pastures on the Grizzly WHMA between 2004 and 2010 improved riparian habitat conditions. Please refer to the 2010 Fish Division Progress Report for detailed survey results and discussions.

### **Muddy Creek Spike Treatment (Goal 2) - Ron Lockwood and Jill Randall**

This is a cooperative project with BLM, the livestock grazing permittee, Sublette County Conservation District, WGFD, and NRCS and is located in the South LaBarge Common BLM allotment. It is designed to improve habitat conditions for wildlife, primarily mule deer and sage grouse, and livestock through increased vigor of mountain shrub and sagebrush communities, increasing herbaceous production, and improving the overall health of rangelands and watershed functions. Herbicide (Spike) will be aerially applied to several hundred acres to thin Wyoming big sagebrush canopy cover by 30 to 50%. It was developed as a result of the 2008 Wyoming Range Mule Deer Habitat Assessment recommendations. In 2010, six shrub transects and one macro-plot (line point and shrub belt) were established and data provided to the BLM to refine treatment locations on 400 to 500 acres (Figure 3). Plans include further refining polygons and post-treatment management plans before the planned fall 2011 treatment. Funding is being provided by WWNRT and WGBGLC. Pending success and monitoring information we plan on additional treatments in future years.



Figure 3. Photo of a shrub transect installed to help design the Spike treatment in Muddy Creek.

### **Powder Mountain Spike Treatment (Goal 2) - Ron Lockwood**

This is a cooperative effort between the Rawlins BLM, livestock grazing permittee and WGFD located west of Baggs within the Powder Mountain area covering approximately 8,550 acres. The goal is to thin dense, over mature sagebrush by 30 to 50% in a mosaic pattern to improve mixed mountain shrub and sagebrush steppe communities as well as grass and forb understory. Treatments are scheduled for fall of 2011. This is classified as crucial winter range, transitional, and year-long range for the mule deer, elk, and antelope and includes sage grouse brood rearing habitat. Healthy, mountain shrub communities with an improved grassland and forb understory are important parturition and fawn rearing areas for big game.

### **Pole Creek Watershed Aspen Restoration and Fence Rebuild (Goal 2) - Ron Lockwood**

Approximately 8,500 acres were prescribed burned within the 35,000 acre Pole Creek watershed (Figure 4). Ignition began in late September with fire crews from the USFS and BLM. Portions of this watershed are classified as crucial winter range for Lincoln moose and summer and transitional range for West Green River elk and Wyoming Range mule deer herds. Part of the watershed is also classified as early and late brood rearing habitat for sage grouse. Funding was obtained from WWNRT, BLM, USFS and WGFD. In addition to the prescribed burn, future replacement of about five miles of woven wire fence with four-wire fence will allow for better wildlife movement.



Figure 4. Prescribed burn on Pole Creek Watershed.

## **Buck Horn Flowing Well (Goal 2) - Ron Lockwood**

This well is located on private lands owned by Truman Julian. Drill stem was donated by Devon Energy and the Lander sage grouse working group to fence off this spring and associated wetland. Drill stem was chosen to prevent wild horse use of the area. The drill stem was delivered by a donation of trucks from Knight Energy Company. It is located in core sage grouse habitat but will also benefit mule deer, pronghorn and a variety of wetland associated non-game species. Fence construction will be completed in 2011.

## **Profit, McGinnis and Zimple Ranch Legume Seedings (Goal 3) - Ron Lockwood**

These ranches are classified as crucial winter/yearlong range for Wyoming Range mule deer. All the seeding areas are within sage grouse core areas. They were designed to improve transitional/fawning habitat for mule deer and late brood rearing habitat for sage grouse. \$8,000 was provided by WGFD to assist landowners with purchase of seed. Landowners provided the equipment and labor to plant the seed. Approximately 420 acres have been planted with a mixture of sanfoin, vetch, and dry land alfalfa. The landowners also provided native grass seeds to the mix. Seeding took place in the fall of 2010 and with the moisture conditions in the area results are expected to be good.

## **Seedskadee Aquatic Habitat Improvement Planning (Goal 3) - Kevin Spence**

Department and Seedskadee National Wildlife Refuge personnel worked together to plan, coordinate, and permit a series of aquatic habitat improvement projects for the Green River reach through refuge lands. These projects are scheduled for 2011 implementation and include: placing additional rock onto existing instream sill structures at McCullen Bluff and the refuge headquarters areas to improve the hydrologic function of each structure and lift water to increase flows into river side channels adjacent to each structure; placing woody debris in each of those side channels to improve structural juvenile fish habitat; constructing up to 12 rock barb jetty structures on an outside meander bend to benefit juvenile fish habitat at the Hawley Unit, and constructing a large trench pool/point bar channel constriction at the Pal Unit to provide slower velocity pool habitat for adult trout. The Statewide Habitat Access and Maintenance Crew, including the department track-hoe equipment and operator have been requested to assist with these projects in 2011 and beyond.

## **Wyoming Range Mule Deer Habitat Assessment (Goal 5) - Ron Lockwood**

This is the third and final year of the contracted work with the Teton Science School (TSS) for the Wyoming Range mule deer habitat assessment to assess habitat conditions and make recommendations for management actions as a part of the Wyoming Mule Deer Initiative. The first two years focused on 500,000 acres on the eastern slope of the Wyoming Range in the Pinedale area. This year assessments were conducted on about 400,000 acres in the southern and eastern portion, including Star Valley area of the Wyoming Range (Figure 5). Previous reports have been and are being posted on the WGFD internet site and are discussed by Jill Randall in the Pinedale Region report.

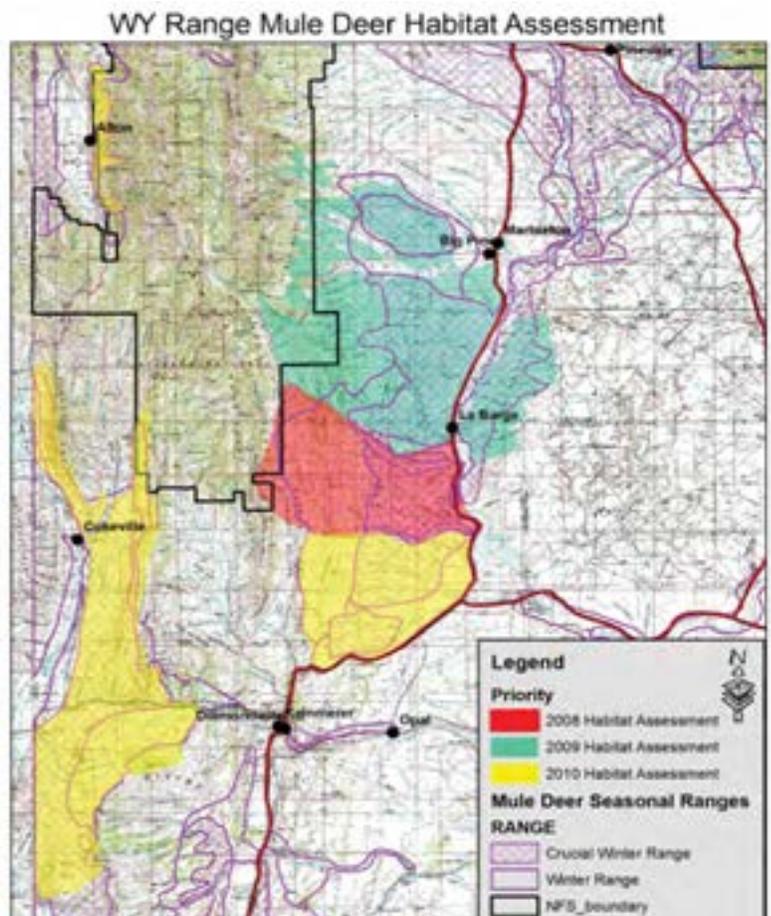


Figure 5. Acres focused on within the Wyoming Range Mule Deer Habitat Assessment.

The 2010 assessment conducted by TSS and the draft report has been reviewed by WGFD personnel. TSS is finalizing the report and it will be posted on the WGFD web site in the spring of 2011. The report includes assessment data and recommendations and is coupled with an extensive excel and GIS based dataset which is linked to field data collected, transects, photo points and patch recommendations.

### **West Green River Elk Habitat Use (Goal 5) - Ron Lockwood**

This study was continued with significant monetary support from the USGS, BLM, NPS, and USFS. The WGFD continues to provide in-kind support. Over the past 5 years a total of 63 elk have been fitted with radio collars to determine location and seasonal habitat use and selection. During this time over 250,000 elk locations have been documented. Results have been used to support the need for improved management of the Rock Creek grazing allotment, and is one of the major reasons that the USFWS is considering a grass bank on CMNWR. The AUMs provided by a grass bank could help with management of the Rock Creek allotment. This study has also helped to support oil and gas lease restrictions and recommendations in Dempsey Basin. Elk locations have documented use of past habitat treatments on the Lost Creek Unit, on the Fossil Butte NPS and the Thoman private land lease in Nugget Canyon. It will help to determine the effectiveness of highway underpasses on Highway 30.

### **Green River Corridor Russian Olive/Tamarisk Collaborative Working Group (Goal 5) - Kevin Spence**

In late 2009 and into 2010, the WLCI Coordinator and habitat biologist encouraged the formation of a local collaborative working group consisting of local landowner and agency representatives to begin addressing control of invasive Russian olive and tamarisk along the lower Green River riparian corridor between Fontenelle Dam and the inflow area of Flaming Gorge reservoir. The level of Russian olive and tamarisk invasion along this reach of river is a concern, but the densities of these invasive species have not yet reached the level where control efforts would be futile (Figure 6). The working group met twice during the past year, and began discussions toward a coordinated effort to strategically inventory, prioritize, plan, implement, rehabilitate, and monitor multiple phased control projects.



Figure 6. A Russian olive tree invading the native sumac understory of a mature cottonwood stand along the lower Green River riparian corridor.

The overall approach will successfully control Russian olive and tamarisk while promoting sustainable native riparian tree and shrub communities along this river corridor reach. Participation in the group during 2010 consisted of individual private landowners, Sweetwater County Weed and Pest, Bureau of Reclamation, Seedskadee National Wildlife Refuge, WLCI Coordination Team, Rock Spring Grazing Association, BLM, City of Green River Parks and Recreation, Green River Greenbelt Task Force, USFWS, Ashley National Forest, and the department.

### **City of Green River Russian Olive/tamarisk Control and Native Tree/Shrub Rehabilitation (Goal 5) - Kevin Spence**

The City of Green River parks and recreation department is an active participant in the collaborative river corridor working group, and the urban riparian greenbelt area adjacent to and through the city of Green River is experiencing the highest observed densities of Russian olive invasion of any location within the river corridor between Fontenelle Dam and Flaming Gorge reservoir (Figure 7). This urban riparian greenbelt area is suspected of being a primary source for Russian olive seed dispersal (bird ingested seeds as the likely upstream vector) both up and downstream within the focus river corridor area, and seed dispersal from this area now threatens important native riparian habitats currently experiencing little or no Russian olive establishment such as lands within Seedskadee National Wildlife Refuge.

Assistance was provided to the Green River Parks and Recreation Department in identifying the locations of Russian olive and tamarisk plants growing on city administered property along the greenbelt corridor. Substantial time and assistance was also provide to the city in planning, coordinating, obtaining cost estimates from potential contractors, and preparing grant proposals for a mechanical treatment to control Russian olive/tamarisk and native tree/shrub planting project in 2011.



Figure 7. A young thicket of Russian olive that established during the past 6-8 years along a lateral river channel in the Scott's Bottom area of Green River's urban greenbelt.

An essential component of the City of Green River's Russian olive/tamarisk control project will be rehabilitating the treated sites with larger sized native riparian tree and shrub plantings. Speedy reestablishment of large stature native riparian tree and shrubs not only will provide the horizontal and vertical structure needed for wildlife habitat and the appropriate species composition for maintaining sound ecological processes, but will serve an important initial demonstration role for encouraging other private landowners along the entire focus reach of the Green River corridor to participate in the Russian olive/tamarisk control effort.

**Phase I Russian Olive/Tamarisk Assessment along the Lower Green River Riparian Corridor (Goal 5) - Kevin Spence**

TSS was contracted by the department to inventory and determine the existing distribution of invading Russian olive and tamarisk plants within the lower Green River riparian corridor between Fontenelle Dam and the downstream property boundary of Seedskafee National Wildlife Refuge. Funding for the inventory was approved by the Director's Office for high priority habitat improvement projects requiring pre-planning and design to facilitate on the ground implementation.

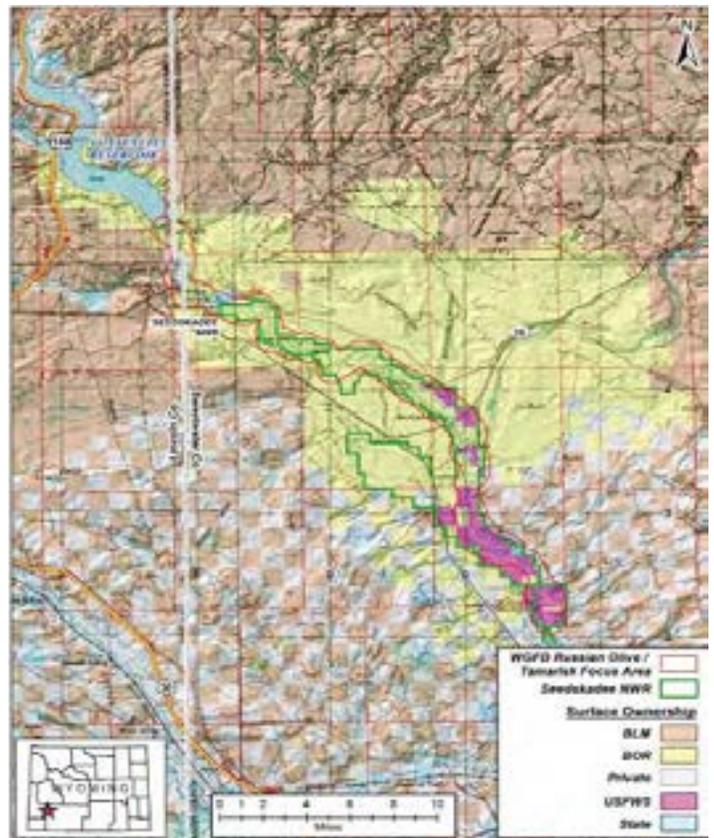


Figure 8. The Russian olive/tamarisk inventory focus area along the lower Green River riparian corridor (Map courtesy of TSS).

The inventory focused on a half mile wide belt of riparian floodplain adjacent to, and along, a 44-mile reach of river totaling 28,556 acres of the riparian habitat corridor (Figure 8). Locations of Russian olive and tamarisk plants were documented. Additional associated data collected included photos, age class, height class, stand size, stem density, general stand descriptions, associated native vegetation, locations of young cottonwood regeneration, and descriptions and locations of any other non-native vegetation encountered. Moreover, each Russian olive and tamarisk site encountered was identified as high, medium, or low priority for treatment, and access routes or limitations were described. A written report was completed, and all the inventory data were compiled into a GIS geo-database and made available to interested landowners and agency partners in the project area. TSS presented the assessment results to some members of the Green River corridor working group in December and negotiations with individual landowners to plan specific Russian olive/tamarisk control projects is expected to begin in early 2011.

## Lincoln Moose Herd Unit Habitat Assessment (Goal 5) - Ron Lockwood

LTSS was contracted to conduct an assessment of habitat conditions within important seasonal ranges of the Sublette and Lincoln moose Herd Units (Figure 9). Poor habitat conditions are generally believed to have contributed to poor herd productivity within these herd units in recent years. The goal was to develop management recommendations for enhancing and conserving important moose winter/yearlong habitats associated with the two herd units. During 2010, the TSS assessed and mapped approximately 46,705 and 60,235 acres within the Sublette and Lincoln Herd Units, respectively. The Sublette portion is reported in the Jackson Region by Steve Kilpatrick. Patch habitat mapping of willow and aspen communities, line transects, and extensive photo-documentation were used. The report is being finalized by TSS. It includes assessment data and recommendations and is coupled with an extensive excel and GIS based dataset which is linked to field data collected, transects, photo points and patch recommendations. The final report will include discussion of the current habitat conditions and recommended management alternatives and enhancement ideas to improve moose habitat for portions of the Lincoln moose herds. In general, the assessment found overall willow habitats to be in a relatively healthy state. However, some specific areas exhibited inadequate willow regeneration and/or regeneration that is unable to escape the browsing zone due to elevated herbivory levels by wild and domestic ungulates. Aspen communities within the study area were composed of stands in all categories of risk to loss. Advanced successional stages, lack of natural fire, and excessive herbivory by wild and domestic ungulates are the major factors contributing to some aspen communities being at high risk levels. Patch level management recommendations included evaluation of livestock grazing, prescribed fire, mechanical thinning, willow plantings, and conservation easements.

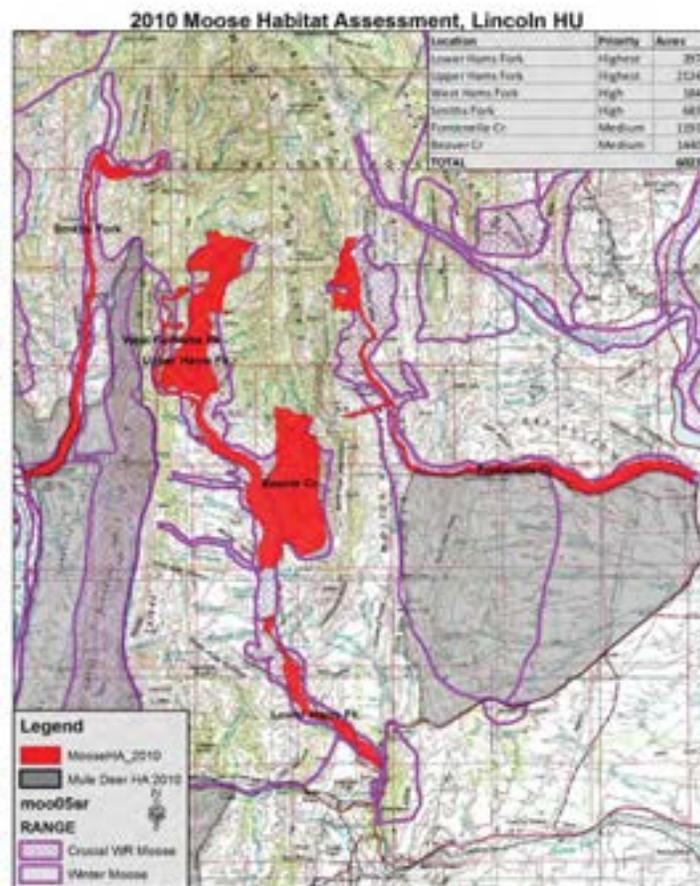


Figure 9. Habitat assessment locations for the Lincoln moose Herd Units, 2010.

### **Little Snake Fringe Aspen (Goal 2) - WLCI**

This treatment consists of removing the conifers and old aspen clones from existing stands through mechanical treatments and prescribed burns. Previous treatments associated with this long-term effort have resulted in the restoration of 400 acres of aspen habitat and 61 acres of other vegetation treatments. In FY10 276 acres were treated (Figure 10). This project improved aspen habitat in an area south of Rawlins. Treatments involved state, private, and BLM lands. Partners included permittees, Little Snake River Conservation District, WGFD and RMEF.



Figure 10. Conifer removal on the East Fork treatment site.

### **Pole Creek (Goal 2) - WLCI**

The objective of this prescribed burn is to promote a more natural vegetative community characterized by a diversity of age classes of upland woody shrub species. The goal is to target approximately 6,650 acres of BLM, private, and State Land for treatment in a mosaic pattern of burned and unburned areas over the landscape.

The prescribed burn will improve wildlife habitat as well as increase livestock forage in this area. It exceeded the projected 6,650 acres of restoration, 7,269 acres were treated (Figures 11 and 12). Partners include WGFD, Forest Service, WWNRT, and WFHF.



Figure 11. Pole Creek prescribed fire.



Figure 12. Mosaic pattern of burned and unburned areas within Pole Creek watershed.

### **Baggs Deer Crossing (Goal 2) - WLCI**

A total of 10 miles of deer proof fence (5 miles on either side of the road) and a tunnel underpass were constructed. There were an estimated 5,423 deer crossings during the fall of 2009, winter of 2009 to 2010 and spring of 2010 through the newly constructed deer underpass and associated 5 miles of deer “proof” fence. Deer vehicle collisions were reduced to less than 50 occurrences from hundreds prior to implementation of the deer proof fencing and underpass. In 2010 the WGFD hired a temporary employee to herd the deer toward the underpass. Partners include WyDOT, WGFD, and Little Snake River Conservation District (LSRCD).

## **R**awlins Fence Conversion (Goal 2) - WLCI

Conversion of old livestock fences to a wildlife friendly standard and reducing wildlife stress, injury and mortality in travel corridors is the goal of this project. The Rawlins fence conversions are a continuing project and the WY Youth Conservation Crew fencing crew does much of the work. In 2010, a total of 21 conversions were completed: 17 rangeland, two wildlife, and two riparian. Partners include WGFD, permittees, LSRC, Industry, and WWNRT.

## **S**eedskadee Boundary Fence (Goal 2) - WLCI

Seedskadee National Wildlife Refuge established a boundary fence in 1997 to exclude range cattle from Refuge habitat (Figure 14). The 100-mile fence was designed with a smooth bottom wire no less than 16 inches above the ground to facilitate pronghorn antelope movement. A study conducted in 2003 found several sections of fence were too low to the ground and some pronghorn mortalities have resulted and pronghorn were not crossing the fence. Approximately 29 miles of fence required adjustments to improve pronghorn migration. This was completed in 2010 and partners included USFWS and WGFD.



Figure 13. USFWS Youth Crew working on boundary fence.

## **B**itter Creek Tamarisk (Goal 2) - WLCI

This involves both biological and herbicide treatments for tamarix on Bitter Creek and Red Creek. Some areas of Bitter Creek are difficult to treat. The use of biological control is the preferred method in these areas. The BLM is waiting until the issue with the use of biological control agents is resolved to release the biological controls in the more difficult treatment areas. The chemical treatments on the Red Creek drainage were successful. This will increase water supply, support fisheries, and support a more productive riparian zone. A total of 150 acres were treated for invasives and one riparian project was completed. Partners include Rock Springs Grazing Association, Anadarko, Sweetwater County Weed and Pest, and Kanda Lateral Mitigation Fund.

## **B**lacks Fork/Muddy Creek Tamarisk (Goal 2) - WLCI

This effort began in 2008 and involves the removal of tamarix (salt cedar) along Muddy Creek and the Blacks Fork River in Uinta County to improve and restore wetland and stream riparian areas. This will increase water supply, support fisheries, and support a more productive riparian zone. In addition, it will reduce the fragmentation of riparian habitat and improve the riparian corridor for numerous wildlife species. A total of 124.5 acres were treated for tamarix and 10 acres of riparian area were re-vegetated with native tree and shrub species (Figure 14). Partners include Uinta County Conservation District and the Uinta County Weed and Pest District.



Figure 14. Native riparian vegetation planted along the Black's Fork.

## **H**ay Reservoir (Goal 2) - WLCI

The Hay Reservoir entails treating approximately 1200 acres of Russian knapweed, whitetop, and swainson pea invasion. This area has failed Standards for Healthy Rangelands due to the invasive plant infestation. Treatment consists of ground application of herbicide to control these weeds across the whole area, including private lands. A total of 600 acres were treated with half of the acreage completed in July and the remainder in September. An additional 250 acres were monitored for re-invasion and 150 acres were inventoried. The inventory revealed a new location of a sensitive species (*Rorippa calycina*). Ocular monitoring of last years' treatments showed 70 to 80 percent kill rate. This benefits Red Creek and Hay Reservoir proper, native vegetation and the wildlife that use the water in these drainages. It will also free up water into the Great Divide Basin. Partner (industry, grazing permittees, landowners, and Sweetwater County Weed and Pest) contributions helped achieve this goal.

## **L**incoln County Weed Control (Goal 2) - WLCI

This involves spraying and biological control of all invasive/noxious weeds within the BLM Kemmerer Field Office (KFO) area within Lincoln and Uinta Counties. Mule deer and the greater sage-grouse in sagebrush-steppe habitat and bald eagles and moose in riparian areas are the major species to benefit from this work. BLM CCI dollars will be provided to the Lincoln and Uinta County Weed & Pest Districts through assistance agreements to support additional seasonal work crews, equipment use and the cost of chemicals; they, in turn, match contributed dollars with in-kind services to double the number of acres covered. Their contributions helped achieve a goal of 500 acres treated and 400 acres of monitoring. Partners include Lincoln and Uinta County Weed and Pest.

## **B**itter Creek Restoration (Goal 2) - WLCI

This involves replacing an in-stream structure that will benefit sensitive fish species, control of invasive species in the riparian corridor and reestablishment of native vegetation in the Bitter Creek watershed. One riparian project was accomplished in 2010. Native vegetation was planted on Bitter Creek between Green River and Rock Springs with the help of approximately 80 youth volunteers as part of BLM's National Public Lands Day (Figure 15 and 16). Partners include Sweetwater County Conservation District, Sweetwater County School District #1, and BLM.



Figure 15. Bare-root stock purchased from SCCD and potted by BLM personnel.



Figure 16. Students from Sweetwater County School District #1 planting native vegetation on the banks of Bitter Creek.

## **M**uddy Creek Enhancements (Goal 1) - WLCI

This involves removing fencing that blocks wildlife migration and causes animal fatalities and replacing this fencing with wildlife friendly fencing. Other components included sediment and erosion control using road improvements. This will enhance the public's wildlife and fisheries habitats by increasing the abundance, diversity, and age class distribution of woody riparian and mountain shrubs in the watershed. Partners include WGFD and LSRC.

### **Sand Creek Salt Cedar (Goal 2) - WLCI**

The Sand Creek Salt cedar control entails treating approximately 30 miles of stream bottom in the Colorado River watershed for salt cedar invasion. Treatment consists of aerial and ground application of herbicides to remove salt cedar. A total of 500 acres were treated, 50 acres were monitored and 150 acres were inventoried. The BLM Rawlins Field Office anticipates continuing this project and incorporating the river inventory and follow up maintenance as needed. This benefits two stream systems, native vegetation and the wildlife that use it. It will also free up water into the Colorado River system and help achieve Standards for Healthy Rangeland. Accomplishments were achieved with the help of Sweetwater County Weed and Pest.

### **Raymond Mountain Invasives (Goal 2) - WLCI**

This effort involves removing two aggressive invasive species to improve the forage base for wildlife species in the Raymond Mountain area. It was designed to be implemented and funded over a 5 year period and is located within the Highland Cooperative Weed Management Area. The primary goal is to control/eradicate Dalmatian toadflax and Dyer's Woad on Raymond Mountain within the Sublette Mountain Range. The primary approach is to use helicopters equipped to spray herbicides in the rugged canyons on Raymond Mountain. Partner (Lincoln County Weed and Pest) contributions helped achieve a goal of 500 acres treated and 250 acres monitored in 2010.

### **Sweetwater County Weeds (Goal 2) - WLCI**

This project increases the level of control to minimize the economic and ecological impacts caused by invasive species. 450 acres of weeds were controlled, and 200 acres of formally controlled areas were evaluated. Treatment areas of priority include riparian areas, BLM roads and their horse corrals. Treatment for cheatgrass where invasion is of particular concern. Partners include Sweetwater County and private landowners.

### **Seedskadee Cottonwood Restoration (Goal 2) - WLCI**

Seedskadee NWR in conjunction with several partners is working to improve habitat conditions along the Green River corridor by restoring the cottonwood gallery that provides food and shelter for wildlife and migratory birds. The project is proposed to extend from Fontenelle Dam to the City of Green River. Restoration and rehabilitation of declining and decadent cottonwood galleries will improve biotic community stability, river fisheries, wildlife use, and aesthetics. Additionally, associated with restoration would be proportionate increase in hunting and recreation opportunities. Seedskadee personnel worked with the BLM Kemmerer Field Office to plant 45 trees at the Weeping Rocks camp ground just north of the refuge. The Boy Scouts and a youth group from Kemmerer helped plant the trees in the campgrounds.



Figure 17. Cottonwood trees planted at Seedskadee NWR, Note: Contract also provided for tree protection.

A contractor planted 234 trees in a portion of the refuge that has not had trees for many years (Figure 17). This area along the river was proposed due to the complete absence of trees and existing infrastructure in place to irrigate the trees to increase survival. The trees were planted and the refuge irrigated them all summer. Partners include USFWS, WGFD, and BLM.

## Muddy Creek Fish Barrier Removal (Goal 1) - WLCI

Muddy Creek is the only system in Wyoming where viable populations of BLM sensitive Colorado River cutthroat trout, bluehead sucker, flannelmouth sucker, and roundtail chub coexist. Bluehead sucker, flannelmouth sucker, and roundtail chub populations have declined by about 50% range-wide. There are numerous threats to the populations in Muddy Creek including hybridization/competition with non-native species, habitat fragmentation from in-stream structures, and loss of habitat. The removal of fish barriers is key to the recovery and conservation of the species. This was the first step in removing numerous fish barriers in the Muddy Creek watershed. An upstream fish barrier (a perched culvert on the main-stem of Muddy Creek) was removed and 0.70 miles of new stream channel was constructed to allow for BLM sensitive fish passage (Figure 18 and 19). This was a cooperative effort between the BLM, WGFD, NRCS, LSRC, and TU.

## FWS Private Landowner Lincoln County (1) (Goal 2) - WLCI

Phase 3 will focus on establishing /enhancing hydrology to 12 acres of wetland/ flood irrigated native hay-lands through the repair of 400 ft. of low level dikes and installation of three water control structures. The shallow water wetlands established/enhanced through this project will benefit several migratory waterfowl and water birds. Historic water management will favor migrants with early season shallow inundation until July 15th when water levels are then drawn down for the haying season. The surrounding 65 acres of upland will remain idled during the primary nesting season (April-July). Partners include a private landowner and WWNRT.

## Savory Creek Restoration (Goal 2) - WLCI

Under Phase II, an additional 5,600 ft. of Savory Creek will be restored to benefit native fish species, including Colorado cutthroat trout. Natural channel design concepts will ensure long term stream functions. Goals include reducing bank erosion, increasing the number of pools and pool depths, improving riffle width/depth ratio, increasing bed stability, and reducing overall water temperatures by increasing riffle velocity, decreasing cross-sectional area and adding over hanging vegetation (willow/cottonwood canopy). Partners include LSRC, private landowners, and WWNRT.



Figure 18. Map of the Muddy Creek stream restoration project.



Figure 19. Restored stream reach Note: Bridge in background replaced perched culvert, and wetland is approximately where the culvert was located.

## **Sagebrush Habitat Treatment (JO Ranch)** **(Goal 2) - WLCI**

This will increase forb and invertebrate diversity in riparian and transitional riparian/upland areas through mowing and seeding of native forb species. The focus is improving habitat for a diversity of species, particularly sage-grouse and other BLM sensitive avian species such as the Brewer's sparrow and sage thrasher, which rely on riparian habitats for critical brood rearing requirements in the Sand Hills ACEC south of Rawlins (Figure 20). Ten acres of vegetative treatments were applied and will continue in 2011. Partners include local ranchers, WGFD, NRCS, and BLM.



Figure 20. Small patch of cheatgrass found on the JO Ranch.

## **BQ Dike Rehabilitation (Goal 2) - WLCI**

The BQ Dike along the Bear River was repaired to protect wet meadow habitats and associated wildlife. Rehabilitation of the BQ Canal will permit stable, dependable water conveyance and expand migratory waterfowl and shorebird nesting habitat and wetland management options both within and outside Cokeville Meadows NWR (Figure 21). This has improved the functioning of the dike and prevented the inadvertent draining of approximately 5,000 acres of wetland meadows located on the east side of the Bear River. Approximately 1 mile of dike and water delivery system south of the refuge boundary was repaired to prevent water washing out areas and returning back to the river. Additionally, about 120 acres of invasive species were treated, 0.25 mile of irrigation ditch was cleaned, and 0.5 mile of interior fencing removed to allow passage of antelope. The Dike will be monitored in the spring to watch for erosion issues.



Figure 21. Example of the repairs made to the BQ Dike to prevent water in the dike returning to the Bear River.

## **Forgen Slough (Goal 2) - WLCI**

Bordering Cokeville NWR, Phase II will focus on establishing /enhancing hydrology to 388.8 acres of wetland through the construction and/or repair of 16 low level dikes and installation of 17 water control structures. Partners include NRCS, Union Pacific RR, WWNRT, and Rocky Mountain Power.

## **Whites Water Canal (Goal 2) - WLCI**

Through collaborative efforts, a fish screen will be installed at the Whites Water Canal irrigation diversion on the mainstem Smiths Fork to prevent entrainment and mortality of native fishes. Designs will also include a series of in-stream structures to adequately elevate water levels at the diversion point to provide irrigation water while facilitating upstream passage of various native species of concern, including fluvial Bear River Bonneville cutthroat trout (*Oncorhynchus clarki utah*), bluehead sucker (*Catostomus discobolus*) and leatherside chub (*Gila copei*). Several other important native fish species are found in the Bear River system, including mountain whitefish, mottled and Paiute sculpin, longnose and speckled dace, reidside shiners, Utah suckers, and mountain suckers. Partners include private landowner, WWNRT, TU, and NRCS.

## **K**illdeer Wetlands Restoration (Goal 2) - WLCI

This effort includes adapting to reduced water flow from Fontenelle Dam by constructing a sill to restore water flow to an original oxbow and braids. As water continues to flow through this area natural vegetation can be restored and vital riparian and wetland habitat will return (Figure 22). It will restore plant diversity to the Green River corridor, provide habitat for birds and aquatic species, enhance the Greenbelt walkway by providing a destination for trail hikers and recreational whitewater enthusiasts. Partners include WWNRT, Ducks Unlimited, USFWS, WGFD, City of Green River, Green River Greenbelt Task Force, BOR, and U.S. Department of the Interior – Central Utah Project.



Figure 22. Installation of sill in the Green River. The sill will aid in watering the Killdeer Wetlands.



## JACKSON REGION HIGHLIGHTS

- 16 acres of wetlands were restored at South Park WHMA
- 8 water control structures were replaced at South Park WHMA and Alpine Wetlands
- 43 miles of elk fence were maintained on WHMA's and feedgrounds
- 60 acres of meadow were irrigated and mowed on Horse Creek WHMA
- Provided native Snake River fish access to an additional 8 miles of spawning and migrating habitat by replacing a headgate in tributary Spring Creek
- Replaced decaying irrigation infrastructure, restoring native fish access to over 45 miles of historic spawning and rearing habitat in Spread Creek
- Enhanced another 2 miles of stream and 4 miles of riparian habitat on upper Crow Creek
- Reduced hazards to anglers and wildlife along 2.5 miles of riparian area along Flat Creek
- 1,907 acres of Rx fire in Lower Gros Ventre
- 1,624 acres received Rx fires in Hill Creek

### Hill Creek Prescribed Burn (Goal 2) - Steve Kilpatrick

The Teton Basin Ranger District of the Caribou-Targhee National Forest completed the second phase of the three phased Hill Creek prescribed burn and the Bradley Mountain prescribed burn during the fall of 2009. (Figures 1 and 2). The following partners contributed financially to the project: RMEF - \$5,500; BTNF - \$87,000.

The area consists of important moose, elk and mule deer transition/winter range and the main objective is to set back succession in aspen/conifer and mountain shrub communities. It is located along the base of the west side of the Tetons approximately six miles southeast of Driggs, ID. The treatment includes three burn units. The Darby Unit (1,583 acres) was completed in 2008 and the Rapid Creek Unit (1,624 acres) was completed in 2010. Approximately 85% of the Rapid Creek Unit received fire with a mosaic of intensity/severity levels. The remaining Hill Creek Unit (2,051 acres) is planned to be completed by September of 2012.



Figure 1. Location of the Hill Creek prescribed burn.



Figure 2. Implementation of the Hill Creek prescribe burn.

## Spring Creek Headgate Fish Passage (Goal 2) – Lara Sweeney Gertsch

The spring creeks of the Snake River watershed are integral to the natural recruitment of native Snake River cutthroat trout for a fishery of national and regional importance. Levees and flood irrigation have changed the structure and function of the river and its spring creeks. Partnerships with private landowners, WGFD, WHFW, Teton County Conservation District, WVNRT, and conservation groups were initiated to re-establish the function of these spring creeks and enhance fisheries habitats.

Spring Creek, south of Jackson, is critical Snake River cutthroat trout spawning habitat and is entirely located on private lands. The reach of Spring Creek of most concern was upstream of the confluence with Blue Crane Creek and downstream of the Spring Creek Headgate. The work for this stream reach was separated into two concurrent projects: channel enhancement and passage restoration. The Spring Creek Channel Enhancement Project addressed the degraded channels with objectives to narrow stream width, add spawning gravel, construct instream structures, and dredge sediment accumulations. This project was initiated in December 2009 (See 2009 SHP Annual Report) and finished when the headgate project was complete on February 19th, 2010.

The second concurrent project was the Spring Creek Headgate Fish Passage Project. The objectives were to restore and maintain access to spawning habitats within Spring Creek. The Spring Creek irrigation headgate was in disrepair and needed to be replaced. The headgate acted as a barrier, excluding downstream native fish assemblages from eight miles of spawning habitat. A new headgate structure, which included a fish ladder, was designed by the landowner, with assistance of the WGFD. The prefabricated concrete structure was delivered in four pieces (Figure 3). A 30 metric ton trackhoe was brought in to place the headgate sections. During construction, the stream was diverted into a historically abandoned oxbow. The concrete segments were fit together and leveled as they were placed in the streambed. The project was completed on February 19, 2010 (Figure 4). With the headgate work concluded, spawning gravels were strategically placed in seven areas downstream. The ladder was monitored and the sod matting was planted during the 2010 spawning season.



Figure 3. Spring Creek Headgate prefabricated concrete structure prior to installation. The prefabricated concrete forms were fit together as they were placed in the streambed.



Figure 4. Spring Creek Headgate structure installed. The fish ladder is on the west bank of the structure (bank opposite the cottonwood tree).

## Lower Gros Ventre Vegetation Treatments (Goal 2) - Steve Kilpatrick

The Jackson Interagency Habitat Initiative (JIHI) lower Gros Ventre treatment (16,684 acres) was initiated in 2005. Phase I focus was on site-specific ignitions to benefit bighorn sheep and elk. Managers also avoided burning large continuous patches of sagebrush to minimize negative impacts to greater sage grouse. Phases I & II (2007-2009 Rx burning) produced a nice mosaic of burned and unburned areas with approximately 2,922 acres receiving fire (Figure 5 and 6).

Phase III was initiated in the fall of 2010 with funding from the following: RMEF- \$14,000; Wyoming Wild Sheep Foundation - \$10,000; WGBGLC \$10,000; and the WWNRT \$50,000. Approximately 1,907 acres received prescribed fire in a mosaic of varying severity/intensity.

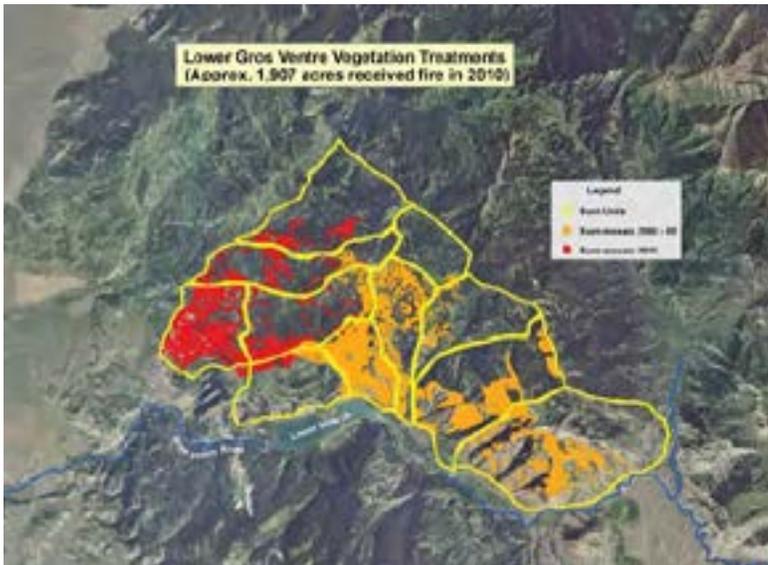


Figure 5. Lower Gros Ventre burn mosaic.



Figure 6. Bighorn Sheep utilizing the Lower Gros Ventre Rx burns, 2010.

Prescribed burning conditions 2010 were equally excellent to those in 2009. Managers took advantage of the excellent burn windows with implementation activities lasting for over a month and allowed October snow falls to extinguish the last of the fires. As in 2009, a variety of challenging weather events kept managers vigilant throughout the month-long implementation phase.

Public relations were again a high priority and BTNF staff did an excellent job of keeping the public updated and informed during implementation. FS personnel established public relations stations along the Gros Ventre road and patrolled it regularly entertaining questions and discussing the project with those interested. A group of graduate students from the Teton Science Schools also provided an interpretive tour of the site. FS and WGFD personnel gave a presentation on fire ecology and the project to a group of approximately 20 guests at the Gros Ventre River Ranch.

## Spread Creek Fish Passage (Goal 2) - Lara Sweeney Gertsch

The Spread Creek Dam is located within the BTNF approximately 1/4 mile south of the TNP boundary and north of the town of Jackson. The dam and infrastructure was built in 1967 and showed a need for significant repair. The concrete diversion was originally designed only for irrigation deliveries and there were no allowances for upstream fish passage through the structure. As constructed, the total vertical drop across the structure was approximately 3.5 feet. In the subsequent 43 years, the formation of a scour hole downstream of the structure increased the hydraulic drop to as much as 9 feet. Wyoming TU partnered with WGFD, GTNP, BTNF, and water users Triangle X Ranch and Moosehead Ranch, to modernize the irrigation infrastructure while removing a fish barrier.

The Spread Creek Dam blocked Snake River cutthroat trout and native non-game fish from migrating out of the mainstream Snake River and accessing over 45 miles of historic spawning and rearing habitat in the middle and upper portions of Spread Creek. The objectives of the Spread Creek Fish Passage Project are to restore native fish access to the diverse habitats in headwater reaches and improve irrigation delivery systems. Detailed objectives included:

- Removing the Spread Creek Dam and appurtenant headgates (Figure 7).
- Re-grading of the stream channel to natural elevations and to allow fish passage through the old dam site (Figure 8).
- Installing of three rock weirs to maintain the elevation necessary to divert water at the new upstream point of diversion. The rock weirs were designed to allow fish to either migrate over or through to ensure access to upper Spread Creek habitats.
- Modernize the irrigation infrastructure including new headgates, sediment basin, pipe (both from the headgate to splitter box and under Spread Creek to deliver water to the south ditch), and splitter box.



Figure 7. Crews removing the 1964 Spread Creek Dam, a barrier to upstream migration for Snake River cutthroat trout and native non-game fish.



Figure 8. Re-grading of the Spread Creek channel to allow fish passage through the old dam site.

Construction was completed in mid-December 2010. Once the snow is gone in spring 2011, the partners will discuss operations of the new facilities and opportunities for revegetation and monitoring.

## Upper Gros Ventre Habitat Enhancement (Goal 2) - Steve Kilpatrick

The JIHI habitat managers continue to conduct assessments and plan for treatments within the Upper Gros Ventre (Figure 9). A 2007 habitat inventory was used to habitat type a 29,612 acre area between Slate Creek and Cottonwood Creek. Certain elements necessary for NEPA have been initiated and the WGFD provided a \$15,000 grant to the BTNF for NEPA development.

Additional cover-board assessments and snowshoe hare pellet counts were conducted in 2010 to refine treatment recommendations and assess compliance with the Canada lynx forest plan amendment. Numerous areas

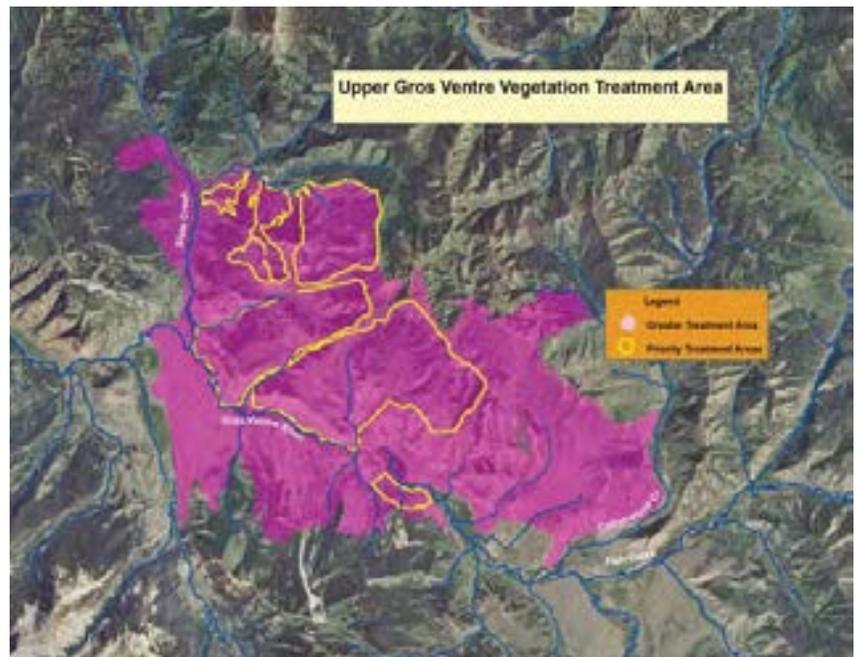


Figure 9. Upper Gros Ventre Habitat Enhancement Area.

proposed for treatment have met or surpassed the horizontal cover-board threshold of 48%. However, relatively low densities of pellets were found in most of these. Managers have planned a field trip involving the USFS, USFWS and WGFD in early 2011 to review and assess data sets, review on-site conditions and make final recommendations relative to treatments.

### **Upper Crow Creek Spawning and Migration Enhancement Phase 2010 (Goal 2) – Lara Sweeney Gertsch**

Crow Creek is a tributary to the Salt River. The WGFD is working with landowners, NRCS and Star Valley Conservation District to promote watershed function and ecosystem integrity by enhancing the quality and diversity of aquatic habitats. Enhancing Snake River cutthroat trout spawning and migration and habitat function in Salt River tributaries is an ongoing watershed effort. The Upper Crow Creek Spawning and Migration Enhancement Phase 2010 Project objectives are to provide sustainable pools, overhead cover, spawning habitats and migration routes for native Snake River cutthroat trout.

The project is located 4 miles southwest of Fairview and approximately ½ mile east of the Idaho Stateline. The first two phases of the Upper Crow Creek Spawning and Migration Enhancement Project were installed during the falls of 2008 and 2009. Two rock cross-vane structures, two barb structures and six tree revetments were placed to enhance overhead cover and maintain stream form. Washed gravels were added for spawning habitat. Pools were excavated to enhance meander pattern and improve trout habitat.

Upper Crow Creek Spawning and Migration Enhancement Phase 2010 is directly downstream of the first two phases. This reach is enrolled in the WGFD’s Private Land Public Wildlife Program for angler access. Currently, the stream has minimal habitat diversity. There are few pools and riffles, and little overhead cover. The stream bottom and spawning gravels are inundated with sediment. Installing instream rock habitat structures, dredging sediments, building riparian fence, planting streambank willows, creating water gaps, and installing a new water well and pipelines are planned.



Figure 10. Boy Scouts of America planting willows on upper Crow Creek.

Work began during the spring of 2010. Boy Scouts harvested willows from another stream in the watershed in May. After three weeks of preparing the cuttings, the scouts planted approximately 300 willows along the Crow Creek streambanks (Figure 10). In September, twelve rock structures were installed and dredging was used to stabilize and restore the form of the meandering stream. The riparian fences were completed and all gates were mounted. This fencing assists three different landowners to manage their horse pastures with a rest/rotation system. In 2011, livestock will be excluded from the riparian pasture with the exception of water gaps. The off-stream water well, pipeline and trough are planned to be in place by October 2011. When the pipeline, trough and well system is complete, the water gaps will be removed and replaced by gates. The livestock will be excluded until tree and shrub planting have become established or after five years of grazing rest.

### **Teton to Snake Project (Goal 2) - Steve Kilpatrick**

The Jackson Ranger District (BTNF) is proposing to conduct prescribed burning, non-commercial and commercial thinning to modify potential fire behavior, set back succession and enhance aspen communities across 87,000 acres in the Jackson area. This includes important wildlife habitats along the west side of the Snake River from Teton Village to south of Hoback Junction (Figure 11). Fire suppression has moved the landscape toward an advanced vegetation succession state with decreased age-class diversity. Vegetation age-class diversity

generally results in increased landscape stability and resistance to catastrophic events associated with fire, disease and insect infestations.

A minimum of 198 fires were suppressed within the project area between 1953 and 2007 (an average of 4 fires/year). Moreover, four fires were suppressed within the project area in 2010 (Figure 12).

We support the Forest Service’s approach to manage fuels and protect human developments utilizing a more fine-scaled mosaic of vegetation manipulations. We also support using limited mechanical treatments and prescribed fires to allow the return of more natural fire regimes, especially within the Palisades Wilderness Study Area. The proposed treatments will generally enhance habitats for wild ungulates, especially moose, if juxtaposition and optimal amounts of thermal cover and foraging areas are managed for. It should also be noted that old growth and climax vegetation communities are providing valuable habitats for many of our designated Species of Greatest Conservation Need within the project area. Thus, we encourage managers to design the project so it strikes the best balance between meeting fuels reduction objectives and maintaining/enhancing wildlife habitat for the suite of species occurring within the area.

Public scoping has been completed, including comments from the WGFD, and additional planning/evaluations are needed prior to a record of decision which is scheduled for the fall of 2011. A proposal for NEPA funding support from the WGFD has been submitted (\$24,027).



Figure 11. Designated big game winter, summer and transitional ranges adjacent to and within the Teton to Snake Fuels Management Area.



Figure 12. Historically, fire has played a major role in molding vegetation communities surrounding Jackson and the Teton – Snake project area. The pre- 1950 fires in the project area occurred in 1931 and 1934, resulting in stand regeneration which generally lasts for 80-110 years in this area.

### **F**lat Creek National Elk Refuge Phase 2010 (Goal 3) - Lara Sweeney Gertsch

Flat Creek is a spring fed and irrigation augmented stream that originates north of the town of Jackson, runs through town and ends at the Snake River south of town. This stream is integral to Jackson Hole and the natural recruitment of native trout for the Snake River, a fishery of national importance. In addition, Flat Creek on the National Elk Refuge (NER) provides a walk in catch and release trophy Snake River Cutthroat trout fishery. Flat Creek’s proximity to town, public access and large average fish size make it one of the most popular creeks in Wyoming.

In 1983 a large habitat restoration project was initiated on Flat Creek by WGFD, NER and Jackson Hole Chapter of Trout Unlimited. The treatments narrowed Flat Creek, stabilized banks, increased cover, and tied up excess sediment in bars and streambanks. Twenty-seven years later, some of these structures still function in stabilizing

Flat Creek while others create hazards for anglers. In 2009, 2.5 miles of creek were visually assessed, 760 photos of structures and 29 historical photo repeats were taken. A map, summary and evaluation of the inventory were presented to NER personnel. The partners concluded that angler safety, increasing brook trout numbers and decreasing function of the stream structures were significant issues. Angler safety was identified as the highest priority and was planned to be addressed first.

The objective of the Flat Creek NERS Phase 2010 is to reduce hazards to anglers and wildlife along the stream. Old structures were anchored using T-posts and cables along the stream banks. Due to natural freeze and thaw over 27 years, several T-posts are six to eight inches out of the ground. During the summer months grass obstructs the view of these posts (Figure 13). This presents a hazard to anglers walking the banks. In addition, cables attached to these posts are often exposed. Finally, a dilapidated and unsafe angler foot bridge was identified as not repairable and aesthetically objectionable (Figure 14).

A contract has been awarded to remove exposed hardware on the banks. In addition, the Habitat and Access section of the WGFD removed the Flat Creek Foot Bridge in July. Phase 2011 will address the unstable instream structures. Future goals are providing habitat for all age classes of trout, moving Flat Creek toward stability, and identifying options for enhancing Snake River cutthroat trout populations.



Figure 13. Exposed T-post along the banks of Flat Creek present a hazard to angler and wildlife.



Figure 14. Flat Creek Foot Bridge, a dilapidated and unsafe angler foot bridge was removed by the Habitat and Access Crew.

## **Jackson Moose Research – Phase II (Goal 5) - Steve Kilpatrick**

Phase I of the Jackson moose research, “Resource selection and population dynamics of Shira’s moose (*Alces alces shirasi*) in northwest Wyoming” by Scott Becker, UW Coop. Unit was completed in 2008. Becker’s findings and conclusions were:

- Moose wintering in the Buffalo Valley exhibit low reproductive potential illustrated by low twinning rates, reproductive pauses, in-utero loss over winter, possible nutritional deficiencies and relatively low parturition rates.
- The nutritional quality of available forage may be the most important determinant in limiting population growth over the past 20 years. Moose populations may have slowly declined in response to gradually declining habitat quality over this time period.

Phase II, “Habitat condition, diet, and nutritional quality of available forage: implications for a declining moose population in northwest Wyoming” is near completion. Janess Vartanian, Master of Science Candidate, U.S. Geological Survey, Wyoming Cooperative Fish and Wildlife Research Unit, Department of Zoology and Physiology, University of Wyoming should be completing her thesis in the spring of 2011. Over 40 moose were individually followed as a part of their research (Figure 15).

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

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



Figure 15. Over 40 moose were individually followed.

A summary of the information and results will be reported in the 2011 SHP report. Her Thesis should be available from the University of Wyoming following completion and acceptance in Spring 2011.

### **Teton Bighorn Sheep Research (Goal 5) - Steve Kilpatrick**

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

The Teton Range bighorn sheep herd, known as the Targhee Bighorn Sheep Herd, resides year-round at high elevation in Grand Teton National Park (GTNP) and on the BT and Caribou-Targhee National Forests. It is Wyoming's smallest and most isolated native "core" herd consisting of a remnant population of perhaps 100-150 sheep. The population's future is tenuous owing to its small size, likely isolation and the combined effects of loss of historic winter ranges, habitat alteration due to fire suppression and threats posed by increasing recreation in and near important seasonal ranges.

Substantial progress has been made to address the threats to the long-term survival of the herd by Teton Range Bighorn Sheep Working Group members. Disease concerns were significantly reduced with retirement of the last remaining domestic sheep allotment in the Teton's in 2005. Since 2001, the park has implemented seasonal closures of sheep winter ranges to reduce disturbance impacts during this stressful period. Work on genetic concerns is ongoing. Uncertainties still remain regarding the current and historical distribution of the sheep herd, recent and historical impacts to sheep habitat, and whether bighorn sheep avoid areas of human activity. Specifically, managers are concerned about proposed expansion of developed recreation along the park boundary and potential impacts to bighorn sheep winter ranges and travel corridors. Consequently, there is a critical need to quantitatively assess the habitat selection patterns of this isolated sheep herd. Much of the information has been obtained through information collected from collared bighorn sheep.

The primary objectives of this study are to:

1. Compile and map historic sheep distribution using historical data sources;
2. Document locations, characteristics, and use patterns for seasonal habitats and movement corridors;
3. Quantitatively assess the habitat selection patterns of the herd (in winter and summer);
4. Quantitatively assess avoidance of winter habitats by bighorn sheep due to human recreation (i.e. skiing);
5. Evaluate the effects of retiring domestic sheep allotments on the Teton Range bighorn sheep herd;
6. Determine lamb production and lamb survival to mid- summer for radio-collared adult female sheep; and
7. Analyze bighorn sheep nutrition in the Teton Range during summer;
8. Determine causes of mortality for radio-collared bighorn ewes throughout the study period;
9. Provide community education on bighorn sheep and the project in the form of public presentations, written materials, local media, website, etc.

2010 - Summer and winter data were collected through the 2009-2010 winter and through July 15, 2010 at which time the collars fell off (Figure 16). Aly is working on data analysis and hopes to complete her thesis summer 2011.

In addition, the report will be summarized in the 2011 SHP. Genetic information from this study is being shared with the University of Montana which was contracted by GTNP to determine the genetic variability and population genetic structure of the Targhee and Jackson bighorn sheep herds. The University of Montana is conducting genetic analysis on 156 fecal and 29 tissue samples from the Targhee and Jackson herds. The following is a summary of their results.

- Significant genetic differentiation between Teton and Jackson herds, and North and South. Teton bands
- Genetic evidence for movement of one ewe from North and South Teton band
- Reduced genetic variation in both Teton Bands
- Low level of genetic differentiation among bands in the Jackson herd
- Strong evidence for a bottleneck in the North Teton band

Management Implications/Recommendations are:

- Consider translocation of unrelated sheep in the Teton Range, balancing risk of disease introduction with fitness increases from gene flow
- Consider the North and South Teton bands as separate management units (for harvest)
- Continue managing the Jackson herd as one genetic unit: though the bands could be demographically independent

The final thesis for the above study is expected in early to mid 2011.

### **Star Valley Front Habitat Enhancement (Goal 5) - Steve Kilpatrick**

The Greys River Ranger District of the BTNF is proposing to implement prescribed burn treatments within a 24,963 acre area along the Star Valley Front (Figure 17). The area is east of Afton, and extends from Smoot north nearly to Turnerville. The main purposes of the burn are to:

- (1) create a balance of age classes in the mountain shrubland, big sagebrush, aspen, and conifer woodlands
- (2) improving the vigor of vegetation on mule deer and elk winter and transition range
- (3) reduce fuel loading along the national forest-private land interface.



Figure 16. Twenty bighorn sheep collars were retrieved in the Teton's ( Dr. Matt Kauffman, Dr. Seth Newsone).

Burn units are currently being drafted to treat areas in crucial mule deer winter range recommended by WGFD in the mid 1980s. Burn units will be treated on a rotational basis given the importance of the habitat for wintering mule deer, elk, and moose. This area comprises the largest crucial winter range on the BTNF. It is within SHP terrestrial enhancement priority area and nearby aquatic enhancement area and ranks high. Project planning, in cooperation with WGFD, will continue through the 2010-2011 winter and field data collection will be completed in the summer of 2011 (goshawk surveys in many burn units is already completed). Project implementation is planned for 2012. A WGFD grant for \$67,500 has been approved to conduct and implement NEPA associated activities.

### **S**ublette Moose Herd Unit Habitat Assessment (Goal 5) - Steve Kilpatrick

TSS was contracted to conduct an assessment of habitat conditions within important seasonal ranges of the Sublette and Lincoln moose Herd Units. Poor habitat conditions are generally believed to have contributed to poor herd productivity within these herd units in recent years.

The project goal was to develop a habitat assessment with management recommendations for enhancing and conserving important moose winter/yearlong habitats associated with the two herd units. During 2010, TSS assessed and mapped approximately 46,705 and 60,235 acres within the Sublette and Lincoln Herd Units, respectively (Figure 18). Patch habitat mapping of willow and aspen communities, line transects, and extensive photo-documentation were used for this habitat assessment.

The assessment report is being finalized and should be in the summer of 2011. The report includes assessment data and recommendations and is coupled with an extensive excel and GIS based dataset which is linked to field data collected, transects, photo points and patch recommendations. The final report will include discussion of the current habitat conditions and recommended management alternatives and enhancement ideas to improve moose habitat for portions of the Sublette and Lincoln moose herds. In general, the assessment found overall willow habitats to be in a relatively healthy state. However, some specific areas exhibited inadequate willow regeneration and/or regeneration that is unable to escape the browsing zone due to elevated herbivory

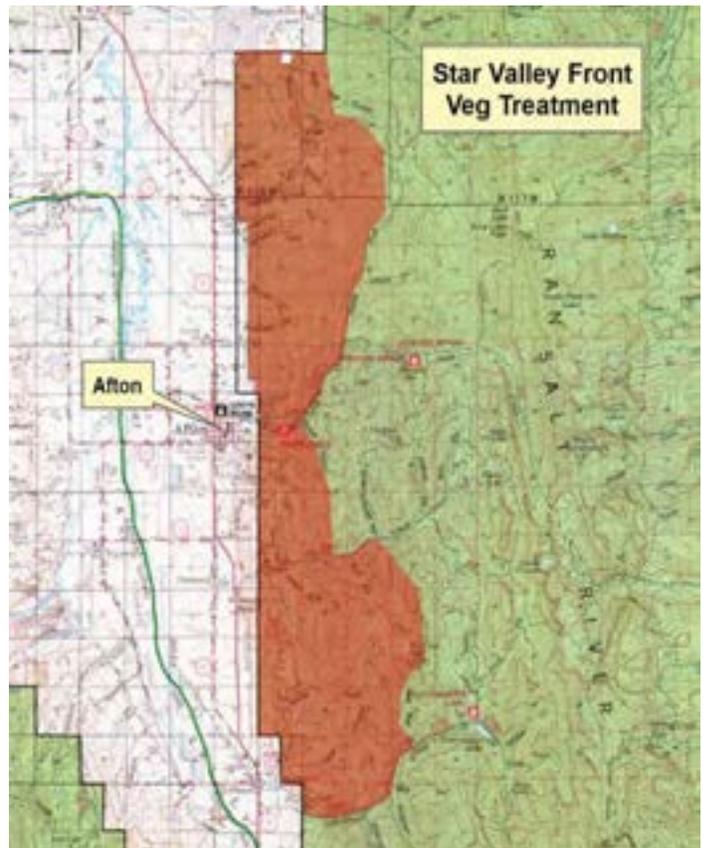


Figure 17. Star Valley Front treatment area.

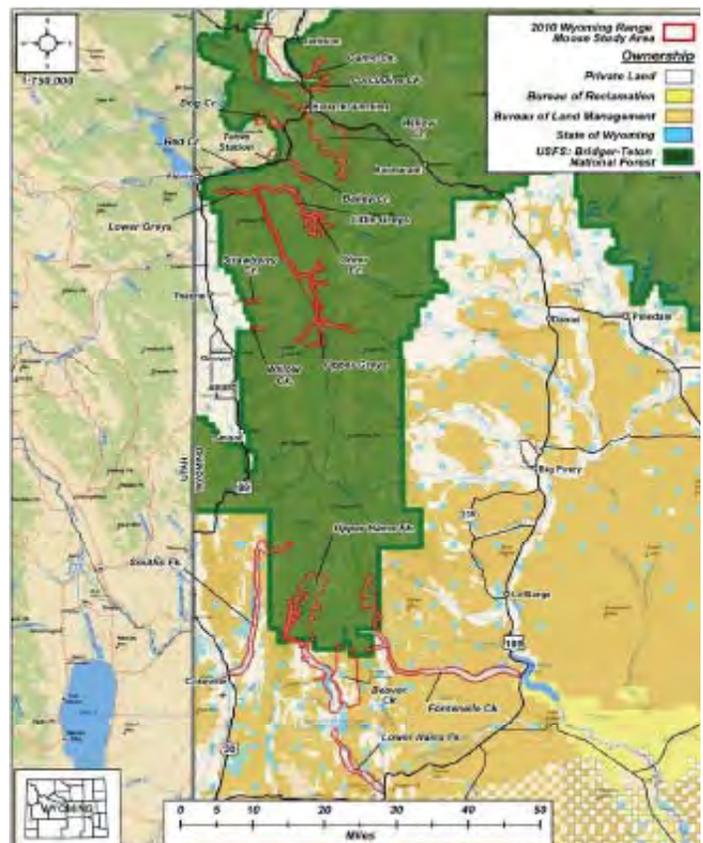


Figure 18. Habitat assessment locations for the Sublette and Lincoln moose Herd Units, 2010.

levels by wild and domestic ungulates. Aspen communities within the study area were composed of stands in all categories of risk to loss. Advanced successional stages, lack of natural fire, and excessive herbivory by wild and domestic ungulates are the major factors contributing to some aspen communities being at high risk levels. Patch level management recommendations included evaluation of livestock grazing, prescribed fire, mechanical thinning, willow plantings, and conservation easements.

### **Horse Creek WHMA Irrigation (Goal 2) - Matt Miller**

The lower meadow on the Horse Creek WHMA was irrigated in 2010. Approximately 60 acres on the elk feedground got multiple coverings of water from June through August (Figure 19).



Figure 19. Irrigation on Horse Creek WHMA.

### **South Park WHMA Wetland Restoration (Goal 2) - Mat Miller**

The eastern developed wetland on South Park WHMA was restored in 2010. The islands and shoreline were excavated in 2009. In 2010 over 10,000 bare root sedges and rushes were planted in the newly excavated areas (Figures 20 and 21). Native seed was also planted on the upland excavated areas. WGFD also set in place 36 pieces of wetland sod that had a mix of rushes and sedges. The water control structures were replaced with Agri Drain boards which are much more precise and easier/safer to operate. An informational kiosk was placed in front of the wetland to inform the public of the important role wetlands play in Teton County.



Figure 20. 10,000 bare root sedges and rushes planted on South Park WHMA.



Figure 21. Aerial photograph showing the treated wetland on South Park WHMA.

## Alpine Wetland Restoration (Goal 2) - Matt Miller

The Alpine Wetland Restoration project was started in 2010. With cooperation from the BOR the WGFD pulled out eight water control structures on the wetlands that were old and dysfunctional (Figure 22). Five new structures were placed along with new PVC piping (Figure 23). The other three water control structures will be replaced in the spring of 2011. The new water control structures will allow for precise and safe water level manipulation.



Figure 22. Removing water control structure.

Figure 23. Replacing water control structures.

## Horse Creek WHMA Mowing (Goal 2) - Matt Miller

The lower meadow on Horse Creek WHMA was mowed in 2010. Approximately 60 acres were mowed (Figure 24) with the goal of removing the tall and decadent grasses and having fresh protein-rich new growth come up in the fall for elk before feeding operations begin.

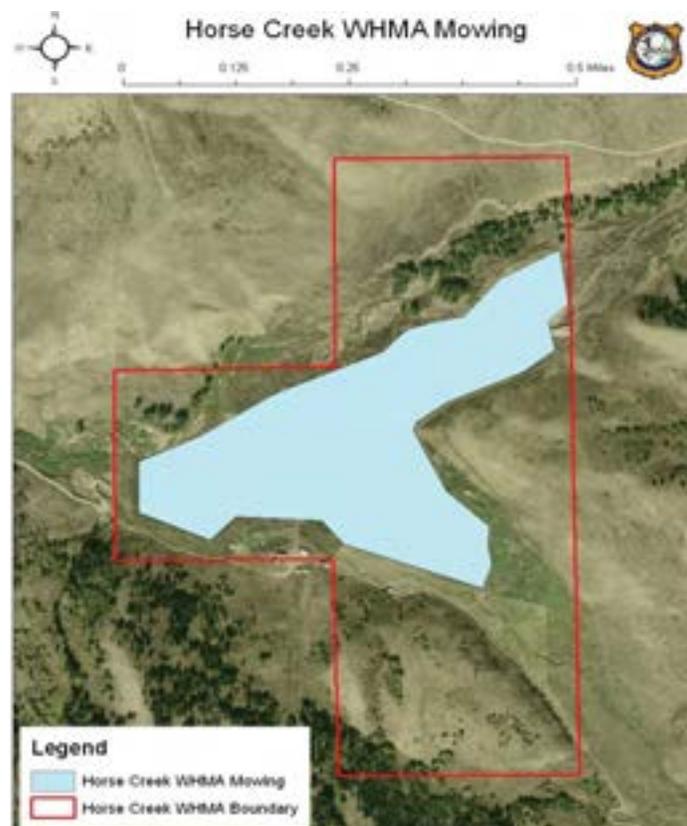


Figure 24. Mowed area on Horse Creek WHMA.

## **E**lk Fence Maintenance (Soda Lake WHMA, Greys River WHMA, South Park WHMA, Muddy Creek Feedground, and Horse Creek WHMA) - Matt Miller

Nearly 43 miles of elk fence was maintained by the Habitat and Access Crew in the Jackson and Pinedale areas. Fences were walked and rode on horseback or 4-wheeler (Figure 25). All downed trees on the elk fence were removed and holes or damages in the fences repaired (Figure 26).



Figure 25. Replacing a section of elk fence on the Soda Lake WHMA .



Figure 26. Replacing a section of elk fence and installing a new gate on Greys River WHMA elk fence.

## **W**einer Creek Burn (Goal 2) - WLCI

The burn will restore aspen habitat in important elk calving areas for the Afton herd. Treatment of these key areas will improve aspen health and benefit wildlife through the larger area. This project benefits aspen habitat restoration on one of the most important elk calving areas for the Afton herd and important for aspen-dependent species, transition and winter range for elk, mule deer, and moose east of Alpine, transition and winter range for mule deer and elk of crucial winter range just east of Smoot, and sagebrush, aspen, meadow, and willow habitat on transition range for mule deer and elk 30 miles up the Grey's River. The Weiner Creek burn was completed with 1500 acres treated and 30,000 acres assessed. Partners include BLM, BTNF, WGFD, NPS, RMEF, WWNRT, Wyoming Sportsmen for Fish and Wildlife, Star Valley Conservation District, and Western Wyoming RC&D.



## LANDER REGION HIGHLIGHTS

- Radio tagged 20 fish and marked an additional 22 in Sheridan Creek to assess upstream movement through a potential barrier
- Designed and implemented over 1,000 ft. of in-stream rehabilitation work in the Dubois area to reduce bank erosion and enhance fish habitat
- Assessed nearly 40 miles of irrigation drains to Ocean Lake for maintenance needs and other potential projects to improve habitat conditions
- 425 acres of juniper removed/thinned
- 200 acres of Russian olive and saltcedar resprouts sprayed
- 500 acres of sagebrush mowed

### **R**esource Management Plan (Goal 1) - Carrie Dobey

Participated in the Lander BLM Resource Management Plan revision and commented on the range of alternatives for wildlife, vegetation, weeds and fire as well as the first draft.

### **D**iamond G Ranch Conservation Easement (Goal 1) - Nick Scribner

Assisted and coordinated with Ellen Vanuga of the Jackson Hole Land Trust on several funding applications to secure a conservation easement on the Diamond G ranch in the upper Dunoir Valley near Dubois, WY. The Diamond G Ranch is approximately 5,130 acres including 1,100 acres of wetlands and 5.5 miles of streams surrounded by public land on 3 sides of the property. The ranch provides crucial winter and yearlong habitat for moose, elk, and deer. It is also a significant migration corridor (Figure 1) for these species connecting winter range with summer ranges. Numerous species can be found in the Dunoir drainage including Canada lynx, grizzly bear, gray wolf, trumpeter swan, boreal owl, and Yellowstone cutthroat trout. A total of 32 species of SGCN can be found on the property (24 birds and mammals, 8 amphibians and fish) making this a key area for sensitive species. Development is one of the primary threats to fish and wildlife in the upper Wind River Valley, thus protecting intact habitat like the Diamond G Ranch is vital to preserving future wildlife populations.



Figure 1. The Diamond G Ranch provides a critical migration corridor for many species including elk.

### **S**outh Pass Aspen/Willow Habitat Improvement (Goal 2) - Carrie Dobey

Stand inventory began in summer 2010 for an aspen/willow improvement near Atlantic City. The department is working with the BLM and USFS to improve aspen health by removing encroaching conifers. Inventory is the first phase of the proposal. Stands will be digitized in GIS over winter to determine acreages of treatments which may include hand removal, mastication with machines and prescribed burning. Open houses will be held in winter 2011 to get comments and concerns from the public. Archeological clearances and EA writing will occur in 2011 with treatments starting in 2012.

### **F**erris and Seminoe Mountains Prescribed Burns (Goal 2) - Carrie Dobey

The Rawlins BLM office held public scoping during the WGFD season setting open houses in Rawlins and Casper to provide the public an opportunity to learn about planned prescribed burns on Ferris and Seminoe Mountains. The goals of the burns are to improve aspen health, conifer age structure, remove encroaching juniper and limber pine from sagebrush and mountain mahogany stands and increase forage availability for newly

transplanted bighorn sheep. The BLM has received \$40,000 from the RMEF to assist with the first burn on Seminoe Mountain, planned for spring 2011. The first burn on Ferris Mountain is planned for fall 2011.

### **L**ander Front Mule Deer Habitat Improvement - Phase 2009 (Goal 2) - Carrie Dobey

Activities this year included 425 acres of juniper thinned, 200 acres of Russian olive and saltcedar resprouts treated on Beaver Creek and 500 acres of sagebrush mowed to stimulate grass and forb growth (Figure 2). Four nested frequency transects were established pre-mowing to determine the effects on cheatgrass growth. Two of the sites were supposed to be treated with Plateau in fall; however the cheatgrass never germinated and will be treated next year. Transects established in previous treatments were monitored with positive results. Juniper sites had an average increase in forbs (217%), grasses (85%) and litter cover (98%) as well as a decrease in bare ground (38%). Unfortunately annuals such as cheatgrass and desert alyssum also increased on average by 118%. This was not an unexpected result as ground disturbance from the machines will create bare ground ripe for annual germination. The amount of cheatgrass resulting from machine disturbance is minimal compared to what would return post fire. A surprising result in a couple of the juniper treatments was the appearance of currant. Birds landing in the branches of juniper dispersed currant seeds and once the competition from the juniper was removed, the currants exploded growing two feet in one year. Sagebrush treated with Spike also had positive results with an increase in forbs (47%) and grasses (103%) and a decrease in bare ground (23%). Litter cover decreased slightly by 7%. Because it was not a mechanical treatment, minimal change in litter cover was expected. Annuals did increase but still remain less than 10% of the total canopy cover.



Figure 2. Currant growth following juniper removal.

Phase III of the project is currently being planned for the Red Canyon/Weiser Knoll area and includes additional juniper and sagebrush treatments as well as cheatgrass spraying.

### **S**hrub Production/Utilization Monitoring (Goal 2) - Carrie Dobey

Regional wildlife personnel collected production and utilization data on 10 shrub transects located throughout the region. Utilization over the 2009-2010 winter was relatively low at all transects, ranging from 1-26% with an average of 11%. Wildlife could easily roam during the winter due to minimal snow cover throughout the region therefore they did not focus use in any particular area and over browse the shrubs. Sagebrush production declined slightly from 0.8 inches in 2009 to 0.7 inches in 2010. Bitterbrush production also declined from 3.7 inches to 2.9 inches. Decreased growth was likely due to very dry summer conditions.

### **H**erbaceous Production/Utilization Monitoring (Goal 2) - Carrie Dobey

Transects for over winter utilization were not monitored for the 2009-2010 winter on Red Canyon and Red Rim/Daley WHMA's due to late snow cover. By the time the areas were accessible, vegetation had already begun to green up making clipping extremely difficult. Utilization on the Whiskey Basin WHMA was 30%, Inberg/Roy WHMA was 50% and Spence/Moriarty WMA was 40%, all below the recommended level of 60%. Across the region, production decreased or remained stable from 2009 with an average of 553 lb/acre. The decline was likely due to dry summer conditions.

### **S**heridan Creek Yellowstone Cutthroat Protection (Goal 2) - Nick Scribner

In 2008, the lower section of Sheridan Creek was identified as a possible location for construction of a barrier to block upstream movement of non-native fish, which would allow YSC to be restored above the barrier and provide an additional 7 miles of YSC occupied habitat. Preliminary stream survey work was completed in 2009

directly upstream of USFS road #532, an area easily accessible for construction activities. The data documented a steep and slightly entrenched stream reach. However, high flows would likely spill out of the channel, indicating this location is not suitable for a barrier because flood flows could circumvent any barrier built and provide an avenue for non-natives to move upstream.

Additional Sheridan Creek assessments in 2010 identified a more suitable barrier location approximately 0.75 miles upstream of USFS #532 where the creek emerges from a small canyon. Data were collected on stream dimensions through 4 cross sections and an upstream to downstream profile of channel slope and other features. It appears this location may already be a fish barrier at particular flows based on visual observations (Figure 3) and initial data analysis. However, without fish movement data we cannot verify this theory. As a result, we partnered with Trout Unlimited and Gregory Aquatics to initiate a telemetry study. In October, 42 fish were captured from both upstream and downstream of this potential barrier and released 1 mile below it. Twenty fish that were large enough (0.3 lbs) were radio tagged while the other 22 just had their adipose fins clipped. Radio tagged trout were brook trout and cutthroat trout and will be tracked once a month until the tags battery life expires (440 days). Electroshocking will be done above the barrier site in 2011 to assess movement of fin clipped fish. To date, most of the radio tagged fish have remained in Sheridan Creek, though 1 has moved downstream into the Wind River and 4 were not located in December 2010 (Figure 4). Rainbow trout presence was also assessed since they are the primary threat to Yellowstone cutthroat conservation efforts in Sheridan Creek through hybridization. Rainbow trout are present in upper Wind River and lower Sheridan Creek, but have never been found above the canyon we surveyed in Sheridan Creek. Our electrofishing efforts confirmed these data as we captured 1 rainbow trout in lower Sheridan Creek, but zero above the canyon. Additional sampling will occur in 2011 to validate these results.



Figure 3. A steep gradient with fast water, few pools, and bedrock substrate may impede upstream fish movement at certain flows in Sheridan Creek.

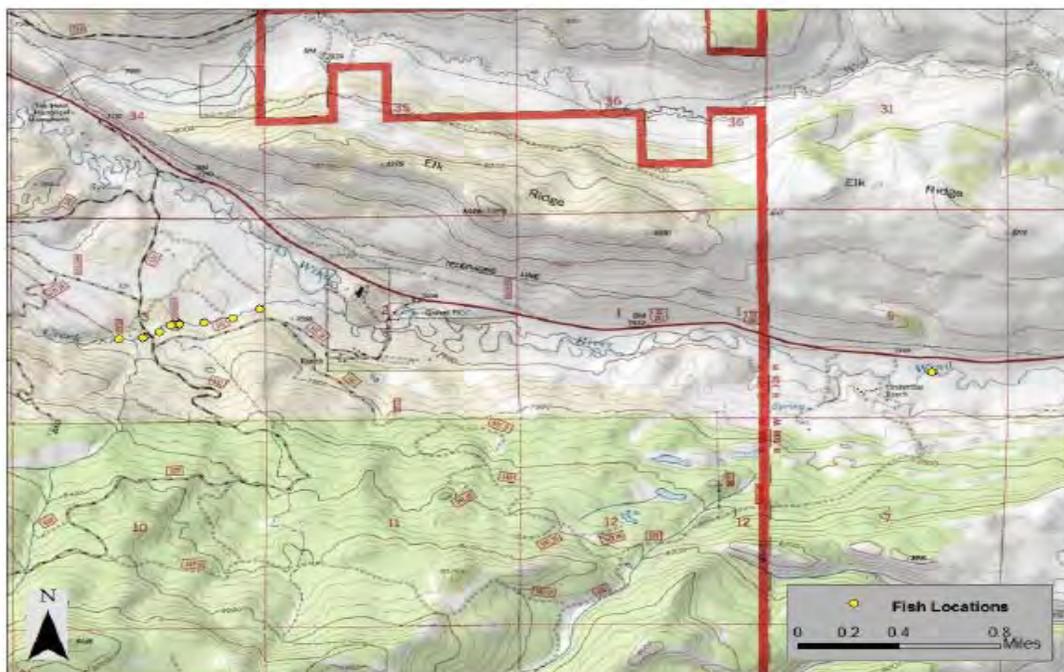


Figure 4. Locations of radio tagged fish from Sheridan Creek in December 2010.

## **N**orth Fork Popo Agie Riparian Fence (Goal 2) - Nick Scribner

Popo Agie Anglers partnered with WGFD, NRCS, BIA, WWNRT, and Ralph Alley to implement a fencing project on the North Fork Popo Agie River public fishing access near Lander. Objectives are to improve riparian shrub conditions, reduce bank trampling from cattle, and improve water quality. This easement on Mr. Alley's property is annually used for both winter/spring grazing and calving, putting considerable pressure on riparian shrubs and stream banks and resulting in stream instability. Project partners felt fencing would improve aquatic habitat by enhancing shrubs that would in turn stabilize stream banks and increase insect input to the stream. A fence would also improve cattle management for Mr. Alley by eliminating their access to properties across the river. Pine Tree Fencing of Lander completed construction of the fence in early October, 2010. They installed approximately 1.5 miles of fence with 3 water gaps and 4 gates to allow cattle access to water and the ability to periodically graze (Figure 5). In addition, a new well and watering tank were installed at the corrals to eliminate a water gap and decrease barnyard runoff to the river.



Figure 5. New fence along the corrals on the North Fork Popo Agie River eliminated a troublesome water gap.

## **D**ubois Area Extension Services (In-stream habitat) (Goal 2) - Nick Scribner

Approximately 25 yards of rock were used to extend existing rock barbs and construct 4 new barbs in the Wind River at Dubois City Park. These barbs deflect flows to the mid-channel to protect stream banks and develop deeper scour pools. This project was done as a demonstration to the Dubois school kids involved with the "adopt-a-trout" program to show them what a habitat enhancement project could mean for fish.

Another was designed for a landowner desiring to stabilize an eroding bank and provide trout holding cover in the Wind River below Dubois. A total of 220 yards of rock and 30 trees were set along 350 ft. of eroding bank (Figure 6). Several of the trees had root wads, which were placed upstream to provide a barb type structure to redirect flows towards the mid-channel and create scour pools. In addition, 4 boulder clusters were placed near the thalweg to create scour pools for more holding cover.

An additional one was designed for a landowner interested in enhancing overhead cover in the Wiggins Fork at the East Fork Wind River confluence. A total of 300 yards of rock and 12 trees were used on over 500 ft. of bank. Rock work was done primarily to protect the banks where the landowner is building a house. Trees with root wads were integrated into the rock to create 5 log vanes to create downstream scour pools and also deflect flows to the mid-channel. Additional trees were cabled along the bank to provide more overhead cover. Large rock was used to create 6 boulder clusters (3-4 rocks) near the thalweg to create more break water for holding fish.

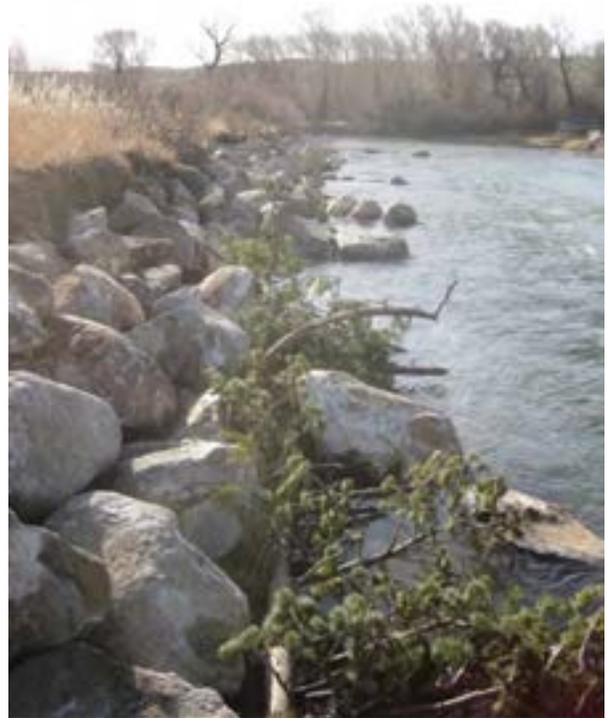


Figure 6. Looking downstream on the Wind River after installation of trees and rock revetments to protect the eroding stream bank.

## **S**pence Moriarty WMA East Fork Wind River Habitat Improvement (Goal 2) - Nick Scribner

Approximately 7 miles of the East Fork Wind River were assessed possible habitat improvement projects to benefit fish, primarily Yellowstone cutthroat trout (YSC). Prior studies on this drainage have noted a strong association between YSC and complex habitat (i.e., woody debris, rock). The assessment identified areas of unstable banks, excessive erosion, undercut banks, and suitable pools where adding a combination of tree and/or rock revetments would stabilize banks and enhance fish habitat. A total of 30 sites were identified downstream of Bear Creek on the Spence Moriarty wildlife management area. Ten sites were selected to work on over the next 2-3 years, and were all downstream of the Wiggins Fork confluence. Sites range from 150 – 300 ft. in length and several have extensive erosion issues. Authorization from the Army Corp. of Engineers was secured in October and work began in November with mobilizing supplies to the stream sites. We were able to complete one 200 ft. long site prior to ice conditions becoming too severe (Figure 7). Approximately 25 yards of rock and 20 trees were used to increase overhead cover for fish and provide bank protection during high flows. The project continued in December with additional stockpiling of rock (300 yards) and trees (60) for installation in 2011. Additional trees will be needed and will come from the Bear Creek conifer removal project.



Figure 7. Rocks were used in combination with cable to hold trees in place to increase woody debris for fish habitat.

Authorization from the Army Corp. of Engineers was secured in October and work began in November with mobilizing supplies to the stream sites. We were able to complete one 200 ft. long site prior to ice conditions becoming too severe (Figure 7). Approximately 25 yards of rock and 20 trees were used to increase overhead cover for fish and provide bank protection during high flows. The project continued in December with additional stockpiling of rock (300 yards) and trees (60) for installation in 2011. Additional trees will be needed and will come from the Bear Creek conifer removal project.

## **I**nberg/Roy WHMA Bear Creek Conifer Removal (Goal 2) - Nick Scribner

In 2009, a conifer removal project began along Bear Creek on the Inberg/Roy WHMA to enhance riparian deciduous vegetation, increase soil moisture and invertebrate biomass and thereby improve aquatic habitat. To date, over 80% of the 50 acre project area has had conifers removed. In 2010, over 80 trees were cut and hauled out of Bear Creek by the statewide HAMS crew (Figure 8). These trees were stockpiled at 3 different locations along the East Fork Wind River for future use as woody debris jams in the East Fork Wind River habitat project. Most of the trees cut were between 25-40 ft. tall and heavily branched, which should provide excellent overhead cover as in-stream habitat. Additional cutting will be done in 2011 to complete the project area and provide enough trees for the East Fork Wind River habitat project.



Figure 8. A loader was used to skid trees to the landing area.

## **R**ed Canyon WHMA Sheet Piling (Goal 2) - Nick Scribner

Two log bunker structures were modified in Red Canyon Creek by placing sheet piling in front of the structures to slow flows and trap sediment. The bunker structures had failed and were not reducing downgrading of the streambed as intended. Approximately 45 ft. of sheet piling was used between the two sites and placed directly upstream of the log structures. Additional fill material was placed around the sheet piling to secure leaks and force flows through a channel over the structure.

## **Ocean Lake Irrigation Drain Assessment (Goal 2) - Nick Scribner**

Ocean Lake has been classified since 1998 as an impaired water by the Wyoming Department of Environmental Quality (DEQ) due to sediment. In December 2009, a total maximum daily load (TMDL) was approved by DEQ that strives to calculate the allowable sediment load for the lake to meet water quality standards to support assigned designated uses. Although most of the sediment is already in the lake and is re-suspended each year, 72 miles of irrigation drains contribute additional sediment each year. There are very few options to address sediment within the lake and to do so would be very expensive, thus an assessment of the drains for possible improvements is a more realistic approach.

The goal is to determine maintenance needs, problem areas, and improvements that can be made to decrease sediment input to Ocean Lake and enhance habitat conditions for various wildlife. It has been roughly 20 years since many of the Save Ocean Lake projects were completed, so it is also time to evaluate these projects. Overall, the drains are relatively stable, but a list of recommendations were produced to help direct management priorities and funding for future projects:

### **Management Recommendations:**

- Repair deteriorated water gaps with new fencing and work with landowners to construct new ones where grazing is impacting vegetation and bank stability
- Remove debris that is adversely affecting drain flows and bank stability
- Stabilize eroding banks and reestablish vegetation to hold them in place
- Reduce impact of falling water from culvert outlets by directing it to the irrigation drains with rock or other suitable material
- Assess if additional rock-drop structures are needed to reduce water velocities, which might be contributing sediment and causing downcutting in the drains
- Remove Russian olive where feasible and plant native shrubs (e.g., willow, alder, chokecherry, etc) where suitable to enhance wildlife habitat
- Look for opportunities to construct more wetlands or sediment settling ponds on drains 4, 6, and 7 to eliminate direct flows from drains to the lake
- Drain #4 should be the highest priority for maintenance

## **Energy Development Reclamation Study (Goal 5) - Carrie Dobey**

Extremely dry conditions have led to unsuccessful reclamation on newly constructed oil and gas pads in the Lysite and Beaver Creek areas. WGFD assisted the BLM, NRCS, ConocoPhillips and Devon Energy in the development of a reclamation study being conducted at ConocoPhillips' Lysite field and at Devon's Beaver Creek field. In an effort to increase reclamation success both companies agreed to complete various planting techniques on three different soil types at each oil field. Tests were set up on a clayey, sandy and saline site on both units. Each pad was divided into a split plot design to test 3 variables: cover crop vs. no cover crop, drilling vs. broadcasting, and irrigated vs. non-irrigated. In 2009, the sections selected to receive a cover crop were planted with barley in May and mowed in July-August. Native seeds were drilled or broadcasted in November 2009. Barley germinated at all but one saline site. Initially the group decided not to erect temporary electric fencing because of cost, but grazing on the cover crop was significant. Fences were put up over winter to prevent cattle from grazing seedlings.

Both fields received significant moisture in April, May and early June 2010 and the group decided not to irrigate. Russian thistle and halogeton were the dominate species present when monitoring was completed in mid-June. A few native species were found in very low numbers, some from the seeding and some recruited from neighboring areas. The saline site in the ConocoPhillips field had the worst results with very poor germination. Sites will be monitored again in 2011.

### **Sinks Canyon (Goal 2) - Carrie Dobey**

An arsonist started several fires in the Sinks Canyon WHMA during 2009 ranging from 1 to 30 acres. In an effort to control cheatgrass spread, WGFD contracted with the Fremont County Weed and Pest to spray Plateau on approximately 13 of the 18 acres burned in February. The fires started in July were too rugged to spray by foot and not large enough to warrant using a helicopter.

The results of the Plateau treatment were very positive (Figure 9). There was less cheatgrass and more native species present in the herbicide treatment than the non-treated burn which was almost solid cheatgrass. There is still a lot of bare ground in the treatment providing room for the cheatgrass to spread and the treatment will continue to be monitored.



Figure 9. Plateau treatment one year post spray.

### **Inberg/Roy WHMA and Spence/Moriarty WMA (Goal 2) - Carrie Dobey and Brian Parker**

Habitat Access and Maintenance crews removed conifers from 4 aspen stands and began construction on exclosures on the Inberg/Roy WHMA (Figure 10). These aspen stands are on the verge of disappearing because elk browsing is prohibiting new growth. By protecting the suckers from browsing, new healthy aspen should thrive.

A weed contractor was hired to spray roads, ditches and hay fields on both units to treat cheatgrass and white top. Cheatgrass was supposed to be treated in fall 2010 but it never germinated and both species will be treated next year.



Figure 10. Crews removing conifers from aspen stands prior to fence construction.

### **Ocean Lake WHMA (Goal 2) - Brian Parker**

Approximately forty-acres of barley food-plots was planted in three different fields at Ocean Lake (Figure 11). The food-plot planting was the Area Improvement Project Agreement (AIPA) payment for the grazing lessee. The grazing lease is a five-year winter rotation used to maintain irrigated meadows and promote waterfowl nesting success.



Figure 11. Food-plots on Ocean Lake.

### **Inberg/Roy WHMA (Goal 2) - Brian Parker**

Phase 1 of the Dennison Meadows pipeline and restoration was completed during the fall of 2010 (Figure 12). Approximately 4,500 feet of transport ditch was converted to buried pipeline. Field spreader ditches will be replaced with gated pipe during spring 2011. Farming two of the four meadows with palatable, drought-tolerant species will begin in spring 2011 followed by an analogous treatment for the remaining two meadows in spring 2012. Pipeline installation will greatly increase water use efficiency, which will benefit Yellowstone cutthroat trout, while meeting needs of supplemental forage production for wintering elk.

### **Whiskey Basin WHMA (Goal 2) - Brian Parker**

Phase 2 of the Basin Meadow restoration was completed during the spring of 2010. Phase 2 consisted of gated pipe conversion and supplemental weed spraying following the farming effort of 2009.

### **Red Canyon WHMA (Goal 2) - Brian Parker**

Cows from the Red Canyon CRM grazed the upper and east meadows to remove decadent vegetation and promote vigor and palatability of meadow vegetation for wintering elk. Grazing occurs every other year.

### **Sand Mesa WHMA (Goal 2) - Brian Parker**

Farming continued at Sand Mesa in the three pivot fields and fields four and five where corn was planted.

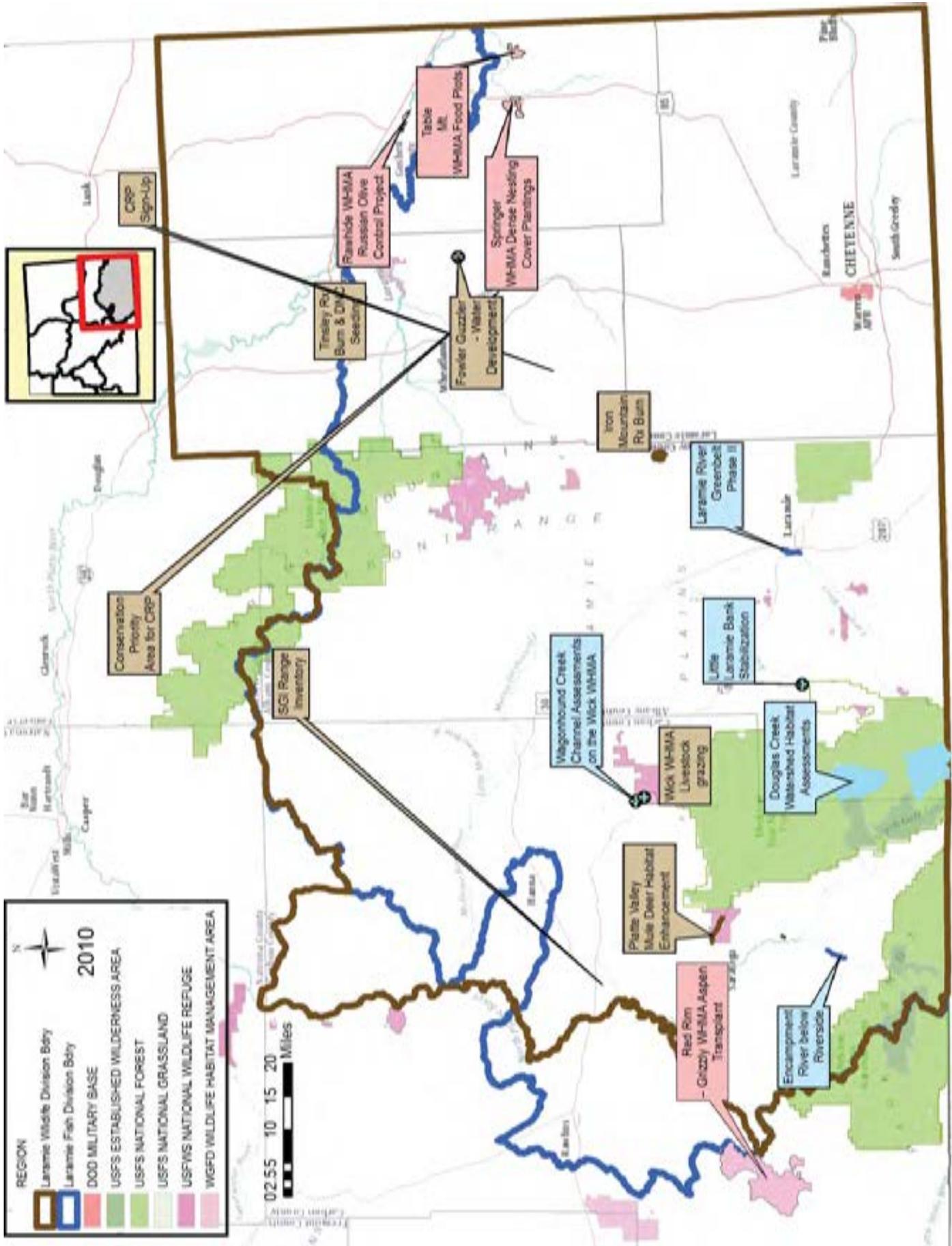
### **Ferris Invasives (Goal 2) - WLCI**

The Ferris Mountain Wilderness Study Area (WSA) Leafy Spurge project entails treating the WSA adjacent Hogback ridges for invasive weeds, mainly leafy spurge, with some whitetop and Russian knapweed. Treatment consists of the application of herbicide to control weeds in this extremely rugged area. Monitoring in 2005 showed actual infestation into the WSA for the first time, along with a marked increase of acres infested along the fringes in this wildlife-rich WSA. These weeds are also increasing in the adjacent hogback ridges. The project benefits the Wilderness Study Area native vegetation, sage-grouse, and other native wildlife. 500 acres of treatments were accomplished this year. Partners include grazing permittees and Carbon County.



Figure 12. Pipeline and restoration on Dennison Meadows.

# LARAMIE REGION



## LARAMIE REGION HIGHLIGHTS

- Cheatgrass sprayed on Pennock Mountain WHMA and right-of-way fence along Highway 130 east of North Platte River converted to pole-top for Platte Valley Mule Deer Habitat Enhancement
- Willow transects established in the Snowy Range and Pole Mountain to evaluate moose habitat
- Phase II of the Laramie River Enhancement Project completed and consisted of rock deflectors, rootwad revetments, boulder clusters, vegetated riprap, and rootwad spurs
- In partnership with Trout Unlimited, a consultant collected assessment data for a detailed stream restoration plan on 3.9 miles of the Encampment River
- Thirty-five stream miles were assessed in the Douglas Creek watershed on the Medicine Bow National Forest
- Over 50,000 acres of rangeland inventoried for sage grouse habitat in Little Snake River Valley
- Prescribed burning conducted on 1,500 acres of mixed mountain shrub habitats in southern Laramie Range
- CRP Sign-Up 39, the first CRP sign-up in more than a decade, enrolls / re-enrolls more than 100,000 acres in southeast Wyoming
- In Albany County, 60 acres of WGFD Public Access Areas were treated for noxious weeds
- In Carbon County, 20 acres of WGFD Public Access Areas were treated for noxious weeds

### **C**onservation Priority Area Development (Goal 1) - Ryan Amundson

An outdated Conservation Priority Area (CPA) for Wyoming, developed in the mid-90's, was updated utilizing wildlife species seasonal range data and the department's SHP, for use in future CRP sign-ups. Approximately 240,000 acres were included in the newly established priority area in southeast Wyoming. Additional environmental ranking points will be given to producers in future CRP sign-ups that fall within the CPA's geographic boundaries.

### **S**AFE CRP (Goal 1) - Ryan Amundson

A proposal for a "State Acres For Wildlife Enhancement – SAFE" CRP program was developed by Erika Peckham, Brian Jensen, and Ryan Amundson. A proposal was submitted to Washington, D.C. for 10,000 acres in northeast Wyoming, focusing on converting cropland back to sagebrush steppe habitat. The proposal was approved, and initial sign-up will occur in Spring 2011.

### **U**SDA's Sage Grouse Initiative (Goal 2) - Ryan Amundson

The USDA unveiled their SGI program in Spring 2010. The HEB assisted with statewide training of NRCS personnel, and also conducted field inventories on five ranches in the Little Snake River valley near Baggs. Over 50,000 acres of sagebrush / sage grouse habitat was inventoried, and reports detailing habitat management recommendations were completed (Figure 1 and 2).



Figure 1. Sage Grouse Initiative inventories conducted in the Little Snake River valley revealed some habitats in very good condition for sage grouse.



Figure 2. Some areas had been drastically altered through aerial herbicide applications.

### **C**onservation Reserve Program (CRP) (Goal 1) - Ryan Amundson

The first CRP sign-up in over 10 years was conducted in Fall 2010, resulting in contacts with more than 200 landowners in SE Wyoming. Technical assistance with permanent cover seed mixes, water developments, and mid-contract cover management was frequently given. Following acceptance into the CRP program, wildlife habitat management recommendations were formally made on over 100,000 acres of permanent cover management on the 200 plus contracts.

### **E**nvironmental Action Conservation Review (Goal 1) - Ryan Amundson

The HEB assisted NRCS field offices in southeast Wyoming with review of Environmental Quality Incentive Program (EQIP) conservation practices, ensuring that wildlife habitats or wildlife species are not negatively impacted by planned fences, pipelines, and other practices.

### **C**onservation Easements (Goal 1) - Ryan Amundson

Five landowners were provided technical assistance on conservation easements. All projects are moving forward, but are being spearheaded by other conservation groups such as Ducks Unlimited.

### **W**ind Energy / Wildlife Considerations (Goal 1) - Ryan Amundson

Wind energy development is coming to southeast Wyoming in the next few years. Numerous visits with private landowners were completed, as questions arose concerning the department's Wind Energy Development Recommendations, developed to reduce impacts to wildlife and wildlife habitat. The HEB participated on an advisory committee for Jade Energy Company, as they plan potential transmission line routes across southeast Wyoming, heading west to Idaho.

### **P**latte Valley Mule Deer Habitat Enhancement (Goal 2) - Grant Frost

The right-of-way fence along Highway 130 was converted to pole-top along the first ½ mile on both sides from County Road 209 to the east. Small portions of the fence had been constructed originally that way in high wildlife crossing spots, but there were continued problems with young animals not being able to cross, or getting trapped in the ROW, or individuals getting caught in the fence (Figure 3). The Pennock Mountain WHMA has seen an increase of cheatgrass presence and dominance through the recent drought. A contract sprayer was hired to spray Plateau herbicide with ATV and backpack equipment on 38 acres of heavily infested sites along the main road along South Lake Creek. Plateau herbicide and 120 treated poles were purchased for future use.



Figure 3. Completed sections of pole-top fence along Hwy 130.

### **R**ed Mountain Project (Goal 2) - Grant Frost

Department involvement in this project began in 2004. A project update has been included in the previous five annual reports. In 2010, a legal challenge was raised to the planned sagebrush mowing, and the project was put on hold.

### **S**outheast Wyoming Cheatgrass Partnership (Goal 2) - Grant Frost

The Partnership continues to meet and share project planning and information.

## **C**omprehensive Management Plan for the Platte Valley Mule Deer Herd (Goal 2) - Grant Frost

Department personnel continue to use the Platte Valley Mule Deer Habitat Assessment to plan projects, and look for opportunities to meet with landowners. Coordination meetings are held with personnel from the BLM, NRCS, and local conservation districts. Project planning and funding applications have begun for work on the Mark Condict Ranch.

Mule deer will be collared in the 2010-11 winter for a new study on habitat use, migration, sightability and mortality. Information from this study will help in population estimation and in planning more effective habitat projects.

## **L**aramie River Greenbelt Phase II (Goal 2) - **Christina Barrineau**

Phase II of the Laramie River Enhancement Project was completed in 2010. Habitat treatments in the river and along the streambanks consisted of rock deflectors, rootwad revetments, vegetated riprap with rootwad spurs, and longitudinal stone toe with rootwad spurs (Figure 4). Funding for Phase II was provided by the WWNRT, WGFD trust fund, City of Laramie, Albany County, Laramie Rivers Conservation District, BP Amoco, Wyoming DEQ, Laramie Economic Development Corporation, and the Mule Deer Foundation. Additionally, numerous local volunteers participated in the cutting and planting of willow at the treatment sites. The third and final phase will be completed in 2011.

Also in summer 2010, streambank erosion and photo monitoring were conducted to fulfill requirements for a WYDEQ 319 grant (Figure 5). Monitoring assistance was provided by the Laramie Rivers Conservation District and the WYDEQ. To monitor changes in streambank erosion, a 1,500 feet long reach was established downstream of the Snowy Range Road bridge. Habitat enhancement construction is scheduled for this reach in 2011. The Bank Assessment for Non-point source Consequences of Sediment (BANCS) model, along with the Bank Erosion Hazard Index (BEHI) and Near-Bank Stress (NBS) were used to obtain streambank erosion rates. Variables in the model include bank angle, bank material, bank height/bankfull height, and the ratio of near-bank maximum depth to bankfull mean depth. Using BEHI and NBS ratings from the monitoring reach, the annual erosion rate was estimated at 0.042 tons/year/foot. The BEHI and NBS will be used over the next three years to monitor annual erosion rate.

In addition to streambank erosion monitoring, five photo points taken in 2008 for the project design plan were relocated. These photo points could be easily relocated and show several treatment types. Photos at these points will be taken once every year for at least the next three years.



Figure 4. Vegetated riprap with rootwad spur habitat treatment along the Laramie River.



Figure 5. Conducting bank erosion monitoring along the Laramie River for the Laramie River Enhancement project.

## **Encampment River below Riverside (Goal 2) – Christina Barrineau**

In partnership with TU, a consultant was hired to collect assessment data for a detailed habitat restoration plan on the Encampment River. The design plan will cover four landowners from the Highway 230 bridge downstream approximately 3.9 river miles. WGFD provided assistance to the consultant for data collection. The most upstream reach, owned by Mr. Randy Boykin, was selected for the first phase of project implementation. The Boykin Reach is approximately 4,300 linear feet and is considered an unstable Rosgen C3 channel type. The project design plan calls for building floodplain benches, excavating pools, installing cross-vanes, narrowing riffles, and changing the radius on meanders. The restoration on the Boykin Reach is scheduled to begin in 2011. The restoration of the Boykin Reach will be used as a pilot project for design concepts to be used on the downstream reaches assessed in 2010.

In addition to assisting with design data collection, several monitoring stations were established on the Boykin Reach. Bank erosion pins were installed at three established pool cross-sections to quantify annual bank erosion rates prior to stream restoration (Figure 6). Bank profiles were also obtained at the cross-sections. The bank profiles and bank pins will be resurveyed following spring run-off to obtain erosion rates. Additionally, the BEHI and NBS were evaluated at the three monitoring banks for the prediction of streambank erosion rates. Twenty-one permanent photo monitoring points were also established throughout the Boykin reach.



Figure 6. Establishing bank erosion monitoring at a pool cross-section on the Boykin Reach of the Encampment River.

## **Little Laramie Streambank Stabilization and Habitat Enhancement (Goal 2) – Christina Barrineau**

Technical assistance was provided to NRCS, USFWS, and a landowner on a streambank stabilization project on the Little Laramie River downstream of Highway 130. The small project addressed an eroding streambank issue along a meander bend of the Little Laramie River. A j-hook structure was installed to redirect flows into the center of the channel and away from the eroding bank. Additionally, a toewood structure below the j-hook was used for bank protection and fish habitat enhancement.

## **Wagonhound Creek Channel Assessments on the Wick WHMA (Goal 2) – Christina Barrineau**

Two channel stability monitoring sites were re-evaluated on Wagonhound Creek on the Wick WHMA during summer low-flow conditions. The upper site was located approximately 0.5 river miles upstream of I-80, while the lower site was located approximately two river miles downstream of I-80. At each site the following information was collected: longitudinal profile, permanent cross-sections (pool, riffle, run, and glide), riffle pebble count, reach pebble count, and particle sample from point bars. For measurements of bed scour, scour chains were recovered from riffle and glide cross-sections and the depth of scour or deposition was measured. For measurements of bank erosion, bank profiles and erosion pins were measured at monitoring locations on pool cross-sections. Additionally, the bank erosion hazard index and near bank stress was estimated for each reach, along with several other indices of stability (i.e., meander patterns and depositional patterns).

Preliminary data analyses from both reaches indicate some channel instability. In 2011, data from 2009 and 2010 at both sites will be summarized in an administrative report. Additionally, a summary of lessons learned from establishing stream stability monitoring stations will be detailed.

## 2010 Production and Utilization Surveys (Goal 2) - Grant Frost

Game wardens and population biologists assisted with collecting utilization and production information in the spring and fall (Table 1). Utilization was measured for the winter of 2009-10 at 53 of the pronghorn and mule deer shrub winter range monitoring stations. Average utilization was down for bitterbrush and sagebrush, and up for mahogany. Utilization levels exceeded the recommended level of 35% at 17 transects.

Table 1. Laramie Region Average Shrub Utilization

	Big Sagebrush	Antelope Bitterbrush	Mountain Mahogany
2009 Measurement	32%	36%	5%
2010 Measurement	30%	29%	14%
Change	-2%	-7%	+9%

Production for the growing season of 2010 was generally similar to 2009, with slight drops for bitterbrush and mountain mahogany, but an increase for big sagebrush. Measurements were taken at 37 transects (Table 2).

Table 2. Laramie Region Average Shrub Production (in)

	Big Sagebrush	Antelope Bitterbrush	Mountain Mahogany
2009 Measurement	0.94	3.56	3.99
2010 Measurement	1.13	3.39	3.71
Change	+20%	-4%	-7%

The information is used to help address big game population management efforts.

## Mountain Pine Beetle (Goal 2) - Grant Frost

Mountain Pine beetles continued to spread north and east onto 63,000 new acres, especially in the Snowy Range; this includes a dramatic expansion in lower-elevation ponderosa pine trees. Additional information on mountain pine beetle expansion can be viewed at

[http://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb5259977.pdf](http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5259977.pdf)



Figure 7. September forest fire in beetle-killed lodgepole near Fox Park.

There was one small fire (~112 acres) near Fox Park that was contained (Figure 7). The Medicine Bow National Forest continues to remove hazardous trees around roads, trails, camping areas and other places, and planning for treatments in the Spruce Gulch area and wildland/urban interface and watershed protection on the east side of the Snowy Range.

## Douglas Creek Watershed Habitat Assessments (Goal 2) - Christina Barrineau

Wyoming Habitat Assessment Methodology (WHAM) Level 1 surveys were conducted on tributary streams in the Douglas Creek drainage on the Medicine Bow National Forest during summer 2010. Surveys were conducted on 11 streams within 2 sixth level HUCs (Pelton Creek - 101800020106 and Upper Douglas Creek 101800020104). Approximately 35 stream miles were surveyed. Streams assessed were stable, although some areas of instability were observed. Potential reference reaches were identified for future data collection of stable stream habitat. Most reaches had evidence of past beaver activity, while current beaver activity was predominately located on only two streams (Figure 8). Widespread watershed impacts observed included bark beetle impacts to upland conifer vegetation and unauthorized ATV trails. Once all streams in the Douglas Creek drainage are surveyed, the information will be summarized in an administrative report. Additional information can be found in the WGF D WHAM and Photo databases.



Figure 8. Beaver activity and bark beetle impacts to upland habitats in the Illinois Creek drainage within the Douglas Creek watershed.

## Habitat Extension Services (Goal 2) - Ryan Amundson

In 2010, 37 individual landowner contacts were made, with 80% of those developing into on-the-ground projects. Numerous other contacts were made while performing normal job duties, that may or may not lead to a landowner implementing a project on his or her own.

Field inventory information was gathered for 4 pending conservation easement projects in Goshen County, aimed at preserving important wetland habitats. Several other potential conservation easement projects were reviewed with the State Forest Stewardship Committee, and funding recommendations were made.

A one page handout on the values of fence markers for sage grouse was developed for use by NRCS as part of their 2010 Sage Grouse Initiative. The handout discussed the how to's, the reason for marking fences, and where to purchase the markers. This handout was utilized in all field offices throughout Wyoming.

Over 1,800 acres were burned through prescription in mixed mountain shrub communities (1,500 acres) and CRP lands (300 acre) (Figure 9 and 10).



Figure 9. Prescribed burning near Iron Mountain, northwest of Cheyenne, Wyoming in Spring 2010.



Figure 10. Prescribed burning resulted in excellent response by shrubs such as antelope bitterbrush.

CRP stand renovation through burning, herbicide application, and re-seeding was conducted on 200 acres. Burn planning was conducted with BLM personnel and private landowners for several other burns planned for 2011-2012. Planning involved use of GIS and field site visits with cooperating agencies and funding partners (Figure 11).

Two wetland restoration projects totaling more than 15 surface acres of water were completed, after nearly two years of planning, permitting, and design work. More than 40 upland acres surrounding the wetlands will be managed for nesting cover for migratory waterfowl nesting (Figure 12 and 13).



Figure 11. CRP burns are conducted with assistance from local volunteer fire departments.



Figure 12. Wetland restoration along the Laramie River involved reconnecting river hydrology to off-channel historic oxbows.



Figure 13. Wetland restoration will be managed for migratory waterfowl nesting.

Landowner interest in upland water developments remained high in 2010, with over 175 guzzlers being planned for installation in the coming year on newly enrolled or re-enrolled CRP lands. Guzzler standards and specifications were cooperatively developed with NRCS personnel to meet the needs of wildlife in southeast Wyoming.

Over 30 USDA EQIP applications were reviewed by the Habitat Extension Biologist, where recommendations were made in the Conservation Assistance Notes sections of the landowner's file. The HEB also assisted the NRCS field offices with review of draft ECS-42's, prior to submittal to the department's Environmental Protection section for formal comment.

Twenty shrub transects are read on an annual basis throughout the Laramie Range to measure annual production and utilization by ungulates.

### **Walk In Area Program (Goal 3) - Ryan Amundson**

The HEB continues to coordinate with private landowners participating in the Walk In Area program, and provides technical habitat management recommendations to PLPW staff and landowners.

### **Pennock Mountain Beaver Transplant (Goal 5) - Grant Frost**

Heavy runoff with a large component of rocks and gravel filled in much of the dam complex previously built on South Lake Creek, and beaver were displaced to unknown parts. Future transplants will have to be coordinated with upland stabilization work upstream.

## **E**ducation (Goal 4) - Ryan Amundson

Numerous educational events were held throughout 2010 where the HEB delivered conservation messages to over 350 attendees including: Hunter Safety / Education, Wheatland Science Day, Wheatland High School Science Classes, CRP landowner workshops (Figure 14), Girl Scouts, Laramie Peak Cattlewomen's Ag in the Classroom, and Water For Wildlife (WFW) Foundation field tour.

## **T**echnical Assistance (Goal 5) - Ryan Amundson

The HEB continues to work in the role of "State Coordinator" and "Western U.S. Project Technical Advisor" for the Water for Wildlife Foundation based out of Lander. In addition, he still contributes technical assistance to the Wyoming State Forestry's Living Snow Fence program and State Forestry Stewardship Committee.

In 2010, extensive effort was made to continue to build working relationships with USDA's FSA and NRCS, particularly with CRP and SAFE CRP sign-ups occurring.

Technical assistance was provided to department personnel on management of croplands, rangelands, riparian and wetland habitats on WHMA properties (Figure 15). Approximately 320 acres of meadow habitats on the Wick WHMA were grazed with livestock under a short-duration / high intensity grazing scheme. The grazing treatment, conducted annually since 2004, helps to control noxious vegetation and improves forage quality for big game use (Figure 16).

Over 200 acres of dense nesting cover were planted on the Springer WHMA—Thaler Farm in Spring 2010. Considerable effort was spent to find alternative funding sources to pay for cover establishment. \$12,000 in outside funding was secured to plant the permanent cover from groups such as Pheasants Forever and Goshen Rooster Boosters. The HEB continues to serve on the WGFD's management team, developed to cooperatively manage the Thaler Farm.

Efforts to conduct a prescribed burn on Sugarloaf Mountain—Laramie Peak WHMA in cooperation with the BLM was met with resistance from neighboring landowners / permittees in Summer 2010, and will not be pursued at this time. With the onset of pine beetle infestations on the mountain, natural fires are highly likely at this location in the years to come, enhancing habitat for bighorn sheep and other wildlife.



Figure 14. Landowner interest in CRP stand renovation is high as contracts start to expire in 2010. This landowner field day to view CRP re-seeding was attended by over 50 people.



Figure 15. Cropland conversion to permanent nesting cover habitat on the Thaler Farm at Springer WHMA.



Figure 16. Moving cattle into another small meadow paddock on the Wick WHMA in September 2010.

The Southeast Wyoming Cheatgrass Partnership brings together representatives from WGFD, BLM, USFS, county weed and pest districts, NRCS, Conservation Districts, researchers and university faculty, and private citizens to communicate, collaborate, and learn. CSU credits the partnership with helping get funding for their current research and the newly initiated Rocky Mountain Cheatgrass Management Project. In 2010, the group met twice, the first in September for a tour of the CSU study locations and presentation on their cheatgrass management program (Figure 17). The second meeting occurred in November in Laramie, with a presentation by Ed Vasquez on “Ecologically Based Invasive Plant Management”.



Figure 17. CSU presentation at study site - Thorne/Williams WHMA.

### **R**awhide WHMA Russian Olive Control Project (Goal 2) - Dave Lewis

In the winter/spring of 2009, a team of interested parties started efforts to control the state designated noxious weed Russian olive (*Elaeagnus angustifolia*) on Rawhide WHMA. The team included members of the Casper region Habitat and Access crew, the Goshen County Weed and Pest District supervisor; representatives from the 2-Shot Goose Hunt, Pheasants Forever, and the National Wild Turkey Federation (NWTF); the Wheatland extension habitat biologist; the WGFD waterfowl biologist; the Wheatland wildlife biologist; the Torrington game warden; the Goshen County NRCS supervisor; and members of the Goshen County Weed Coordinated Resource Management group. All members of the coalition provided input and expertise with regard to treatment methods. The coalition decided on a four-year time frame for the project. The first year of the project consisted of ripping the trees out, roots and all on 75 acres of Rawhide WHMA (Figure 18). The removed trees were stacked in small piles to provide thermal and screening cover for small mammals, birds, and deer. In the fall of 2009, follow-up chemical treatments were applied to any re-growth that was evident in the 75-acre treatment area.

Left over funding was used in the spring of 2010 to purchase and plant 200 seedling trees/shrubs. We planted 100 native plum trees, 50 chokecherry trees, and 50 buffaloberry shrubs within the 75-acre treatment area from the 2009 application. New funds have been acquired for the project and will be utilized to complete as much of the project area as funding will allow.



Figure 18. Mechanical removal of Russian olive trees.

### **Table Mountain WHMA Food Plots (Goal 3) - Dave Lewis**

At Table Mountain WHMA, the Casper Habitat and Access crew planted 45 acres of food plots, including 21 acres of corn, sorghum, and sunflowers, 20 acres of a mixture of sunflowers, millet, and buckwheat, 2 acres of millet, and 2 acres of barley. The Pine Bluffs Chapter of Pheasants Forever provided all of the seed. The 21 acres of corn, sorghum, and sunflowers was planted in alternating strips to maximize pheasant hunting opportunities, and provide a diverse stand of food/cover (Figure 19). The 20-acre mix of sunflowers, millet, and buckwheat also provided a great source of food and cover for pheasants, deer, and doves (Figure 20).



Figure 19. Alternating strips of corn, sorghum, and sunflowers at Table Mountain WHMA.



Figure 20. Mixture of sunflowers, millet, and buckwheat at Table Mountain WHMA.

The Casper H&A crew also inter-seeded 5 acres of millet, and buckwheat in an existing food plot. The food plots were irrigated through the use of a flood irrigation system. The major goal of this project was to increase wildlife-based recreation through habitat enhancements that maintain or increase productivity of wildlife.

### **Springer WHMA Dense Nesting Cover Plantings (Goal 2) - Dave Lewis**

Crew members of the Habitat and Access Branch from around the state assisted in the planting of one hundred and sixty eight (168) acres of dense nesting cover (DNC) on the new Thaler property on Springer WHMA (Figure 21). One hundred and two (102) acres of warm season grasses were planted under the irrigation pivot on the north side of the Thaler property. Sixty-six (66) acres of cool season grasses were planted on the remainder of the property outside of the irrigation pivot.

The warm season grass mixture included big bluestem, switchgrass, indiangrass, little bluestem, sideoats grama, prairie sandreed, and an additional forb/legume mix, which was premixed and prepared by Pheasants Forever (Nebraska). The cool season grass mixture consisted of tall wheatgrass, intermediate wheatgrass, hybrid wheatgrass, and cicer milkvetch.



Figure 21. Planting of dense nesting cover on Springer WHMA.

## **R**ed Rim - Grizzly WHMA Aspen Transplant (Goal 2) - Dave Lewis

Crews transplanted sixty 8 ft. to 16 ft. tall aspen trees on the Upper Muddy Creek riparian area inside the Grizzly WHMA (Figure 22). The project is in the second year of a trial planting for riparian area rehabilitation. This was a cooperative project in which the Little Snake River Conservation District supplied the spaded aspen, the BLM built the big game fence enclosures and the WGFD Laramie Habitat and Access crew completed the plantings with the WGFD backhoe.



Figure 22. Aspen transplanted on the Upper Muddy Creek.

## **W**ick WHMA - Dave Lewis

- Installed seven miles of electric fence to manage the one-year livestock grazing treatment as required on the 2,880-acres of State Lands inside the WHMA
- 900 acres of hay meadows were irrigated on the WHMA
- 20 miles of crucial winter range fence were maintained
- 107 acres of noxious weed control were completed by the contractor
- 180 acres of hay meadow were grazed as a fall vegetative treatment

## **P**ennock Mountain WHMA - Dave Lewis

- 68 acres of hay meadow were irrigated on the WHMA
- 29 miles of crucial winter range boundary fence were maintained
- 25 acres of noxious weed control were completed by the contractor
- 32 acres were sprayed with herbicide in a cheatgrass control trial

## **R**ed Rim - Daley WHMA - Dave Lewis

- 49 miles of crucial winter range fence were maintained
- Daley WHMA livestock grazing 1528 AUMs were used

## **R**ed Rim - Grizzly WHMA - Dave Lewis

- 88 miles of boundary fence were maintained
- Grizzly WHMA livestock grazing 3258 AUMs were used

## **F**orbes WHMA - Dave Lewis

- Albany County Weed and Pest sprayed 5 acres of noxious weeds
- 6 miles of boundary fence were maintained

## **L**aramie Peak WHMA - Dave Lewis

- Albany County Weed and Pest sprayed 5 acres of noxious weeds
- 6 miles of crucial winter range fence were maintained

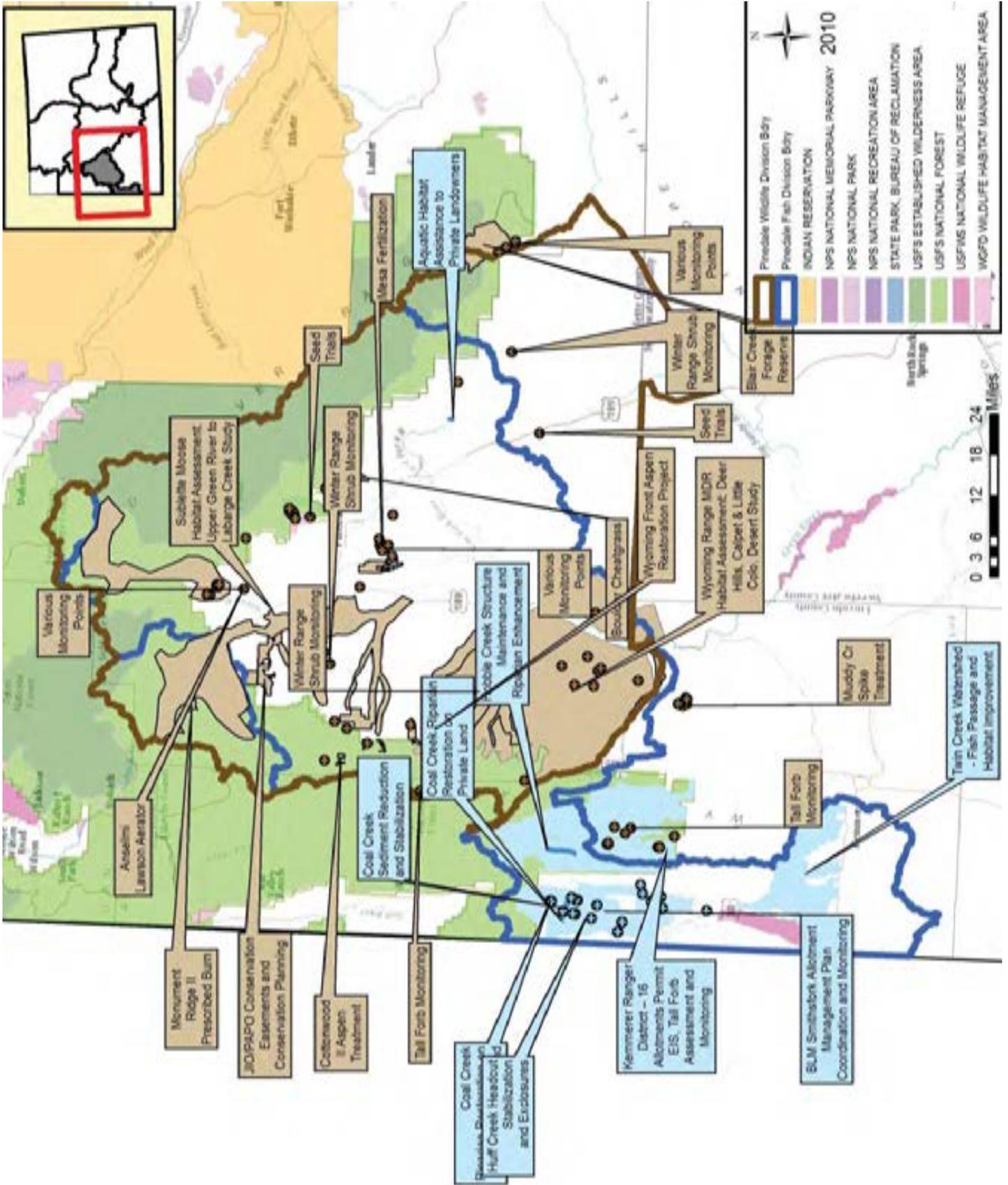
## **T**om Thorne / Beth Williams WHMA - Dave Lewis

- 18 acres of noxious weed control were completed by the contractor
- 7 miles of boundary fence were maintained

## **FWS Private Landowner Projects (4) in Carbon County (Goal 2) - WLCI**

1. Historically the cooperating ranch operated sheep transitioning to a cattle operation. The large pasture size has limited the Wildlife Cooperator's ability to adequately manage season of use and timing of grazing. This has resulted in a shift from grass and sagebrush dominated communities to prickly pear cactus and woody aster dominated communities. The goal of this project is to assist the Wildlife Cooperator with fence and water developments to improve native range conditions for potential brood-rearing and nesting sage grouse as well as other sagebrush dependant bird species on 4,572 acres of private lands. Approximately 1,185 acres outlined within this agreement falls within the Wyoming Sage Grouse Core Area (July 2010 version). A livestock grazing and wildlife management plan is being developed for the site. Fencing construction will consist of a 3-strand suspension fence with the bottom strand being smooth. This fence design is encouraged because the area falls within a large resident population and migratory corridor for pronghorn antelope.
2. This Wildlife Cooperator, with assistance from BLM and University of Wyoming range specialists, has come to recognize that changes are needed in both grazing management and added infrastructure in order to maintain native rangeland health. The USFWS has interests in this project because of its potential importance as brood-rearing and nesting habitat for sage grouse. The entire project area lies within the Wyoming Sage Grouse Core Area (July 2010 version). This agreement identifies habitat benefits on 9,313 acres of private land and 4,318 acres public land (BLM and State of Wyoming). This portion of the project would require the installation of roughly 19,500 linear feet of fence, 11 gates, one cattle guard, one reservoir enclosure, and one trough enclosure. Approximately 21,300 linear feet of suspension fence will be installed to divide this large single pasture into two smaller grazing units. A livestock grazing and wildlife management plan is being developed for the site.
3. The primary purpose of this project is to improve riparian health (19 acres) by limiting grazing within riparian area of the Little Medicine Bow River (~8,500 feet). In addition to riparian protection, fencing will create a new upland grazing paddock (49 acres) that allows cattle grazing to be more easily managed. Both riparian and upland habitat work could potentially benefit brood-rearing sage grouse. Riparian efforts could reduce sedimentation, improve the fishery, and promote riparian dependant neo-tropical bird use.
4. This project area falls within the Wyoming Sage Grouse Core Area (July 2010 version). The primary purpose is to restore riparian habitat along 2,844 feet of the Little Medicine Bow River (9.2 acres riparian acres) and manage upland vegetation within a 54.7 acre pasture. Both riparian and upland habitat work should potentially benefit brood-rearing sage grouse. Riparian efforts should reduce sedimentation and promote riparian dependant neo-tropical bird use. A secondary benefit is to remove 5,900 feet of tightly-woven wire sheep fence in order to allow the movement of pronghorn antelope through the private land. This area, in particular, has been determined to have a large distribution of year-round pronghorn use. Movements through the area have been limited by the location and style of fencing. Partners include private landowners, WWNRT, WGFD, and Medicine Bow Conservation District.

# PINEDALE REGION



## PINEDALE REGION HIGHLIGHTS

- Over 19,000 acres protected through conservation easements with several more to be completed in 2011
- Wyoming Front Aspen Restoration Project (WFARP) continues to enhance aspen communities along the Wyoming Range Front on BLM lands
- Long-term vegetation monitoring results are analyzed to understand changes in sagebrush habitats fifteen years post-treatment along the Piney Front
- Blair Creek Forage Reserve is used on Pinedale Ranger District, BTNF to rest a treated area
- Monument Ridge Prescribed Burn treats 1025 acres in Bondurant, Big Piney Ranger District, BTNF
- Approximately 1,100 willow cuttings and 100 cottonwood cuttings planted on Muddy Creek
- Approximately 300 willow cuttings planted on Coal Creek
- Approximately 400 willow cuttings planted on Hobble Creek and dozens of small conifers anchored to unstable banks
- Trash rack fish screen installed on upper South Twin Creek and approximately 250 fingerling BCT released
- Conceptual plans developed for Coal Creek Sediment Reduction and Stabilization

**B**LM Smithsfork Allotment Management Plan Coordination and Monitoring (Goal 1) - Floyd Roadifer  
BWGFD aquatic habitat personnel continued to coordinate closely with the BLM to analyze and interpret riparian greenline trend data and establish new riparian vegetation objectives for 2013 and 2021 as per the 2008 Settlement Agreement between the BLM, permittees, and other parties. Remarkable recovery of riparian habitat since 1996 was documented at two Raymond Creek greenline locations. Lower Coal Creek is the only other monitoring site where riparian recovery has clearly progressed towards stable, diverse communities that optimize habitat for Bonneville cutthroat trout (BCT) and other wildlife. Slight upward trends were apparent at several other sites, but 2008 data indicate that short term (5-year) objectives that were cooperatively established by the Technical Review Team in 1997 had not been reached in 2008 at these sites.

Although greenline trend monitoring documented a clear upward trend in riparian conditions in the Raymond Creek watershed, much greater long-term improvement will be necessary to achieve BLM's minimum standard of Proper Functioning Condition (PFC) throughout the drainage (Figure 1 and 2). Regional aquatic habitat personnel participated with the BLM regional riparian team to conduct a PFC assessment on Raymond Creek. The group concluded that the only reach of the stream that has achieved PFC is the lower end within the canyon, downstream of the confluence of the North and South Forks. Here, beaver recently constructed several small willow dams which will likely fill quickly with sediments. Long-term successful reestablishment of stable beaver dam complexes in this watershed is desirable, but is likely not sustainable until overall watershed function has improved. All remaining reaches of Raymond Creek were rated as "Functioning-at-Risk" or "Non-functional". Recovery to PFC is expected to require many more years with very limited or no livestock use. Complete recovery to Potential Natural Communities (PNC), which is the most desirable condition for BCT and other wildlife species, will require even more time.



Figure 1. Improved management in the Raymond watershed is allowing riparian habitat conditions to gradually improve.



Figure 2. South Fork Raymond Creek will require many years to fully recover with upstream reaches in the "Functioning at Risk" category.

Regional aquatic habitat personnel assisted Kemmerer BLM staff with seasonal utilization, distribution, and compliance monitoring on the Smithsfork Allotment. Preliminary summaries of utilization monitoring at 12 greenline locations in 2010 indicated that one of these sites, Lower Huff Creek, met both willow use and stubble height criteria. Stubble height criteria were met at several sites, but the 40% willow use criteria was exceeded at seven of the eight sites that support willows. This indicates that browsing by cattle is the primary limitation on willow restoration in this allotment. Utilization measurements taken outside of exclosures prior to scheduled cattle grazing at 19 locations, and then again immediately following planned grazing further supports this conclusion.

Other on-going cooperative efforts included assisting BLM and permittees with maintenance work on the Raymond watershed fence and riparian exclosures.

**JIO/PAPO Conservation Easements and Conservation Planning (Goal 1) - Dan Stroud and Jill Randall**  
The JIO and PAPO Mitigation offices were involved in securing 2 conservation easements in 2010: Sommers and Grindstone easements totaling over 19,000 acres of private land. Public walk-in fishing access was made available on an additional 4 miles of the Green River as part of this easement. These funds were made available to mitigate for loss of wildlife habitat associated with energy development in Sublette County. An annual report with details is available at <http://www.wy.blm.gov/jio-papo/>

**BLM Landscape Planning (Goal 1) - Jill Randall**  
BLM Pinedale Field Office has recently decided to undergo landscape planning efforts in the Boulder, North LaBarge and Ryegrass areas. This effort involves grazing management, permit renewal, travel management, vegetation management and wildlife concerns into one NEPA planning document. WGFD has been involved with many components of this planning effort including setting vegetation objectives, designing vegetation treatments, commenting on travel management and coordinating grazing management with permittees. The anticipated outcome is a better coordinated effort towards multiple uses on these BLM lands. The first NEPA process will be in the Boulder area and is expected to have a decision by 2012.

**Kemmerer Ranger District – 16 Allotments Permit EIS, Tall Forb Assessment and Monitoring (Goal 1) - Floyd Roadifer**  
WGFD personnel continued to coordinate with USFS Kemmerer Ranger District personnel on a variety of issues and concerns in this large area (175,728 acres) that affects the upper portions of the Smiths Fork, Hams Fork, and Thomas Fork watersheds. A workshop and tour was conducted with Dr. Alma Winward, retired FS plant ecologist. Several sites in these allotments were evaluated and monitoring issues and concerns were reviewed and discussed with USFS personnel who participated in the tour. A tour summary will soon be available from Dr. Winward and will be posted on the WGFD internet site.

Three locations proposed by the USFS for construction of monitoring exclosures were visited with the USFS, NRCS, UW, and WGFD. Soils data were collected at eleven sites and cooperative long-term efforts to better define specific tall forb ecological sites are under way. USFS had previously collected nested frequency data or other vegetation data at these proposed exclosure sites and shared that information with regional habitat personnel.

**Huff Creek Headcut Stabilization and Exclosures (Goal 2) - Floyd Roadifer**  
Two additional rock sills were constructed at the headcut located on private land on upper Huff Creek. Minor maintenance work was conducted on the exclosure fences and sills constructed in the fall of 2009. Over winter survival of willow cuttings planted in 2009 appeared very high so no additional willows were planted in 2010. Huff Creek provides some of the most critical spawning habitat for Bonneville cutthroat trout in the Thomas Fork drainage.

## **Wyoming Front Aspen Restoration Project (Goal 2) - Eric Maichak and Jill Randall**

In 2010, on-the-ground and logistical progress continued on the Wyoming Front Aspen Restoration Project (WFARP). About 606 acres of conifer, mostly subalpine fir, were slashed by Northwest Management Inc (NMI, (Figure 3) hand crews on the Upper Billies allotment in preparation for future prescribed burns, and about 650 acres of slashed material within aspen stands of the Red Canyon allotment were burned by an interagency crew in June. To date, 2,500 acres of conifer have been slashed over four allotments, and 1,000 acres have been burned within two of these allotments. In 2011, NMI is expected to slash 602 acres of conifer and aspen on the Miller Creek allotment, with 791 acres of prescribed burns (spring season) expected on the Camp Creek allotment.

Pre-treatment aspen data collected in mid-August on Upper Billies allotment show an average of 477 stems/acre, similar to pre-treatment findings at Maki (735 stems/acre), Red Canyon (526 stems/acre), and Camp Creek (457 stems/acre) allotments. We also found that 4.2% of current-year terminal leaders in Upper Billies were browsed, compared to 6.7% (Maki), 12.5% (Red Canyon), and 20% (Camp Creek). Additionally, we monitored aspen in late June on the Maki allotment (1-year post-treatment). Although only 1% of current-year terminal leaders were browsed, no individual suckers had attained a height greater than three feet, and we noted that nearly 100% of previous-year terminal leaders had been browsed. Similar results were found on adjacent Maki USFS aspen monitoring sites in late June, suggesting that elk and other wildlife are impacting local aspen recruitment and succession during transitional periods (autumn and/or early spring). To assess species composition, % cover, and herbaceous production within the stand, we installed a macroplot and read this during mid-August (spp. comp., % cover) and late October (production). We found 14 species of forbs (dominated by meadowrue, 4.2% cover), 4 species of grasses (dominated by sedges, 3.2% cover), and that subalpine fir (12.4%) rather than aspen (0.6%) dominated all aerial line-point-intercept cover estimates. Production was limited to 8.48 lb/acre and 4.20 lb/acre of forbs and grasses, respectively.

Furthermore, a temporary electric fence was installed in late June around the 2009 burn perimeter of the Maki allotment to permit livestock use of the remaining allotment. Although we were unable to sample aspen following the end of the grazing period due to logistical constraints, regeneration appeared to be good, browsing of terminal leaders appeared to be much less than in 2009, and ultimately the fence prevented livestock use of the burn. Monitoring was not conducted on the recently burned Red Canyon allotment, however, visual inspection of the site showed that aspen and tall forb regeneration within the burn is good (Figure 3). Continued financial support has been secured through 2011 from the BLM, RMEF, WVNRT, WLCI, and WGFD. Lastly, for their exemplary efforts thus far on WFARP and other western-Wyoming aspen restoration projects, NMI received the coveted 2010 WY Hunting and Fishing Heritage Expo Industry Reclamation and Wildlife Stewardship Award.



Figure 3. Aspen and herbaceous regeneration two months post-burn on the Red Canyon Allotment, western Wyoming.

## **Hobble Creek Structure Maintenance and Riparian Enhancement (Goal 2) - Floyd Roadifer**

Regional aquatic habitat personnel assisted the USFS with maintenance work along Hobble Creek where rock / tree jam structures installed in 2003 needed maintenance work. Approximately 450 willow cuttings were planted using a waterjet stinger and dozens of small conifer trees were anchored to existing structures to reduce stream energy along unstable banks.

## **Coal Creek Riparian Restoration on Private Land (Goal 2) - Floyd Roadifer**

Two landowners on Lower Coal Creek are interested in improving riparian resources on their properties. Both properties comprise a total of ~ ½ mile of stream. However, this relatively short reach of stream provides critical habitat and a potential future reference reach and seed source for willows within the larger watershed that is otherwise heavily impacted. Dennis Austin fenced ~ ¼ mile of stream about 7 years ago and began planting a variety of woody species. We assisted by planting approximately 250 willows with a waterjet stinger in fall 2009 and spring 2010. Growth and survival due to lack of browsing in 2010 was phenomenal. The Austin family is interested in planting additional mature trees and shrubs (cottonwood, black hawthorn, chokecherry, red osier dogwood, golden currant) throughout the property. Trout Unlimited has indicated an interest in assisting and a local Boy Scout group may also become involved. Jed Jacobson, the downstream landowner plans to work on his property boundary fence in the spring of 2011. Recovery of woody riparian vegetation will likely occur rapidly once the area is protected. WGFD personnel offered to assist with fence maintenance and willow plantings in the spring (2011), if the landowner continues to demonstrate a commitment to restoring the riparian habitat.

## **Coal Creek Sediment Reduction and Stabilization (Goal 2) - Floyd Roadifer**

A consultant (AVI) was contracted to prepare a conceptual plan to address sediment loading to Coal Creek primarily from the main road that parallels this important BRC stream. This involved coordinating with BLM, State Lands, and the private landowner to initiate project development and define objectives. Funding for this planning stage was secured from department sources while implementation will require other partner contributions. The plan includes at least 2 options for each of the 11 sites identified and a prioritization of the sites (Figure 4 and 5). These conceptual plans were used to develop Phase I funding proposals for additional WGFD trust fund money and WWNRT and WLCI funds to implement projects on private and state lands for implementation in the fall of 2011.



Figure 4. The abandoned bridge across Stoner Creek will be replaced with a bottomless arch-plate structure, similar to the one completed on Twin Creek (see Figure 11).



Figure 5. A variety of techniques will be employed to address large sources of sediment contribution into Coal Creek.

## **Maki Creek Prescribed Burn Monitoring (Goal 2) - Eric Maichak and Jill Randall**

Maki Creek is an aspen and sagebrush enhancement treatment located on the Big Piney Ranger District, BTNF, in the foothills of the Wyoming Range. Aspen treatments were targeted for heavily conifer-encroached aspen stands throughout the burn unit. These stands were mechanically slashed and subsequently burned. Some adjacent sagebrush was also included in the burn. A portion of the burn was implemented in the late fall of 2008, while the remaining acres were burned in the summer of 2009. In 2010, aspen monitoring was completed in three aspen stands using nonpermanent circular density plots (two treated and one control). Aspen sucker density in the two burn areas is encouraging (Figure 6). Despite the sparse presence of aspen in the stands prior to slashing and burning, the average regeneration has been strong (Figure 7). The objective is to have 1000 aspen stems/acre over 10 feet tall by 12 years post-treatment. Aspen height measurements for the two burned stands show that no

stems are reaching the 3-6 foot height class, one and two years post burn. This is not unexpected, because the burn severity was high, and sucker heights are sometimes stunted the first year when the roots in the upper soil layers are heated by hot fire. Browsing by elk continues to be a concern that is monitored closely. More data and further summary information is available in the annual BTNF Fire Effects Monitoring Report.

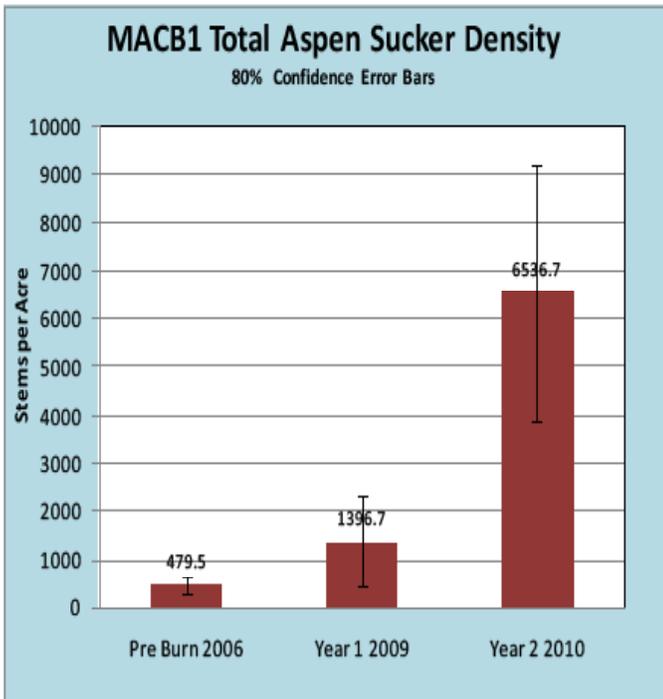


Figure 6. Aspen sucker density two years after the Maki Creek prescribed fire, Wyoming Range, BTNF.



Figure 7. Aspen regeneration two years after the Maki Creek prescribed fire, Wyoming Range, BTNF.

## Cottonwood II Aspen Treatment (Goal 2) - Jill Randall and Eric Maichak

Cottonwood II is a mechanical thinning and prescribed burn enhancement. The goals are to increase aspen sucker density and create a mosaic of age classes in areas of aspen encroached by conifers on the Big Piney District of BTNF in and around the Cottonwood Creek drainages. Mechanical treatment was completed in 2010 on approximately 400 acres of stands remaining to be treated after the 2009 season (Figure 8). Prescribed burn implementation is expected to start in 2011 and will be monitored cooperatively by the Interagency Fire Effects Crew and WGFDD post-treatment to ensure vegetation objectives are being met. More data and further summary information is available in the annual BTNF Fire Effects Monitoring Report.



Figure 8. Aspen unit with conifer slashing work completed in Sjhoberg Creek of the Cottonwood II project.

## Aquatic Habitat Assistance to Private Landowners (Goal 2) - Floyd Roadifer

A Giraffe Creek landowner was advised on riparian and stream conditions and enhancement and restoration opportunities. Numerous comments on plans provided by his consultant were offered in a formal letter of concurrence. Improvements in riparian condition, resulting from fencing and herding implemented in 2007 by the previous owner, are evident on this property. Four irrigation diversion structures on the Dunham Ranch on lower Cottonwood Creek were reviewed. Opportunities to improve water management and fish passage on this property

were discussed. We also met with the landowner / irrigator who holds water rights for the McNinch Reservoirs in the North Piney Creek watershed. These reservoirs were constructed in the 1950's primarily for irrigation water storage, but also support a viable brook trout fishery. They are in need of maintenance or reconstruction. Opportunities to improve water management and fisheries habitat as part of reservoir reconstruction were discussed.

A group consisting of an Eagle Scout troop and their leaders, other WGFD Pinedale Regional Office personnel, BLM, NRCS, and Conservation District personnel was organized to plant ~1,100 willow cuttings, and ~100 cottonwood cuttings along approximately ½ mile of Muddy Creek, a tributary of the East Fork River on the M-J Ranch (Figure 9). An additional 12 willow clumps, freshly removed from an upstream irrigation ditch were also planted at several critical eroding sites. This work was conducted inside of an approximately 1 mile long enclosure constructed as part of the Conservation Management Plan on land recently protected by a conservation easement.



Figure 9. Numerous cooperators assisted with planting approximately 1,100 willow cuttings and 100 cottonwood cuttings in the recently constructed riparian enclosure along Muddy Creek on the MJ Ranch.

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

The Twin Creek / Rock Creek watershed provides crucial habitats for a wide variety of aquatic and terrestrial wildlife. Aquatic habitat personnel worked cooperatively with the TU, DEQ, Abandoned Mine Land Division and their consultant (AVI) to address fish passage barriers at two major culvert crossings associated with past mining activities near Leefe on Twin Creek. In late October three culverts under the abandoned rail spur were removed and a bottomless arch-plate structure was installed underneath the road crossing (Figure 10 and 11). Site stability and future maintenance needs should be closely monitored at both sites over the long-term. Also, woody vegetation should be planted at both sites in the spring of 2011 to increase stability and enhance long-term habitat quality. This project will improve connectivity of fish populations between Twin Creek and the Bear River.



Figure 10. Culverts across Twin Creek were removed.



Figure 11. A bottomless arch-plate structure replaced the old culverts that were impeding fish movement on Twin Creek.

TU scheduled installation of a screen and new diversion structure at the BQ Diversion near Sage Junction in the fall of 2010 but delayed project implementation for archaeological clearance. This is the next barrier upstream from Leefe in Twin Creek and will be reconstructed in the spring of 2011.

Aquatic habitat and management personnel worked with a landowner (Jullian) to restore a population of BCT on his South Twin Creek property (“Angelo Place”). A trash rack screen was installed and maintained and approximately 250 fingerling BCT were released into the short (approx. ~1/4 mile long), spring-fed reach in mid July. Because flows are naturally limited and are further depleted at the screened ditch this population is very isolated. Furthermore, impoundments in the channel farther downstream eliminate opportunities for movement of fish to and from this isolated location. A visual survey in September indicated that numbers declined below levels immediately following stocking, but the remaining fish appeared healthy. Ongoing efforts will include developing opportunities to implement passive riparian restoration, supplement the BCT population if necessary, and maintain a working relationship with the landowner.

Regional aquatic habitat personnel continued working with landowners to improve riparian habitats and watershed conditions throughout the Rock Creek drainage. Meetings and discussions were coordinated with BLM, State Land Board and Rock Creek State land lessees to pursue constructing drift fences in the canyons draining from Dempsey Ridge into Rock Creek. The draft EA provided to the BLM in 2009 was reviewed and edited to address BLM concerns. The aquatic habitat project biologist assisted BLM with PFC assessments on Rock Creek. The AMP for the Rock Creek Allotment is scheduled for review in 2012. Coordination with the permittees, BLM, and State Lands to improve this important watershed will continue in 2011.

### **M**onument Ridge II Prescribed Burn (Goal 2) - Jill Randall

Monument Ridge II is the second unit to be prescribed burned in the three units south and west of Bondurant (Figure 12). Approximately 50% of the 1,025 acres of sagebrush was burned (Figure 13). Objectives include reintroducing disturbance to this mature monotypic sagebrush stand that serves as important transitional range for mule deer and pronghorn. Additionally, fuels objectives will be met by breaking up continuous fuel loads adjacent to private land in Bondurant. Immediate post-treatment photo points were retaken by the Interagency Fire Effects Crew and will be monitored cooperatively in 2011. More data and further summary information is available in the annual BTNF Fire Effects Monitoring Report.



Figure 12. Monument Ridge prescribed fire implementation, Bondurant Wyoming.



Figure 13. Map of Monument Ridge prescribed burn near Bondurant Wyoming.

## **A**nselmi Lawson Aerator (Goal 2) - Jill Randall and Statewide Habitat Access

In 2010, 75 acres of mountain big sagebrush were mechanically treated with the WGFD Lawson aerator to create a mosaic of age classes in sagebrush as well as increase understory herbaceous production to benefit sage grouse brood rearing habitat and improve mule deer and pronghorn transitional range (Figure 14). The pre-treatment conditions included canopy cover in excess of 30% which was decreasing the quality of habitat for wildlife. In order to adhere to sage grouse core area stipulations, WGFD Habitat and Access personnel intentionally treated in a pattern that never exceeded a distance of 60 meters to undisturbed sagebrush canopy cover of 15% or greater. This allows for foraging habitat to be closely adjacent to hiding cover at all times. This project was jointly designed and monitored by Sublette County Conservation District, NRCS and WGFD and utilized Farm Bill funding for implementation.



Figure 14. WGFD Habitat Access-operated Lawson Aerator on the Anselmi project near Cora, Wyoming.

## **B**oulder Cheatgrass (Goal 2) - Jill Randall and WLCI

The first year of herbicide control of cheatgrass using Imazopic (4 oz/acre) in the Boulder Lake area began in 2010 (Figure 15). This will be a multi-year, multi-land ownership project with portions of the first 547 acres sprayed on BLM this first year. Phase 2 will include land on the Fall Creek WHMA and additional BLM lands north of the road into Boulder Lake.

Additionally, Sublette County Weed and Pest, BLM, WLCI and WGFD are cooperatively working with USGS and DuPont on several test plots for a new chemical, Matrix, which is designed to treat cheatgrass with a reduced impact on native grasses compared to chemicals currently approved for use on BLM lands. The intent is to determine if results on vegetation are favorable, and if so, potentially providing required documentation and justification for getting Matrix approved for use on BLM lands.



Figure 15. Cheatgrass on the rangelands near Boulder Lake that will be chemically treated for cheatgrass control in 2011.

## **M**uddy Creek Spike Treatment (Goal 2) - Jill Randall and Ron Lockwood

Located in the South LaBarge Common BLM allotment this proposal has objectives to improve habitat conditions for wildlife and livestock through increased vigor of mountain shrub and sagebrush communities, increasing herbaceous production, and improving health of rangelands. Herbicide (Spike) will be aerially applied to several hundred acres attempting to thin Wyoming big sagebrush canopy cover. This treatment was developed as a result of the 2008 Wyoming Range Mule Deer Habitat Assessment recommendations. In 2010, six shrub transects and one macro-plot (line point and shrub belt) were monitored and data provided to the BLM. Plans include further refining polygons and post-treatment management plans before a fall 2011 implementation.

## Half Moon/Fayette Prescribed Burn Post-Treatment Monitoring (Goal 2) - Jill Randall and Jared Rogerson

The Half Moon prescribed burn was implemented in 1985. The area burned again in the fall of 1996 as part of the Fayette Fire, an escaped prescribed burn. Monitoring objectives reflect the goal of improving native elk habitats to reduce their dependence on artificial feed and lure them from the Fall Creek feedground earlier in the spring to reduce the intra- and inter-specific brucellosis transmission risks (Figure 16). Although this area was described pre-treatment to be dominated by mountain big sagebrush, bitterbrush and bluebunch wheatgrass, it has not shown good recovery of shrubs to date and is dominated by native grasses, specifically bluebunch wheatgrass. Monitoring efforts in 2010 indicate cheatgrass presence on the transect location which was not previously encountered. This is not surprising given the dominance of cheatgrass on nearby Half Moon mountain. More data and further summary information is available in the annual BTNF Fire Effects Monitoring Report.

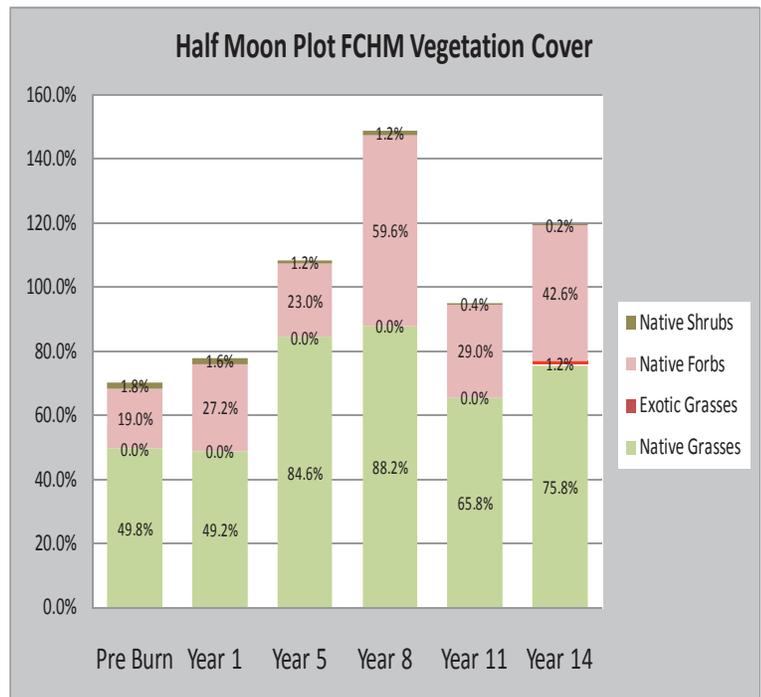


Figure 16. Monitoring data for the Half Moon prescribed fire vegetation response.

## Mesa Fertilization (Goal 2) - Dan Stroud and Jill Randall

The BLM and the WGFD implemented a rangeland fertilization project on 600 acres of Wyoming big sagebrush habitat to offset natural gas development impacts to the wintering mule deer and year-round greater sage-grouse populations present on the Mesa area, on the west flank of the Anticline Gas Field (Figure 17). Natural gas development on the Mesa has led to direct (habitat conversions) and indirect (human presence, noise) habitat losses on and adjacent to development sites (well pads, road/pipeline corridors, ancillary facilities). The potential for increasing shrub productivity on winter ranges through fertilization has been documented in other studies, in particular one that was performed by Len Carpenter in 1975.



Figure 17. Mesa fertilization.

The project will be closely monitored during the next several years to determine success and longevity of the treatment. In particular, both sagebrush leaders and herbaceous production will be monitored on an annual basis. Future projects or phases are being considered and identified pending the success of the project based on the monitoring results. An annual report with details of this project is available at <http://www.wy.blm.gov/jio-papo/>

## Fremont II Prescribed Burn (Goal 2) - Jill Randall and Jared Rogerson

The Fremont II prescribed burn was completed in 2005 on 1,200 acres of sagebrush and aspen communities northeast of Soda Lake on both Soda Lake WHMA and BTNF lands. The objectives were to enhance aspen sucker density through introducing disturbance, creating a mosaic of age class diversity in sagebrush, and increasing

bitterbrush vigor and health. In 2010 monitoring was completed to represent five year-post treatment monitoring. The most notable observation is that bitterbrush is returning in the burned plots. This species has not always had a positive response to fire in the Pinedale area but is very valuable as wildlife forage. The Interagency Fire Effects Crew and WGFD will monitor this project again in five years, to determine if vegetation objectives are being met. More data and further summary information is available in the annual BTNF Fire Effects Monitoring Report.

### **Willow Rim Prescribed Burn (Goal 2) - Jill Randall and Jared Rogerson**

Willow Rim prescribed burn is a portion of the Little Flattop prescribed burn, located south east of New Fork Lakes on the Pinedale Ranger District, BTNF. This aspen unit is located on an east facing slope above Willow Creek guard station and was burned in 2006. The treatment objectives were to increase aspen suckers to 1000 stems per acre over 10 feet tall by 12 years post-treatment. In 2005 (five years post-treatment), over 8000 aspen stems per acre were measured, mostly in the 0-3 and 3-6 foot height categories. The Interagency Fire Effects Crew and WGFD will monitor again in five years, to determine if vegetation objectives are being met (Figure 18). More data and further summary information is available in the annual BTNF Fire Effects Monitoring Report.



PRE, 2006



IMMPOST, 2006



YR02, 2007



YR05, 2010

Figure 18. Photo point sequence demonstrating increased aspen regeneration over time on the Willow Rim prescribed burn project area.

### **Wyoming Range Mule Deer Initiative (Goal 4) - Jill Randall and many department employees**

Pinedale, Green River and Jackson Regional WGFD personnel have been heavily involved in the Wyoming Range Mule Deer Initiative since 2008. This process has included three rounds of public meeting, many internal meeting and increased efforts on winter range habitat data collection, discussions with partner agencies and private individuals as well as increased emphasis on habitat enhancements in the Wyoming Range Mule Deer Herd Unit. More information on this process is available on the WGFD website,

<http://gf.state.wy.us/wildlife/WyRangePublicInput/index.asp>

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

The aquatic habitat and wildlife biologists worked cooperatively with the USFWS Partners for Fish and Wildlife, NRCS, TNC, and Intermountain Joint Venture on numerous potential opportunities to protect crucial wetland habitats through temporary or permanent agreements under the voluntary Wetland Reserve Program (WRP). One WRP agreement was approved on a large ranch (Teichert's) south of Cokeville on the Bear River. Formal comments were provided supporting this project. Cooperative implementation of the Bear River Conservation Action Plan (CAP), led by TNC entailed several interagency meetings. TNC is currently focused primarily on implementation of the CAP for the lower Bear River watershed (in Utah), but plans to focus on the upper watershed soon.

Regional aquatic habitat and management personnel continued to provide input into the ongoing development of a long-term management plan for the Cokeville Meadows Refuge (CMR). USFWS anticipates this planning process will be completed in approximately one more year and will guide CMR management for the next 15 years. Department personnel continued to support ongoing efforts to develop a forage reserve on portions of the CMR. A preliminary evaluation to assess the potential for woody species recovery along this portion of the Bear River was initiated. This work indicates a need to implement a combination of passive restoration strategies (i.e. rest from grazing) combined with active rehabilitation efforts, such as planting willow cuttings. Information from the evaluation will be provided to USFWS along with support to construct riparian fencing along the Bear River corridor as needed to restore woody riparian communities.

The Raymond Canyon Road provides the only public access point into the Raymond Mountain Wilderness Study Area. Lincoln County recently negotiated a secure easement with private landowners to maintain the historic public access at the mouth of Raymond Canyon and a new parking area was developed. Discussions about signing this parking lot are on-going with BLM and other WGFD personnel. The possibility of creating a new access road and parking area at Chalk Canyon across Wyoming State Land was recently discussed with a representative for the State Lands Office. These opportunities will be pursued in 2011.

Regional aquatic habitat personnel prepared an article for the Pinedale Angler Newsletter bestowing the many virtues of willows. This resource has been shared with various landowners and agency personnel in the Pinedale Region.

## **Winter Range Shrub Monitoring (Goal 5) - Jill Randall**

Winter range shrubs had poor annual production in 2010, which was expected due to the cool spring and lack of snowpack conditions. Mountain big sagebrush, Wyoming big sagebrush, black sagebrush, bitterbrush and true mountain mahogany are monitored for annual leader production on established transects throughout Pinedale Region big game winter ranges. Future year's monitoring will determine if seedlings from 2008 and 2009 have survived. Spring monitoring includes incidence of browse, age classification and hedging categories on the shrubs. Spring monitoring has indicated a general condition of over browsed shrubs, severe hedging categories, and very little recruitment, especially on shrubs that are highly preferred by mule deer on winter ranges such as bitterbrush, true mountain mahogany and black sagebrush (Figure 19). Fall monitoring includes annual leader growth measurements.

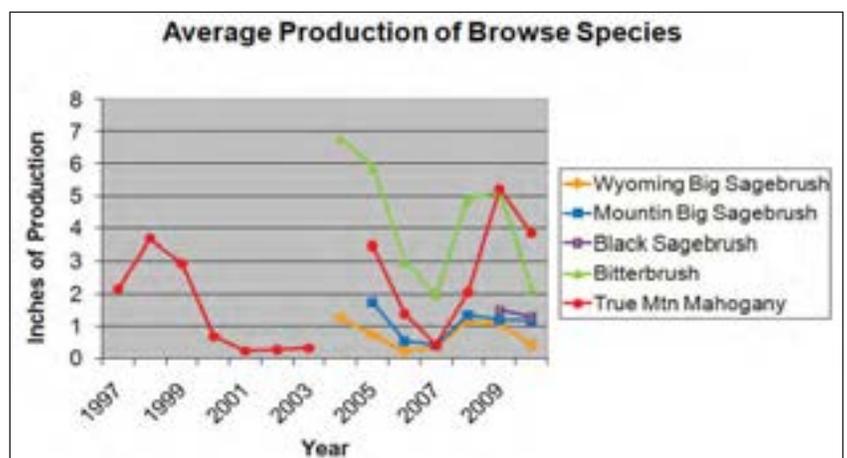


Figure 19. Average annual leader length on Pinedale Region winter range shrub transects, represented by species.

**Effects of Fire, Mechanical, and Herbicide Treatments in Sagebrush Ecotypes of Western Wyoming (Goal 5) - Eric Maichak and Jill Randall**

In summer and autumn 2008 through 2010, BFH and Terrestrial Habitat personnel were assisted by BLM and USGS staff in post-treatment vegetation monitoring on 10 sites throughout the east-central slope of the Wyoming Range front, western Wyoming. Treatments (prescribed fire, mechanical, ‘Spike’ herbicide) occurred from 1993 through 2008 in sagebrush (Wyoming big, low, mountain big) habitats and were paired with adjacent untreated control sites. With the use of nested frequency (1993-1997), line-point-intercept (1998-2010), shrub belts (1993-2010), and production clippings

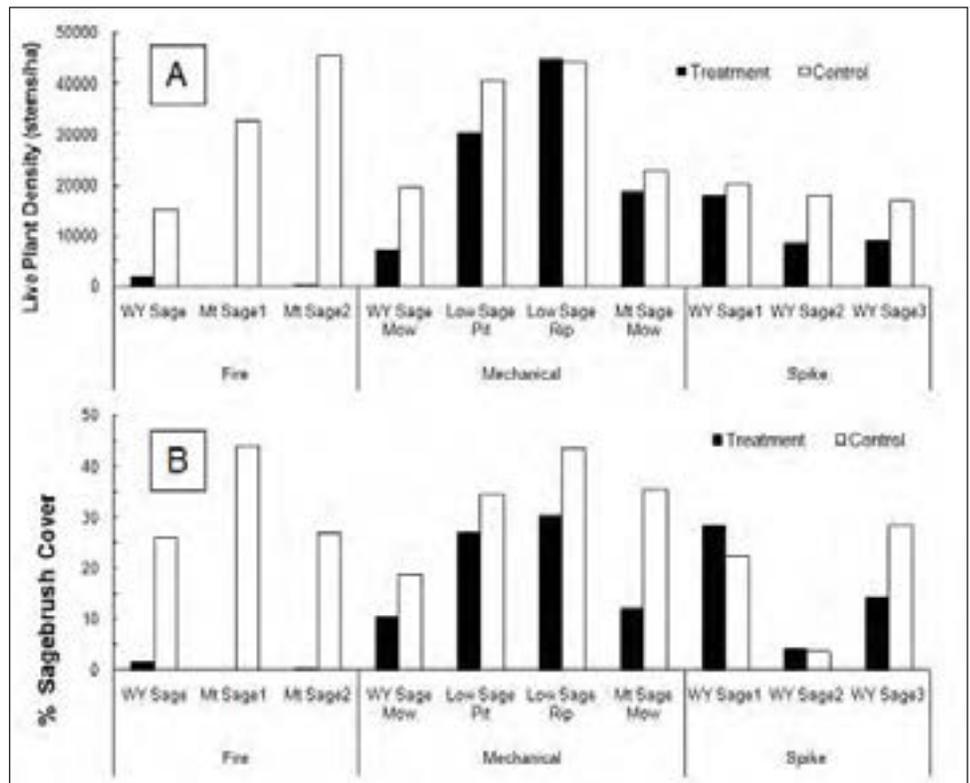


Figure 20. Mean plant density (A) and percent cover (B) of live dominant sagebrush species on treated and respective control sites, 1998-2010, western Wyoming.

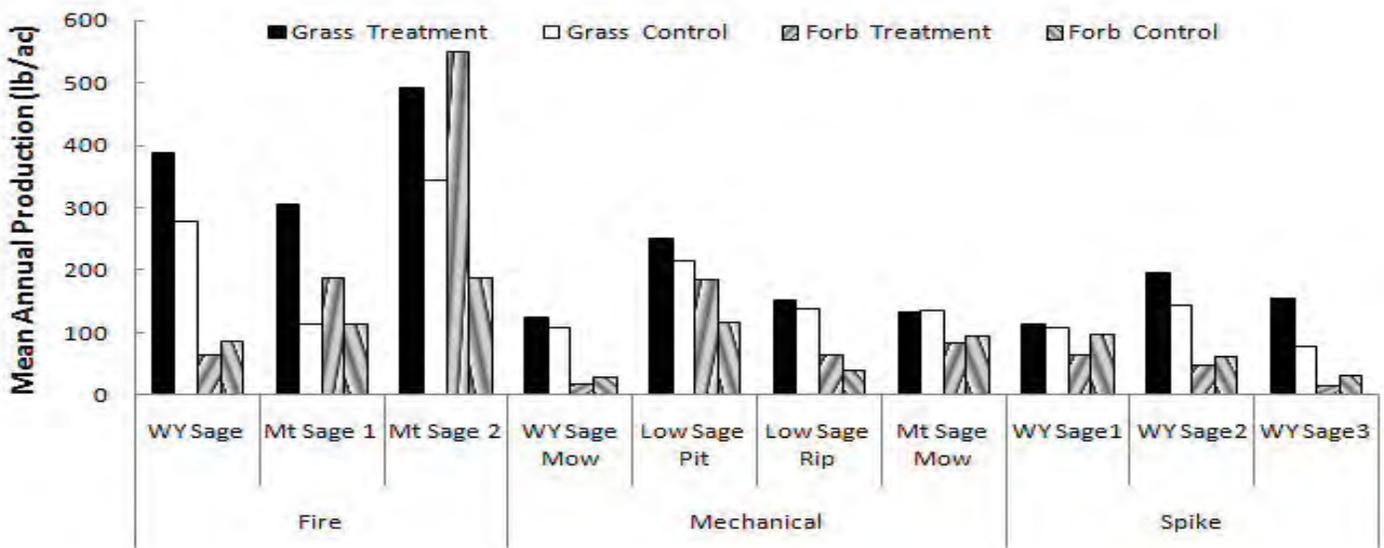


Figure 21. Mean annual herbaceous production on treated and respective control sites, 1993-2010, western Wyoming.

(1993-2010), the goals of this effort were to 1) document and compare vegetation characteristics among habitat and treatment types and 2) assess potential long-term effects of treatments. We found that relative to control sites, density and cover of sagebrush were and continue to be (15-yr post treatment) reduced substantially by fire, while most of these variables were reduced within mechanical (pitting, ripping, mowing) and Spike treatments but to a lesser extent than fire (Figure 20). Basal cover of bare ground was increased with fire and reduced with Spike, but cover of bare ground on fire sites appears to return to control site levels within eight to 15 years. We found that all treatment types increased grass production, mechanical treatments increased forb production, yet Spike treatments reduced forb production (Figure 21). Species richness of grasses and forbs was unassociated

with any treatment type. However, when we compiled line-point and respective grass production data from all sites and habitats (1998-2010), forb richness was low to modestly correlated with annual production of grasses (used as a surrogate measure of annual precipitation) suggesting that precipitation (i.e., annual or site specific) dictates recruitment of forbs. Our results support previous literature, and we suggest that mechanical and Spike rather than fire treatments can be implemented with greater control over sagebrush cover, density and age/height composition, and therefore may have fewer presumed negative effects on sagebrush obligate species (e.g., sage grouse) and fewer post-treatment livestock grazing stipulations. Furthermore, we suggest that until landscape-scale habitat treatments of varying mosaics (blob vs. patches) are implemented and assessed with respect to sage-grouse metapopulation impacts, mechanical and Spike treatments may have greater potential than fire for incorporation into recently delineated sage grouse core areas.

### **Tall Forb Monitoring (Goal 5) - Jill Randall**

**T**all forb communities are characterized by a large array of luxuriant, tall (16-48 inches) mesic forbs (Figure 22). These communities occur on all aspects and slope gradients, in large, open high-elevation (over 7,000 ft elevation) parklands or along streams in small forest openings where soils are deep and soil moisture is adequate for growth to occur throughout the frost-free growing period. These communities provide high quality summer forage for wildlife when in good condition as well as provide very important watershed functions including prevention of sedimentation at the headwaters of many drainages. However, very little is understood about these sites including species potential, recovery time frame and acceptable thresholds for ground cover.



Figure 22. Diverse tall forb community in the Wyoming Range.

In order to appropriately manage these important areas for wildlife, watershed and livestock resources further scientific understanding is needed. The BTNF, NRCS, University of Wyoming and WGFD are cooperatively increasing monitoring of these sites, including vegetation and soil parameters, in an attempt to better understand impacts of management on vegetation and soil conditions. Fourteen sites were monitored in 2010 as part of this ongoing effort. Eventually, all parties desire to develop Ecological Sites to describe tall forb communities and aid in management of these important communities.

### **Mule Deer Habitat Assessment (Goal 5) - Jill Randall and Ron Lockwood**

**M**Wyoming range mule deer habitat assessments began in 2008, with completion of 163,000 acres between LaBarge Creek and Fontenelle Creek in the Green River Region. In 2009 this effort was expanded to include 350,000 acres from LaBarge Creek north through Deer Hills as well as a portion of the Little Colorado Desert, east of the Green River. The 2010 portion included lands in the Green River Region at the southern end of the Wyoming Range. This project was modeled after the moose habitat assessment and included similar objectives on important winter and transitional ranges for the Wyoming Range Mule Deer Herd. Habitat conditions are generally considered to be in poor condition on many of our mule deer winter ranges and have experienced significant impacts from energy development. This assessment effort produces an elevated understanding of current habitat conditions as well as recommends potential ways to improve the quality of habitat for mule deer. A GIS product is an additional component of this project which can be used by WGFD and partner agencies to enhance project development. The final reports for 2009 field work were delivered to WGFD personnel in early 2010 and are available from TSS or local WGFD personnel.

## **B**lair Creek Forage Reserve (Goal 2) **B-** Jill Randall, WLCI and Lander Region (See Scribner)

Blair Creek forage reserve was created on the BTNF in an area set aside from livestock grazing for the betterment of wildlife. After a fence was constructed in 2009 (Figure 23), a livestock permittee utilized this forage reserve in 2010 from an adjacent allotment that had a prescribed burn completed in 2009. Without this area for cattle, the required rest would not have been possible, therefore preventing a 1500-acre treatment from occurring. This was a great example where multiple partners joined forces to provide a win-win situation for all involved parties. Vegetation monitoring was cooperatively performed between BTNF and WGFD personnel to assure there were no negative trends in species composition or undesirable levels of use on key locations within the forage reserve. (Figure 24). Partners include WLCI, WGFD and BTNF.

## **M**oose Habitat Assessment (Goal 5) **M-** Jill Randall, Ron Lockwood and Steve Kilpatrick

The moose habitat assessment was initiated in 2007 in the Jackson Herd Unit (HU) and continued in 2008 and 2009 to the Sublette HU. 2010 included assessment at the south end of the Wyoming Range, portions in the Greys River and areas along the Snake River between Jackson and Alpine, in western Wyoming. The impetus behind conducting a moose habitat assessment were concerns that several of the moose herds in Wyoming are experiencing poor calf recruitment and recent population declines. While the specific reasons for the declines are not fully understood, habitat conditions remain a common theme and are generally an important component of the decline equation. Thus, managers at recent herd unit review meetings have recommended field personnel develop habitat enhancement proposals benefiting moose. A proposal was developed to address the above recommendations by providing a systematic and comprehensive review, including management recommendations, of important moose habitats on a HU basis.

The primary objectives of the inventory assessment are: 1. Accelerate WGFD efforts to implement SHP and wildlife habitat productivity with emphasis on moose; 2. Provide moose HU based maps and reports depicting current ecological conditions for important moose habitats; 3. Provide prioritized list of future management recommendations for important habitats within HU's; and 4. Use above prioritized list to submit and solicit funding for habitat enhancement project proposals. During 2007, the TSS completed habitat assessment for most of the Jackson Moose HU (approximately 95,000 acres) and provided a report. Habitat evaluation components included: 1) dominant understory and overstory species composition; 2) site potential evaluation; 3) digital photos hyperlinked to display in ArcMap; and 4) management recommendations by geographic area.

The final report for 2009 field work titled Sublette Moose Habitat Assessment: Upper Green River to LaBarge Creek study area were delivered to WGFD personnel in early 2010.



Figure 23. Fence allowing land on BTNF, Pinedale Ranger District to be managed as a forage reserve.



Figure 24. Cooperative monitoring conducted to measure trend in species in the area used as a forage reserve at Blair Creek, Wind River Range, BTNF.

### **Seed Trials (Goal 5) - Jill Randall**

Critical wildlife habitat supporting mule deer, pronghorn, and sage-grouse in high elevation rangeland and sagebrush ecosystems of southwest Wyoming is being disturbed by energy development. The objective of the seed trials field studies is to evaluate the restoration of native plant species after disturbances, such as well pads. In October 2005, 72 entries of 50 native species were drill-seeded on a well-pad site, in single species plots, with four replications. Also, two seed mixtures were broadcast- and drill-seeded, and one seed mixture was hydro-seeded on disturbed areas adjacent to the plots on the same well pad. Cover and density have been monitored annually by Shell, NRCS, BLM and WGFD personnel (Figure 25). Grasses, forbs and shrubs have all been evaluated over a five year period for performance so that reclamation practices on western Wyoming's low precipitation sites can be improved.



Figure 25. Seed trial conducted cooperatively by energy companies, NRCS, BLM, WGFD and others to learn about seed mixes and specific species performance to be used in reclamation activities around Pinedale, Wyoming.

The Soda Lake WHMA seed trial was also evaluated in 2010 by NRCS and WGFD on both the formal enclosure site and the wetland dike area for species presence and performance over time.

### **Wildlife Friendly Fencing (Goal 2) - WLCI**

This is in the second year of a 5 year initiative, which offers cost-free livestock and wildlife friendly fence improvements to interested public and private landowners within a portion of a key mule deer migration route. This corridor runs from Hoback Rim to Big Sandy in Sublette County and links important habitat for mule deer, pronghorn, and other species. Improving fencing is critical to the survival of big game, as they must be able to move freely between seasonal ranges. Non-wildlife friendly fencing contributes to the mortality rates of game as they make their seasonal migrations. Eighteen and a half miles of fence conversion were accomplished in 2010. Partners include BTNF, Industry, JIO, PAPO, RMEF, TNC, WWNRT, WGFD, WY Department of Ag, Western Governors Association, and many NGOs and private individuals.

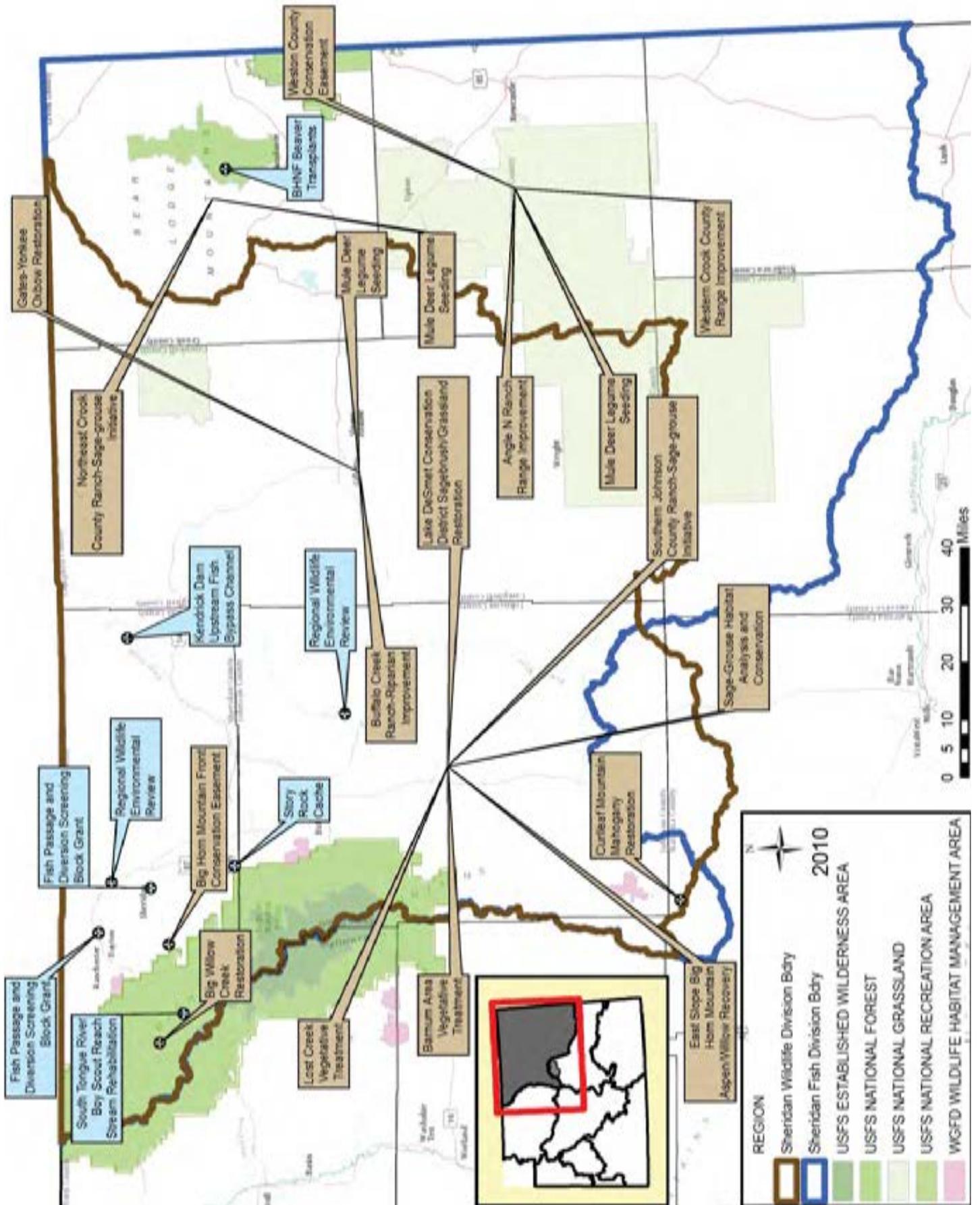
### **Sublette County Weed and Pest District (Goal 2) - WLCI**

The weed management activity increases the level of control to minimize the economic and ecological impacts caused by invasive species. Controlling noxious weeds is a priority for the BLM and this collaborative effort with Sublette, Lincoln and Teton Counties reinforces this commitment. Approximately 900 acres of rangeland were inventoried for the presence of invasive species, 1,120 acres were treated for invasives, and 1,900 acres were monitored. Partners include private landowners, permittees, Forest Service, and Sublette County Weed and Pest.

### **Swift Swan (Goal 2) - WLCI**

This is a long-term effort to establish additional shallow water wetland habitat for an expanding population of resident trumpeter swans and other waterfowl in southwest Wyoming. One pond was completed for this threatened and endangered species. Partners include WGFD, Private Landowners, and WWNRT.

# SHERIDAN REGION



## SHERIDAN REGION HIGHLIGHTS

- 1,478 acres were mechanically aerated and interseeded with 2,956 pounds of forb and shrub seed to enhance sage-grouse habitats
- Conifers were removed from 80 acres of curlleaf mountain mahogany to conserve mule deer winter browse
- 11 trash-catchers and 26 beaver were transplanted to restore a willow complex in the Big Horn Mountains
- 1,020-acre conservation easement was purchased to preserve crucial elk winter range along the east slope of the Big Horn Mountains
- Began operating the Kendrick bypass which reopened 36-miles of Clear Creek to native fish
- Helped reconnect 37-stream miles along pieces of the Tongue River and Big Goose Creek
- Helped partners screen fish from the Tongue River Diversion
- Transplanted 15 beaver to two watershed segments on the Black Hills National Forest
- Inventoried or monitored about 8-miles of stream and riparian corridors

### **R**egional Wildlife Environmental Reviews (Goal 1) - Travis Cundy

The Aquatic Habitat Biologist concluded two environmental reviews. One involved recommending options to rectify a culvert crossing on Crazy Woman Creek (Figure 1 and 2) that created a fish barrier and violated Corps of Engineers permitting stipulations. The crossing was replaced with a bridge and associated streambank erosion was rehabilitated. The other review involved providing input into the final Goose Creek Watershed TMDL Implementation Plan.



Figure 1. Crossing on Crazy Woman Creek.



Figure 2. Crossing replaced with a full span bridge.

### **S**age-grouse Habitat Analysis and Conservation (Goal 1) - Bert Jellison

The Sheridan terrestrial habitat biologist spent considerable time participating in statewide initiatives involving sage-grouse and their habitats. The State is working with University of Wyoming's WyGISC department, Audubon Wyoming, USGS, energy industry representatives and their consultants, and other federal and state agencies to remotely sense and map sagebrush communities and develop habitat suitability models to predict sage-grouse nesting, brooding and winter habitats. This assignment originated from the Governor's Sage-Grouse Implementation Team.

The Sheridan terrestrial habitat biologist also partnered with the Lake DeSmet Conservation District (LDCD), Audubon Wyoming and NRCS to determine if NRCS Ecological Site Descriptions (ESD's) could be used to predict the value of nesting habitat for sage-grouse. The LDCD and NRCS have extensive rangeland survey information for northern Johnson County, where sage-grouse had been researched by the University of Montana. These two data sets were analyzed to determine if soil type, ESD's and the ecological condition of these sites can be used to predict sage-grouse nesting preferences and success. Results were presented at the 16th Wildland Shrub Symposium in Logan, Utah in May of 2010. The title of the abstract is A comparison of ecological site descriptions to local and landscape level habitat characteristics known to influence sage-grouse nest site selection and nest survival by Jeffrey Beck, Kevin Doherty, and David Naugle and can be viewed at

<http://wss2010.usu.edu/Abstracts.pdf>

Assistance was provided to the BLM who are proposing an approach to restoring sage-grouse habitats within the Powder River Basin, called the Powder River Basin Initiative. The goal is to integrate the habitat improvement programs and projects implemented by the Conservation Districts, the NRCS, WGFD and Northeast Wyoming Sage-Grouse Local Working Group in conjunction with the BLM coal-bed methane abandonment program and to leverage funding and interagency coordination for the purpose of enhancing sage-grouse habitat reclamation.

### **W**eston County Easement (Goal 1) - Erika Peckham

Preliminary work was initiated on a conservation easement adjacent to one currently in the process of closing (Figure 3). This property provides yearlong habitat for mule deer, white-tailed deer and various other wildlife. The south Black Hills crucial priority and enhancement areas are located just east and southeast of this location. Development pressure is the primary concern with wildlife managers; this is one way to address this concern.



Figure 3. Weston County Easement.

### **B**ig Horn Mountain Front Conservation Easement Progress (Goal 1) - Bert Jellison

Within the WGFD Sheridan Region, TNC is the leader in long-term conservation of wildlife habitats. Because they are a valued partner, the terrestrial habitat biologist participates on TNC’s Northeast Wyoming Advisory Board and assists their program director with planning and project implementation. Several conservation easements are being planned by TNC and the RMEF. One, near Beckton Wyoming, was just closed.

The Beckton Stock Farm, owned and operated by the Forbes family, is located approximately ten miles west of Sheridan. The easement prohibits subdivision and restricts housing development while permitting agricultural activities. It is also almost entirely designated as crucial elk winter range (Figure 4).

Partners and programs that helped TNC with this important accomplishment include the WWNRT, NRCS Farm and Ranch Protection Program, RMEF, WGFD, El Paso Corporation, WGBGLC and private donors.

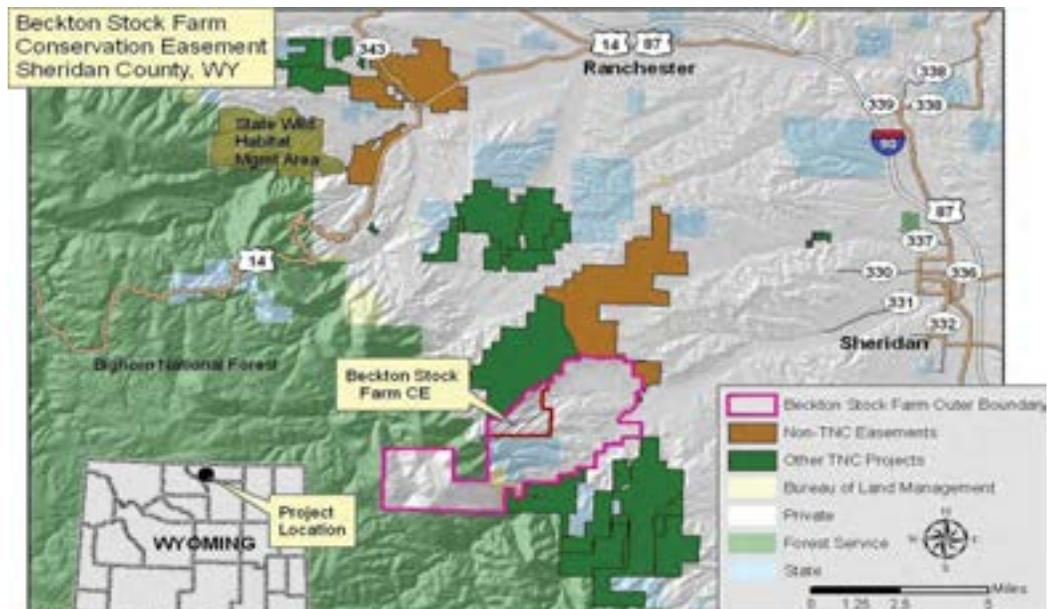


Figure 4. The Beckton Stock Farm is a 1,020-acre property on which TNC has completed the purchase of the easement. The property is located on the east slope of the Big Horns in Sheridan County.

## Lake DeSmet Conservation District Sagebrush/Grassland Restoration (Goal 2) - Bert Jellison

This program just completed its sixth year of working with ranchers to enhance sagebrush and grassland communities. LDCD in partnership with private landowners and the NRCS initiated this program on private and public lands in northern Johnson County.

Since then, the LDCD has partnered with numerous agencies, non-governmental organizations, foundations and industry to restore the productivity of sagebrush/grassland communities. This community-based program has had tremendous success. So far, approximately \$3.3 million have been granted. Phase VI of the program involved implementing grazing strategies and plans on seven ranches.

The NRCS and contractors have prepared ranch management plans for all 24 participating ranches (Figure 5). These plans include rangeland resource and wildlife inventories, conservation strategies, identification of best management practices, livestock grazing practices and monitoring techniques for measuring management changes. The WGFD prepares reports showing sage-grouse seasonal distribution maps and suggested livestock grazing best management practices per pasture. All resource information is managed in a geographic information system database to supply a rapid decision-making tool for land managers. Dr. Roy Roath, a rangeland and livestock grazing specialist from Colorado State University and others are contracted to educate livestock producers and assist them with developing progressive plans that will benefit both livestock and wildlife.

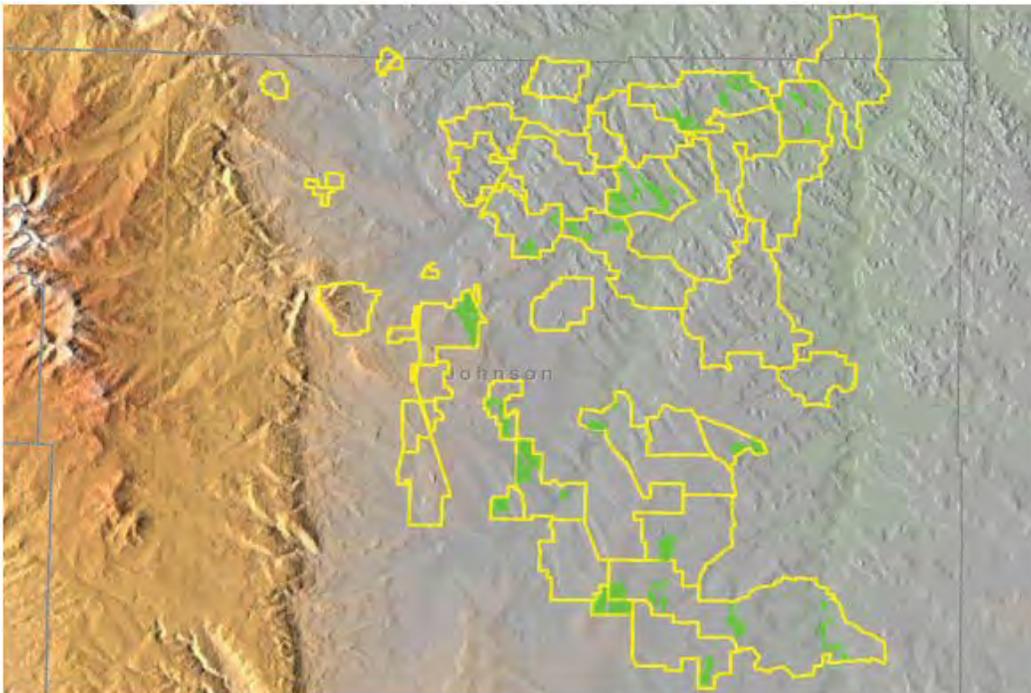


Figure 5. The LDCD has enrolled 24 livestock producers, consisting of approximately 353,722 acres (yellow polygons), to restore and enhance sagebrush/grassland communities. This program has grown to a scale where it could potentially benefit wildlife populations on a landscape level. In addition, 15,066 acres (florescent green polygons) have been treated with an aerator and planted with an assortment of forbs and shrubs.

Funding partners, in order of contributions, include the Wyoming NRCS, private landowners enrolled in program, National NRCS, WWNRT, Wyoming Governor's Sage-Grouse Fund/NE Wyo. Sage-Grouse Local Working Group, WGFD, oil and gas industry (Anadarko Petroleum, Lance Oil and Gas, Kennedy Oil), BLM, LDCD, USFWS, Department of Environmental Quality SEP, Sheridan/Johnson County Chapter of Pheasants Forever, WGBGLC, Eyas Foundation, Wyoming Private Lands Grazing Team, Bighorn Environmental Consultants, Water for Wildlife Foundation and Bow Hunters of Wyoming.

Rangeland restoration practice accomplishments are shown in Table 1. Most practices involve creating more pastures to allow livestock rotations. Rotating livestock limits the duration of grazing use to favor positive plant responses. Fences and water facility practices are designed to be as wildlife friendly as possible. Aeration equipment is used to restore up to 5 percent of the landscape. Approximately 1,478 acres were treated in 2010. By improving herbaceous production and maintaining conservative livestock stocking rates, we expect to reserve more forage and cover for wildlife. The aerator is also used to enhance overflow and riparian sites for sage-grouse brood rearing. Seed is planted during most aeration operations. Species selected depend on soil conditions and include prairie coneflower, American vetch, white prairie clover, Spreador alfalfa, winterfat, fourwing saltbush and yarrow.

Table 1. Conservation practice achievements to date and for 2010.

Conservation Practices	2010 Achievements	Program Achievements to Date
Restoration of depleted rangelands and enhancement of sage-grouse brooding habitats.	1,478 acres mechanically aerated and interseeded with 2,956 pounds of forb and shrub seed.	13,588 acres mechanically aerated and interseeded with 13,277 pounds of forb and shrub seed.
Livestock grazing system practices that are designed to improve rotational grazing and management	22 tanks installed 10 miles of pipeline installed * 1 wells drilled * 0 solar-system pumps 41 wildlife escape ramps installed 14 miles of fence installed	74 tanks installed 18 miles of pipeline installed * 3 wells drilled * 6 solar-system pumps 122 wildlife escape ramps installed 54 miles of fence installed
Note: * The Lake DeSmet Conservation District's program does not offer financial assistance for wells or stock-water pipelines. These are landowner expenses.		

**Mule Deer Legume Seeding Program (Goal 2) - Erika Peckham**

Seven private landowners enrolled 881 acres in northeast Wyoming into a legume seeding program to benefit mule deer and sage-grouse. Associated with this program, technical assistance was provided to a landowner to try an experimental planting of sanfoin, a valuable forage for many wildlife species. Sanfoin had not been previously planted in the area.

**Range Inventory and Grazing Plan (Goal 2) - Erika Peckham**

Information was collected and assembled for an in-depth range inventory and grazing plan on ranches in Campbell, Crook and Johnson counties to benefit sage-grouse under the NRCS SGI (Figure 6). This included development of a grazing system with 2 private landowners that will provide residual grass cover in areas important to nesting and brood-rearing sage-grouse.



Figure 6. Johnson County Sage-grouse Initiative property.

## **Kendrick Dam Upstream Fish Bypass Channel (Goal 2) - Travis Cundy**

The 800-foot long fish bypass channel around Kendrick Dam on Lower Clear Creek was completed in late winter 2010 and became operational in mid-April 2010. The new bypass allows fish to move upstream past the dam when stream flows are sufficient. Meanwhile, the Pee Gee Ranch continues traditional irrigation operations from the dam. Tuning of the Kendrick Dam bypass channel was completed in fall. The bypass (Figure 7) restored fish species access to about 36 miles of historic habitat in Clear Creek for the first time in nearly a century. Thanks to the Pee Gee Ranch for their cooperation to make this project a reality.



Figure 7. The Kendrick Dam fish bypass channel became operational in April 2010.

Department biologists began sampling fish use of the bypass channel in May. Thus far, channel catfish, goldeye, river carpsucker, plains minnow, and flathead chub, all of which were previously isolated below the dam, have moved upstream past the dam, which is about seven miles upstream from the confluence with the Powder River. During spring runoff, these fish migrate up the Powder River to Clear Creek where they spawn before returning downstream. Some of these native fish, such as channel catfish are expected to reestablish longer-term residency in Clear Creek. Passage by sauger and shovelnose sturgeon is also anticipated, though has not yet been documented.

## **Buffalo Creek Ranch-Riparian Improvement (Goal 2) - Erika Peckham**

Several species of wildlife will directly benefit from this project including but not limited to elk, mule deer, white-tailed deer, sharp-tailed grouse, pheasants, turkeys, and neo-tropical migrants. The landowner has previously excluded adjacent draws from grazing and has seen increased use by these species. This additional acreage will add value to the watershed and conserve unique riparian areas in the Buffalo Creek drainage (Figure 8). Improvements will be implemented in 2011.



Figure 8. Buffalo Creek riparian project.

## **East Slope Big Horn Mountain Aspen/Willow Recovery (Goal 2) - Bert Jellison**

Willow, aspen and adjacent herbaceous vegetation were analyzed to diagnose nutrient deficiencies along the east slope of the Bighorn National Forest. We need to know what minerals are lacking in the environment that may be accumulated in willow and aspen browse. Results will be compared to nutritional requirements of wild and domestic ungulates. Samples were taken where heavy browsing is documented and analyzed at Colorado State University's Soil, Water and Plant Testing Laboratory.

A report is being prepared by the University of Wyoming Cooperative Extension Service to guide livestock producers in the selection of supplements that fulfill nutritional gaps and may be encouraging the selection of aspen and willow (to satisfy this demand). We would like to test this management tool, to see if aspen and willow resources can be protected by providing an alternative source of minerals, in the form of salt blocks and/or lick-tubs.

### **G**ates-Yonkee Oxbow Restoration (Goal 2) - Erika Peckham

This restoration will improve forage and cover conditions for all wildlife utilizing this riparian area. The adjacent portions of Wild Horse Creek are currently enrolled in FSA's CCRP. This area of the creek is in its second year of rest from grazing. Restoring this oxbow, in conjunction with the deferred grazing will provide more and better quality riparian habitat in this portion of Wild Horse Creek (Figure 9). Restoration will be completed in 2011.



Figure 9. Wild Horse Creek oxbow restoration site.

### **C**urlleaf Mountain Mahogany Restoration (Goal 2) - Bert Jellison

Curl-leaf mountain mahogany (mahogany) is drought tolerant, slow growing, long-lived and an evergreen shrub that exists on well drained nutrient poor soils. The preservation of functional mahogany habitats is essential for maintaining the diversity and abundance of wildlife in the region. Mahogany benefits wildlife by providing crucial forage for wintering ungulates. The shrub also provides thermal cover, hiding cover, and nesting cover for a variety of wildlife species. Threats to mahogany in the region include fire and encroachment by conifers.

Invariably the greatest threat to mahogany in the region is encroachment by juniper, limber and ponderosa pines. They also compete with mahogany for sunlight, nutrients and water. Conifers exhibit a faster rate of growth than mahogany. As conifers mature and canopy closure increases they begin to overshadow and choke out the mahogany.

Mature mahogany is largely shade intolerant. The removal of mahogany due to encroachment by conifers depends largely on the density of conifers. Aggressive infestations of conifers eventually lead to the removal of entire mahogany stands. To help prevent conifers from replacing stands of mahogany, two projects are underway. They are:

*Lost Creek Project* - The BLM's Casper Field Office initiated this vegetative treatment project in coordination and partnership with the WGFD, WWNRT, RMEF and the MDF. Located in the southern Big Horn Mountains 2,700 acres are identified for treatment and will occur in relatively small blocks over a ten-year period. Legal access to the project area is available through BLM-administered lands and State Lands off the 33-mile Stock Driveway. In 2010, an 80 acre block of mahogany was mechanically treated to remove conifer encroachment (Figure 10).



Figure 10. This curlleaf mountain mahogany stand was mechanically treated to remove conifer encroachment. The treatment and spread of white pine blister rust (note standing dead trees) will preserve this crucial winter browse resource.

*Barnum Area Project* - WGFD initiated this vegetative treatment , since it occurs on WGFD, private and BLM lands. Funding partners include the WWNRT (grant not approved as of the writing of this report), MDF and BLM. These sites are located along the eastern foothills of the southern Big Horn Mountain range near Barnum. Kaycee is approximately 17 miles east of this area. The first group of mahogany communities proposed for treatment involves 1,165 acres.

For both areas, mechanical treatment (Table 2) will be accomplished using a hand crew with chain saws. This treatment method is thought to be the most feasible , given the topographic variation and density of vegetation.

Table 2. Conservation practice achievements to date and for 2010.

Conservation Practices	2010 Achievements	Program Achievements to Date
<i>Lost Creek Project</i> - Mechanically remove limber pine from 2,700 acres of mahogany stands	80 acres treated	80 acres treated
<i>Barnum Area Project</i> - Mechanically remove limber and ponderosa pines and juniper from 1,165 acres of mahogany stands	Presently waiting for the BLM Environmental Assessment Decision Notice	None

**BHNF Beaver Transplants (Goal 2) - Travis Cundy**

Fifteen beaver were transplanted to two watershed segments on the Black Hills National Forest. The ponds established by new beaver colonies (Figure 11) will retain and slowly release runoff water, thus augmenting stream flows later into the year, and provide habitat for various fish and wildlife.



Figure 11. Colony establishment occurred at beaver transplant areas in headwaters segments of Blacktail Creek on the Black Hills National Forest. Beaver dams will raise streamside water tables and increase late season stream flows.

**South Tongue River Boy Scout Reach Stream Rehabilitation (Goal 2) - Travis Cundy**

A five acre electric rope enclosure was erected around an oxbow channel enhancement along the Boy Scout rehabilitation reach on the South Tongue River (Figure 12). Wyoming Governor’s Big Game License Coalition funding covered the fencing materials and Bighorn National Forest personnel helped erect the fence. The contractor for the stream rehabilitation project increased flows to the oxbow by adjusting the water control grade structure.



Figure 12. The oxbow on the right is supplied flow from the South Tongue River by the grade structure pictured mid channel. It was temporarily excluded from cattle grazing to allow transplanted sod time to stabilize.

## Big Willow Creek Restoration (Goal 2) - Bert Jellison

On the BNF, beaver populations have plummeted from approximately 1,200 individuals in the 1950's to less than 200. In response, the RMEF, WGBGLC, Bow Hunters of Wyoming, WGFD and USFS have cooperated to restore beaver to unoccupied habitats. It's hoped that beaver can use residual willows to build dams and restore the hydrology needed to support these water-loving plants.

The absence of beaver dams has allowed streams to run faster and straighter, cutting more deeply into the substrate. Where dramatic changes have occurred in stream morphology and function, it's difficult for beaver to successfully dam the primary stream channel.

The objective is to construct weed-catcher structures within an incised section of Big Willow Creek. Weed-catchers are expected to form the structural support to enable beaver to dam the incised channel (Figure 13). This stream section was selected because the livestock-grazing lessee had voluntarily reduced stocking rates, resulting in the recovery and release of willow resources. It was also selected because it's a broad floodplain with significant willow resources.



Figure 13. One large dam complex and many smaller plugs have been added to Big Willow Creek since the beginning of this project.

We hope to restore the complex of historic beaver dams within the 178-acre willow community, thus restoring stream morphology and function (Table 3). The elevated water table will re-hydrate the riparian zone, encourage willow growth and vigor, create seedbeds for new willow establishment, keep water on the land longer and extend the green-growth period of most vegetation.

Table 3. Conservation practice achievements to date and for 2010.

Conservation Practices	2010 Achievements	Program Achievements to Date
Construct weed-catcher structures within an incised reach of Big Willow Creek.		10 weed-catchers constructed.
Transplant beaver to secure and expand seed-catcher structures.	11 beaver transplanted.	26 beaver transplanted.

## **F**ish Passage and Diversion Screening Block Grants (Goal 2) - Travis Cundy

Cost share assistance was provided to the Sheridan County and Lake DeSmet conservation districts to provide upstream fish passage or screen fish from ditches at irrigation diversions sites. Projects were completed on Big Goose Creek (Figure 14) and the Tongue River (Figures 15 and 16). Planning continued at three projects on Clear Creek. Many thanks to the NRCS and conservation districts, for these ventures would not have been possible without their efforts to administer and coordinate the projects.



Figure 14. The Flume Diversion project improved fish movements between a 2.8-mile segment of the Big Goose Creek below the diversion and a 2.9-mile segment above the diversion.



Figure 15. The Tongue River Diversion project provided fish passage over a roughened ramp.



Figure 16. Screened fish from entering the diversion ditch via a flat bottom plate screen. The project reconnected 25.7-mile of the Tongue River downstream to the Interstate Diversion to 5.7-miles upstream to the York Diversion.

## **S**tory Rock Cache (Goal 2) - Travis Cundy

A contractor was enlisted to stock-pile rock available from construction work at the Story Hatchery at the hatchery entrance and Penrose trailhead. About 300-2 to 3.5 foot boulders are available.

## **E**ducational Efforts (Goal 4) - Travis Cundy

The Aquatic Habitat Biologist completed a presentation on stream habitat rehabilitation efforts in Wyoming to an NRCS sponsored stream assessment course. Four tours of fish passage and screening, or stream rehabilitation projects were completed with requesting groups in the region during 2010.

## **S**and Creek Public Access Area (Goal 5) - Travis Cundy

Three hundred twenty four head of cattle were grazed on the Sand Creek public access unit from late May until early June. This use equated to about 130 animal unit months (0.4 months \* ~324 animal units).

## **Extension Services To Landowners, Organizations And Agencies (Goal 5) - Bert Jellison**

The Sheridan habitat biologist works in partnership with NRCS offices in the towns of Sheridan, Buffalo and Kaycee, to help deliver Farm Bill programs and extension services. Considerable time was spent helping the agency with their new Sage-Grouse Initiative (SGI) program. This involved:

- Helping with the development of a scorecard/screen evaluation procedure for prioritizing and awarding program dollars, as well as a habitat assessment process.
- Identifying priority ranches.
- Delivering the SGI program to interested landowners. This included meeting with nine (9) landowners to provide technical assistance.
- Evaluating and ranking properties.
- Delivering educational opportunities.

Other wildlife extension services included:

- Helping Sheridan County planners and their consultants with mapping critical wildlife habitats for their comprehensive plan.
- Delivering information to eight (8) ranches concerning improved livestock grazing techniques and mechanical and fire treatment.
- Assisting two (2) natural gas producers with controlling annual bromes in disturbed landscapes.

## **Aquatic Habitat Information and Technical Assistance Requests (Goal 5) - Travis Cundy**

The Aquatic Habitat Biologist assisted landowners, managers, consultants, or agency representatives on 21 projects. One contact resulted in further assistance to Bighorn Forest, Sheridan County Conservation District and TU personnel to complete bio-revetment treatments at three eroding streambank segments on the North Tongue River. Two contacts involved proactive outreach to ditch companies to promote fish passage and screening projects at high priority diversion locations on Clear Creek and the Tongue River. Another contact with multiple interests involved recommending a short-term fix to temporarily remediate a sediment bar that was impinging water delivery to the Story Hatchery. The temporary fix was completed by the department's statewide construction crew (Figure 17).



Figure 17. Before (left) and after (right) photos depicting the substrate bar redistribution project completed above the South Piney Mead Coffeen Diversion Dam. A long-term solution is needed to limit future reformation of the mid-channel bar.